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Godina LXX



NAUTIČKI GODIŠNJAK

— ZA —
2012
— GODINU —

HIDROMETEOROLOŠKI ZAVOD CRNE GORE
SEKTOR ZA HIDROGRAFIJU I OKEANOGRAFIJU
PODGORICA – CRNA GORA

UKUPNA POPRAVKA VISINE

| PRVA POPRAVKA VISINE ZA SUNCE, ZVJEZDE I PLANETE | | |
|---|--|-------------|
| Opažena visina | ⊕ | ★ i planeta |
| | refrakcija paralaksa radijus = 16' | refrakcija |
| 0 00 | / | / |
| 6 30 | + 8.2 | - 7.9 |
| 6 40 | 8.4 | 7.7 |
| 6 50 | 8.6 | 7.6 |
| 7 00 | 8.7 | 7.4 |
| 7 10 | 8.9 | 7.2 |
| 7 20 | + 9.0 | - 7.1 |
| 7 30 | 9.2 | 7.0 |
| 7 40 | 9.3 | 6.8 |
| 7 50 | 9.5 | 6.7 |
| 8 00 | 9.6 | 6.6 |
| 8 10 | + 9.7 | - 6.4 |
| 8 20 | 9.8 | 6.3 |
| 8 30 | 10.0 | 6.2 |
| 8 40 | 10.1 | 6.1 |
| 8 50 | 10.2 | 6.0 |
| 9 00 | + 10.3 | - 5.9 |
| 9 20 | 10.5 | 5.7 |
| 9 40 | 10.6 | 5.5 |
| 10 00 | 10.8 | 5.3 |
| 10 20 | 11.0 | 5.2 |
| 10 40 | + 11.2 | - 5.0 |
| 11 00 | 11.3 | 4.9 |
| 11 30 | 11.5 | 4.7 |
| 12 00 | 11.7 | 4.5 |
| 12 30 | 11.9 | 4.3 |
| 13 00 | + 12.0 | - 4.1 |
| 13 30 | 12.2 | 4.0 |
| 14 00 | 12.3 | 3.8 |
| 15 00 | 12.6 | 3.6 |
| 16 00 | 12.8 | 3.4 |
| 17 00 | + 13.0 | - 3.2 |
| 18 00 | 13.2 | 3.0 |
| 19 00 | 13.3 | 2.8 |
| 20 00 | 13.5 | 2.6 |
| 22 00 | 13.7 | 2.4 |
| 24 00 | + 14.0 | - 2.2 |
| 26 00 | 14.1 | 2.0 |
| 28 00 | 14.3 | 1.8 |
| 30 00 | 14.4 | 1.7 |
| 32 00 | 14.6 | 1.6 |
| 34 00 | + 14.7 | - 1.4 |
| 36 00 | 14.8 | 1.3 |
| 38 00 | 14.9 | 1.3 |
| 40 00 | 15.0 | 1.2 |
| 50 00 | 15.3 | 0.8 |
| 60 00 | + 15.5 | - 0.6 |
| 70 00 | 15.7 | 0.4 |
| 80 00 | 15.8 | 0.2 |
| 90 00 | 16.0 | 0.0 |

| DRUGA POPRAVKA VISINE ZA VISINU OKA | | | |
|--|-----------|------------|-----------|
| Visina oka | depresija | Visina oka | depresija |
| metara | / | metara | / |
| 0.5 | - 1.3 | 18 | - 7.5 |
| 1.0 | 1.8 | 19 | 7.7 |
| 1.5 | 2.2 | 20 | 7.9 |
| 2.0 | 2.5 | 21 | 8.1 |
| 2.5 | 2.8 | 22 | 8.3 |
| 3.0 | - 3.1 | 23 | - 8.5 |
| 3.5 | 3.3 | 24 | 8.7 |
| 4.0 | 3.5 | 25 | 8.9 |
| 4.5 | 3.8 | 26 | 9.0 |
| 5.0 | 3.9 | 27 | 9.2 |
| 5.5 | - 4.1 | 28 | - 9.4 |
| 6.0 | 4.3 | 29 | 9.6 |
| 6.5 | 4.5 | 30 | 9.7 |
| 7.0 | 4.7 | 50 | 12.6 |
| 7.5 | 4.9 | 75 | 15.4 |
| 8.0 | - 5.0 | 100 | - 17.7 |
| 8.5 | 5.2 | 125 | 19.9 |
| 9.0 | 5.3 | 150 | 21.8 |
| 9.5 | 5.4 | 175 | 23.5 |
| 10.0 | 5.6 | 200 | 25.1 |
| 11.0 | - 5.9 | 250 | - 28.1 |
| 12.0 | 6.1 | 300 | 30.8 |
| 13.0 | 6.4 | 350 | 33.2 |
| 14.0 | 6.5 | 400 | 35.5 |
| 15.0 | 6.9 | 450 | 37.7 |
| 16.0 | - 7.1 | 500 | - 39.7 |
| 17.0 | 7.3 | 600 | 43.5 |

| TREĆA POPRAVKA VISINE ZA VISINU PLANETE S OBZIROM NA PARALAKSU | | | | | | |
|---|-----------------------|-----|-----|-----|-----|-----|
| Opažena visina planete | Horizontska paralaksa | | | | | |
| | / | / | / | / | / | / |
| 0 | / | / | / | / | / | / |
| 10 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 |
| 30 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 |
| 50 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 |
| 70 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 |

| TREĆA POPRAVKA VISINE ZBOG PARALAKSE I PROMJENE RADIJUSA SUNCA | | | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| | Jan. | Feb. | Mart | Apr. | Maj | Jun | Jul | Avg. | Sep. | Okt. | Nov. | Dec. |
| od 1. do 15. | / | / | / | / | / | / | / | / | / | / | / | / |
| od 16. do kraja | +0.3 | +0.2 | +0.1 | 0.0 | -0.1 | -0.2 | -0.2 | -0.2 | -0.1 | +0.1 | +0.2 | +0.3 |

⊕ Za gornji rub Sunca korekcija = tablična vrijednost manje dvostruki radijus (2r)

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GLAVNI I ODGOVORNI UREDNIK:

Mr LUKA MITROVIĆ

RECENZENT:

Mr DUŠAN SLAVNIĆ

LEKTURA I KOREKTURA:

Prof. Dr STEVO ŠEGAN

UREĐIVAČKI ODBOR:

Pbb BRANISLAV GLOGINJA

Mr DUŠAN SLAVNIĆ

Prof. Dr STEVO ŠEGAN

SLOG:

Prof. Dr STEVO ŠEGAN

ŠTAMPA: STUDIO XXXX, Podgorica

POVEZ: STUDIO XXXX, Podgorica

TIRAŽ:

150 PRIM JERAKA

ADRESA IZDAVAČA:

HIDROMETEOROŠKI ZAVOD CRNE GORE
IV PROLETERSKE BRIGADE 19, 81000 PODGORICA



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var = promjenljivi deo Nautičkog godišnjaka
const = stalni deo Nautičkog godišnjaka

PREDGOVOR

Hidrometeorološki zavod Crne Gore izdaje svoj drugi broj NAUTIČKOG GODIŠNJAKA, koji je devetnaesti u prethodnom nizu i sedamdeseti u ukupnom nizu izdanja ove publikacije na našim prostorima.

Za sedamdeset brojeva Nautičkog godišnjaka, do sada, možemo zahvaliti jednoj maloj armiji ljudi, entuzijasta i naučnika, koji su dali svoj nesobični doprinos da ova publikacija bude prisutna među pomorcima Kraljevine Jugoslavije, Socijalističke Jugoslavije, Saveza Republika Srbije i Crne Gore, a sada i samo Crne Gore.

Put je išao preko preuzimanja ruskih Nautičkih godišnjaka, koji su prevođeni na naš jezik i ručno ukucavane brojene vrednosti efemerida, tablica popravki i svih ostalih tablica, do današnje skoro sasvim automatizovane računarske obrade podataka.

Od 1983. godine, zahvaljujući prof. dr Stevi Šeganu, počelo se sa računarskom obradom Nautičkog godišnjaka.

Algoritme i softver za potrebna izračunavanja, kao i računarsku pripremu za štampu i za ovaj broj, kao i za prethodnih dvadeset šest, izvršio je prof. dr Stevo Šegan sa Katedre za astronomiju Univerziteta u Beogradu.

Svi podaci potreбni za navigaciju izračunati su polazeći od heliocentričnih pravouglih koordinata nebeskih tijela za standardnu epohu J2000.0, a izračunavanja su uskladena sa preporukama i rješenjima Međunarodne astronomске unije (IAU 1976–1983 i XXIV GA 2000). Takvim postupkom osigurana je maksimalna tačnost u današnje vrijeme.

Podaci u Nautičkom godišnjaku izračunati su i priređeni isključivo za potrebe astronomске navigacije.

Godišnjak se sastoji iz dva djela—*efemeridskog* (var) i *stalnog* (const). Efemeridski dio sadrži za tekuću godinu efemeride Sunca, Mjeseca, četiri velike planete (Venere, Marsa, Jupitera i Saturna) i pedeset četiri najsjajnije (nautičke) zvjezde kao i tablice za određivanje geografske širine pomoću visine i azimuta Sjevernjače. Stalni dio Godišnjaka sadrži interpolacione i pomoćne tablice.

Svi vremenski podaci u Nautičkom godišnjaku odnose se na Grinički meridjan. Prema tome, argument u svim efemeridama je univerzalno, odnosno svjetsko vrijeme, koje se računa od ponoći (00^h.00) na meridijanu Griniča.

Tačnost astronomskih podataka data je u ugaonoj mjeri od jedne desetine minuta, u vremenskoj skali od jedne sekunde, odnosno, gdje je to bilo potrebno, do jedne desetine sekunde. Podaci izračunati u interpolacionim tablicama imaju približno istu tačnost.

Izbor i sastav efemerida ostao je neizmjenjen i u ovom izdanju. Raspored efemerida je, kao i ranije, po datumima, po dva na svakoj stranici. Efemeride zvjezda i tablice za izračunavanje geografske širine pomoću visine i azimuta Sjevernjače izdvojene su posebno. Interpolacione tablice, zajedničke za ispravke časovnog ugla i deklinacije, takođe su date posebno.

Ukoliko postoje opravdane primjedbe i potreba za izmjenama i ispravkama molimo da nam ih prosljedite, a mi ćemo ih, sa punim uvažavanjem, razmotriti.

Podgorica, Decembar 2011.

ZA HIDROMETEOROLOŠKI ZAVOD CRNE GORE

DIREKTOR
Mr LUKA MITROVIĆ

ASTRONOMSKI ZNACI, SKRAĆENICE I KONSTANTE

| NAŠI I ENGLESKI NAZIVI ZA ZNAKOVE Domestic and English Names for Symbols | | ZODIJAČKI ZNACI I SAZVEŽĐA | |
|---|----------------------|----------------------------|-------------|
| ⊙ ... Sunce | The Sun | ♈ ... Ovan | Aries |
| ☾ ... Mjesec | The Moon | ♉ ... Bik | Taurus |
| ★ ... Zvjezda | A Star | ♊ ... Blizanci | Gemini |
| ♀ ... Venera | Venus | ♋ ... Rak | Cancer |
| ♂ ... Mars | Mars | ♌ ... Lav | Leo |
| ♃ ... Jupiter | Jupiter | ♍ ... Djevojka | Virgo |
| ♄ ... Saturn | Saturn | ♎ ... Vaga | Libra |
| ♈ ... Proljećna tačka | First Point of Aries | ♏ ... Škorpija | Scorpius |
| ● ... Mlad Mjesec | New Moon | ♐ ... Strelac | Sagittarius |
| ● ... Prva četvrt | First Quarter | ♑ ... Jarac | Capricornus |
| ○ ... Pun Mjesec | Full Moon | ♒ ... Vodolija | Aquarius |
| ● ... Poslednja četvrt | Last Quarter | ♓ ... Ribe | Pisces |
| ○ ... Stepen | Degree | ♉ ... Proljećna tačka | |
| / ... Minut (luka) | Minute of Arc | ♎ ... Jesenja tačka | |
| // ... Sekunda (luka) | Second of Arc | | |

| OPŠTI ASTRONOMSKI ZNACI | OSNOVNE ASTRONOMSKE KONSTANTE IAU(1976) XXIV(2000) | | | | | | | | | | | | | | | | |
|---|---|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|------------|-------------------|---------------|------------------|--------------|------------------------|--|
| <table border="0"> <tr> <td>⊙ ... Sunce</td><td>♂ ... Uran</td></tr> <tr> <td>☽ ... Mjesec</td><td>♀ ... Neptun</td></tr> <tr> <td>☿ ... Merkur</td><td>♃ ... Pluton</td></tr> <tr> <td>♀ ... Venera</td><td>彗 ... Kometa</td></tr> <tr> <td>♂ ... Zemlja</td><td>● ... Mlad Mjesec</td></tr> <tr> <td>♂ ... Mars</td><td>● ... Prva četvrt</td></tr> <tr> <td>♃ ... Jupiter</td><td>○ ... Pun Mjesec</td></tr> <tr> <td>♄ ... Saturn</td><td>● ... Poslednja četvrt</td></tr> </table> | ⊙ ... Sunce | ♂ ... Uran | ☽ ... Mjesec | ♀ ... Neptun | ☿ ... Merkur | ♃ ... Pluton | ♀ ... Venera | 彗 ... Kometa | ♂ ... Zemlja | ● ... Mlad Mjesec | ♂ ... Mars | ● ... Prva četvrt | ♃ ... Jupiter | ○ ... Pun Mjesec | ♄ ... Saturn | ● ... Poslednja četvrt | <p>DEFINICIJE KONSTANTE Gausova gravitacijska konstanta $k = 0.017\,202\,098\,95$ Brzina svjetlosti $c = 299\,792\,458 \text{ m/s}$</p> <p>OSNOVNE KONSTANTE Sjeklošno vrijeme $\tau_A = 499.004\,786 \text{ s}$ Ekvatorijski poluprečnik Zemlje $a_\oplus = 6\,378\,137 \text{ m}$ Dinamički faktor oblike Zemlje $J_2 = 0.001\,082\,64$ Geocentrična gravitacijska konstanta $GE = 3.986\,004 \times 10^{14} \text{ m}^3/\text{s}^2$ Konstanta gravitacije $G = 6.673 \times 10^{-11} \text{ m}^3/\text{kg s}^2$ Masa Mjeseca u jedinicama mase Zemlje $\mu = 0.012\,300\,04$ Opšta precesija u longitudi, za Julijansko stoljeće $\varpi = 5029''.7970$ Nagib ekliptike $\epsilon = 23^\circ 26' 21''.448$</p> <p>IZVEDENE KONSTANTE Konstanta nutacije $N = 9''.2052$ Jedinica rastojanja (astronomski jed.) $a_{\text{AU}} = 1.495\,978\,71 \times 10^{11} \text{ m}$ Paralaksa Sunca $\arcsin(a_e/A) = \pi_\odot = 8''.794\,143$ Konstanta aberracije $x = 20''.495\,51$ Faktor Zemljine sploštenosti $f = 0.003\,352\,82 = 1/298.256$ Heliocentrična gravitacijska konstanta $GS = 1.327\,124\,42 \times 10^{20} \text{ m}^3/\text{s}^2$ Masa Sunca u jedinicama mase Zemlje $GS/GE = S/E = 332\,946.0$ Masa Sunca $GS/G = S = 1.9884 \times 10^{30} \text{ kg}$ Relativne mase planeta: Merkur 6 023 600 Venera 408 523.7 Zemlja+Mjesec 328 900.6 Mars 3 098 708 Jupiter 1 047 349 Saturn 3 497.9 Uran 22 903 Neptun 19 412 Pluton 135 200 000</p> |
| ⊙ ... Sunce | ♂ ... Uran | | | | | | | | | | | | | | | | |
| ☽ ... Mjesec | ♀ ... Neptun | | | | | | | | | | | | | | | | |
| ☿ ... Merkur | ♃ ... Pluton | | | | | | | | | | | | | | | | |
| ♀ ... Venera | 彗 ... Kometa | | | | | | | | | | | | | | | | |
| ♂ ... Zemlja | ● ... Mlad Mjesec | | | | | | | | | | | | | | | | |
| ♂ ... Mars | ● ... Prva četvrt | | | | | | | | | | | | | | | | |
| ♃ ... Jupiter | ○ ... Pun Mjesec | | | | | | | | | | | | | | | | |
| ♄ ... Saturn | ● ... Poslednja četvrt | | | | | | | | | | | | | | | | |

NAŠE I ENGLESKE SKRAĆENICE I KLJUČNE RIJEČI

Domestic and English Abbreviations and Key Words

| | | | |
|------------------------|---|----------------------|--|
| UT | Univerzalno (svjetsko) vrijeme | UT | Universal Time |
| T_p | Griničko pravo vrijeme | GAT | Greenwich Apparent Time |
| T_z | Griničko zvjezdano vrijeme | GST | Greenwich Sidereal Time |
| T_{m̄} | Srednje vrijeme gornjeg prolaza kroz meridijan u Griniču | T_U | Greenwich Mean Time of the Upper Transit on the Meridian of Greenwich |
| T_{m̄} | Srednje vrijeme donjeg prolaza kroz meridijan u Griniču | T_L | Greenwich Mean Time of the Lower Transit on the Meridian of Greenwich |
| t_s | Mjesno srednje vrijeme | LMT | Local Mean Time |
| t_p | Mjesno pravo vrijeme | LAT | Local Apparent Time |
| t_z | Mjesno zvjezdano vrijeme | LST | Local Sidereal Time |
| t_x | Zonsko vrijeme | ZT | Zone Time |
| t_{zv} | Zvanično vrijeme | LCT | Local Civil Time |
| e | Vremensko izjednačenje | Eq.T. | Equation of Time (App.-Mean) |
| S | Grinički časovni ugao | GHA | Greenwich Hour Angle |
| s | Mjesni časovni ugao | LHA | Local Hour Angle, Meridian Angle |
| δ | Deklinacija | Dec. | Declination |
| α | Rektascenzija | RA | Right Ascension |
| $(360^\circ - \alpha)$ | Surektascenzija | SHA | Sidereal Hour Angle |
| γ | Proljećna tačka | γ | First Point of Aries |
| π | Horizontska paralaksa | H.P. | Horizontal Parallax |
| φ | Geografska širina | Lat. | Latitude |
| λ | Geografska dužina | Long. | Longitude |
| r | Poluprečnik | SD | Semidiometer |
| Pl. | Planete | Pl. | Planets |
| Br. | Broj | No. | Number |
| Vel. | Veličina | Mag. | Magnitude |
| d | Dan | d | Day |
| h | Čas | h | Hour |
| min | Minut | min | Minute of Time |
| s | Sekunda | s | Second of Time |

| | |
|---|-------------------------------------|
| Pregled zvjezda | Review of Selected Stars |
| Prividni položaji zvjezda | Apparent Places of Selected Stars |
| Popravka časovnog ugla | Increment to GHA |
| Druga popravka za časovni ugao i deklinaciju | Correction to GHA and Declination |
| Vrijeme prolaza zvjezda | Upper Transit of Stars at Greenwich |
| Popravka | Correction |
| Tablice za određivanje geografske širine i azimuta pomoću Sjevernjače | Latitude and Azimuth by Polaris |
| Interpolacione tablice | Interpolation Tables |
| Izlaz, zalaz | Rise, Set |
| Trajanje sumraka | Twilight Duration |
| Građanski | Civil |
| Astronomski | Astromic |
| Mjesecove mene | Moon Phases |
| Starost Mjeseca | Moon Age |
| Perigej | Perigee |
| Apogej | Apogee |

PODACI O MJESECU I POČETKU GODIŠNJIH DOBA

| MJESEČEVE MJENE | | | | | | | | | | | | |
|-----------------|-------------|-----------|-------------|-----------|------------|-----------|------------------|-----------|-----------|--|--|--|
| mjesec | MLAD MJESEC | | PRVA ČETVRT | | PUN MJESEC | | POSLEDNJA ČETVRT | | mjesec | | | |
| | ● | ● | ● | ● | ○ | ○ | ● | ● | | | | |
| | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | | | | |
| Januar | 23 7 39 | | 1 6 15 | 31 4 10 | 9 7 30 | | 16 9 8 | | Januar | | | |
| Februar | 21 22 35 | | | | 7 21 54 | | 14 17 4 | | Februar | | | |
| Mart | 22 14 37 | | 1 1 21 | 30 19 41 | 8 9 39 | | 15 1 25 | | Mart | | | |
| April | 21 7 18 | | | 29 9 57 | 6 19 19 | | 13 10 50 | | April | | | |
| Maj | 20 23 47 | | | 28 20 16 | 6 3 35 | | 12 21 47 | | Maj | | | |
| Jun | 19 15 2 | | | 27 3 30 | 4 11 12 | | 11 10 41 | | Jun | | | |
| Jul | 19 4 24 | | | 26 8 56 | 3 18 52 | | 11 1 48 | | Jul | | | |
| August | 17 15 54 | | | 24 13 54 | 2 3 27 | 31 13 58 | 9 18 55 | | August | | | |
| Septembar | 16 2 11 | | | 22 19 41 | | 30 3 19 | 8 13 15 | | Septembar | | | |
| Oktobar | 15 12 3 | | | 22 3 32 | | 29 19 49 | 8 7 33 | | Oktobar | | | |
| Novembar | 13 22 8 | | | 20 14 31 | | 28 14 46 | 7 0 36 | | Novembar | | | |
| Decembar | 13 8 42 | | | 20 5 19 | | 28 10 21 | 6 15 31 | | Decembar | | | |

| PERIGEJ I APOGEJ MJESECA | | | | | | | | | | | | |
|--------------------------|------------|------------|-----------|-----------|-----------|-----------|------------|------------|-----------|-----------|-----------|--------|
| PERIGEJ | | | APOGEJ | | | | | | | | | |
| mjesec | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | dan h min | mjesec |
| Januar | 17 21 29.0 | | | | | | 2 20 20.0 | 30 17 43.0 | | Januar | | |
| Februar | 11 18 33.0 | | | | | | | 27 14 3.0 | | Februar | | |
| Mart | 10 10 3.0 | | | | | | | 26 6 5.0 | | Mart | | |
| April | 7 17 0.0 | | | | | | | 22 13 50.0 | | April | | |
| Maj | 6 3 34.0 | | | | | | | 19 16 14.0 | | Maj | | |
| Jun | 3 13 21.0 | | | | | | | 16 1 25.0 | | Jun | | |
| Jul | 1 18 2.0 | 29 8 31.0 | | | | | | 13 16 48.0 | | Jul | | |
| August | | 23 19 40.0 | | | | | | 10 10 53.0 | | August | | |
| Septembar | | 19 2 53.0 | | | | | | 7 6 1.0 | | Septembar | | |
| Oktobar | | 17 1 3.0 | | | | | | 5 0 44.0 | | Oktobar | | |
| Novembar | | 14 10 23.0 | | | | | 28 19 36.0 | 1 15 31.0 | | Novembar | | |
| Decembar | | 12 23 15.0 | | | | | 25 21 21.0 | | | Decembar | | |

| VIDLJIVOST PLANETA | | | | | | | | | | | | |
|---|------|------|------|-------|------|-------|-----|------|-------|------|------|------|
| Osjenčeni dio dijagrama pokazuje kada je planeta nevidljiva | | | | | | | | | | | | |
| Planeta | Jan. | Feb. | Mart | Apr. | Maj | Jun | Jul | Avg. | Sep. | Okt. | Nov. | Dec. |
| ♀ Venera | | | | | 30.V | 13.VI | | | | | | |
| ♂ Mars | | | | | | | | | | | | |
| ♃ Jupiter | | | | 29.IV | | 28.V | | | | | | |
| ♄ Saturn | | | | | | | | 8.X | 12.XI | | | |

| POČECI GODIŠNJIH DOBA | | | | | | | | | | | | |
|---|--|--|--|--|--|---|--|--|--|--|--|--|
| PROLJEĆE | | | LJETO | | | JESEN | | | ZIMA | | | |
| 20. mart u 5 ^h 14 ^m 0 | | | 20. jun u 23 ^h 9 ^m 0 | | | 22. septembar u 14 ^h 49 ^m 0 | | | 21. decembar u 11 ^h 12 ^m 0 | | | |

POMRAČENJA SUNCA I MJESECA
u 2012. godini

DESICE SE UKUPNO ČETRI POMRAČENJA:
JEDNO PRSTENASTO I JEDNO POTPUNO POMRAČENJE SUNCA
JEDNO DELIMIČNO I JEDNO POMRAČENJE MJESECA POLUSENKOM

| | | | |
|------|-------------|--|---|
| 1. | 20./21. MAJ |  PRSTENASTO POMRAČENJE SUNCA | univerzalno (svjetsko) vrijeme dan h min |
| . | | POČETAK POMRAČENJA | 20 20 56.1 |
| .... |  | SREDINA POMRAČENJA | 20 23 59.2 |
| . | | KRAJ POMRAČENJA | 21 2 49.4 |
| | | VIDLJIVOST: RUSIJA, KINA, JUGOISTOČNA AZIJA, deo ARKTIKA I SEVERNE AMERIKE | |

| | | | |
|------|--------|---|---|
| 2. | 4. JUN |  DELIMIČNO POMRAČENJE MJESECA | univerzalno (svjetsko) vrijeme dan h min |
| . | | ULAZAK MJESECA U POLUSENKU | 4 8 46.5 |
| .... |  | SREDINA POMRAČENJA | 4 11 3.2 |
| . | | IZLAZAK MJESECA IZ POLUSENKE | 4 13 19.9 |

| | | | |
|------|------------------|---|---|
| 3. | 13./14. NOVEMBAR |  POTPUNO POMRAČENJE SUNCA | univerzalno (svjetsko) vrijeme dan h min |
| . | | POČETAK POMRAČENJA | 13 19 38.0 |
| ... | | POČETAK POTPUNOG POMRAČENJA | 13 20 36.1 |
| .... |  | SREDINA POMRAČENJA | 13 22 18.1 |
| ... | | KRAJ POTPUNOG POMRAČENJA | 13 23 47.4 |
| . | | KRAJ POMRAČENJA | 14 0 45.6 |
| | | VIDLJIVOST: AUSTRALIJA, POLINEZIJA, JUŽNI PACIFIK | |

| | | | |
|------|--------------|--|---|
| 4. | 28. NOVEMBAR |  POMRAČENJE MJESECA POLUSENKOM | univerzalno (svjetsko) vrijeme dan h min |
| . | | ULAZAK MJESECA U POLUSENKU | 28 12 12.6 |
| .... |  | SREDINA POMRAČENJA | 28 14 33.0 |
| . | | IZLAZAK MJESECA IZ POLUSENKE | 28 16 53.4 |

X

KALENDAR
za prestupnu 2012. godinu

| JANUAR | | | | FEVRIJAR | | | | MART | | | | APRIL | | | | MAJ | | | | JUN | | | |
|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|
| Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum |
| | | | 245 | | | | 245 | | | | 245 | | | | 245 | | | | 245 | | | | 245 |
| NE ₁ | 1 | 1 | 5927-5 | SR | 1 | 32 | 5928-5 | ČE | 1 | 61 | 5927-5 | PE | 1 | 92 | 6018-5 | NE ₁₄ | 1 | 122 | 6048-5 | UT | 1 | 152 | 6079-5 |
| PO | 2 | 2 | 5928-5 | CE | 2 | 33 | 5929-5 | PE | 2 | 62 | 5928-5 | SU | 2 | 93 | 6019-5 | SR | 2 | 123 | 6049-5 | SU | 2 | 154 | 6080-5 |
| UT | 3 | 3 | 5929-5 | PE | 3 | 34 | 5929-5 | SU | 3 | 63 | 5929-5 | NE ₁₀ | 3 | 94 | 6020-5 | ČE | 3 | 124 | 6050-5 | NE ₂₃ | 3 | 155 | 6081-5 |
| SR | 4 | 4 | 5930-5 | SR | 4 | 35 | 5930-5 | PO | 4 | 64 | 5930-5 | PO | 4 | 95 | 6021-5 | PE | 4 | 125 | 6051-5 | PO | 4 | 156 | 6082-5 |
| ČE | 5 | 5 | 5931-5 | PO | 5 | 36 | 5931-5 | UT | 5 | 65 | 5931-5 | UT | 5 | 96 | 6022-5 | SR | 5 | 126 | 6052-5 | UT | 5 | 157 | 6083-5 |
| PE | 6 | 6 | 5932-5 | SR | 6 | 37 | 5932-5 | SR | 6 | 66 | 5932-5 | PE | 6 | 97 | 6023-5 | NE ₁₉ | 6 | 127 | 6053-5 | SR | 6 | 158 | 6084-5 |
| SU | 7 | 7 | 5933-5 | UT | 7 | 38 | 5933-5 | SR | 7 | 67 | 5933-5 | PO | 7 | 98 | 6024-5 | PO | 7 | 128 | 6054-5 | ČE | 7 | 159 | 6085-5 |
| NE ₂ | 8 | 8 | 5934-5 | SR | 8 | 39 | 5935-5 | ČE | 8 | 68 | 5934-5 | PE | 8 | 99 | 6025-5 | UT | 8 | 129 | 6055-5 | PE | 8 | 160 | 6086-5 |
| PO | 9 | 9 | 5935-5 | CE | 9 | 40 | 5936-5 | PE | 9 | 69 | 5935-5 | SU | 9 | 100 | 6026-5 | SR | 9 | 130 | 6056-5 | SU | 9 | 161 | 6087-5 |
| UT | 10 | 10 | 5936-5 | PE | 10 | 41 | 5937-5 | SU | 10 | 70 | 5936-5 | NE ₁₁ | 10 | 101 | 6027-5 | ČE | 10 | 131 | 6057-5 | NE ₂₄ | 10 | 162 | 6088-5 |
| SR | 11 | 11 | 5937-5 | SR | 11 | 42 | 5938-5 | PO | 11 | 71 | 5937-5 | SR | 11 | 102 | 6028-5 | SR | 11 | 132 | 6058-5 | PO | 11 | 163 | 6089-5 |
| ČE | 12 | 12 | 5938-5 | NE ₇ | 12 | 43 | 5939-5 | UT | 12 | 73 | 5939-5 | PE | 12 | 103 | 6029-5 | SU | 12 | 133 | 6059-5 | UT | 12 | 164 | 6090-5 |
| PE | 13 | 13 | 5939-5 | PO | 13 | 44 | 5940-5 | SR | 14 | 74 | 5940-5 | SR | 13 | 104 | 6030-5 | NE ₂₀ | 13 | 134 | 6060-5 | SR | 13 | 165 | 6091-5 |
| SU | 14 | 14 | 5940-5 | UT | 14 | 55 | 5941-5 | ČE | 15 | 75 | 6001-5 | SR | 14 | 105 | 6031-5 | PO | 14 | 135 | 6061-5 | ČE | 14 | 166 | 6092-5 |
| NE ₃ | 15 | 15 | 5941-5 | SR | 15 | 46 | 5972-5 | PE | 16 | 76 | 6002-5 | SU | 15 | 106 | 6032-5 | UT | 15 | 136 | 6062-5 | PE | 15 | 167 | 6093-5 |
| PO | 16 | 16 | 5942-5 | CE | 16 | 47 | 5973-5 | SU | 17 | 77 | 6003-5 | NE ₁₂ | 16 | 107 | 6033-5 | SR | 16 | 137 | 6063-5 | SU | 16 | 168 | 6094-5 |
| UT | 17 | 17 | 5943-5 | PE | 17 | 48 | 5974-5 | SR | 17 | 78 | 6004-5 | PO | 17 | 108 | 6034-5 | ČE | 17 | 138 | 6064-5 | NE ₂₃ | 17 | 169 | 6095-5 |
| SR | 18 | 18 | 5944-5 | SR | 18 | 49 | 5975-5 | UT | 18 | 79 | 6005-5 | SR | 18 | 109 | 6035-5 | PE | 18 | 139 | 6065-5 | PO | 18 | 170 | 6096-5 |
| ČE | 19 | 19 | 5945-5 | NE ₈ | 19 | 50 | 5976-5 | PO | 19 | 80 | 6006-5 | UT | 19 | 110 | 6036-5 | SU | 19 | 140 | 6066-5 | UT | 19 | 171 | 6097-5 |
| PE | 20 | 20 | 5946-5 | PO | 20 | 51 | 5977-5 | SR | 21 | 81 | 6007-5 | SR | 21 | 111 | 6037-5 | NE ₂₀ | 20 | 141 | 6067-5 | SR | 20 | 172 | 6098-5 |
| SU | 21 | 21 | 5947-5 | SR | 22 | 52 | 5978-5 | ČE | 22 | 82 | 6008-5 | SR | 22 | 112 | 6038-5 | PO | 21 | 142 | 6068-5 | PO | 21 | 173 | 6099-5 |
| NE ₄ | 22 | 22 | 5948-5 | SR | 22 | 53 | 5979-5 | PE | 23 | 83 | 6009-5 | NE ₁₃ | 23 | 113 | 6039-5 | UT | 22 | 143 | 6069-5 | PE | 22 | 174 | 6100-5 |
| PO | 23 | 23 | 5949-5 | CE | 23 | 54 | 5980-5 | SR | 24 | 84 | 6010-5 | PO | 23 | 114 | 6040-5 | SR | 23 | 145 | 6101-5 | SU | 23 | 175 | 6101-5 |
| UT | 24 | 24 | 5950-5 | PE | 24 | 55 | 5981-5 | SR | 25 | 85 | 6011-5 | UT | 24 | 115 | 6041-5 | NE ₂₄ | 24 | 146 | 6101-5 | NE ₄ | 24 | 176 | 6102-5 |
| SR | 25 | 25 | 5951-5 | SR | 25 | 56 | 5982-5 | PO | 26 | 86 | 6012-5 | SR | 25 | 116 | 6042-5 | PE | 25 | 146 | 6102-5 | PO | 25 | 177 | 6103-5 |
| ČE | 26 | 26 | 5952-5 | NE ₉ | 26 | 57 | 5983-5 | UT | 27 | 87 | 6013-5 | ČE | 26 | 117 | 6043-5 | SU | 26 | 147 | 6103-5 | UT | 26 | 178 | 6104-5 |
| PE | 27 | 27 | 5953-5 | PO | 27 | 58 | 5984-5 | SR | 27 | 88 | 6014-5 | PE | 27 | 118 | 6044-5 | NE ₂₂ | 27 | 148 | 6104-5 | SU | 27 | 179 | 6105-5 |
| SU | 28 | 28 | 5954-5 | SR | 28 | 59 | 5985-5 | SR | 28 | 89 | 6015-5 | PO | 28 | 119 | 6045-5 | PO | 28 | 149 | 6105-5 | ČE | 28 | 180 | 6106-5 |
| NE ₅ | 29 | 29 | 5955-5 | SR | 29 | 60 | 5986-5 | PE | 29 | 90 | 6016-5 | NE ₁₄ | 29 | 120 | 6046-5 | UT | 29 | 150 | 6076-5 | PE | 29 | 181 | 6107-5 |
| PO | 30 | 30 | 5956-5 | SR | 30 | 121 | 5987-5 | SR | 30 | 121 | 6017-5 | SR | 30 | 151 | 6077-5 | SR | 30 | 182 | 6108-5 | CE | 31 | 152 | 6078-5 |

| JUL | | | | AVGUST | | | | SEPTEMBAR | | | | OKTOBAR | | | | NOVEMBER | | | | DECEMBAR | | | |
|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|------------------|-------------------|------------------|---------------------|
| Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum | Dan u sed. | Dan u mjes. | Dan u god. | Julijanski datum |
| | | | 245 | | | | 245 | | | | 245 | | | | 245 | | | | 245 | | | | 245 |
| NE ₁ | 1 | 183 | 6100-5 | SR | 1 | 214 | 6140-5 | PO | 1 | 275 | 6201-5 | NE ₁₄ | 2 | 276 | 6202-5 | ČE | 1 | 306 | 6232-5 | SU | 1 | 336 | 6262-5 |
| PO | 2 | 184 | 6101-5 | CE | 2 | 215 | 6141-5 | PO | 3 | 247 | 6173-5 | PO | 2 | 307 | 6233-5 | NE ₂₃ | 2 | 337 | 6263-5 | PO | 3 | 338 | 6264-5 |
| UT | 3 | 185 | 6111-5 | PE | 3 | 216 | 6142-5 | UT | 4 | 248 | 6174-5 | SR | 3 | 277 | 6203-5 | UT | 4 | 309 | 6235-5 | UT | 4 | 339 | 6265-5 |
| SR | 4 | 186 | 6112-5 | SR | 4 | 217 | 6143-5 | SR | 5 | 249 | 6175-5 | PE | 5 | 279 | 6204-5 | SR | 5 | 310 | 6236-5 | SR | 5 | 340 | 6266-5 |
| ČE | 5 | 187 | 6113-5 | NE ₁₂ | 5 | 218 | 6144-5 | ČE | 6 | 250 | 6176-5 | SR | 6 | 280 | 6205-5 | UT | 6 | 311 | 6237-5 | ČE | 6 | 341 | 6267-5 |
| PE | 6 | 188 | 6114-5 | PO | 6 | 219 | 6145-5 | PE | 7 | 251 | 6177-5 | NE ₄ | 7 | 281 | 6207-5 | SR | 7 | 312 | 6238-5 | PE | 7 | 342 | 6268-5 |
| SU | 7 | 189 | 6115-5 | SR | 8 | 221 | 6147-5 | SR | 8 | 252 | 6178-5 | PO | 8 | 282 | 6208-5 | PO | 8 | 313 | 6239-5 | SU | 8 | 343 | 6269-5 |
| NE ₂ | 8 | 190 | 6116-5 | CE | 9 | 222 | 6148-5 | NE ₁₃ | 9 | 253 | 6179-5 | UT | 9 | 283 | 6209-5 | PE | 9 | 314 | 6240-5 | NE ₂₄ | 9 | 344 | 6270-5 |
| PO | 9 | 191 | 6117-5 | PO | 10 | 223 | 6149-5 | UT | 10 | 254 | 6180-5 | SR | 10 | 284 | 6210-5 | SR | 10 | 315 | 6241-5 | PO | 10 | 345 | 6271-5 |
| UT | 10 | 192 | 6118-5 | SR | 11 | 224 | 6150-5 | UT | 11 | 255 | 6181-5 | ČE | 11 | 285 | 6211-5 | NE ₄₀ | 11 | 316 | 6242-5 | UT | 11 | 346 | 6272-5 |
| SR | 11 | 193 | 6119-5 | NE ₁₃ | 12 | 225 | 6151-5 | SR | 12 | 256 | 6182-5 | PO | 12 | 286 | 6212-5 | SR | 12 | 317 | 6243-5 | SR | 12 | 347 | 6273-5 |
| ČE | 12 | 194 | 6120-5 | PO | 13 | 226 | 6152-5 | ČE | 13 | 257 | 6183-5 | SR | 13 | 287 | 6213-5 | UT | 13 | 318 | 6244-5 | ČE | 13 | 348 | 6274-5 |
| PE | 13 | 195 | 6121-5 | UT | 14 | 227 | 6153-5 | NE ₄ | 14 | 258 | 6184-5 | SR | 14 | 288 | 6214-5 | SR | 14 | 319 | 6245-5 | PE | 14 | 349 | 6275-5 |
| SU | 15 | 196 | 6122-5 | SR | 15 | 228 | 6154-5 | SR | 15 | 299 | 6185-5 | PO | 15 | 289 | 6215-5 | ČE | 15 | 320 | 6246-5 | SU | 15 | 350 | 6276-5 |
| NE ₃ | 16 | 198 | 6124-5 | CE | 16 | 229 | 6155-5 | PO | 16 | 261 | 6186-5</td | | | | | | | | | | | | |

* * ★ * *

Efemeride

*SUNCA, MJESECA, VENERE,
MARSA, JUPITERA I SATURNA*

1. JANUAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 | 13.4 -23 | 3.8 | 100 | 3.4 | 143 13.2 -18 25.8 | 287 59.2 6 37.2 |
| 2 | 209 | 12.8 -23 | 3.4 | 130 | 8.3 | 173 12.0 -18 24.0 | 318 3.0 6 36.8 |
| 4 | 239 | 12.2 -23 | 3.0 | 160 | 13.2 | 203 10.8 -18 22.2 | 348 6.8 6 36.8 |
| 6 | 269 | 11.6 -23 | 2.6 | 190 | 18.1 | 233 9.5 -18 20.4 | 18 10.5 6 36.1 |
| 8 | 299 | 11.0 -23 | 2.2 | 220 | 23.1 | 263 8.3 -18 18.6 | 48 14.3 6 35.8 |
| 10 | 329 | 10.4 -23 | 1.8 | 250 | 28.0 | 293 7.0 -18 16.7 | 78 18.1 6 35.4 |
| 12 | 359 | 9.8 -23 | 1.4 | 280 | 32.9 | 323 5.8 -18 14.9 | 108 21.8 6 35.1 |
| 14 | 29 | 9.2 -23 | 1.0 | 310 | 37.9 | 353 4.6 -18 13.1 | 138 25.6 6 34.8 |
| 16 | 59 | 8.6 -23 | .6 | 340 | 42.8 | 23 3.3 -18 11.2 | 168 29.4 6 34.4 |
| 18 | 89 | 8.0 -23 | .2 | 104 | 47.7 | 53 2.1 -18 9.4 | 198 33.2 6 34.1 |
| 20 | 119 | 7.4 -23 | .22 | 59.8 | 40 52.6 | 83 .9 -18 7.5 | 228 37.0 6 33.7 |
| 22 | 149 | 6.8 -22 | 59.4 | 70 | 57.6 | 112 59.7 -18 5.7 | 258 40.8 6 33.4 |
| Δ | -3 | 2 | | | | -6 | 9 |
| | | | | | | 19 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 3 | 15 4 | 0 57 | 2 44 | 10 53 | .5 | 0 30 | 3.2 | |
| 55 | 8 25 | 15 42 | 0 45 | 2 17 | 11 4 | .7 | 0 21 | 2.9 | |
| 50 | 7 59 | 16 8 | 0 38 | 1 59 | 11 13 | .9 | 0 13 | 2.7 | |
| 45 | 7 38 | 16 29 | 0 34 | 1 46 | 11 21 | 1.0 | 0 7 | 2.5 | |
| 40 | 7 22 | 16 45 | 0 30 | 1 37 | 11 27 | 1.2 | 0 2 | 2.4 | |
| 35 | 7 8 | 16 59 | 0 28 | 1 30 | 11 32 | 1.3 |0 | | |
| 30 | 6 56 | 17 11 | 0 26 | 1 25 | 11 37 | 1.4 |0 | | |
| 20 | 6 35 | 17 32 | 0 24 | 1 18 | 11 45 | 1.5 |0 | | |
| 10 | 6 17 | 17 50 | 0 23 | 1 15 | 11 52 | 1.7 |0 | | |
| 0 | 5 60 | 18 7 | 0 22 | 1 15 | 11 59 | 1.8 |0 | | |
| 10 | 5 42 | 18 24 | 0 23 | 1 17 | 12 6 | 1.9 |0 | | |
| 20 | 5 24 | 18 43 | 0 24 | 1 24 | 12 13 | 2.1 |0 | | |
| 30 | 5 2 | 19 5 | 0 27 | 1 36 | 12 22 | 2.2 | 23 52 | 1.4 | |
| 35 | 4 49 | 19 17 | 0 30 | 1 46 | 12 27 | 2.3 | 23 46 | 1.3 | |
| 40 | 4 34 | 19 32 | 0 33 | 2 2 | 12 32 | 2.4 | 23 39 | 1.2 | |
| 45 | 4 17 | 19 50 | 0 37 | 2 30 | 12 39 | 2.5 | 23 32 | 1.1 | |
| 50 | 3 55 | 20 12 | 0 44 | :: : | 12 47 | 2.7 | 23 22 | 1.0 | |
| 55 | 3 25 | 20 41 | 0 57 | :: : | 12 57 | 2.9 | 23 21 | .8 | |
| 60 | 2 42 | 21 24 | 1 36 | :: : | 13 10 | 3.2 | 22 56 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
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| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 95 | 26.7 | 154 | 7 15.2 | 109 | 71 18.3 | 10 28.2 | 252 54.7 - 8 36.2 | |
| 2 | 124 | 35.5 | 154 | 7 36.9 | 108 | 101 23.2 | 10 28.2 | 282 59.3 - 8 36.3 | |
| 4 | 153 | 44.4 | 154 | 7 58.5 | 107 | 131 28.0 | 10 28.3 | 313 3.9 - 8 36.4 | |
| 6 | 182 | 53.1 | 154 | 8 19.9 | 106 | 161 32.8 | 10 28.3 | 343 8.6 - 8 36.4 | |
| 8 | 212 | 1.9 | 153 | 8 41.2 | 106 | 191 37.7 | 10 28.4 | 13 13.2 - 8 36.5 | |
| 10 | 241 | 10.5 | 153 | 9 2.3 | 105 | 221 42.5 | 10 28.5 | 43 17.8 - 8 36.6 | |
| 12 | 270 | 19.1 | 153 | 9 23.2 | 104 | 251 47.3 | 10 28.5 | 73 22.4 - 8 36.7 | |
| 14 | 299 | 27.7 | 152 | 9 44.0 | 103 | 281 52.2 | 10 28.6 | 103 27.1 - 8 36.8 | |
| 16 | 328 | 36.1 | 152 | 10 4.6 | 102 | 311 57.0 | 10 28.7 | 133 31.7 - 8 36.9 | |
| 18 | 357 | 44.5 | 151 | 10 25.1 | 101 | 342 1.8 | 10 28.7 | 163 36.3 - 8 37.0 | |
| 20 | 26 | 52.8 | 151 | 10 45.3 | 100 | 12 6.6 | 10 28.8 | 193 41.0 - 8 37.1 | |
| 22 | 56 | .9 | 150 | 11 5.4 | 100 | 42 11.5 | 10 28.9 | 223 45.6 - 8 37.2 | |
| Δ | -3 | 2 | | | | 24 | 0 | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------|-------------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | - 3 6.4 | -1.2 | 16.3 | T _{m̄} | 18 9 | 1.8 | 54.5 | 14.8 | |
| 12 | - 3 20.6 | T _{m̄} | 12 h | 3.3 min | Starost | 7.2 d | Faza | 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | | | h min | / | o | | |
| 0 | 14 28 | .1 | 43 | -3.5 | 4 | 19 12 | .0 | 331 | -2.2 |
| δ | 4 47 | .1 | 188 | -.1 | h | 7 7 | .0 | 153 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
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| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 85 | 9.0 | 150 | 11 25.3 | 99 | 72 16.3 | 10 28.9 | 253 50.2 - 8 37.3 | |
| 2 | 114 | 17.0 | 149 | 11 45.0 | 98 | 102 21.1 | 10 29.0 | 283 54.8 - 8 37.4 | |
| 4 | 143 | 24.8 | 149 | 12 4.6 | 97 | 132 25.9 | 10 29.1 | 313 59.5 - 8 37.4 | |
| 6 | 172 | 32.5 | 148 | 12 23.9 | 96 | 162 30.7 | 10 29.1 | 344 4.1 - 8 37.5 | |
| 8 | 201 | 40.1 | 147 | 12 43.0 | 95 | 192 35.6 | 10 29.2 | 14 8.7 - 8 37.6 | |
| 10 | 230 | 47.6 | 147 | 13 1.9 | 93 | 222 40.4 | 10 29.3 | 44 13.4 - 8 37.7 | |
| 12 | 259 | 54.9 | 146 | 13 20.6 | 92 | 252 45.2 | 10 29.3 | 74 18.0 - 8 37.8 | |
| 14 | 289 | 2.1 | 145 | 13 39.1 | 91 | 282 50.0 | 10 29.4 | 104 22.6 - 8 37.9 | |
| 16 | 318 | 9.2 | 144 | 13 57.3 | 90 | 312 54.8 | 10 29.5 | 134 27.3 - 8 38.0 | |
| 18 | 347 | 16.0 | 144 | 14 15.3 | 89 | 342 59.6 | 10 29.6 | 164 31.9 - 8 38.1 | |
| 20 | 16 | 22.8 | 143 | 14 33.1 | 88 | 13 4.4 | 10 29.6 | 194 36.6 - 8 38.2 | |
| 22 | 45 | 29.4 | 142 | 14 50.6 | 87 | 43 9.2 | 10 29.7 | 224 41.2 - 8 38.2 | |
| Δ | -3 | 2 | | | | 24 | 0 | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------|-------------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | - 3 34.8 | -1.2 | 16.3 | T _{m̄} | 18 52 | 1.9 | 54.3 | 14.8 | |
| 12 | - 3 48.8 | T _{m̄} | 12 h | 3.8 min | Starost | 8.2 d | Faza | 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | | | h min | / | o | | |
| 0 | 14 29 | .1 | 42 | -3.5 | 4 | 19 8 | .0 | 331 | -2.1 |
| δ | 4 44 | .1 | 188 | -.2 | h | 7 4 | .0 | 153 | .9 |

3. JANUAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|-------------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 59.2 -22 53.7 | 102 1.6 | 142 44.0 -17 41.3 | 289 30.3 | 6 29.2 | | |
| 2 | 208 58.7 -22 53.3 | 132 6.6 | 172 42.9 -17 39.4 | 319 34.2 | 6 28.9 | | |
| 4 | 238 58.1 -22 52.8 | 162 11.5 | 202 41.7 -17 37.5 | 349 38.0 | 6 28.6 | | |
| 6 | 268 57.5 -22 52.3 | 192 16.4 | 232 40.5 -17 35.6 | 19 41.9 | 6 28.3 | | |
| 8 | 298 56.9 -22 51.9 | 222 21.4 | 262 39.3 -17 33.7 | 49 45.7 | 6 27.9 | | |
| 10 | 328 56.3 -22 51.4 | 252 26.3 | 292 38.1 -17 31.8 | 79 49.6 | 6 27.6 | | |
| 12 | 358 55.8 -22 50.9 | 282 31.2 | 322 37.0 -17 29.9 | 109 53.4 | 6 27.3 | | |
| 14 | 28 55.2 -22 50.4 | 312 36.1 | 352 35.8 -17 28.0 | 139 57.3 | 6 27.0 | | |
| 16 | 58 54.6 -22 50.0 | 342 41.1 | 22 34.6 -17 26.1 | 170 1.1 | 6 26.7 | | |
| 18 | 88 54.0 -22 49.5 | 12 46.0 | 52 33.5 -17 24.1 | 200 5.0 | 6 26.4 | | |
| 20 | 118 53.5 -22 49.0 | 42 50.9 | 82 32.3 -17 22.2 | 230 8.9 | 6 26.1 | | |
| 22 | 148 52.9 -22 48.5 | 72 55.9 | 112 31.1 -17 20.3 | 260 12.7 | 6 25.8 | | |
| Δ | -3 | 2 | | -6 | 10 | 19 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 1 | 15 7 | 0 56 | 2 44 | 11 18 | .8 | 3 2 | 3 1 | |
| 55 | 8 25 | 15 44 | 0 45 | 2 16 | 11 42 | 1.1 | 2 39 | 2 8 | |
| 50 | 7 58 | 16 10 | 0 38 | 1 59 | 11 60 | 1.2 | 2 22 | 2.7 | |
| 45 | 7 38 | 16 30 | 0 34 | 1 46 | 12 14 | 1.4 | 2 9 | 2.5 | |
| 40 | 7 22 | 16 47 | 0 30 | 1 37 | 12 26 | 1.5 | 1 58 | 2.4 | |
| 35 | 7 8 | 17 0 | 0 28 | 1 30 | 12 36 | 1.5 | 1 49 | 2.3 | |
| 30 | 6 56 | 17 12 | 0 26 | 1 25 | 12 45 | 1.6 | 1 41 | 2.2 | |
| 20 | 6 36 | 17 33 | 0 24 | 1 18 | 13 01 | 1.7 | 1 27 | 2.1 | |
| 10 | 6 18 | 17 51 | 0 23 | 1 15 | 13 14 | 1.8 | 1 15 | 2.0 | |
| 0 | 6 1 | 18 8 | 0 22 | 1 15 | 13 26 | 1.9 | 1 3 | 1.9 | |
| 10 | 5 43 | 18 25 | 0 23 | 1 17 | 13 39 | 2.0 | 0 52 | 1.8 | |
| 20 | 5 25 | 18 44 | 0 24 | 1 24 | 13 53 | 2.1 | 0 40 | 1.7 | |
| 30 | 5 3 | 19 5 | 0 27 | 1 36 | 14 8 | 2.2 | 0 26 | 1.5 | |
| 35 | 4 51 | 19 18 | 0 29 | 1 46 | 14 18 | 2.3 | 0 18 | 1.5 | |
| 40 | 4 36 | 19 32 | 0 33 | 2 1 | 14 28 | 2.4 | 0 9 | 1.4 | |
| 45 | 4 19 | 19 50 | 0 37 | 2 29 | 14 40 | 2.5 | .. .. | 0 | |
| 50 | 3 57 | 20 11 | 0 44 | .. .. | 14 56 | 2.6 | .. .. | 0 | |
| 55 | 3 28 | 20 40 | 0 56 | .. .. | 15 15 | 2.8 | 23 52 | 1.2 | |
| 60 | 2 45 | 21 22 | 1 33 | .. .. | 15 41 | 3.1 | 23 25 | .9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 74 35.8 141 | 15 7.9 | 85 | | 73 14.0 | 10 29.8 | 254 45.8 | - 8 38.3 |
| 2 | 103 42.0 140 | 15 25.0 | 84 | | 103 18.8 | 10 29.8 | 284 50.5 | - 8 38.4 |
| 4 | 132 48.1 139 | 15 41.8 | 83 | | 133 23.6 | 10 29.9 | 314 55.1 | - 8 38.5 |
| 6 | 161 53.9 139 | 15 58.3 | 81 | | 163 28.4 | 10 30.0 | 344 59.7 | - 8 38.6 |
| 8 | 190 59.6 138 | 16 14.6 | 80 | | 193 33.2 | 10 30.1 | 15 4.4 | - 8 38.7 |
| 10 | 220 5.2 137 | 16 30.6 | 79 | | 223 38.0 | 10 30.1 | 45 9.0 | - 8 38.8 |
| 12 | 249 10.5 136 | 16 46.4 | 77 | | 253 42.8 | 10 30.2 | 75 13.7 | - 8 38.8 |
| 14 | 278 15.6 135 | 17 1.8 | 76 | | 283 47.6 | 10 30.3 | 105 18.3 | - 8 38.9 |
| 16 | 307 20.6 134 | 17 17.0 | 74 | | 313 52.4 | 10 30.4 | 135 22.9 | - 8 39.0 |
| 18 | 336 25.3 133 | 17 31.9 | 73 | | 343 57.2 | 10 30.4 | 165 27.6 | - 8 39.1 |
| 20 | 5 29.9 132 | 17 46.5 | 71 | | 14 2.0 | 10 30.5 | 195 32.2 | - 8 39.2 |
| 22 | 34 34.2 131 | 18 .8 | 70 | | 44 6.8 | 10 30.6 | 225 36.9 | - 8 39.3 |
| Δ | -3 | 3 | | | 24 | 0 | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|----------------|-----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | - 4 2.8 | -1.2 | 16.3 | T _{m̄} | 19 37 | 2.0 | 54.2 | 14.8 | |
| 12 | - 4 16.7 | T _{m̄} | 12 h 4.3 min | Starost | 9.2 d | Faza | 0 | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min | / | ° | | | h min | / | ° | | |
| 0 | 14 30 | .1 | 41 | -3.5 | 4 | 19 4 | .0 | 331 | -2.1 |
| δ | 4 41 | .1 | 187 | -2 | h | 6 60 | .0 | 153 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 63 38.3 130 | 18 14.8 | 68 | | 74 11.6 | 10 30.7 | 255 41.5 | - 8 39.4 |
| 2 | 92 42.3 129 | 18 28.4 | 67 | | 104 16.4 | 10 30.8 | 285 46.2 | - 8 39.4 |
| 4 | 121 46.0 128 | 18 41.8 | 65 | | 134 21.1 | 10 30.8 | 315 50.8 | - 8 39.5 |
| 6 | 150 49.5 127 | 18 54.9 | 64 | | 164 25.9 | 10 30.9 | 345 55.5 | - 8 39.6 |
| 8 | 179 52.8 125 | 19 7.6 | 62 | | 194 30.7 | 10 31.0 | 18 1 | - 8 39.7 |
| 10 | 208 55.9 124 | 19 20.0 | 60 | | 224 35.5 | 10 31.1 | 48 4.8 | - 8 39.8 |
| 12 | 237 58.8 123 | 19 32.0 | 59 | | 254 40.3 | 10 31.2 | 76 9.4 | - 8 39.9 |
| 14 | 267 1.5 122 | 19 43.7 | 57 | | 284 45.1 | 10 31.2 | 106 14.1 | - 8 39.9 |
| 16 | 296 3.9 121 | 19 55.1 | 55 | | 314 49.8 | 10 31.3 | 136 18.7 | - 8 40.0 |
| 18 | 325 6.2 120 | 20 6.1 | 53 | | 344 54.6 | 10 31.4 | 166 23.4 | - 8 40.1 |
| 20 | 354 8.2 119 | 20 16.7 | 51 | | 14 59.4 | 10 31.5 | 196 28.0 | - 8 40.2 |
| 22 | 23 10.0 118 | 20 27.0 | 50 | | 45 4.2 | 10 31.6 | 226 32.7 | - 8 40.3 |
| Δ | -3 | 2 | | | 24 | 0 | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|----------------|-----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | | h min | min | / | | |
| 00 | - 4 30.5 | -1.1 | 16.3 | T _{m̄} | 20 24 | 2.0 | 54.3 | 14.8 | |
| 12 | - 4 44.2 | T _{m̄} | 12 h 4.7 min | Starost | 10.2 d | Faza | 0 | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min | / | ° | | | h min | / | ° | | |
| 0 | 14 31 | .1 | 39 | -3.5 | 4 | 19 0 | .0 | 331 | -2.1 |
| δ | 4 38 | .1 | 187 | -2 | h | 6 56 | .0 | 153 | .9 |

5. JANUAR

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 45.5 -22 41.8 | 103 59.9 | 142 16.3 -16 54.9 | 291 3.4 6 22.1 | | | | |
| 2 | 208 44.9 -22 41.3 | 134 4.8 | 172 15.2 -16 52.9 | 321 7.3 6 21.8 | | | | |
| 4 | 238 44.4 -22 40.8 | 164 9.8 | 202 14.1 -16 51.0 | 351 11.2 6 21.5 | | | | |
| 6 | 268 43.8 -22 40.2 | 194 14.7 | 232 12.9 -16 49.0 | 21 15.2 6 21.2 | | | | |
| 8 | 298 43.2 -22 39.7 | 224 19.6 | 262 11.8 -16 47.0 | 51 19.1 6 21.0 | | | | |
| 10 | 328 42.7 -22 39.1 | 254 24.6 | 292 10.7 -16 45.0 | 81 23.0 6 20.7 | | | | |
| 12 | 358 42.1 -22 38.6 | 284 29.5 | 322 9.6 -16 43.0 | 111 27.0 6 20.4 | | | | |
| 14 | 28 41.6 -22 38.0 | 314 34.4 | 352 8.5 -16 41.0 | 141 30.9 6 20.1 | | | | |
| 16 | 58 41.0 -22 37.5 | 344 39.3 | 22 7.4 -16 39.0 | 171 34.6 6 19.9 | | | | |
| 18 | 88 40.4 -22 36.9 | 14 44.3 | 52 6.3 -16 37.0 | 201 38.8 6 19.6 | | | | |
| 20 | 118 39.9 -22 36.4 | 44 49.2 | 82 5.2 -16 35.0 | 231 42.7 6 19.3 | | | | |
| 22 | 148 39.3 -22 35.8 | 74 54.1 | 112 4.1 -16 33.0 | 261 46.7 6 19.1 | | | | |
| Δ | -3 3 | | -6 10 | 20 -1 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 0 | 15 11 | 0 56 | 2 43 | 12 4 | 1.6 | 5 28 | 2.7 | |
| 55 | 8 24 | 15 47 | 0 45 | 2 16 | 12 40 | 1.8 | 4 53 | 2.5 | |
| 50 | 7 58 | 16 13 | 0 38 | 1 58 | 13 6 | 1.8 | 4 28 | 2.4 | |
| 45 | 7 38 | 16 32 | 0 33 | 1 46 | 13 25 | 1.9 | 4 9 | 2.4 | |
| 40 | 7 22 | 16 48 | 0 30 | 1 37 | 13 41 | 1.9 | 3 53 | 2.3 | |
| 35 | 7 9 | 17 2 | 0 28 | 1 30 | 13 55 | 2.0 | 3 40 | 2.3 | |
| 30 | 6 57 | 17 14 | 0 26 | 1 25 | 14 7 | 2.0 | 3 28 | 2.2 | |
| 20 | 6 36 | 17 34 | 0 24 | 1 18 | 14 27 | 2.0 | 3 9 | 2.2 | |
| 10 | 6 18 | 17 52 | 0 23 | 1 15 | 14 45 | 2.1 | 2 52 | 2.1 | |
| 0 | 6 1 | 18 9 | 0 22 | 1 15 | 15 1 | 2.1 | 2 36 | 2.1 | |
| 10 | 5 44 | 18 26 | 0 23 | 1 17 | 15 18 | 2.1 | 2 20 | 2.0 | |
| 20 | 5 26 | 18 44 | 0 24 | 1 23 | 15 36 | 2.2 | 2 3 | 2.0 | |
| 30 | 5 5 | 19 5 | 0 27 | 1 35 | 15 56 | 2.2 | 1 44 | 1.9 | |
| 35 | 4 52 | 19 18 | 0 29 | 1 45 | 16 8 | 2.2 | 1 32 | 1.9 | |
| 40 | 4 38 | 19 32 | 0 32 | 2 1 | 16 22 | 2.3 | 1 19 | 1.8 | |
| 45 | 4 21 | 19 49 | 0 37 | 2 27 | 16 39 | 2.3 | 1 4 | 1.7 | |
| 50 | 3 59 | 20 11 | 0 43 | ::: | 16 59 | 2.3 | 0 45 | 1.7 | |
| 55 | 3 30 | 20 39 | 0 56 | ::: | 17 26 | 2.4 | 0 21 | 1.5 | |
| 60 | 2 49 | 21 21 | 1 30 | ::: | 18 4 | 2.5 |0 | | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | |
|----|----------------|---------|----------------|----------------|----------------|-------------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | S _ø | δ _ø | S _η | δ _η | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 52 11.6 117 | 20 36.9 | 48 | 75 8.9 | 10 31.7 | 256 37.3 - 8 40.4 | | | |
| 2 | 81 13.0 116 | 20 46.5 | 46 | 105 13.7 | 10 31.7 | 286 42.0 - 8 40.4 | | | |
| 4 | 110 14.2 115 | 20 55.6 | 44 | 135 18.5 | 10 31.0 | 316 46.6 - 8 40.5 | | | |
| 6 | 139 15.2 114 | 21 44.4 | 42 | 165 23.2 | 10 31.9 | 346 51.3 - 8 40.6 | | | |
| 8 | 168 16.0 113 | 21 12.8 | 40 | 195 28.0 | 10 32.0 | 16 55.9 - 8 40.7 | | | |
| 10 | 197 16.6 112 | 21 20.8 | 38 | 225 32.8 | 10 32.1 | 47 .6 - 8 40.8 | | | |
| 12 | 226 17.0 111 | 21 28.4 | 36 | 255 37.5 | 10 32.2 | 77 5.2 - 8 40.8 | | | |
| 14 | 255 17.1 110 | 21 35.6 | 34 | 285 42.3 | 10 32.3 | 107 9.9 - 8 40.9 | | | |
| 16 | 284 17.1 109 | 21 42.4 | 32 | 315 47.0 | 10 32.4 | 137 14.5 - 8 41.0 | | | |
| 18 | 313 16.9 108 | 21 48.8 | 30 | 345 51.8 | 10 32.4 | 167 19.2 - 8 41.1 | | | |
| 20 | 342 16.5 107 | 21 54.7 | 28 | 15 56.6 | 10 32.5 | 197 23.9 - 8 41.2 | | | |
| 22 | 11 16.0 106 | 22 .3 | 26 | 46 1.3 | 10 32.6 | 227 28.5 - 8 41.2 | | | |
| Δ | -3 3 | | | 24 0 | | 23 0 | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 59 | 15 12 | 0 56 | 2 42 | 12 43 | 2.2 | 6 32 | 2.2 | |
| 55 | 8 23 | 15 48 | 0 45 | 2 16 | 13 22 | 2.2 | 5 53 | 2.2 | |
| 50 | 7 58 | 16 14 | 0 38 | 1 58 | 13 50 | 2.2 | 5 26 | 2.2 | |
| 45 | 7 38 | 16 33 | 0 33 | 1 46 | 14 11 | 2.2 | 5 5 | 2.2 | |
| 40 | 7 22 | 16 59 | 0 30 | 1 37 | 14 28 | 2.2 | 4 49 | 2.2 | |
| 35 | 7 9 | 17 3 | 0 28 | 1 30 | 14 42 | 2.2 | 4 34 | 2.2 | |
| 30 | 6 57 | 17 15 | 0 26 | 1 25 | 14 55 | 2.2 | 4 22 | 2.2 | |
| 20 | 6 36 | 17 35 | 0 24 | 1 18 | 15 16 | 2.2 | 4 1 | 2.2 | |
| 10 | 6 19 | 17 53 | 0 23 | 1 15 | 15 35 | 2.2 | 3 43 | 2.2 | |
| 0 | 6 2 | 18 9 | 0 22 | 1 15 | 15 52 | 2.2 | 3 26 | 2.1 | |
| 10 | 5 45 | 18 26 | 0 23 | 1 17 | 16 9 | 2.2 | 3 8 | 2.1 | |
| 20 | 5 27 | 18 44 | 0 24 | 1 23 | 16 28 | 2.1 | 2 50 | 2.1 | |
| 30 | 5 6 | 19 5 | 0 27 | 1 35 | 16 49 | 2.1 | 2 29 | 2.1 | |
| 35 | 4 53 | 19 18 | 0 29 | 1 45 | 17 2 | 2.1 | 2 17 | 2.1 | |
| 40 | 4 39 | 19 32 | 0 32 | 2 0 | 17 16 | 2.1 | 2 3 | 2.1 | |
| 45 | 4 22 | 19 49 | 0 37 | 2 26 | 17 34 | 2.1 | 1 46 | 2.1 | |
| 50 | 4 0 | 20 11 | 0 43 | ::: | 17 55 | 2.1 | 1 25 | 2.0 | |
| 55 | 3 32 | 20 39 | 0 55 | ::: | 18 23 | 2.0 | 0 58 | 2.0 | |
| 60 | 2 51 | 21 20 | 1 28 | ::: | 19 3 | 1.9 | 0 20 | 1.9 | |
| S | | | | | | | | | |

| UT | SUNCE | | | MJESEC | | | |
|-------------|-------------------------|---------|----------------------|--------|-------|----------------|---|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _ø | r |
| h min s | s / | / | h min min / | h min | min / | / | / |
| 00 - 5 24.7 | -1.1 | 16.3 | T _{m̄} 22 4 | 2.2 | 54.9 | 15.0 | |
| 12 - 5 37.9 | T _{m̄} 12 h | 5.6 min | Starost | 12.2 d | Faza | ○ | |

| PI. | PLANETE | | | | | | | | |
|---------|-----------------|---------|--------|---------|---------|-----------------|---------|--------|---------|
| | T _{m̄} | π | 360°-π | Vel. | PI. | T _{m̄} | π | 360°-π | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / | h min / |
| 9 | 14 32 | .1 | 37 | -3.5 | 4 | 18 53 | .0 | 331 | -2.1 |
| ○ | 4 32 | .1 | 187 | -.2 | h | 6 49 | .0 | 153 | .9 |

7. JANUAR

2012.

SUBOTA

| UT | SUNCE | | | | PROJ. TAČKA | | VENERA | | | | MARS | | | |
|----|----------------|----------------|----------------|-------------------|----------------|----------------|----------------|----------------|-------------------|-------------------|----------------|----------------|-------------------|-------------------|
| | S _⊕ | δ _⊕ | S _↑ | S _↑ ·r | S _♀ | δ _♀ | S _♂ | δ _♂ | S _♂ ·r | δ _♂ ·r | S _♂ | δ _♂ | S _♂ ·r | δ _♂ ·r |
| h | o | r | o | r | o | r | o | r | o | r | o | r | o | r |
| 0 | 178 | 32.2 | -22 | 28.2 | 105 | 58.2 | 141 | 50.0 | -16 | 6.7 | 292 | 38.4 | 6 | 15.8 |
| 2 | 208 | 31.6 | -22 | 27.6 | 136 | 3.1 | 171 | 49.0 | -16 | 4.6 | 322 | 42.4 | 6 | 15.6 |
| 4 | 238 | 31.1 | -22 | 26.9 | 166 | .8 | 201 | 47.9 | -16 | 2.6 | 352 | 46.4 | 6 | 15.3 |
| 6 | 268 | 30.5 | -22 | 26.3 | 196 | 13.0 | 231 | 46.8 | -16 | .5 | 22 | 50.4 | 6 | 15.1 |
| 8 | 298 | 30.0 | -22 | 25.7 | 226 | 17.9 | 261 | 45.8 | -15 | 58.5 | 52 | 54.5 | 6 | 14.8 |
| 10 | 328 | 29.5 | -22 | 25.1 | 256 | 22.8 | 291 | 44.7 | -15 | 56.4 | 82 | 58.5 | 6 | 14.6 |
| 12 | 358 | 28.9 | -22 | 24.5 | 286 | 27.8 | 321 | 43.7 | -15 | 54.4 | 113 | 2.5 | 6 | 14.4 |
| 14 | 28 | 28.4 | -22 | 23.8 | 316 | 32.7 | 351 | 42.6 | -15 | 52.3 | 143 | 6.5 | 6 | 14.1 |
| 16 | 58 | 27.8 | -22 | 23.2 | 346 | 37.6 | 21 | 41.6 | -15 | 50.2 | 173 | 10.6 | 6 | 13.9 |
| 18 | 88 | 27.3 | -22 | 22.6 | 16 | 42.5 | 51 | 40.5 | -15 | 48.2 | 203 | 14.6 | 6 | 13.7 |
| 20 | 118 | 26.8 | -22 | 21.9 | 45 | 47.5 | 81 | 39.5 | -15 | 46.1 | 233 | 18.6 | 6 | 13.5 |
| 22 | 148 | 26.2 | -22 | 21.3 | 76 | 52.4 | 111 | 38.5 | -15 | 44.0 | 263 | 22.7 | 6 | 13.2 |
| Δ | | -3 | | 3 | | | -5 | | 10 | | 20 | | -1 | |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|----------------|-----|----------------|-----|
| | S ₀ | Δ | δ ₀ | Δ | S ₊ | δ ₊ | S _η | δ _η | S ₀ | Δ | δ ₀ | Δ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 27 54.0 | 97 | 22 32.1 | -4 | 77 3.0 | 10 33.8 | 258 29.1 | - 8 42.2 | | | | |
| 2 | 56 51.4 | 97 | 22 31.3 | -6 | 107 7.8 | 10 33.9 | 288 33.8 | - 8 42.3 | | | | |
| 4 | 85 48.7 | 96 | 22 30.1 | -16 | 137 12.5 | 10 34.0 | 318 38.5 | - 8 42.4 | | | | |
| 6 | 114 46.0 | 96 | 22 28.4 | -11 | 167 17.3 | 10 34.1 | 348 43.1 | - 8 42.5 | | | | |
| 8 | 143 43.1 | 95 | 22 26.2 | -13 | 197 22.0 | 10 34.2 | 18 47.8 | - 8 42.5 | | | | |
| 10 | 172 40.1 | 95 | 22 23.6 | -16 | 227 26.7 | 10 34.3 | 48 52.5 | - 8 42.6 | | | | |
| 12 | 201 37.1 | 95 | 22 20.4 | -18 | 257 31.5 | 10 34.4 | 78 57.1 | - 8 42.7 | | | | |
| 14 | 230 34.0 | 94 | 22 16.8 | -20 | 287 36.2 | 10 34.5 | 109 1.8 | - 8 42.8 | | | | |
| 16 | 259 30.9 | 94 | 22 12.7 | -23 | 317 40.9 | 10 34.6 | 139 6.5 | - 8 42.8 | | | | |
| 18 | 288 27.7 | 94 | 22 8.2 | -25 | 347 45.6 | 10 34.7 | 169 11.1 | - 8 42.9 | | | | |
| 20 | 317 24.4 | 94 | 22 3.1 | -28 | 17 50.4 | 10 34.8 | 199 15.8 | - 8 43.0 | | | | |
| 22 | 346 21.2 | 94 | 21 57.6 | -30 | 47 55.1 | 10 34.9 | 229 20.5 | - 8 43.1 | | | | |
| Δ | | | | | 24 | 0 | 23 | 0 | | | | |

| SUNCE | | | | MJESEC | | | | | |
|---------|--------------------------|-----------------|--------------|-----------------|-------|-----------------|---------|--------|------|
| UT | e = $P_{\text{TP}} - UT$ | $\Delta/24$ | t | Prolaz | | $\Delta/24$ | π_d | t | |
| | h min s | s | / | h | min | min | / | / | |
| 00 | - 5 51.1 | -1.1 | 16.3 | T _{m̄} | 22 57 | 2.2 | 55.4 | 15.1 | |
| 12 | - 6 4.1 | T _{m̄} | 12 h 6.1 min | S | 13.2 | 13.2 d | Fa2a | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360°-x | Vel. | Pl. | T _{m̄} | π | 360°-x | Vel. |
| | h | min | / | ° | | h | min | / | ° |
| ♀ | 14 33. | .1 | 36 | -3.5 | ♃ | 18 49. | .0 | 331 | -2.1 |
| ♂ | 4 29. | .1 | 187 | -3.3 | ♃ | 6 45. | .0 | 153 | .9 |

8. JANUAR

NEDJELJA

| UT | SUNCE | | PROJ. TAKA S _T | VENERA | | MARS | | |
|----|----------------|----------------|---------------------------------|----------------|----------------|----------------|----------------|------|
| | S _⊕ | δ _⊕ | | S _♀ | δ _♀ | S _♂ | δ _♂ | |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 25.7 | -22 | 20.7 | 106 | 57.3 | 141 | 37.4 |
| 2 | 208 | 25.1 | -22 | 20.0 | 137 | 2.3 | 171 | 36.4 |
| 4 | 238 | 24.6 | -22 | 19.4 | 167 | 7.2 | 201 | 35.4 |
| 6 | 268 | 24.1 | -22 | 18.7 | 197 | 12.1 | 231 | 34.3 |
| 8 | 298 | 23.5 | -22 | 18.1 | 227 | 17.0 | 261 | 33.3 |
| 10 | 328 | 23.0 | -22 | 17.4 | 257 | 22.0 | 291 | 32.3 |
| 12 | 358 | 22.5 | -22 | 16.7 | 287 | 26.9 | 321 | 31.3 |
| 14 | 28 | 22.0 | -22 | 16.1 | 317 | 31.8 | 351 | 30.2 |
| 16 | 58 | 21.4 | -22 | 15.4 | 347 | 36.8 | 21 | 29.2 |
| 18 | 88 | 20.9 | -22 | 14.7 | 17 | 41.7 | 51 | 28.2 |
| 20 | 118 | 20.4 | -22 | 14.1 | 47 | 46.6 | 81 | 27.2 |
| 22 | 148 | 19.8 | -22 | 13.4 | 77 | 51.5 | 111 | 26.2 |
| Δ | -3 | | 3 | | -5 | | 10 | |
| | | | | | 20 | | -1 | |

| SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-------|-------|-------|------------------|---------|--------|--------|-------|------|
| φ | IZLAZ | ZALAZ | GRAD. | ASTR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 57 | 15 16 | 0 55 | 2 41 | 14 46 | 3.3 | 8 5 | 1.2 |
| 55 | 8 22 | 15 11 | 0 44 | 2 15 15 | 20 3.0 | 7 30 | 1 4 | |
| 50 | 7 57 | 16 16 | 0 38 | 1 58 15 | 25 4.9 | 7 5 | 1 6 | |
| 45 | 7 38 | 16 36 | 0 33 | 1 46 | 16 4 | 2.7 | 6 45 | 1.7 |
| 40 | 7 22 | 16 51 | 0 30 | 1 37 | 16 20 | 2.6 | 6 29 | 1.8 |
| 35 | 7 9 | 17 5 | 0 28 | 1 30 | 16 33 | 2.6 | 6 15 | 1.9 |
| 30 | 6 57 | 17 16 | 0 26 | 1 25 | 16 44 | 2.5 | 6 4 | 1.9 |
| 20 | 6 37 | 17 36 | 0 24 | 1 18 | 17 4 | 2.4 | 5 43 | 2.1 |
| 10 | 6 19 | 17 54 | 0 23 | 1 15 | 17 21 | 2.3 | 5 26 | 2.1 |
| 0 | 6 3 | 18 10 | 0 22 | 1 14 | 17 36 | 2.2 | 5 9 | 2.2 |
| 10 | 5 46 | 18 27 | 0 23 | 1 17 | 17 52 | 2.1 | 4 53 | 2.3 |
| 20 | 5 28 | 18 45 | 0 24 | 1 23 | 18 9 | 2.0 | 4 35 | 2.3 |
| 30 | 5 7 | 19 6 | 0 27 | 1 35 | 18 28 | 1.9 | 4 14 | 2.4 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|----------------|----------------|---|----------------|---|
| | S ₀ | Δ | δ ₀ | Δ | S ₊ | δ ₊ | S _η | δ _η | S ₀ | Δ | δ ₀ | Δ |
| h | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 15 | 17.9 | 93 | 21 51.6 | -32 | 77 59.8 | 10 35.0 | 259 | 25.2 | - | 8 43.1 | |
| 2 | 44 | 14.6 | 93 | 21 45.2 | -35 | 108 4.5 | 10 35.1 | 289 | 29.8 | - | 8 43.2 | |
| 7 | 73 | 11.3 | 93 | 21 38.2 | -37 | 138 9.3 | 10 35.2 | 319 | 34.5 | - | 8 43.3 | |
| 6 | 102 | 7.9 | 93 | 21 30.8 | -39 | 168 14.0 | 10 35.3 | 349 | 39.2 | - | 8 43.3 | |
| 8 | 131 | 4.6 | 93 | 21 22.9 | -42 | 198 18.7 | 10 35.4 | 19 | 43.9 | - | 8 43.4 | |
| 10 | 160 | 1.3 | 93 | 21 14.5 | -44 | 228 23.4 | 10 35.5 | 49 | 48.5 | - | 8 43.5 | |
| 12 | 188 | 58.0 | 94 | 21 5.7 | -47 | 258 28.1 | 10 35.7 | 79 | 53.2 | - | 8 43.6 | |
| 14 | 217 | 54.7 | 94 | 20 56.3 | -49 | 288 32.8 | 10 35.8 | 109 | 57.9 | - | 8 43.6 | |
| 16 | 246 | 51.4 | 94 | 20 46.6 | -51 | 318 37.6 | 10 35.9 | 140 | 2.6 | - | 8 43.7 | |
| 18 | 275 | 48.2 | 94 | 20 36.3 | -54 | 348 42.3 | 10 36.0 | 170 | 7.3 | - | 8 43.8 | |
| 20 | 304 | 45.0 | 94 | 20 25.6 | -56 | 378 47.0 | 10 36.1 | 200 | 11.9 | - | 8 43.8 | |
| 22 | 333 | 41.9 | 95 | 20 14.4 | -58 | 408 51.7 | 10 36.2 | 230 | 16.6 | - | 8 43.9 | |
| Δ | | | | | | 24 | 1 | 23 | | | | 0 |

| SUNCE | | MJESEC | | | | | | | | |
|---------|-------------------------|------------------|--------------|----------------|--------|----------------|-----------------|-------|------|------|
| UT | e = T _p - UT | Δ/24 | r | Prolaz | | Δ/24 | π _{cl} | r | | |
| h | min | s | / | h | min | / | π _{cl} | r | | |
| 00 | - 6 17.1 | -1.1 | 16.3 | T _m | 23 49 | 2.2 | 56.0 | 15.2 | | |
| 12 | - 6 29.8 | T _m ○ | 12 h 6.5 min | Strost | 14.2 d | Faza | ○ | | | |
| PLANETE | | | | | | | | | | |
| Pl. | T _m | π | 360-x | Vel. | Pl. | T _m | π | 360-x | Vel. | |
| | h | min | / | o | | h | min | / | o | |
| ♀ | 14 | 34 | .1 | 35 | -3.6 | 4 | 184.5 | .0 | 331 | -2.1 |
| ♂ | 4 | 26 | .1 | 186 | -3 | .3 | 6 41 | .0 | 152 | .9 |

9. JANUAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 19.3 -22 | 12.7 | 107 56.5 | 141 25.2 -15 | 16.8 | 294 15.5 | 6 10.5 | |
| 2 | 208 18.8 -22 | 12.0 | 138 1.4 | 171 24.2 -15 | 14.7 | 324 19.6 | 6 10.3 | |
| 4 | 238 18.3 -22 | 11.3 | 168 6.3 | 201 23.2 -15 | 12.6 | 354 23.7 | 6 10.1 | |
| 6 | 268 17.8 -22 | 10.7 | 198 11.3 | 231 22.2 -15 | 10.4 | 24 27.8 | 6 9.9 | |
| 8 | 298 17.2 -22 | 10.0 | 228 16.2 | 261 21.2 -15 | 8.3 | 54 31.9 | 6 9.7 | |
| 10 | 328 16.7 -22 | 9.3 | 258 21.1 | 291 20.2 -15 | 6.2 | 84 36.0 | 6 9.5 | |
| 12 | 358 16.2 -22 | 8.6 | 288 26.0 | 321 19.2 -15 | 4.1 | 114 40.1 | 6 9.3 | |
| 14 | 28 15.7 -22 | 7.9 | 318 31.0 | 351 18.2 -15 | 1.9 | 144 44.2 | 6 9.1 | |
| 16 | 58 15.2 -22 | 7.2 | 348 35.9 | 21 17.2 -14 | 59.8 | 174 48.4 | 6 8.9 | |
| 18 | 88 14.6 -22 | 6.5 | 18 40.8 | 51 16.2 -14 | 57.7 | 204 52.5 | 6 8.7 | |
| 20 | 118 14.1 -22 | 5.8 | 48 45.8 | 81 15.3 -14 | 55.5 | 234 56.6 | 6 8.5 | |
| 22 | 148 13.6 -22 | 5.1 | 78 50.7 | 111 14.3 -14 | 53.4 | 265 .7 | 6 8.3 | |
| Δ | -3 | 3 | | -5 | 11 | 21 | -1 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 56 | 15 18 | 0 55 | 2 41 | 16 5 | 3.6 | 8 34 | .9 | |
| 55 | 8 22 | 15 53 | 0 44 | 2 15 | 16 33 | 3.2 | 8 5 | 1.1 | |
| 50 | 7 57 | 16 17 | 0 38 | 1 58 | 16 54 | 3.0 | 7 43 | 1.3 | |
| 45 | 7 37 | 16 37 | 0 33 | 1 45 | 17 10 | 2.9 | 7 26 | 1.5 | |
| 40 | 7 22 | 16 52 | 0 30 | 1 37 | 17 23 | 2.7 | 7 12 | 1.6 | |
| 35 | 7 9 | 17 5 | 0 28 | 1 30 | 17 34 | 2.6 | 7 0 | 1.7 | |
| 30 | 6 57 | 17 17 | 0 26 | 1 25 | 17 44 | 2.5 | 6 50 | 1.8 | |
| 26 | 6 37 | 17 37 | 0 24 | 1 18 | 18 0 | 2.4 | 6 32 | 1.9 | |
| 10 | 6 20 | 17 54 | 0 23 | 1 15 | 18 15 | 2.3 | 6 16 | 2.0 | |
| 0 | 6 3 | 18 11 | 0 22 | 1 14 | 18 29 | 2.1 | 6 2 | 2.2 | |
| 10 | 5 47 | 18 27 | 0 23 | 1 17 | 18 42 | 2.0 | 5 47 | 2.3 | |
| 20 | 5 29 | 18 45 | 0 24 | 1 23 | 18 56 | 1.9 | 5 31 | 2.4 | |
| 30 | 5 8 | 19 6 | 0 27 | 1 35 | 19 13 | 1.7 | 5 13 | 2.5 | |
| 35 | 4 56 | 19 18 | 0 29 | 1 44 | 19 22 | 1.6 | 5 2 | 2.6 | |
| 40 | 4 42 | 19 32 | 0 32 | 1 59 | 19 33 | 1.5 | 4 50 | 2.7 | |
| 45 | 4 25 | 19 48 | 0 36 | 2 24 | 19 46 | 1.4 | 4 35 | 2.8 | |
| 50 | 4 4 | 20 9 | 0 43 | ::: | 20 1 | 1.2 | 4 17 | 3.0 | |
| 55 | 3 36 | 20 37 | 0 54 | ::: | 20 21 | 1.0 | 3 54 | 3.2 | |
| 60 | 2 57 | 21 16 | 1 24 | ::: | 20 47 | .7 | 3 22 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 2 38.8 | 95 | 20 2.8 | -60 | 78 56.4 | 10 36.3 | 260 21.3 | -8 44.0 |
| 2 | 31 35.8 | 95 | 19 50.7 | -63 | 109 1.1 | 10 36.4 | 290 26.0 | -8 44.1 |
| 4 | 60 32.8 | 96 | 19 38.2 | -65 | 139 5.8 | 10 36.5 | 320 30.7 | -8 44.1 |
| 6 | 89 29.9 | 96 | 19 25.3 | -67 | 169 10.5 | 10 36.6 | 350 55.3 | -8 44.2 |
| 8 | 118 27.1 | 96 | 19 11.9 | -69 | 199 15.2 | 10 36.7 | 20 40.0 | -8 44.3 |
| 10 | 147 24.3 | 97 | 18 58.0 | -71 | 229 19.9 | 10 36.8 | 50 44.7 | -8 44.3 |
| 12 | 176 21.7 | 97 | 18 43.7 | -73 | 254 24.6 | 10 36.9 | 80 49.4 | -8 44.4 |
| 14 | 205 19.1 | 98 | 18 29.1 | -76 | 289 29.3 | 10 37.1 | 110 54.1 | -8 44.5 |
| 16 | 234 16.6 | 98 | 18 13.9 | -78 | 319 34.0 | 10 37.2 | 140 58.8 | -8 44.5 |
| 18 | 263 14.2 | 98 | 17 58.4 | -80 | 349 38.7 | 10 37.3 | 171 3.4 | -8 44.6 |
| 20 | 292 11.9 | 99 | 17 42.5 | -82 | 19 43.4 | 10 37.4 | 201 8.1 | -8 44.7 |
| 22 | 321 9.7 | 99 | 17 26.1 | -84 | 49 48.1 | 10 37.5 | 231 12.8 | -8 44.7 |
| Δ | -3 | 4 | | | -5 | 11 | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------------|---------|---------------------|--------|----------------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 6 42.5 | -1.0 | 16.3 | T _{m̄} ... | 1.0 | 56.5 | 15.4 | | |
| 12 | - 6 55.0 | T _{m̄} 12 h | 6.9 min | Starost 15.2 d | Faza ○ | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / | |
| 0 | 14 35 | .1 | 33 | -3.6 | 4 | 18 41 | .0 | 331 | -2.1 |
| ○ | 4 22 | .1 | 186 | -3.3 | h | 6 38 | .0 | 152 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 350 7.6 | 100 | 17 9.4 | -86 | 79 52.8 | 10 37.6 | 261 17.5 | -8 44.8 |
| 2 | 19 5.6 | 100 | 16 52.2 | -88 | 109 57.5 | 10 37.7 | 291 22.2 | -8 44.9 |
| 4 | 48 3.7 | 101 | 16 34.7 | -89 | 140 2.2 | 10 37.8 | 321 26.9 | -8 44.9 |
| 6 | 77 1.9 | 102 | 16 16.8 | -91 | 170 6.9 | 10 38.0 | 351 31.6 | -8 45.0 |
| 8 | 106 2.2 | 102 | 15 58.5 | -93 | 200 11.5 | 10 38.1 | 21 36.3 | -8 45.1 |
| 10 | 134 58.6 | 103 | 15 39.9 | -95 | 230 16.2 | 10 38.2 | 51 41.0 | -8 45.1 |
| 12 | 163 57.1 | 103 | 15 20.9 | -97 | 260 20.9 | 10 38.3 | 81 45.7 | -8 45.2 |
| 14 | 192 55.8 | 104 | 15 1.5 | -98 | 290 25.6 | 10 38.4 | 111 50.3 | -8 45.3 |
| 16 | 222 54.5 | 104 | 14 41.8 | -100 | 320 30.3 | 10 38.5 | 141 55.0 | -8 45.3 |
| 18 | 250 53.4 | 105 | 14 21.8 | -102 | 350 35.0 | 10 38.7 | 171 59.7 | -8 45.4 |
| 20 | 279 52.4 | 105 | 14 1.4 | -103 | 20 39.6 | 10 38.8 | 202 4.4 | -8 45.5 |
| 22 | 308 51.5 | 106 | 13 40.8 | -105 | 50 44.3 | 10 38.9 | 232 9.1 | -8 45.5 |
| Δ | -3 | 1 | | | 23 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------------|---------|----------------------|--------|----------------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 7 7.4 | -1.0 | 16.3 | T _{m̄} 0 41 | 2.1 | 57.1 | 15.5 | | |
| 12 | - 7 19.7 | T _{m̄} 12 h | 7.3 min | Starost 16.2 d | Faza ○ | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / | |
| 0 | 14 36 | .1 | 32 | -3.6 | 4 | 18 38 | .0 | 331 | -2.1 |
| ○ | 4 19 | .1 | 186 | -3.3 | h | 6 34 | .0 | 152 | .9 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 7.0 -21 55.5 | 109 | 54.8 | 141 | 1.8 -14 25.3 | 295 | 54.8 6 6.1 |
| 2 | 208 | 6.5 -21 54.8 | 139 | 59.7 | 171 | 8.4 -14 23.1 | 325 | 59.0 6 5.9 |
| 4 | 238 | 6.0 -21 54.0 | 170 | 4.6 | 200 | 59.9 -14 20.9 | 356 | 3.1 6 5.8 |
| 6 | 268 | 5.5 -21 53.3 | 200 | 9.5 | 230 | 58.9 -14 18.8 | 26 | 7.3 6 5.6 |
| 8 | 298 | 5.0 -21 52.5 | 230 | 14.5 | 260 | 58.0 -14 16.6 | 56 | 11.5 6 5.4 |
| 10 | 328 | 4.5 -21 51.7 | 260 | 19.4 | 290 | 57.1 -14 14.4 | 86 | 15.7 6 5.3 |
| 12 | 358 | 4.0 -21 51.0 | 290 | 24.3 | 320 | 56.1 -14 12.2 | 116 | 19.9 6 5.1 |
| 14 | 28 | 3.5 -21 50.2 | 320 | 29.2 | 350 | 55.2 -14 10.0 | 146 | 24.1 6 5.0 |
| 16 | 58 | 3.0 -21 49.4 | 350 | 34.2 | 20 | 54.3 -14 7.8 | 176 | 28.4 6 4.8 |
| 18 | 88 | 2.5 -21 48.6 | 20 | 39.1 | 50 | 53.3 -14 5.6 | 206 | 32.6 6 4.7 |
| 20 | 118 | 2.0 -21 47.9 | 50 | 44.0 | 80 | 52.4 -14 3.4 | 236 | 36.8 6 4.5 |
| 22 | 148 | 1.5 -21 47.1 | 80 | 49.0 | 110 | 51.5 -14 1.2 | 266 | 41.0 6 4.4 |
| Δ | -2 | 4 | | | -5 | 11 | 21 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 54 | 15 22 | 0 54 | 2 40 | 18 58 | 3.7 | 9 10 | .5 | |
| 55 | 8 20 | 15 56 | 0 44 | 2 14 | 19 11 | 3.4 | 8 55 | .8 | |
| 50 | 7 56 | 16 20 | 0 37 | 1 57 | 19 21 | 3.2 | 8 43 | 1.0 | |
| 45 | 7 37 | 16 39 | 0 33 | 1 45 | 19 29 | 3.0 | 8 33 | 1.2 | |
| 40 | 7 21 | 16 54 | 0 30 | 1 36 | 19 36 | 2.8 | 8 26 | 1.3 | |
| 35 | 7 8 | 17 7 | 0 28 | 1 30 | 19 41 | 2.7 | 8 18 | 1.5 | |
| 30 | 6 57 | 17 19 | 0 26 | 1 24 | 19 46 | 2.6 | 8 12 | 1.6 | |
| 20 | 6 37 | 17 38 | 0 24 | 1 18 | 19 55 | 2.4 | 8 2 | 1.7 | |
| 10 | 6 20 | 17 55 | 0 23 | 1 15 | 20 3 | 2.2 | 7 52 | 1.9 | |
| 0 | 6 4 | 18 11 | 0 22 | 1 14 | 20 10 | 2.0 | 7 44 | 2.1 | |
| 10 | 5 48 | 18 28 | 0 23 | 1 17 | 20 17 | 1.9 | 7 35 | 2.2 | |
| 20 | 5 30 | 18 45 | 0 24 | 1 23 | 20 24 | 1.7 | 7 25 | 2.4 | |
| 30 | 5 10 | 19 6 | 0 27 | 1 34 | 20 33 | 1.5 | 7 14 | 2.6 | |
| 35 | 4 58 | 19 17 | 0 29 | 1 44 | 20 37 | 1.4 | 7 8 | 2.7 | |
| 40 | 4 44 | 19 31 | 0 32 | 1 58 | 20 43 | 1.3 | 7 1 | 2.8 | |
| 45 | 4 27 | 19 48 | 0 36 | 2 22 | 20 49 | 1.1 | 6 52 | 3.0 | |
| 50 | 4 7 | 20 8 | 0 42 | 3 34 | 20 57 | 1.0 | 6 42 | 3.1 | |
| 55 | 3 40 | 20 35 | 0 53 | ::: | 21 6 | .8 | 6 29 | 3.4 | |
| 60 | 3 1 | 21 13 | 1 21 | ::: | 21 18 | .5 | 6 12 | 3.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | | |
|----|----------------|----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------|
| | S _Ø | Δ | δ _Ø | S _φ | δ _φ | S _η | δ _η | S _γ | δ _γ | |
| h | o | / | o | / | o | / | o | / | / | |
| 0 | 337 | 50.6 106 | 13 19.7 -107 | 80 | 49.0 | 10 39.0 | 262 | 13.8 | - 8 45.6 | |
| 2 | 649.9 | 107 | 12 58.4 -108 | 110 | 53.7 | 10 39.1 | 292 | 18.5 | - 8 45.7 | |
| 4 | 35 49.3 | 108 | 12 36.8 -110 | 140 | 58.3 | 10 39.3 | 322 | 23.2 | - 8 45.7 | |
| 6 | 64 | 48.9 | 108 | 12 14.9 -111 | 171 | 3.0 | 10 39.4 | 352 | 27.9 | - 8 45.8 |
| 8 | 93 | 48.5 | 109 | 11 52.7 -112 | 201 | 7.7 | 10 39.5 | 22 | 32.6 | - 8 45.8 |
| 10 | 122 | 48.2 | 109 | 11 30.3 -114 | 231 | 12.4 | 10 39.6 | 52 | 37.3 | - 8 45.9 |
| 12 | 151 | 48.0 | 110 | 11 7.5 -115 | 261 | 17.0 | 10 39.7 | 82 | 42.0 | - 8 46.0 |
| 14 | 180 | 47.9 | 110 | 10 44.6 -116 | 291 | 21.7 | 10 39.9 | 112 | 46.7 | - 8 46.0 |
| 16 | 209 | 47.9 | 110 | 10 21.3 -117 | 321 | 26.4 | 10 40.0 | 142 | 51.4 | - 8 46.1 |
| 18 | 238 | 48.0 | 111 | 9 57.8 -119 | 351 | 31.0 | 10 40.1 | 172 | 56.1 | - 8 46.2 |
| 20 | 267 | 48.1 | 111 | 9 34.1 -120 | 21 | 35.7 | 10 40.2 | 203 | .8 | - 8 46.2 |
| 22 | 296 | 48.4 | 112 | 9 10.2 -121 | 51 | 40.3 | 10 40.4 | 233 | 5.5 | - 8 46.3 |
| Δ | -2 | 4 | | | 23 | 1 | | 23 | 0 | |

| UT | SUNCE | | | MJESEC | | | | | | |
|---------|-------------------------|-----------------|---------|-----------------|---------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | | |
| h min s | s | / | | h min | min / | | | | | |
| 00 | - 7 31.8 | -1.0 | 16.3 | T _{m̄} | 1 32 | 2.0 | 57.6 15.7 | | | |
| 12 | - 7 43.7 | T _{m̄} | 12 h | 7.7 min | Starost | 17.2 d | Faza ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 14 36 | .1 | 31 | -3.6 | γ | 18 34 | .0 | 331 | -2.1 | |
| δ | 4 16 | .1 | 186 | -3.3 | h | 6 30 | .0 | 152 | -.9 | |

| UT | SUNCE | | | JUPITER | | | SATURN | | | |
|----|----------------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| | S _Ø | Δ | δ _Ø | S _φ | δ _φ | S _η | δ _η | S _γ | δ _γ | |
| h | o | / | o | / | o | / | o | / | / | |
| 0 | 325 | 48.7 | 112 | 8 46.0 -122 | 81 | 45.0 | 10 40.5 | 263 | 10.2 - 8 46.3 | |
| 2 | 354 | 49.1 | 112 | 8 21.7 -123 | 111 | 49.7 | 10 40.6 | 293 | 14.9 - 8 46.4 | |
| 4 | 23 49.5 | 113 | 7 57.1 -124 | 141 | 54.3 | 10 40.7 | 323 | 19.6 - 8 46.5 | | |
| 6 | 52 | 50.1 | 113 | 7 32.4 -125 | 171 | 59.0 | 10 40.8 | 353 | 24.3 - 8 46.5 | |
| 8 | 81 | 50.7 | 113 | 7 7.4 -125 | 202 | 3.6 | 10 41.0 | 23 | 29.0 - 8 46.6 | |
| 10 | 110 | 51.3 | 113 | 6 42.3 -126 | 232 | 8.3 | 10 41.1 | 53 | 33.7 - 8 46.6 | |
| 12 | 139 | 52.0 | 114 | 6 17.1 -127 | 262 | 12.9 | 10 41.2 | 83 | 38.4 - 8 46.7 | |
| 14 | 168 | 52.7 | 114 | 5 51.6 -128 | 292 | 17.6 | 10 41.4 | 113 | 43.2 - 8 46.8 | |
| 16 | 197 | 53.5 | 114 | 5 26.1 -128 | 322 | 22.3 | 10 41.5 | 143 | 47.9 - 8 46.8 | |
| 18 | 226 | 54.3 | 114 | 5 .4 -129 | 352 | 26.9 | 10 41.6 | 173 | 52.6 - 8 46.9 | |
| 20 | 255 | 55.1 | 114 | 4 34.6 -130 | 22 | 31.5 | 10 41.7 | 203 | 57.3 - 8 46.9 | |
| 22 | 284 | 56.0 | 114 | 4 8.6 -130 | 52 | 36.2 | 10 41.9 | 234 | 2.0 - 8 47.0 | |
| Δ | -2 | 4 | | | 23 | 1 | | 24 | 0 | |

| UT | SUNCE | | | MJESEC | | | | | | |
|---------|-------------------------|-----------------|---------|-----------------|---------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | | |
| h min s | s | / | | h min | min / | | | | | |
| 00 | - 7 55.6 | -1.0 | 16.3 | T _{m̄} | 2 21 | 2.0 | 58.0 15.8 | | | |
| 12 | - 8 7.3 | T _{m̄} | 12 h | 8.1 min | Starost | 18.2 d | Faza ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 14 37 | .1 | 30 | -3.6 | γ | 18 30 | .0 | 331 | -2.1 | |
| δ | 4 12 | .1 | 186 | -3.3 | h | 6 26 | .0 | 152 | -.9 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 177 | 55.2 -21 | 36.6 | | 111 | 53.0 | 140 | 39.7 -13 |
| 2 | 207 | 54.8 -21 | 35.8 | | 141 | 58.0 | 170 | 38.8 -13 |
| 4 | 237 | 54.3 -21 | 35.0 | | 172 | 2.9 | 200 | 38.0 -13 |
| 6 | 267 | 53.8 -21 | 34.1 | | 202 | 7.8 | 230 | 37.1 -13 |
| 8 | 297 | 53.3 -21 | 33.3 | | 232 | 12.7 | 260 | 36.2 -13 |
| 10 | 327 | 52.9 -21 | 32.5 | | 262 | 17.7 | 290 | 35.3 -13 |
| 12 | 357 | 52.4 -21 | 31.6 | | 292 | 22.6 | 320 | 34.4 -13 |
| 14 | 27 | 51.9 -21 | 30.8 | | 322 | 27.5 | 350 | 33.6 -13 |
| 16 | 57 | 51.5 -21 | 30.0 | | 352 | 32.5 | 20 | 32.7 -13 |
| 18 | 87 | 51.0 -21 | 29.1 | | 374 | 37.4 | 50 | 31.8 -13 |
| 20 | 117 | 50.5 -21 | 28.3 | | 42.3 | 42.3 | 80 | 30.9 -13 |
| 22 | 147 | 50.0 -21 | 27.4 | | 47.2 | 47.2 | 110 | 30.1 -13 |
| Δ | -2 | 4 | | | | | -4 | 11 |
| | | | | | | | | 22 |
| | | | | | | | | -1 |

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|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 51 | 15 26 | 0 54 | 2 39 | 21 56 | 3 8 | 9 33 | .4 | |
| 55 | 8 18 | 15 59 | 0 43 | 2 13 | 21 55 | 3 5 | 9 31 | .7 | |
| 50 | 7 55 | 16 23 | 0 37 | 1 57 | 21 53 | 3 2 | 9 30 | .9 | |
| 45 | 7 36 | 16 41 | 0 33 | 1 45 | 21 52 | 3 0 | 9 29 | 1.1 | |
| 40 | 7 21 | 16 56 | 0 30 | 1 36 | 21 52 | 2.9 | 9 28 | 1.3 | |
| 35 | 7 8 | 17 9 | 0 28 | 1 29 | 21 51 | 2.7 | 9 27 | 1.4 | |
| 30 | 6 57 | 17 20 | 0 26 | 1 24 | 21 50 | 2.6 | 9 26 | 1.5 | |
| 20 | 6 38 | 17 39 | 0 24 | 1 18 | 21 49 | 2.4 | 9 25 | 1.7 | |
| 10 | 6 21 | 17 56 | 0 23 | 1 14 | 21 49 | 2.2 | 9 23 | 1.9 | |
| 0 | 6 5 | 18 12 | 0 22 | 1 14 | 21 48 | 2.1 | 9 22 | 2.0 | |
| 10 | 5 49 | 18 28 | 0 23 | 1 16 | 21 47 | 1.9 | 9 21 | 2.2 | |
| 20 | 5 31 | 18 45 | 0 24 | 1 22 | 21 46 | 1.7 | 9 20 | 2.4 | |
| 30 | 5 11 | 19 5 | 0 27 | 1 34 | 21 45 | 1.5 | 9 18 | 2.6 | |
| 35 | 4 60 | 19 17 | 0 29 | 1 43 | 21 45 | 1.4 | 9 17 | 2.7 | |
| 40 | 4 46 | 19 31 | 0 32 | 1 57 | 21 44 | 1.3 | 9 16 | 2.9 | |
| 45 | 4 30 | 19 47 | 0 36 | 2 20 | 21 43 | 1.1 | 9 15 | 3.0 | |
| 50 | 4 10 | 20 7 | 0 42 | 3 22 | 21 43 | 1.0 | 9 14 | 3.2 | |
| 55 | 3 43 | 20 33 | 0 53 | 3 :: | 21 42 | .7 | 9 12 | 3.4 | |
| 60 | 3 5 | 21 10 | 1 18 | 3 :: | 21 40 | .5 | 9 9 | 3.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|-------------------|-------------|----------------|----------------|----------------|----------------|---------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _ø | δ _ø | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 313 | 56.9 | 114 | 3 42.6 -131 | 82 | 40.8 | 10 42.0 | 264 | 6.7 - 8 47.1 |
| 2 | 342 | 57.8 | 114 | 3 16.5 -131 | 112 | 45.5 | 10 42.1 | 294 | 11.4 - 8 47.1 |
| 4 | 11 | 58.7 | 114 | 2 50.2 -132 | 142 | 50.1 | 10 42.3 | 324 | 16.1 - 8 47.2 |
| 6 | 40 | 59.5 | 114 | 2 23.9 -132 | 172 | 54.8 | 10 42.4 | 354 | 20.8 - 8 47.2 |
| 8 | 70 | .4 | 114 | 1 57.5 -132 | 202 | 59.4 | 10 42.5 | 24 | 25.6 - 8 47.3 |
| 10 | 99 | 1.3 | 114 | 1 31.1 -132 | 233 | 4.1 | 10 42.7 | 54 | 30.3 - 8 47.3 |
| 12 | 128 | 2.1 | 114 | 1 4.6 -133 | 263 | 8.7 | 10 42.8 | 84 | 35.0 - 8 47.4 |
| 14 | 157 | 2.9 | 114 | 0 38.1 -133 | 293 | 13.3 | 10 42.9 | 114 | 39.7 - 8 47.5 |
| 16 | 186 | 3.7 | 114 | 0 11.5 -133 | 323 | 18.0 | 10 43.1 | 144 | 44.4 - 8 47.5 |
| 18 | 215 | 4.4 | 113 - 0 15.1 -133 | 353 | 22.6 | 10 43.2 | 174 | 49.1 - 8 47.6 | |
| 20 | 244 | 5.1 | 113 - 0 41.7 -133 | 23 | 27.2 | 10 43.3 | 204 | 53.8 - 8 47.6 | |
| 22 | 273 | 5.8 | 113 - 1 8.3 -133 | 53 | 31.9 | 10 43.5 | 234 | 58.6 - 8 47.7 | |
| Δ | -2 | 4 | | | 23 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | - 8 18.9 | .9 | 16.3 | T _{m̄} | 3 10 | 2.0 | 58.4 | 15.9 |
| 12 | - 8 30.2 | T _{m̄} | 12 h | 8.5 min | Starost | 19.2 d | Faza | 0 |

| UT | PLANETE | | | |
|---------|---------|-----------------|-----|---------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | | | |
| 0 | 14 38 | .1 | 29 | -3.6 |
| δ | 4 9 | .1 | 186 | -.4 |

| UT | SUNCE | | | | MJESEC | | | | |
|----|-------|-------|-------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | min | h min | min |
| 60 | 8 50 | 15 28 | 0 53 | 2 38 | 23 26 | 3.8 | 9 44 | .5 | |
| 55 | 8 17 | 16 1 | 0 43 | 2 13 | 23 17 | 3.5 | 9 49 | .8 | |
| 50 | 7 54 | 16 24 | 0 37 | 1 56 | 23 11 | 3.3 | 9 52 | 1.0 | |
| 45 | 7 36 | 16 43 | 0 33 | 1 45 | 23 5 | 3.1 | 9 55 | 1.2 | |
| 40 | 7 21 | 16 57 | 0 30 | 1 36 | 23 | 2.9 | 9 58 | 1.3 | |
| 35 | 7 8 | 17 10 | 0 28 | 1 29 | 22 57 | 2.8 | 10 0 | 1.4 | |
| 30 | 6 57 | 17 21 | 0 26 | 1 24 | 22 53 | 2.7 | 10 2 | 1.6 | |
| 20 | 6 38 | 17 40 | 0 24 | 1 18 | 22 47 | 2.5 | 10 5 | 1.8 | |
| 10 | 6 21 | 17 57 | 0 22 | 1 14 | 22 42 | 2.3 | 10 8 | 1.9 | |
| 0 | 6 5 | 18 13 | 0 22 | 1 14 | 22 37 | 2.1 | 10 11 | 2.1 | |
| 10 | 5 49 | 18 28 | 0 23 | 1 16 | 22 33 | 2.0 | 10 14 | 2.3 | |
| 20 | 5 32 | 18 45 | 0 24 | 1 22 | 22 28 | 1.8 | 10 17 | 2.4 | |
| 30 | 5 12 | 19 5 | 0 27 | 1 33 | 22 22 | 1.6 | 10 20 | 2.6 | |
| 35 | 5 0 | 19 17 | 0 29 | 1 43 | 22 19 | 1.5 | 10 22 | 2.8 | |
| 40 | 4 47 | 19 30 | 0 32 | 1 56 | 22 15 | 1.4 | 10 25 | 2.9 | |
| 45 | 4 31 | 19 46 | 0 36 | 2 19 | 22 11 | 1.2 | 10 27 | 3.0 | |
| 50 | 4 11 | 20 6 | 0 42 | 3 17 | 22 | 1.0 | 10 30 | 3.2 | |
| 55 | 3 45 | 20 32 | 0 52 | 3 :: | 21 59 | .8 | 10 34 | 3.5 | |
| 60 | 3 8 | 21 9 | 1 16 | 3 :: | 21 51 | .5 | 10 39 | 3.8 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | | | | | |
| 00 | - 8 41.5 | .9 | 16.3 | T _{m̄} | 3 59 | 2.1 | 58.7 | 16.0 |
| 12 | - 8 52.5 | T _{m̄} | 12 h | 8.9 min | Starost | 20.2 d | Faza | 0 |

| UT | PLANETE | | | |
|---------|---------|-----------------|-----|---------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | | | |
| 0 | 14 38 | .1 | 28 | -3.6 |
| δ | 4 6 | .1 | 186 | -.4 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|---|----------------|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _ø | δ _ø | S _ø | δ _ø | S _ø | |

15. JANUAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 44.1 -21 | 16.1 | 113 51.3 | 140 19.0 -12 | 38.0 | 299 20.1 | 6 | .3 |
| 2 | 207 43.6 -21 | 15.2 | 143 56.2 | 170 18.2 -12 | 35.7 | 329 24.5 | 6 | .2 |
| 4 | 237 43.2 -21 | 14.3 | 174 1.2 | 200 17.4 -12 | 33.4 | 359 28.9 | 6 | .1 |
| 6 | 267 42.7 -21 | 13.4 | 204 6.1 | 230 16.5 -12 | 31.1 | 29 33.3 | 6 | .1 |
| 8 | 297 42.3 -21 | 12.5 | 234 11.0 | 260 15.7 -12 | 28.8 | 59 37.6 | 6 | .0 |
| 10 | 327 41.8 -21 | 11.6 | 264 15.9 | 290 14.9 -12 | 26.5 | 89 42.0 | 5 | .59.9 |
| 12 | 357 41.4 -21 | 10.6 | 294 20.9 | 320 14.0 -12 | 24.2 | 119 46.4 | 5 | .59.9 |
| 14 | 27 40.9 -21 | 9.7 | 324 25.8 | 350 13.2 -12 | 21.9 | 149 50.8 | 5 | .59.8 |
| 16 | 57 40.5 -21 | 8.8 | 354 30.7 | 20 12.4 -12 | 19.6 | 179 55.3 | 5 | .59.7 |
| 18 | 87 40.1 -21 | 7.9 | 24 35.7 | 50 11.6 -12 | 17.3 | 209 59.7 | 5 | .59.7 |
| 20 | 117 39.6 -21 | 7.0 | 54 40.6 | 80 10.8 -12 | 14.9 | 240 4.1 | 5 | .59.6 |
| 22 | 147 39.2 -21 | 6.1 | 84 45.5 | 110 10.0 -12 | 12.6 | 270 8.5 | 5 | .59.6 |
| Δ | -2 | 5 | | -4 | 12 | 22 | 0 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 49 | 15 30 | 0 53 | 2 37 | ... | ... | 0 | 9 56 | .6 |
| 55 | 8 16 | 16 3 | 0 43 | 2 13 | ... | ... | 0 | 10 7 | .9 |
| 50 | 7 53 | 16 26 | 0 37 | 1 56 | ... | ... | 0 | 10 16 | 1.1 |
| 45 | 7 35 | 16 44 | 0 33 | 1 44 | ... | ... | 0 | 10 23 | 1.3 |
| 40 | 7 20 | 16 58 | 0 30 | 1 36 | ... | ... | 0 | 10 30 | 1.4 |
| 35 | 7 8 | 17 11 | 0 28 | 1 29 | ... | ... | 0 | 10 35 | 1.6 |
| 30 | 6 57 | 17 22 | 0 26 | 1 24 | 23 57 | 2.7 | 10 40 | 1.7 | |
| 20 | 6 38 | 17 41 | 0 24 | 1 17 | 23 47 | 2.5 | 10 48 | 1.9 | |
| 10 | 6 21 | 17 57 | 0 22 | 1 14 | 23 37 | 2.4 | 10 55 | 2.0 | |
| 0 | 6 6 | 18 13 | 0 22 | 1 14 | 23 29 | 2.2 | 11 2 | 2.2 | |
| 10 | 5 50 | 18 29 | 0 23 | 1 16 | 23 20 | 2.1 | 11 8 | 2.3 | |
| 20 | 5 33 | 18 46 | 0 24 | 1 22 | 23 11 | 1.9 | 11 15 | 2.5 | |
| 30 | 5 13 | 19 5 | 0 27 | 1 33 | 23 1 | 1.7 | 11 24 | 2.7 | |
| 35 | 5 1 | 19 17 | 0 29 | 1 42 | 22 55 | 1.6 | 11 28 | 2.8 | |
| 40 | 4 48 | 19 30 | 0 32 | 1 56 | 22 48 | 1.5 | 11 34 | 2.9 | |
| 45 | 4 32 | 19 46 | 0 36 | 2 18 | 22 40 | 1.4 | 11 40 | 3.1 | |
| 50 | 4 12 | 20 5 | 0 42 | 3 13 | 22 31 | 1.2 | 11 48 | 3.3 | |
| 55 | 3 47 | 20 31 | 0 52 | 3 52 | 22 19 | 1.0 | 11 57 | 3.5 | |
| 60 | 3 10 | 21 7 | 1 15 | 3 52 | 22 4 | .7 | 12 10 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 290 5.8 106 - 6 49.8 -128 | 84 32.0 | 10 45.2 | 265 60.0 - 8 48.4 | | | | |
| 2 | 319 5.0 105 - 7 15.4 -127 | 114 36.6 | 10 45.4 | 296 4.7 - 8 48.4 | | | | |
| 4 | 348 3.9 104 - 7 40.9 -127 | 144 41.2 | 10 45.5 | 326 9.4 - 8 48.5 | | | | |
| 6 | 17 2.7 103 - 8 6.2 -126 | 174 45.8 | 10 45.7 | 356 14.1 - 8 48.5 | | | | |
| 8 | 46 1.4 102 - 8 31.3 -125 | 204 50.4 | 10 45.8 | 26 18.9 - 8 48.6 | | | | |
| 10 | 74 59.9 101 - 8 56.3 -124 | 234 55.0 | 10 46.0 | 56 23.6 - 8 48.6 | | | | |
| 12 | 103 58.2 101 - 9 21.0 -123 | 264 59.6 | 10 46.1 | 86 28.3 - 8 48.7 | | | | |
| 14 | 132 56.3 100 - 9 45.6 -122 | 295 4.2 | 10 46.2 | 116 33.1 - 8 48.7 | | | | |
| 16 | 161 54.2 99 - 10 10.0 -121 | 325 8.8 | 10 46.4 | 146 37.8 - 8 48.8 | | | | |
| 18 | 190 51.9 98 - 10 34.1 -120 | 355 13.4 | 10 46.5 | 176 42.5 - 8 48.8 | | | | |
| 20 | 219 49.4 97 - 10 58.0 -118 | 25 18.0 | 10 46.7 | 206 47.3 - 8 48.9 | | | | |
| 22 | 248 46.7 95 - 11 21.7 -117 | 55 22.6 | 10 46.8 | 236 52.0 - 8 48.9 | | | | |
| Δ | -2 | 5 | | -4 | 1 | | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|------|----------------|---------|----------------|----------------|--------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | - 9 3.5 | .9 | 16.3 | T _⊖ | 4 49 | 2.2 | 59.0 | 16.1 |
| 12 | - 9 14.2 | T _⊖ | 12 h | 9.2 min | Starost | 21 | 2 d | Faza ① |
| PLANETE | Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊖ | π |
| h min | / | ° | / | ° | h min | / | ° | / |
| 0 | 14 39 | .1 | 26 | -3.6 | 4 | 18 19 | .0 | 331 |
| φ | 4 2 | .1 | 185 | -4 | h | 6 15 | .0 | 152 |
| Δ | | | | | | | | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------------|----------------|---------|-------------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 277 43.8 | 94 -11 45.2 -116 | 85 27.2 | 10 47.0 | 266 56.7 - 8 49.0 | | | |
| 2 | 306 40.7 | 93 -12 8.3 -115 | 115 31.8 | 10 47.1 | 297 1.5 - 8 49.0 | | | |
| 4 | 335 37.3 | 92 -12 31.2 -113 | 145 36.4 | 10 47.3 | 327 6.2 - 8 49.1 | | | |
| 6 | 4 33.7 | 91 -12 53.9 -112 | 175 41.0 | 10 47.4 | 357 10.9 - 8 49.1 | | | |
| 8 | 33 29.9 | 90 -13 16.2 -110 | 205 45.6 | 10 47.5 | 27 15.7 - 8 49.2 | | | |
| 10 | 62 25.9 | 89 -13 38.2 -109 | 238 50.2 | 10 47.7 | 57 20.4 - 8 49.2 | | | |
| 12 | 91 21.6 | 87 -13 59.9 -107 | 265 54.8 | 10 47.8 | 87 25.1 - 8 49.3 | | | |
| 14 | 120 17.1 | 86 -14 21.3 -105 | 298 59.4 | 10 48.0 | 117 29.9 - 8 49.3 | | | |
| 16 | 149 12.4 | 85 -14 42.4 -104 | 326 4.0 | 10 48.1 | 147 34.6 - 8 49.4 | | | |
| 18 | 178 7.4 | 84 -15 3.1 -102 | 356 8.6 | 10 48.3 | 177 39.4 - 8 49.4 | | | |
| 20 | 207 2.1 | 83 -15 23.5 -100 | 26 13.2 | 10 48.4 | 207 44.1 - 8 49.5 | | | |
| 22 | 235 56.6 | 81 -15 43.5 -98 | 56 17.8 | 10 48.6 | 237 48.8 - 8 49.5 | | | |
| Δ | -2 | 5 | | -4 | 1 | | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|------|----------------|---------|----------------|----------------|--------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | - 9 24.9 | .9 | 16.3 | T _⊖ | 5 41 | 2.3 | 59.1 | 16.1 |
| 12 | - 9 35.2 | T _⊖ | 12 h | 9.6 min | Starost | 22 | 2 d | Faza ① |
| PLANETE | Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊖ | π |
| h min | / | ° | / | ° | h min | / | ° | / |
| 0 | 14 40 | .1 | 25 | -3.6 | 4 | 18 15 | .0 | 331 |
| φ | 3 59 | .1 | 185 | -4 | h | 6 11 | .0 | 152 |
| Δ | | | | | | | | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 33.6 -20 53.8 | 115 49.6 | 139 59.6 -11 42.3 | 301 6.4 5 59.0 | | | | |
| 2 | 207 33.1 -20 52.9 | 145 54.5 | 169 58.8 -11 40.0 | 331 10.8 5 58.9 | | | | |
| 4 | 237 32.7 -20 51.9 | 175 59.4 | 199 58.0 -11 37.7 | 1 15.3 5 58.9 | | | | |
| 6 | 267 32.3 -20 50.9 | 206 4.4 | 229 57.3 -11 35.3 | 31 19.8 5 58.9 | | | | |
| 8 | 297 31.9 -20 50.0 | 236 9.3 | 259 56.5 -11 33.0 | 61 24.3 5 58.9 | | | | |
| 10 | 327 31.4 -20 49.0 | 266 14.2 | 289 55.7 -11 30.6 | 91 28.8 5 58.8 | | | | |
| 12 | 357 31.0 -20 48.0 | 296 19.2 | 319 54.9 -11 28.3 | 121 33.3 5 58.8 | | | | |
| 14 | 27 30.6 -20 47.0 | 326 24.1 | 349 54.2 -11 25.9 | 151 37.8 5 58.8 | | | | |
| 16 | 57 30.2 -20 46.1 | 356 29.0 | 19 53.4 -11 23.5 | 181 42.3 5 58.8 | | | | |
| 18 | 87 29.8 -20 45.1 | 26 33.9 | 49 52.6 -11 21.2 | 211 46.9 5 58.8 | | | | |
| 20 | 117 29.4 -20 44.1 | 56 38.9 | 79 51.9 -11 18.8 | 241 51.4 5 58.7 | | | | |
| 22 | 147 29.0 -20 43.1 | 86 43.8 | 109 51.1 -11 16.5 | 271 55.9 5 58.7 | | | | |
| Δ | -2 | 5 | | -4 | 12 | | 23 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 45 | 15 35 | 0 52 | 2 36 | 2 31 | 3.7 | 10 28 | 1.1 | |
| 55 | 8 14 | 16 6 | 0 43 | 2 12 | 2 6 | 3.4 | 10 55 | 1.4 | |
| 50 | 7 52 | 16 29 | 0 37 | 1 56 | 1 48 | 3.2 | 11 15 | 1.6 | |
| 45 | 7 34 | 16 46 | 0 33 | 1 44 | 1 33 | 3.0 | 11 30 | 1.8 | |
| 40 | 7 19 | 17 1 | 0 30 | 1 35 | 1 21 | 2.9 | 11 43 | 1.9 | |
| 35 | 7 7 | 17 13 | 0 27 | 1 29 | 1 11 | 2.8 | 11 54 | 2.0 | |
| 30 | 6 56 | 17 24 | 0 26 | 1 24 | 1 2 | 2.7 | 12 4 | 2.0 | |
| 20 | 6 38 | 17 42 | 0 24 | 1 17 | 0 47 | 2.6 | 12 20 | 2.2 | |
| 10 | 6 22 | 17 58 | 0 22 | 1 14 | 0 34 | 2.5 | 12 35 | 2.3 | |
| 0 | 6 6 | 18 14 | 0 22 | 1 14 | 0 22 | 2.3 | 12 48 | 2.4 | |
| 10 | 5 51 | 18 29 | 0 23 | 1 16 | 0 10 | 2.2 | 13 2 | 2.5 | |
| 20 | 5 34 | 18 46 | 0 24 | 1 22 | .. .. | 0 | 13 17 | 2.6 | |
| 30 | 5 15 | 19 5 | 0 27 | 1 33 | .. .. | 0 | 13 33 | 2.7 | |
| 35 | 5 3 | 19 16 | 0 29 | 1 42 | .. .. | 0 | 13 43 | 2.8 | |
| 40 | 4 50 | 19 29 | 0 31 | 1 55 | .. .. | 0 | 13 55 | 2.9 | |
| 45 | 4 35 | 19 45 | 0 35 | 2 16 | 23 52 | 1.9 | 14 8 | 3.0 | |
| 50 | 4 15 | 20 4 | 0 41 | 3 5 | 23 35 | 1.8 | 14 24 | 3.1 | |
| 55 | 3 50 | 20 28 | 0 51 | .. .. | 23 13 | 1.7 | 14 45 | 3.3 | |
| 60 | 3 15 | 21 3 | 1 12 | .. .. | 22 44 | 1.4 | 15 13 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|----------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 264 50.9 80 -16 3.2 -96 | 86 22.3 | 10 48.7 | 267 53.6 -8 49.5 | | | | |
| 2 | 293 44.9 79 -16 22.4 -94 | 116 26.9 | 10 48.9 | 297 58.3 -8 49.6 | | | | |
| 4 | 322 38.7 78 -16 41.3 -92 | 146 31.5 | 10 49.0 | 328 3.1 -8 49.6 | | | | |
| 6 | 351 32.2 76 -16 59.8 -90 | 176 36.1 | 10 49.2 | 358 7.8 -8 49.7 | | | | |
| 8 | 20 25.5 75 -17 17.8 -88 | 206 40.7 | 10 49.4 | 28 12.6 -8 49.7 | | | | |
| 10 | 49 18.5 74 -17 35.5 -86 | 236 45.2 | 10 49.5 | 58 17.3 -8 49.8 | | | | |
| 12 | 78 11.3 73 -17 52.7 -84 | 266 49.8 | 10 49.7 | 88 22.0 -8 49.8 | | | | |
| 14 | 107 3.8 71 -18 9.4 -82 | 296 54.4 | 10 49.8 | 118 26.8 -8 49.9 | | | | |
| 16 | 135 56.1 70 -18 25.7 -79 | 326 59.0 | 10 50.0 | 148 31.5 -8 49.9 | | | | |
| 18 | 164 48.2 69 -18 41.6 -77 | 357 3.5 | 10 50.1 | 178 36.3 -8 49.9 | | | | |
| 20 | 193 40.0 68 -18 57.0 -75 | 27 8.1 | 10 50.3 | 208 41.0 -8 50.0 | | | | |
| 22 | 222 31.6 67 -19 11.9 -72 | 57 12.7 | 10 50.4 | 238 45.8 -8 50.0 | | | | |
| Δ | -2 | 5 | | -4 | 12 | | 23 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|----------------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 9 45.6 | .8 | 16.3 | T _{m̄} | 6 35 | 2.4 | 59.2 | 16.1 | |
| 12 | - 9 55.6 | T _{m̄} | 12 h 9.9 min | Starost | 23 | 2 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / | |
| 0 | 14 40 | .1 | 24 | -3.7 | 4 | 18 12 | .0 | 331 | -2.0 |
| δ | 3 55 | .1 | 185 | -4 | h | 6 7 | .0 | 152 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|----------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 251 23.0 66 -19 26.3 -70 | 87 17.3 | 10 50.6 | 268 50.5 -8 50.1 | | | | |
| 2 | 280 14.1 65 -19 40.2 -67 | 117 21.8 | 10 50.7 | 298 55.3 -8 50.1 | | | | |
| 4 | 309 5.1 64 -19 53.6 -65 | 147 26.4 | 10 50.9 | 329 .. -8 50.2 | | | | |
| 6 | 337 55.8 63 -20 6.6 -62 | 177 31.0 | 10 51.1 | 359 4.8 -8 50.2 | | | | |
| 8 | 6 46.3 62 -20 19.0 -59 | 207 35.5 | 10 51.2 | 29 9.5 -8 50.2 | | | | |
| 10 | 35 36.6 61 -20 30.8 -57 | 237 40.1 | 10 51.4 | 59 14.3 -8 50.3 | | | | |
| 12 | 64 26.8 60 -20 42.2 -54 | 267 44.7 | 10 51.5 | 89 19.0 -8 50.3 | | | | |
| 14 | 93 16.8 59 -20 53.0 -51 | 297 49.2 | 10 51.7 | 119 23.8 -8 50.4 | | | | |
| 16 | 122 6.6 58 -21 3.2 -49 | 327 53.8 | 10 51.9 | 149 28.6 -8 50.4 | | | | |
| 18 | 150 56.2 57 -21 12.9 -46 | 357 58.3 | 10 52.0 | 179 33.3 -8 50.5 | | | | |
| 20 | 179 45.7 57 -21 22.1 -43 | 28 2.9 | 10 52.2 | 209 38.1 -8 50.5 | | | | |
| 22 | 208 35.0 56 -21 30.7 -40 | 58 7.4 | 10 52.3 | 239 42.8 -8 50.5 | | | | |
| Δ | -2 | 5 | | 23 | 1 | | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | -10 5.6 | .8 | 16.3 | T _{m̄} | 7 32 | 2.5 | 59.3 | 16.2 | |
| 12 | -10 15.4 | T _{m̄} | 12 h 10.3 min | Starost | 24 | 2 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / | |
| 0 | 14 41 | .1 | 23 | -3.7 | 4 | 18 8 | .0 | 330 | -2.0 |
| δ | 3 51 | .1 | 185 | -5 | h | 6 4 | .0 | 152 | .8 |

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2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 23.7 -20 30.0 | 117 47.9 | 139 41.4 -10 45.5 | 302 55.1 5 58.7 | | | | |
| 2 | 207 23.3 -20 29.0 | 147 52.8 | 169 40.7 -10 43.2 | 332 59.7 5 58.8 | | | | |
| 4 | 237 22.9 -20 28.0 | 177 57.7 | 199 39.9 -10 40.8 | 3 4.3 5 58.8 | | | | |
| 6 | 267 22.5 -20 26.9 | 208 2.6 | 229 39.2 -10 38.4 | 33 8.9 5 58.8 | | | | |
| 8 | 297 22.1 -20 25.9 | 238 7.6 | 259 38.5 -10 36.0 | 63 13.5 5 58.8 | | | | |
| 10 | 327 21.7 -20 24.9 | 268 12.5 | 289 37.8 -10 33.6 | 93 18.1 5 58.8 | | | | |
| 12 | 357 21.3 -20 23.8 | 298 17.4 | 319 37.0 -10 31.2 | 123 22.7 5 58.9 | | | | |
| 14 | 27 21.0 -20 22.8 | 328 22.4 | 349 36.3 -10 28.8 | 153 27.4 5 58.9 | | | | |
| 16 | 57 20.6 -20 21.7 | 358 27.3 | 19 35.6 -10 26.4 | 183 32.0 5 58.9 | | | | |
| 18 | 87 20.2 -20 20.7 | 28 32.2 | 49 34.9 -10 24.0 | 213 36.6 5 58.9 | | | | |
| 20 | 117 19.8 -20 19.6 | 58 37.1 | 79 34.2 -10 21.6 | 243 41.2 5 59.0 | | | | |
| 22 | 147 19.4 -20 18.6 | 68 42.1 | 109 33.5 -10 19.2 | 273 45.9 5 59.0 | | | | |
| Δ | -2 5 | | -4 12 | 23 0 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 42 | 15 40 | 0 52 | 2 35 | 5 22 | 2 7 | 11 36 | 2 4 | |
| 55 | 8 12 | 16 10 | 0 42 | 2 11 | 4 43 | 2 7 | 12 15 | 2 4 | |
| 50 | 7 50 | 16 32 | 0 37 | 1 55 | 4 16 | 2 6 | 12 43 | 2 5 | |
| 45 | 7 33 | 16 49 | 0 32 | 1 44 | 3 55 | 2 6 | 13 4 | 2 5 | |
| 40 | 7 19 | 17 3 | 0 30 | 1 35 | 3 39 | 2 6 | 13 25 | 2 5 | |
| 35 | 7 7 | 17 15 | 0 27 | 1 29 | 3 25 | 2 6 | 13 35 | 2 5 | |
| 30 | 6 56 | 17 25 | 0 26 | 1 24 | 3 12 | 2 6 | 13 48 | 2 5 | |
| 20 | 6 38 | 17 43 | 0 23 | 1 17 | 2 51 | 2.5 | 14 9 | 2.5 | |
| 10 | 6 22 | 17 59 | 0 22 | 1 14 | 2 33 | 2.5 | 14 27 | 2.5 | |
| 0 | 6 7 | 18 14 | 0 22 | 1 13 | 2 16 | 2.5 | 14 45 | 2.5 | |
| 10 | 5 52 | 18 29 | 0 23 | 1 16 | 1 60 | 2.5 | 15 2 | 2.5 | |
| 20 | 5 35 | 18 46 | 0 24 | 1 21 | 1 42 | 2.4 | 15 21 | 2.5 | |
| 30 | 5 17 | 19 4 | 0 27 | 1 32 | 1 21 | 2.4 | 15 42 | 2.5 | |
| 35 | 5 5 | 19 15 | 0 29 | 1 41 | 1 9 | 2.4 | 15 54 | 2.5 | |
| 40 | 4 53 | 19 28 | 0 31 | 1 54 | 0 55 | 2.3 | 16 9 | 2.4 | |
| 45 | 4 37 | 19 43 | 0 35 | 2 15 | 0 39 | 2.3 | 16 26 | 2.4 | |
| 50 | 4 19 | 20 2 | 0 41 | 2 59 | 0 19 | 2.2 | 16 47 | 2.4 | |
| 55 | 3 54 | 20 26 | 0 50 | ⋮ ⋮ | ⋮ ⋮ | ⋮ ⋮ | 17 14 | 2.4 | |
| 60 | 3 20 | 20 60 | 1 10 | ⋮ ⋮ | ⋮ ⋮ | ⋮ ⋮ | 17 53 | 2.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 237 24.2 55 -21 38.7 -37 | 88 12.0 | 10 52.5 | 269 47.6 - 8 50.6 | | | | |
| 2 | 266 13.3 55 -21 46.1 -34 | 118 16.6 | 10 52.7 | 299 52.3 - 8 50.6 | | | | |
| 4 | 295 2.2 54 -21 53.0 -31 | 148 21.1 | 10 52.8 | 329 57.1 - 8 50.7 | | | | |
| 6 | 323 51.1 54 -21 59.3 -29 | 178 25.7 | 10 53.0 | 0 1.9 - 8 50.7 | | | | |
| 8 | 352 39.9 53 -22 5.0 -26 | 208 30.2 | 10 53.1 | 30 6.6 - 8 50.7 | | | | |
| 10 | 21 28.6 53 -22 10.1 -23 | 238 34.8 | 10 53.3 | 60 11.4 - 8 50.8 | | | | |
| 12 | 50 17.2 53 -22 14.6 -20 | 268 39.3 | 10 53.5 | 90 16.1 - 8 50.8 | | | | |
| 14 | 79 5.8 53 -22 18.5 -17 | 298 43.8 | 10 53.6 | 120 20.9 - 8 50.8 | | | | |
| 16 | 107 54.3 53 -22 21.8 -14 | 328 48.4 | 10 53.8 | 150 25.7 - 8 50.9 | | | | |
| 18 | 136 42.9 53 -22 24.6 -11 | 358 52.9 | 10 54.0 | 180 30.4 - 8 50.9 | | | | |
| 20 | 165 31.4 52 -22 26.7 -8 | 28 57.5 | 10 54.1 | 210 35.2 - 8 51.0 | | | | |
| 22 | 194 19.9 53 -22 28.2 -5 | 59 2.0 | 10 54.3 | 240 40.0 - 8 51.0 | | | | |
| Δ | -2 5 | | -3 12 | 23 0 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 40 | 15 42 | 0 51 | 2 34 | 6 28 | 2.0 | 12 34 | 3.1 | |
| 55 | 8 11 | 16 12 | 0 42 | 2 11 | 5 47 | 2.1 | 13 14 | 2.9 | |
| 50 | 7 49 | 16 33 | 0 36 | 1 55 | 5 19 | 2.2 | 13 42 | 2.8 | |
| 45 | 7 32 | 16 50 | 0 32 | 1 43 | 4 58 | 2.2 | 14 3 | 2.8 | |
| 40 | 7 18 | 17 4 | 0 29 | 1 35 | 4 41 | 2.3 | 14 20 | 2.7 | |
| 35 | 7 6 | 17 16 | 0 27 | 1 28 | 4 26 | 2.3 | 14 34 | 2.6 | |
| 30 | 6 56 | 17 26 | 0 26 | 1 24 | 4 14 | 2.3 | 14 47 | 2.6 | |
| 20 | 6 38 | 17 44 | 0 23 | 1 17 | 3 52 | 2.4 | 15 8 | 2.5 | |
| 10 | 6 22 | 17 60 | 0 22 | 1 14 | 3 33 | 2.4 | 15 27 | 2.5 | |
| 0 | 6 7 | 18 15 | 0 22 | 1 13 | 3 16 | 2.5 | 15 44 | 2.4 | |
| 10 | 5 52 | 18 29 | 0 23 | 1 16 | 2 58 | 2.5 | 16 1 | 2.4 | |
| 20 | 5 36 | 18 45 | 0 24 | 1 21 | 2 40 | 2.5 | 16 20 | 2.3 | |
| 30 | 5 17 | 19 4 | 0 26 | 1 32 | 2 18 | 2.6 | 16 41 | 2.2 | |
| 35 | 5 6 | 19 15 | 0 28 | 1 41 | 2 6 | 2.6 | 16 53 | 2.2 | |
| 40 | 4 54 | 19 27 | 0 31 | 1 53 | 1 51 | 2.6 | 17 7 | 2.1 | |
| 45 | 4 39 | 19 42 | 0 35 | 2 14 | 1 34 | 2.6 | 17 24 | 2.1 | |
| 50 | 4 20 | 20 1 | 0 41 | 2 56 | 1 13 | 2.7 | 17 45 | 2.0 | |
| 55 | 3 56 | 20 24 | 0 50 | ⋮ ⋮ | 0 46 | 2.7 | 18 12 | 1.8 | |
| 60 | 3 22 | 20 58 | 1 9 | ⋮ ⋮ | 0 6 | 2.8 | 18 50 | 1.6 | |
| S | | | | | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-----------|-----------------|-----------|----------------|------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _⊕ | r | |
| h min s | s / | / | h min min | min / | h min min | / | / | |
| 00 | -10 43.7 | .7 | 16.3 | T _{m̄} | 9 30 | 2.5 | 59.0 | 16.1 |
| 12 | -10 52.7 | T _{m̄} | 12 | 10.9 min | Starost | 26.2 d | Faza | ● |

| UT | PLANETE | | | | MJESEC | | | |
|---------|----------------|-----------------|--------------------|---------|----------------|-----------------|--------------------|------|
| | P _l | T _{m̄} | π ₃₆₀₋₂ | Vel. | P _l | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | o / | |
| 0 | 14 42 | .1 | 21 | -3.7 | 18 1 | .0 | 330 | -2.0 |
| ○ | 3 44 | .1 | 185 | -.5 | 5 56 | .0 | 152 | -.8 |

21. JANUAR

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|-------------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 177 | 14.5 -20 | 4.6 | 119 | 46.1 | 139 24.4 - 9 47.7 | 304 46.5 | 5 59.6 |
| 2 | 207 | 14.2 -20 | 3.6 | 149 | 51.1 | 169 23.7 - 9 45.2 | 334 51.2 | 5 59.7 |
| 4 | 237 | 13.8 -20 | 2.5 | 179 | 56.0 | 199 23.0 - 9 42.8 | 4 55.9 | 5 59.7 |
| 6 | 267 | 13.4 -20 | 1.4 | 210 | .9 | 229 22.3 - 9 40.4 | 35 .6 | 5 59.8 |
| 8 | 297 | 13.1 -20 | .3 | 240 | 5.9 | 259 21.7 - 9 37.9 | 65 5.3 | 5 59.9 |
| 10 | 327 | 12.7 -19 | 59.2 | 270 | 10.8 | 289 21.0 - 9 35.5 | 95 10.1 | 5 59.9 |
| 12 | 357 | 12.4 -19 | 58.1 | 300 | 15.7 | 319 20.3 - 9 33.1 | 125 14.8 | 6 .0 |
| 14 | 27 | 12.0 -19 | 57.0 | 330 | 20.6 | 349 19.6 - 9 30.6 | 155 19.5 | 6 .1 |
| 16 | 57 | 11.6 -19 | 55.8 | 0 | 25.6 | 19 19.0 - 9 28.2 | 185 24.2 | 6 .2 |
| 18 | 87 | 11.3 -19 | 54.7 | 30 | 30.5 | 49 18.3 - 9 25.7 | 215 29.0 | 6 .2 |
| 20 | 117 | 10.9 -19 | 53.6 | 60 | 35.4 | 79 17.6 - 9 23.3 | 245 33.7 | 6 .3 |
| 22 | 147 | 10.6 -19 | 52.5 | 90 | 40.3 | 109 17.0 - 9 20.8 | 275 38.5 | 6 .4 |
| Δ | -2 | 6 | | | -3 | 12 | 24 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 38 | 15 45 | 0 51 | 2 34 | 7 14 | 1 3 | 13 48 | 3.5 | |
| 55 | 8 9 | 16 14 | 0 42 | 2 10 | 6 38 | 1.6 | 14 24 | 3.2 | |
| 50 | 7 48 | 16 35 | 0 36 | 1 55 | 6 12 | 1.7 | 14 49 | 3.0 | |
| 45 | 7 31 | 16 52 | 0 32 | 1 43 | 5 52 | 1.9 | 15 9 | 2.9 | |
| 40 | 7 17 | 17 5 | 0 29 | 1 35 | 5 36 | 2.0 | 15 25 | 2.8 | |
| 35 | 7 6 | 17 17 | 0 27 | 1 28 | 5 22 | 2.0 | 15 38 | 2.7 | |
| 30 | 6 55 | 17 27 | 0 26 | 1 23 | 5 10 | 2.1 | 15 50 | 2.6 | |
| 20 | 6 38 | 17 45 | 0 23 | 1 17 | 4 49 | 2.2 | 16 9 | 2.5 | |
| 10 | 6 22 | 18 0 | 0 22 | 1 14 | 4 32 | 2.3 | 16 26 | 2.4 | |
| 0 | 6 8 | 18 15 | 0 22 | 1 13 | 4 15 | 2.4 | 16 42 | 2.3 | |
| 10 | 5 53 | 18 30 | 0 22 | 1 15 | 3 58 | 2.4 | 16 58 | 2.2 | |
| 20 | 5 37 | 18 45 | 0 24 | 1 21 | 3 40 | 2.5 | 17 15 | 2.1 | |
| 30 | 5 18 | 19 4 | 0 26 | 1 32 | 3 20 | 2.6 | 17 34 | 2.0 | |
| 35 | 5 7 | 19 14 | 0 28 | 1 40 | 3 8 | 2.7 | 17 46 | 1.9 | |
| 40 | 4 55 | 19 27 | 0 31 | 1 53 | 2 54 | 2.8 | 17 58 | 1.8 | |
| 45 | 4 40 | 19 42 | 0 35 | 2 13 | 2 37 | 2.8 | 18 13 | 1.7 | |
| 50 | 4 22 | 19 60 | 0 40 | 2 53 | 2 17 | 2.9 | 18 32 | 1.6 | |
| 55 | 3 58 | 20 23 | 0 49 | 3 : : | 1 51 | 3.1 | 18 56 | 1.4 | |
| 60 | 3 25 | 20 56 | 1 8 | 3 : : | 1 13 | 3.3 | 19 28 | 1.1 | |
| S | | | | | | | | | |

22. JANUAR

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|-------------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 208 | 56.2 | 59 -21 | 54.1 | 33 | 90 .9 | 10 56.5 | 271 42.0 - 8 51.5 |
| 2 | 237 | 46.0 | 60 -21 | 47.4 | 36 | 120 5.5 | 10 56.7 | 301 46.7 - 8 51.5 |
| 4 | 266 | 36.1 | 61 -21 | 40.2 | 39 | 150 10.0 | 10 56.8 | 331 51.5 - 8 51.5 |
| 6 | 295 | 26.3 | 62 -21 | 32.4 | 42 | 180 14.5 | 10 57.0 | 1 56.3 - 8 51.6 |
| 8 | 324 | 16.7 | 63 -21 | 24.1 | 44 | 210 19.0 | 10 57.2 | 32 1.1 - 8 51.6 |
| 10 | 353 | 7.4 | 64 -21 | 15.2 | 47 | 240 23.6 | 10 57.4 | 62 5.8 - 8 51.6 |
| 12 | 21 | 58.3 | 66 -21 | 5.8 | 50 | 270 28.1 | 10 57.5 | 92 10.6 - 8 51.7 |
| 14 | 50 | 49.4 | 67 -20 | 55.9 | 52 | 300 32.6 | 10 57.7 | 122 15.4 - 8 51.7 |
| 16 | 79 | 40.8 | 68 -20 | 45.5 | 55 | 330 37.1 | 10 57.9 | 152 20.2 - 8 51.7 |
| 18 | 108 | 32.4 | 69 -20 | 34.5 | 57 | 0 41.6 | 10 58.1 | 182 25.0 - 8 51.7 |
| 20 | 137 | 24.3 | 71 -20 | 23.1 | 60 | 30 46.1 | 10 58.2 | 212 29.7 - 8 51.8 |
| 22 | 166 | 16.4 | 72 -20 | 11.1 | 62 | 60 50.6 | 10 58.4 | 242 34.5 - 8 51.8 |
| Δ | -2 | 6 | | | -3 | 12 | 24 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 37 | 15 47 | 0 51 | 2 33 | 7 46 | .9 | 15 13 | 3.6 | |
| 55 | 8 8 | 16 16 | 0 42 | 2 10 | 7 16 | 1.2 | 15 42 | 3.3 | |
| 50 | 7 47 | 16 37 | 0 36 | 1 54 | 6 54 | 1.4 | 16 2 | 3.1 | |
| 45 | 7 30 | 16 53 | 0 32 | 1 43 | 6 37 | 1.5 | 16 19 | 2.9 | |
| 40 | 7 17 | 17 6 | 0 29 | 1 35 | 6 23 | 1.7 | 16 32 | 2.8 | |
| 35 | 7 5 | 17 18 | 0 27 | 1 28 | 6 11 | 1.8 | 16 43 | 2.7 | |
| 30 | 6 55 | 17 28 | 0 26 | 1 23 | 6 0 | 1.9 | 16 53 | 2.6 | |
| 20 | 6 38 | 17 45 | 0 23 | 1 17 | 5 42 | 2.0 | 17 10 | 2.4 | |
| 10 | 6 22 | 18 1 | 0 22 | 1 14 | 5 26 | 2.1 | 17 24 | 2.3 | |
| 0 | 6 8 | 18 15 | 0 22 | 1 13 | 5 12 | 2.2 | 17 38 | 2.2 | |
| 10 | 5 53 | 18 30 | 0 22 | 1 15 | 4 57 | 2.4 | 17 51 | 2.0 | |
| 20 | 5 37 | 18 45 | 0 24 | 1 21 | 4 41 | 2.5 | 18 5 | 1.9 | |
| 30 | 5 19 | 19 3 | 0 26 | 1 31 | 4 23 | 2.6 | 18 22 | 1.7 | |
| 35 | 5 8 | 19 14 | 0 28 | 1 40 | 4 12 | 2.7 | 18 31 | 1.7 | |
| 40 | 4 56 | 19 26 | 0 31 | 1 52 | 3 60 | 2.8 | 18 42 | 1.5 | |
| 45 | 4 42 | 19 41 | 0 35 | 2 12 | 3 45 | 2.9 | 18 54 | 1.4 | |
| 50 | 4 24 | 19 59 | 0 40 | 2 50 | 3 28 | 3.1 | 19 9 | 1.3 | |
| 55 | 4 0 | 20 22 | 0 49 | 3 : : | 3 5 | 3.3 | 19 29 | 1.0 | |
| 60 | 3 28 | 20 54 | 1 7 | 3 : : | 2 34 | 3.6 | 19 54 | .7 | |
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23. JANUAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | | |
|----|----------------|----------------|-----------------------------------|------------------|----------------|----------------|----------------|---|
| | S _⊕ | δ _⊕ | | S _♀ | δ _♀ | S _♂ | δ _♂ | |
| h | o | / | o | / | o | / | o | / |
| 0 | 177 | 6.1 -19 37.8 | 121 44.4 | 139 8.5 - 8 48.9 | 306 40.6 | 6 1.6 | | |
| 2 | 207 | 5.8 -19 36.5 | 151 49.3 | 169 7.8 - 8 46.4 | 336 45.4 | 6 1.7 | | |
| 4 | 237 | 5.5 -19 35.5 | 181 54.3 | 199 7.2 - 8 43.9 | 6 50.2 | 6 1.9 | | |
| 6 | 267 | 5.1 -19 34.3 | 211 59.2 | 229 6.6 - 8 41.4 | 36 55.1 | 6 2.0 | | |
| 8 | 297 | 4.8 -19 33.1 | 242 4.1 | 259 5.9 - 8 39.0 | 66 59.9 | 6 2.1 | | |
| 10 | 327 | 4.5 -19 32.0 | 9.1 | 289 5.3 - 8 36.5 | 97 4.7 | 6 2.2 | | |
| 12 | 357 | 4.1 -19 30.8 | 302 14.0 | 319 4.7 - 8 34.0 | 127 9.5 | 6 2.3 | | |
| 14 | 27 | 3.8 -19 29.7 | 332 18.9 | 349 4.0 - 8 31.5 | 157 14.4 | 6 2.4 | | |
| 16 | 57 | 3.5 -19 28.5 | 2 23.8 | 19 3.4 - 8 29.0 | 187 19.2 | 6 2.6 | | |
| 18 | 87 | 3.2 -19 27.3 | 32 28.8 | 49 2.8 - 8 26.6 | 217 24.1 | 6 2.7 | | |
| 20 | 117 | 2.8 -19 26.1 | 62 33.7 | 79 2.2 - 8 24.1 | 247 28.9 | 6 2.8 | | |
| 22 | 147 | 2.5 -19 25.0 | 92 38.6 | 109 1.6 - 8 21.6 | 277 33.8 | 6 2.9 | | |
| Δ | - | -2 | 6 | -3 | 12 | 24 | 1 | |

| SUNCE | | | TRAJANJE SUNKRAKA | | | MJESEC | | | |
|-------|-------|-------|-------------------|-------|-------|--------|-------|-------|-----|
| q | IZLAZ | ZALAZ | GRAD. | ASTR. | IZLAZ | h min | h min | h min | min |
| N | h min | h min | h min | h min | | h min | h min | h min | min |
| 60 | 8 35 | 15 49 | 0 50 | 2 32 | 8 7 | .6 | 16 40 | 3 36 | |
| 55 | 8 6 | 16 18 | 0 42 | 2 10 | 7 44 | .9 | 17 17 | 1 33 | |
| 50 | 7 46 | 16 38 | 0 36 | 1 54 | 7 27 | 1.1 | 17 17 | 1 30 | |
| 45 | 7 30 | 16 54 | 0 32 | 1 43 | 7 14 | 1.3 | 17 29 | 2 9 | |
| 40 | 7 16 | 17 8 | 0 29 | 1 34 | 7 3 | 1.4 | 17 39 | 2.7 | |
| 35 | 7 5 | 17 19 | 0 27 | 1 28 | 6 53 | 1.5 | 17 48 | 2 6 | |
| 30 | 6 55 | 17 29 | 0 26 | 1 23 | 6 45 | 1.6 | 17 55 | 2 5 | |
| 20 | 6 38 | 17 46 | 0 23 | 1 17 | 6 30 | 1.8 | 18 8 | 2 3 | |
| 10 | 6 22 | 18 1 | 0 22 | 1 13 | 6 17 | 2.0 | 18 19 | 2 2 | |
| 0 | 6 8 | 18 15 | 0 22 | 1 13 | 6 5 | 2.1 | 18 30 | 2.0 | |
| 10 | 5 54 | 18 30 | 0 22 | 1 15 | 5 53 | 2.2 | 18 40 | 1.9 | |
| 5 | 5 38 | 18 45 | 0 24 | 1 21 | 5 40 | 2.4 | 18 51 | 1.7 | |
| 30 | 5 20 | 19 3 | 0 26 | 1 31 | 5 26 | 2.5 | 19 4 | 1.6 | |
| 35 | 5 9 | 19 14 | 0 28 | 1 40 | 5 17 | 2.6 | 19 11 | 1.5 | |
| 40 | 4 57 | 19 26 | 0 31 | 1 52 | 5 7 | 2.8 | 19 19 | 1.3 | |
| 45 | 4 43 | 19 40 | 0 35 | 2 11 | 4 56 | 2.9 | 19 28 | 1.2 | |
| 50 | 4 25 | 19 57 | 0 40 | 2 48 | 4 42 | 3.1 | 19 40 | 1.0 | |
| 55 | 4 2 | 20 20 | 0 48 | : : | 4 24 | 3.3 | 19 54 | .8 | |
| 60 | 3 30 | 20 52 | 1 6 | : : | 3 60 | 3.6 | 20 12 | .6 | |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | |
|----|----------------|------|----------------|-----|----------------|-----|----------------|------|----------------|-----|----------------|------|----------|
| | S _E | Δ | δ _E | Δ | S _E | Δ | δ _E | Δ | S _H | Δ | δ _H | Δ | |
| h | ° | ' | ° | ' | ° | ' | ° | ' | ° | ' | ° | ' | |
| 0 | 182 | 1.6 | 92 | -16 | 55.8 | 89 | 91 | 49.2 | 11 | .7 | 273 | 36.7 | - 8 52.2 |
| 2 | 210 | 58.0 | 94 | -16 | 38.0 | 91 | 121 | 53.7 | 11 | .9 | 303 | 41.5 | - 8 52.2 |
| 4 | 239 | 54.8 | 96 | -16 | 19.9 | 92 | 151 | 58.2 | 11 | 1.1 | 333 | 46.3 | - 8 52.2 |
| 6 | 268 | 51.9 | 97 | -16 | 1.4 | 94 | 182 | 2.7 | 11 | 1.3 | 3 | 51.1 | - 8 52.3 |
| 8 | 297 | 49.3 | 99 | -15 | 42.7 | 95 | 212 | 7.2 | 11 | 1.5 | 33 | 55.9 | - 8 52.3 |
| 10 | 326 | 47.1 | 100 | -15 | 23.6 | 97 | 242 | 11.7 | 11 | 1.6 | 64 | .7 | - 8 52.3 |
| 12 | 355 | 45.1 | 102 | -15 | 4.2 | 98 | 272 | 16.1 | 11 | 1.8 | 94 | 5.5 | - 8 52.3 |
| 14 | 24 | 43.5 | 104 | -14 | 44.5 | 100 | 302 | 20.6 | 11 | 2.0 | 124 | 10.3 | - 8 52.4 |
| 16 | 53 | 42.3 | 105 | -14 | 24.6 | 101 | 332 | 25.1 | 11 | 2.2 | 154 | 15.1 | - 8 52.4 |
| 18 | 82 | 41.3 | 107 | -14 | 4.4 | 102 | 2 | 29.6 | 11 | 2.4 | 184 | 19.9 | - 8 52.4 |
| 20 | 111 | 40.6 | 108 | -13 | 43.9 | 104 | 32 | 34.1 | 11 | 2.6 | 214 | 24.7 | - 8 52.4 |
| 22 | 140 | 40.3 | 110 | -13 | 23.2 | 105 | 62 | 38.6 | 11 | 2.7 | 244 | 29.5 | - 8 52.5 |
| Δ | | | | | | 22 | | 1 | | | 24 | | 0 |

| SUNCE | | | | MJESEC | | | | | | | |
|-----------|------------------|-------------|---------------------------------|---------------|------------------|------------------|-------|-------|------|-----|------|
| UT | $e = T_p - UT$ | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_C | t | | | | |
| h | min | s | s | h | min | min | / | | | | |
| 00 | -11 | 35.3 | .7 | 16.3 | T _{bar} | 12 18 | 2.0 | | | | |
| 12 | -11 | 43.2 | T _m (₀) | 12 h 11.7 min | Starost | 29.2 d | Faza | ● | | | |
| PLANETE | | | | | | | | | | | |
| Pl. | T _{bar} | π | 360-x | Vel. | Pl. | T _{bar} | π | 360-x | Vel. | | |
| | h | min | / | o | | h | min | / | o | | |
| 9 | 14 | 44 | .1 | 17 | -3.7 | 4 | 17 | 50 | .0 | 330 | -2.0 |
| σ' | 3 | 33 | .1 | 185 | -6 | η | 5 | 45 | .0 | 152 | .8 |

24. JANUAR

UTORAK

| UT | SUNCE | | | PROLJ. TAČKA S_T | VENERA | | | MARS | | | |
|----------|-----------|----------------|----------------|--------------------------|--------|------------|------------|----------|------------|------------|-------|
| | S_\odot | δ_\odot | σ_\odot | | S_V | δ_V | σ_V | S_M | δ_M | σ_M | |
| h | o | ' | o' | o | ' | o | ' | o | ' | o | ' |
| 0 | 177 | 2.2 | -19 23.8 | 122 | 43.6 | 139 | .9 | - 8 19.1 | 307 | 38.7 | 6 3.1 |
| 2 | 207 | 1.9 | -19 22.6 | 152 | 48.5 | 169 | .3 | - 8 16.6 | 337 | 43.5 | 6 3.2 |
| 4 | 237 | 1.6 | -19 21.4 | 182 | 53.4 | 198 | 59.7 | - 8 14.1 | 7 48.4 | 6 | 3.3 |
| 6 | 267 | 1.3 | -19 20.2 | 212 | 58.3 | 228 | 59.1 | - 8 11.6 | 37 | 53.3 | 6 3.5 |
| 8 | 297 | .9 | -19 19.0 | 243 | 3.3 | 258 | 58.5 | - 8 9.2 | 67 | 58.2 | 6 3.6 |
| 10 | 327 | .6 | -19 17.8 | 273 | 8.2 | 288 | 57.9 | - 8 6.7 | 98 | 3.1 | 6 3.8 |
| 12 | 357 | .3 | -19 16.7 | 303 | 13.1 | 318 | 57.3 | - 8 4.2 | 128 | 8.0 | 6 3.9 |
| 14 | 27 | .0 | -19 15.5 | 333 | 18.1 | 348 | 56.7 | - 8 1.7 | 158 | 12.9 | 6 4.1 |
| 16 | 56 | 59.7 | -19 14.3 | 3 | 23.0 | 18 | 56.1 | - 7 59.2 | 188 | 17.8 | 6 4.2 |
| 18 | 86 | 59.4 | -19 13.1 | 33 | 27.9 | 48 | 55.4 | - 7 56.7 | 218 | 22.7 | 6 4.4 |
| 20 | 116 | 59.1 | -19 11.8 | 63 | 32.8 | 78 | 54.8 | - 7 54.2 | 248 | 27.6 | 6 4.5 |
| 22 | 146 | 58.8 | -19 10.6 | 93 | 37.8 | 108 | 54.2 | - 7 51.7 | 278 | 32.5 | 6 4.7 |
| Δ | - | -2 | 6 | | | -3 | 12 | | 24 | | 1 |

| SUNCE | | | TRAJANJE SUNKRAKA | | | MJESEC | | |
|-------|-------|-------|-------------------|--------|-------|--------|-------|------|
| q | IZLAZ | ZALAZ | GRAD. | A STR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 33 | 15 52 | 0 50 | 2 32 | 8 22 | .5 | 18 6 | 3.5 |
| 55 | 8 5 | 16 20 | 0 41 | 2 9 | 8 6 | .8 | 18 20 | 3.2 |
| 50 | 7 45 | 16 40 | 0 36 | 1 54 | 7 55 | 1.0 | 18 30 | 3.0 |
| 45 | 7 29 | 16 56 | 0 32 | 1 43 | 7 45 | 1.1 | 18 38 | 2.8 |
| 40 | 7 16 | 17 9 | 0 29 | 1 34 | 7 37 | 1.3 | 18 44 | 2.6 |
| 35 | 7 4 | 17 20 | 0 27 | 1 28 | 7 30 | 1.4 | 18 50 | 2.5 |
| 30 | 6 55 | 17 30 | 0 25 | 1 23 | 7 24 | 1.5 | 18 55 | 2.4 |
| 20 | 6 37 | 17 47 | 0 23 | 1 17 | 7 14 | 1.7 | 19 4 | 2.2 |
| 10 | 6 23 | 18 2 | 0 22 | 1 13 | 7 4 | 1.8 | 19 11 | 2.1 |
| 0 | 6 8 | 18 16 | 0 22 | 1 13 | 6 56 | 2.0 | 19 18 | 1.9 |
| 10 | 5 54 | 18 30 | 0 22 | 1 15 | 6 47 | 2.1 | 19 25 | 1.8 |
| 50 | 5 39 | 18 45 | 0 24 | 1 20 | 6 37 | 2.3 | 19 33 | 1.6 |
| 30 | 5 21 | 19 3 | 0 26 | 1 31 | 6 27 | 2.5 | 19 41 | 1.4 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|---------|----------------|-----|----------------|-----|----------------|-----|----------------|-----|----------------|-----|
| | S _C | Δ | δ _C | Δ | S ₊ | Δ | δ ₊ | Δ | S _η | Δ | δ _η | Δ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 169 40.3 | 111 -13 | 2.2 | 106 | 92 43.1 | 11 | 2.9 | 274 | 34.3 - | 8 | 52.5 | |
| 2 | 198 40.5 | 113 -12 | 41.0 | 107 | 122 47.5 | 11 | 3.1 | 304 | 39.1 - | 8 | 52.5 | |
| 4 | 227 41.1 | 114 -12 | 19.6 | 108 | 152 52.0 | 11 | 3.3 | 334 | 43.9 - | 8 | 52.5 | |
| 6 | 256 42.0 | 116 -11 | 58.0 | 109 | 182 56.5 | 11 | 3.5 | 4 | 48.7 - | 8 | 52.6 | |
| 8 | 285 43.1 | 117 -11 | 36.2 | 110 | 213 10.0 | 11 | 3.7 | 34 | 53.5 - | 8 | 52.6 | |
| 10 | 314 44.6 | 119 -11 | 14.2 | 111 | 243 5.5 | 11 | 3.9 | 64 | 58.3 - | 8 | 52.6 | |
| 12 | 343 46.3 | 120 -10 | 52.0 | 112 | 273 9.9 | 11 | 4.1 | 95 | 3.1 - | 8 | 52.6 | |
| 14 | 12 48.4 | 122 -10 | 29.7 | 113 | 303 14.4 | 11 | 4.2 | 125 | 7.9 - | 8 | 52.7 | |
| 16 | 41 50.7 | 123 -10 | 7.2 | 113 | 333 18.9 | 11 | 4.4 | 155 | 12.7 - | 8 | 52.7 | |
| 18 | 70 53.2 | 124 - 9 | 44.5 | 114 | 3 23.3 | 11 | 4.6 | 185 | 17.5 - | 8 | 52.7 | |
| 20 | 99 56.1 | 125 - 9 | 21.7 | 115 | 33 27.8 | 11 | 4.8 | 215 | 22.3 - | 8 | 52.7 | |
| 22 | 128 59.2 | 127 - 8 | 58.8 | 115 | 63 32.3 | 11 | 5.0 | 245 | 27.1 - | 8 | 52.7 | |
| Δ | | | | | 22 | | 1 | 24 | | | | 0 |

| 45 | 4 44 | 19 39 | 0 34 | 2 10 | 6 5 | 2.8 | 19 57 | 1.1 | |
|---------|-------------------------|-------|---------|------------------|---------------|----------------|-------|---------|------|
| 50 | 4 27 | 19 56 | 0 40 | 2 46 | 5 55 | 3.0 | 20 5 | .9 | |
| 54 | 4 24 | 20 18 | 0 48 | : : | 5 43 | 3.2 | 20 14 | .7 | |
| 60 | 3 33 | 20 49 | 1 5 | : : | 5 27 | 3.5 | 20 25 | .5 | |
| S | | | | | | | | | |
| SUNCE | | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _C | t | | |
| h | min | s | | h | min | s | | / | |
| 00 | -11 | 51 | 0 | -.6 | 16.3 | T _m | 13 | 7 | |
| 12 | -11 | 58 | 5 | T _m ⊕ | 12 h 12.0 min | Starost | .7 d | Faza ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _m | π | 360 - x | Vel. | Pl. | T _m | π | 360 - x | Vel. |
| | h min | / | ° | | | h min | / | ° | |
| ⊕ | 14 44 | .1 | 16 | -3.7 | ⊕ | 17 46 | .0 | 330 | -2.0 |
| ♂ | 3 29 | .1 | 185 | -.6 | ♃ | 5 41 | .0 | 152 | .8 |

25. JANUAR

2012.

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|-------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 58.5 -19 | 9.4 | 123 42.7 | 138 53.7 - 7 49.2 | 308 37.4 | 6 4.8 | |
| 2 | 206 | 58.2 -19 | 8.2 | 153 47.6 | 168 53.1 - 7 46.7 | 338 42.4 | 6 5.0 | |
| 4 | 236 | 57.9 -19 | 7.0 | 183 52.6 | 198 52.5 - 7 44.2 | 8 47.3 | 6 5.1 | |
| 6 | 266 | 57.6 -19 | 5.8 | 213 57.5 | 228 51.9 - 7 41.7 | 38 52.2 | 6 5.3 | |
| 8 | 296 | 57.3 -19 | 4.6 | 244 2.4 | 258 51.3 - 7 39.1 | 68 57.2 | 6 5.5 | |
| 10 | 326 | 57.0 -19 | 3.4 | 274 7.3 | 284 50.7 - 7 36.6 | 99 2.1 | 6 5.6 | |
| 12 | 356 | 56.7 -19 | 2.1 | 304 12.3 | 318 50.1 - 7 34.1 | 129 7.1 | 6 5.8 | |
| 14 | 26 | 56.4 -19 | 9 | 334 17.2 | 348 49.5 - 7 31.6 | 159 12.0 | 6 6.0 | |
| 16 | 56 | 56.1 -18 | 59.7 | 4 22.1 | 18 46.9 - 7 29.1 | 189 17.0 | 6 6.1 | |
| 18 | 86 | 55.8 -18 | 58.4 | 34 27.0 | 48 48.4 - 7 26.6 | 219 22.0 | 6 6.3 | |
| 20 | 116 | 55.5 -18 | 57.2 | 64 32.0 | 78 47.8 - 7 24.1 | 249 27.0 | 6 6.5 | |
| 22 | 146 | 55.2 -18 | 56.0 | 94 36.9 | 108 47.2 - 7 21.6 | 279 31.9 | 6 6.7 | |
| Δ | -1 | 6 | | | -3 | 13 | 25 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 31 | 15 55 | 0 50 | 2 31 | 8 34 | .4 | 19 29 | 3.3 | |
| 55 | 8 4 | 16 21 | 0 41 | 2 9 | 8 25 | .7 | 19 36 | 3.1 | |
| 50 | 7 44 | 16 41 | 0 36 | 1 54 | 8 18 | .9 | 19 41 | 2.9 | |
| 45 | 7 28 | 16 57 | 0 32 | 1 42 | 8 12 | 1.0 | 19 45 | 2.7 | |
| 40 | 7 15 | 17 10 | 0 29 | 1 34 | 8 7 | 1.2 | 19 48 | 2.6 | |
| 35 | 7 4 | 17 21 | 0 27 | 1 28 | 8 3 | 1.3 | 19 51 | 2.4 | |
| 30 | 6 54 | 17 31 | 0 25 | 1 23 | 7 60 | 1.4 | 19 53 | 2.3 | |
| 20 | 6 37 | 17 47 | 0 23 | 1 16 | 7 53 | 1.6 | 19 57 | 2.1 | |
| 10 | 6 23 | 18 2 | 0 22 | 1 13 | 7 48 | 1.7 | 20 01 | 2.0 | |
| 0 | 6 9 | 18 16 | 0 22 | 1 13 | 7 43 | 1.9 | 20 04 | 1.8 | |
| 10 | 5 55 | 18 30 | 0 22 | 1 15 | 7 38 | 2.0 | 20 08 | 1.7 | |
| 20 | 5 39 | 18 45 | 0 24 | 1 20 | 7 32 | 2.2 | 20 11 | 1.5 | |
| 30 | 5 22 | 19 2 | 0 26 | 1 31 | 7 26 | 2.4 | 20 15 | 1.3 | |
| 35 | 5 12 | 19 12 | 0 28 | 1 39 | 7 22 | 2.5 | 20 18 | 1.2 | |
| 40 | 4 60 | 19 24 | 0 31 | 1 51 | 7 18 | 2.6 | 20 20 | 1.1 | |
| 45 | 4 46 | 19 38 | 0 34 | 2 9 | 7 13 | 2.7 | 20 23 | 1.0 | |
| 50 | 4 29 | 19 55 | 0 39 | 2 43 | 7 7 | 2.9 | 20 27 | .8 | |
| 55 | 4 6 | 20 17 | 0 48 | : :: | 7 0 | 3.1 | 20 31 | .6 | |
| 60 | 3 36 | 20 47 | 1 4 | : :: | 6 51 | 3.4 | 20 36 | .4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-------------------|----------------|----------|-------------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 158 | 2.5 128 - 8 35.7 | 116 | 93 36.8 | 11 5.2 | 275 31.9 - 8 52.8 | | |
| 2 | 187 | 6.1 129 - 8 12.6 | 116 | 123 41.2 | 11 5.4 | 305 36.7 - 8 52.8 | | |
| 4 | 216 | 10.0 130 - 7 49.3 | 117 | 153 45.7 | 11 5.6 | 335 41.5 - 8 52.8 | | |
| 6 | 245 | 14.1 132 - 7 26.0 | 117 | 183 50.2 | 11 5.8 | 546.3 - 8 52.8 | | |
| 8 | 274 | 18.4 133 - 7 2.5 | 118 | 213 54.6 | 11 6.0 | 65 56.0 - 8 52.9 | | |
| 10 | 303 | 22.9 134 - 6 39.0 | 118 | 243 59.1 | 11 6.2 | 126 5.6 - 8 52.9 | | |
| 12 | 332 | 27.7 135 - 6 15.4 | 118 | 274 3.5 | 11 6.3 | 96 .8 - 8 52.9 | | |
| 14 | 1 32.6 136 - 5 51.7 | 119 | 304 8.0 | 11 6.5 | 126 5.6 - 8 52.9 | | | |
| 16 | 30 37.8 137 - 5 28.0 | 119 | 334 12.5 | 11 6.7 | 156 10.4 - 8 52.9 | | | |
| 18 | 59 43.2 138 - 5 4.2 | 119 | 4 16.9 | 11 6.9 | 186 15.2 - 8 52.9 | | | |
| 20 | 88 48.8 139 - 4 40.4 | 119 | 34 21.4 | 11 7.1 | 216 20.0 - 8 53.0 | | | |
| 22 | 117 54.5 140 - 4 16.5 | 119 | 64 25.8 | 11 7.3 | 246 24.8 - 8 53.0 | | | |
| Δ | -1 | 6 | | | 22 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | -12 5.9 | -.6 | 16.3 | T _{m̄} | 13 54 | 1.8 | 56.6 | 15.4 | |
| 12 | -12 13.0 | T _{m̄} | 12 h 12.2 min | Starost | 1.7 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 14 45 | .1 | 15 | -3.7 | 4 | 17 43 | .0 | 330 | -2.0 |
| ♂ | 3 25 | .1 | 185 | -.6 | h | 5 37 | .0 | 152 | -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------------|----------------|----------|----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 147 | .5 141 - 3 52.7 | 119 | 94 30.3 | 11 7.5 | 276 29.6 - 8 53.0 | | |
| 2 | 176 | 6.6 141 - 3 28.8 | 120 | 124 34.7 | 11 7.7 | 306 34.5 - 8 53.0 | | |
| 4 | 205 | 12.9 142 - 3 4.9 | 120 | 154 39.2 | 11 7.9 | 336 39.3 - 8 53.0 | | |
| 6 | 234 | 19.3 143 - 2 41.0 | 120 | 184 43.6 | 11 8.1 | 6 44.1 - 8 53.1 | | |
| 8 | 263 | 25.9 144 - 2 17.1 | 119 | 214 48.1 | 11 8.3 | 36 48.9 - 8 53.1 | | |
| 10 | 292 | 32.7 144 - 1 53.2 | 119 | 244 52.5 | 11 8.5 | 66 53.7 - 8 53.1 | | |
| 12 | 321 | 39.5 145 - 1 29.3 | 119 | 274 57.0 | 11 8.7 | 96 58.6 - 8 53.1 | | |
| 14 | 350 | 46.6 146 - 1 5.4 | 119 | 305 1.4 | 11 8.9 | 127 3.4 - 8 53.1 | | |
| 16 | 19 | 53.7 146 - 0 41.6 | 119 | 335 5.9 | 11 9.1 | 157 8.2 - 8 53.1 | | |
| 18 | 49 | 1.0 147 - 0 17.8 | 119 | 5 10.3 | 11 9.3 | 187 13.0 - 8 53.2 | | |
| 20 | 78 | 8.3 147 - 0 6.0 | 119 | 35 14.8 | 11 9.5 | 217 17.8 - 8 53.2 | | |
| 22 | 107 | 15.8 148 - 0 29.7 | 118 | 65 19.2 | 11 9.7 | 247 22.7 - 8 53.2 | | |
| Δ | - | 1 | | | 22 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | | | h min | min | / | | |
| 00 | -12 20.0 | -.6 | 16.3 | T _{m̄} | 14 38 | 1.8 | 55.9 | 15.2 | |
| 12 | -12 26.7 | T _{m̄} | 12 h 12.5 min | Starost | 2.7 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 14 45 | .1 | 14 | -3.8 | 4 | 17 39 | .0 | 330 | -2.0 |
| ♂ | 3 21 | .1 | 185 | -.6 | h | 5 33 | .0 | 152 | -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 51.6 -18 | 39.7 | 125 | 41.0 | 138 | 39.8 - 6 | 48.7 |
| 2 | 206 | 51.4 -18 | 38.4 | 155 | 45.9 | 168 | 39.3 - 6 | 46.2 |
| 4 | 236 | 51.1 -18 | 37.2 | 185 | 50.8 | 198 | 38.7 - 6 | 43.7 |
| 6 | 266 | 50.8 -18 | 35.9 | 215 | 55.8 | 228 | 38.2 - 6 | 41.1 |
| 8 | 296 | 50.6 -18 | 34.6 | 246 | 57 | 258 | 37.6 - 6 | 38.6 |
| 10 | 326 | 50.3 -18 | 33.3 | 276 | 5.6 | 288 | 37.1 - 6 | 36.1 |
| 12 | 356 | 50.0 -18 | 32.0 | 306 | 10.5 | 318 | 36.5 - 6 | 33.5 |
| 14 | 26 | 49.8 -18 | 30.8 | 336 | 15.5 | 348 | 36.0 - 6 | 31.0 |
| 16 | 56 | 49.5 -18 | 29.5 | 6 | 20.4 | 18 | 35.4 - 6 | 28.4 |
| 18 | 86 | 49.3 -18 | 28.2 | 36 | 25.3 | 48 | 34.9 - 6 | 25.9 |
| 20 | 116 | 49.0 -18 | 26.9 | 66 | 30.3 | 78 | 34.4 - 6 | 23.3 |
| 22 | 146 | 48.8 -18 | 25.6 | 96 | 35.2 | 108 | 33.8 - 6 | 20.8 |
| Δ | -1 | 6 | | | -3 | 13 | 25 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 26 | 15 60 | 0 49 | 2 30 | 8 53 | .4 | 22 | 8 | 3.2 |
| 55 | 8 0 | 16 26 | 0 41 | 2 8 | 8 56 | .6 | 22 | 1 | 2.9 |
| 50 | 7 41 | 16 45 | 0 36 | 1 53 | 8 58 | .8 | 21 | 56 | 2.7 |
| 45 | 7 26 | 16 60 | 0 32 | 1 42 | 9 0 | 1.0 | 21 | 52 | 2.6 |
| 40 | 7 13 | 17 12 | 0 29 | 1 34 | 9 2 | 1.1 | 21 | 49 | 2.4 |
| 35 | 7 3 | 17 23 | 0 27 | 1 27 | 9 3 | 1.2 | 21 | 46 | 2.3 |
| 30 | 6 53 | 17 32 | 0 25 | 1 23 | 9 5 | 1.3 | 21 | 43 | 2.2 |
| 20 | 6 37 | 17 49 | 0 23 | 1 16 | 9 7 | 1.5 | 21 | 39 | 2.1 |
| 10 | 6 23 | 18 3 | 0 22 | 1 13 | 9 9 | 1.6 | 21 | 35 | 1.9 |
| 0 | 6 9 | 18 16 | 0 22 | 1 13 | 9 11 | 1.8 | 21 | 31 | 1.8 |
| 10 | 5 55 | 18 30 | 0 22 | 1 15 | 9 13 | 1.9 | 21 | 28 | 1.6 |
| 20 | 5 41 | 18 44 | 0 24 | 1 20 | 9 15 | 2.1 | 21 | 24 | 1.5 |
| 30 | 5 24 | 19 1 | 0 26 | 1 30 | 9 17 | 2.2 | 21 | 19 | 1.3 |
| 35 | 5 14 | 19 11 | 0 28 | 1 38 | 9 19 | 2.3 | 21 | 17 | 1.2 |
| 40 | 5 2 | 19 23 | 0 30 | 1 49 | 9 20 | 2.5 | 21 | 14 | 1.1 |
| 45 | 4 49 | 19 36 | 0 34 | 2 7 | 9 22 | 2.6 | 21 | 10 | 1.0 |
| 50 | 4 32 | 19 52 | 0 39 | 2 39 | 9 25 | 2.8 | 21 | 6 | .8 |
| 55 | 4 11 | 20 14 | 0 47 | : :: | 9 27 | 3.0 | 21 | 2 | .7 |
| 60 | 3 41 | 20 43 | 1 2 | : :: | 9 31 | 3.2 | 20 | 55 | .4 |
| S | | | | | | | | | |

28. JANUAR

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 136 | 23.4 148 | 0 53.3 118 | 95 | 23.6 11 9.9 | 277 | 27.5 - 8 | 53.2 |
| 2 | 165 | 31.1 149 | 1 16.9 118 | 125 | 28.1 11 10.1 | 307 | 32.3 - 8 | 53.2 |
| 4 | 194 | 38.8 149 | 1 40.4 117 | 155 | 32.5 11 10.3 | 337 | 37.1 - 8 | 53.2 |
| 6 | 223 | 46.7 150 | 2 3.9 117 | 185 | 37.0 11 10.5 | 7 42.0 - 8 | 53.2 | |
| 8 | 252 | 54.6 150 | 2 27.3 116 | 215 | 41.4 11 10.7 | 37 46.8 - 8 | 53.3 | |
| 10 | 282 | 2.6 150 | 2 50.6 116 | 245 | 45.8 11 10.9 | 67 51.6 - 8 | 53.3 | |
| 12 | 311 | 10.6 150 | 3 13.8 116 | 275 | 50.3 11 11.1 | 97 56.4 - 8 | 53.3 | |
| 14 | 340 | 18.7 151 | 3 36.9 115 | 305 | 54.7 11 11.3 | 128 1.3 - 8 | 53.3 | |
| 16 | 9 | 26.8 151 | 3 59.9 115 | 335 | 59.1 11 11.5 | 158 6.1 - 8 | 53.3 | |
| 18 | 38 | 35.0 151 | 4 22.8 114 | 6 | 3.6 11 11.7 | 188 10.9 - 8 | 53.3 | |
| 20 | 67 | 43.2 151 | 4 45.7 113 | 36 | 8.0 11 11.9 | 218 15.8 - 8 | 53.3 | |
| 22 | 96 | 51.4 151 | 5 8.3 113 | 66 | 12.4 11 12.1 | 248 20.6 - 8 | 53.3 | |
| Δ | -1 | 7 | | | 22 | 1 | 24 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 24 | 16 2 | 0 49 | 2 29 | 9 2 | .4 | 23 | 25 | 3.2 |
| 55 | 7 59 | 16 28 | 0 41 | 2 8 | 9 11 | .7 | 23 | 12 | 2.9 |
| 50 | 7 40 | 16 46 | 0 35 | 1 53 | 9 18 | .9 | 23 | 2 | 2.7 |
| 45 | 7 25 | 17 1 | 0 32 | 1 42 | 9 24 | 1.0 | 22 | 54 | 2.5 |
| 40 | 7 13 | 17 14 | 0 29 | 1 34 | 9 28 | 1.1 | 22 | 48 | 2.4 |
| 35 | 7 2 | 17 24 | 0 27 | 1 27 | 9 32 | 1.3 | 22 | 42 | 2.3 |
| 30 | 6 53 | 17 33 | 0 25 | 1 23 | 9 36 | 1.3 | 22 | 37 | 2.2 |
| 20 | 6 37 | 17 49 | 0 23 | 1 16 | 9 42 | 1.5 | 22 | 28 | 2.1 |
| 10 | 6 23 | 18 3 | 0 22 | 1 13 | 9 48 | 1.7 | 22 | 21 | 1.9 |
| 0 | 6 9 | 18 16 | 0 22 | 1 12 | 9 53 | 1.8 | 22 | 14 | 1.8 |
| 10 | 5 56 | 18 30 | 0 22 | 1 15 | 9 59 | 1.9 | 22 | 7 | 1.7 |
| 20 | 5 41 | 18 44 | 0 24 | 1 20 | 10 5 | 2.1 | 21 | 60 | 1.5 |
| 30 | 5 25 | 19 1 | 0 26 | 1 30 | 10 11 | 2.2 | 21 | 51 | 1.4 |
| 35 | 5 15 | 19 11 | 0 28 | 1 38 | 10 15 | 2.3 | 21 | 46 | 1.3 |
| 40 | 5 3 | 19 22 | 0 30 | 1 49 | 10 19 | 2.4 | 21 | 41 | 1.2 |
| 45 | 4 50 | 19 35 | 0 34 | 2 6 | 10 25 | 2.6 | 21 | 34 | 1.1 |
| 50 | 4 34 | 19 51 | 0 39 | 2 37 | 10 31 | 2.7 | 21 | 27 | .9 |
| 55 | 4 13 | 20 12 | 0 47 | : :: | 10 38 | 2.9 | 21 | 17 | .7 |
| 60 | 3 44 | 20 40 | 1 1 | : :: | 10 48 | 3.2 | 21 | 5 | .5 |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | | |
|----|----------------|----------|----------------|-----|----------------|----------------|------|
| | S _⊖ | Δ | S _⊕ | Δ | S _⊖ | Δ _⊖ | |
| h | o | / | o | / | o | / | |
| 0 | 125 | 59.7 151 | 5 30.9 112 | 96 | 16.8 11 12.3 | 278 25.4 - 8 | 53.4 |
| 2 | 155 | 8.0 151 | 5 53.4 112 | 126 | 21.3 11 12.5 | 308 30.3 - 8 | 53.4 |
| 4 | 184 | 16.2 151 | 6 15.7 111 | 156 | 25.7 11 12.7 | 338 35.1 - 8 | 53.4 |
| 6 | 213 | 24.5 151 | 6 37.9 110 | 186 | 30.1 11 12.9 | 8 39.9 - 8 | 53.4 |
| 8 | 242 | 32.8 151 | 6 59.9 110 | 216 | 34.5 11 13.1 | 38 44.8 - 8 | 53.4 |
| 10 | 272 | 41.0 151 | 7 21.8 109 | 246 | 39.0 11 13.3 | 68 49.6 - 8 | 53.4 |
| 12 | 300 | 49.2 151 | 7 43.6 108 | 276 | 43.4 11 13.5 | 98 54.4 - 8 | 53.4 |
| 14 | 328 | 57.5 151 | 8 5.2 107 | 306 | 47.8 11 13.8 | 128 59.3 - 8 | 53.4 |
| 16 | 355 | 5.6 151 | 8 26.6 106 | 336 | 52.2 11 14.0 | 159 4.1 - 8 | 53.4 |
| 18 | 28 | 13.8 151 | 8 47.9 106 | 6 | 56.6 11 14.2 | 189 8.9 - 8 | 53.5 |
| 20 | 57 | 21.9 150 | 9 9.0 105 | 37 | 1.0 11 14.4 | 219 13.8 - 8 | 53.5 |
| 22 | 86 | 29.9 150 | 9 30.0 104 | 67 | 5.5 11 14.6 | 249 18.6 - 8 | 53.5 |
| Δ | - | - | 22 | 1 | 24 | 0 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 26 | 15 60 | 0 49 | 2 30 | 8 53 | .4 | 22 | 8 | 3.2 |
| 55 | 8 0 | 16 26 | 0 41 | 2 8 | 8 56 | .6 | 22 | 1 | 2.9 |
| 50 | 7 41 | 16 45 | 0 36 | 1 53 | 8 58 | .8 | 21 | 56 | 2.7 |
| 45 | 7 26 | 16 60 | 0 32 | 1 42 | 9 0 | 1.0 | 21 | 52 | 2.6 |
| 40 | 7 13 | 17 12 | 0 29 | 1 34 | 9 2 | 1.1 | 21 | 49 | 2.4 |
| 35 | 7 3 | 17 23 | 0 27 | 1 27 | 9 3 | 1.2 | 21 | 46 | 2.3 |
| 30 | 6 53 | 17 32 | 0 25 | 1 23 | 9 36 | 1.3 | 21 | 43 | 2.2 |
| 20 | 6 37 | 17 49 | 0 23 | 1 | | | | | |

29. JANUAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|--------------|---------------|-------------------------------|--------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 45.6 -18 | 8.6 | 127 39.2 | 138 27.0 - 5 | 47.6 | 312 39.6 | 6 14.6 |
| 2 | 206 45.4 -18 | 7.3 | 157 44.2 | 168 26.5 - 5 | 45.1 | 342 44.8 | 6 14.9 |
| 4 | 236 45.1 -18 | 6.0 | 187 49.1 | 198 25.9 - 5 | 42.5 | 12 50.0 | 6 15.1 |
| 6 | 266 44.9 -18 | 4.6 | 217 54.0 | 228 25.4 - 5 | 40.0 | 42 55.2 | 6 15.4 |
| 8 | 296 44.7 -18 | 3.3 | 247 59.0 | 258 24.9 - 5 | 37.4 | 73 .3 | 6 15.7 |
| 10 | 326 44.4 -18 | 2.0 | 278 3.9 | 288 24.4 - 5 | 34.8 | 103 5.5 | 6 15.9 |
| 12 | 356 44.2 -18 | .6 | 308 8.8 | 318 23.9 - 5 | 32.3 | 133 10.7 | 6 16.2 |
| 14 | 26 44.0 -17 | 59.3 | 338 13.7 | 348 23.4 - 5 | 29.7 | 163 15.9 | 6 16.5 |
| 16 | 56 43.8 -17 | 57.9 | 8 18.7 | 18 22.9 - 5 | 27.2 | 193 21.1 | 6 16.7 |
| 18 | 86 43.6 -17 | 56.6 | 38 23.6 | 48 22.4 - 5 | 24.6 | 223 26.3 | 6 17.0 |
| 20 | 116 43.3 -17 | 55.3 | 68 28.5 | 78 21.9 - 5 | 22.0 | 253 31.5 | 6 17.3 |
| 22 | 146 43.1 -17 | 53.9 | 98 33.5 | 108 21.4 - 5 | 19.5 | 283 36.8 | 6 17.5 |
| Δ | -1 | 7 | | -3 | 13 | 26 | 1 |

| φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|-----------|-------------------------|-----------------|------------------|-----------------|-------------|------------------|-------|-------------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 22 | 16 5 | 0 48 | 2 29 | 9 13 | .5 | ... | .0 |
| 55 | 7 57 | 16 30 | 0 41 | 2 7 | 9 27 | .8 | ... | .0 |
| 50 | 7 39 | 16 48 | 0 35 | 1 52 | 9 39 | 1.0 | ... | .0 |
| 45 | 7 24 | 17 3 | 0 32 | 1 42 | 9 48 | 1.1 | 23 55 | 2.5 |
| 40 | 7 12 | 17 15 | 0 29 | 1 33 | 9 56 | 1.2 | 23 46 | 2.4 |
| 35 | 7 1 | 17 25 | 0 27 | 1 27 | 10 3 | 1.3 | 23 38 | 2.3 |
| 30 | 6 52 | 17 34 | 0 25 | 1 22 | 10 8 | 1.4 | 23 30 | 2.2 |
| 20 | 6 37 | 17 50 | 0 23 | 1 16 | 10 19 | 1.6 | 23 18 | 2.1 |
| 10 | 6 23 | 18 4 | 0 22 | 1 13 | 10 28 | 1.7 | 23 7 | 2.0 |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 10 36 | 1.8 | 22 57 | 1.9 |
| 10 | 5 56 | 18 30 | 0 22 | 1 10 | 10 54 | 1.9 | 22 47 | 1.7 |
| 20 | 5 42 | 18 44 | 0 23 | 1 20 | 11 5 | 2.1 | 22 37 | 1.6 |
| 30 | 5 25 | 19 0 | 0 26 | 1 29 | 11 5 | 2.2 | 22 24 | 1.5 |
| S | | | | | | | | |
| SUNCE | | | | | | | | |
| UT | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{f} | t | |
| h | min | s | / | h min | min | / | / | |
| 00 | -12 57.4 | -.5 | 16.3 | T _{m̄} | 16 47 | 1.8 | 54.5 | 14.8 |
| 12 | -13 2.8 | T _{m̄} | 12 h 13.1 min | Starost | 5.7 d | Faza | ● | |

PLANETE

| Pl. | $T_{\bar{m}}$ | π | 360 - α | Vel. | Pl. | $T_{\bar{m}}$ | π | 360 - α | Vel. |
|-----|---------------|-------|----------------|------|-----|---------------|-------|----------------|------|
| | | | | | | | | | |
| Q | 14 46 | .1 | 11 | -3.8 | 4 | 17 29 | .0 | 330 | -1.9 |
| O | 3 9 | .1 | 185 | -.7 | h | 5 22 | .0 | 152 | -.8 |

30. JANUAR

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|--------------|---------------|-------------------------------|--------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 42.9 -17 | 52.6 | 128 38.4 | 138 20.9 - 5 | 16.9 | 313 42.0 | 6 17.8 |
| 2 | 206 42.7 -17 | 51.2 | 158 43.3 | 168 20.4 - 5 | 14.3 | 343 47.2 | 6 18.1 |
| 4 | 236 42.5 -17 | 49.9 | 188 48.2 | 198 19.9 - 5 | 11.7 | 13 52.5 | 6 18.4 |
| 6 | 266 42.3 -17 | 48.5 | 218 53.2 | 228 19.4 - 5 | 9.2 | 43 57.7 | 6 18.7 |
| 8 | 296 42.0 -17 | 47.2 | 248 58.1 | 258 18.9 - 5 | 6.6 | 74 2.9 | 6 18.9 |
| 10 | 326 41.8 -17 | 45.8 | 279 3.0 | 288 18.4 - 5 | 4.0 | 104 8.2 | 6 19.2 |
| 12 | 356 41.6 -17 | 44.4 | 309 8.0 | 318 17.9 - 5 | 1.5 | 134 13.4 | 6 19.5 |
| 14 | 26 41.4 -17 | 43.1 | 339 12.9 | 348 17.4 - 4 | 58.9 | 164 18.7 | 6 19.8 |
| 16 | 56 41.2 -17 | 41.7 | 9 17.8 | 18 16.9 - 4 | 56.3 | 194 24.0 | 6 20.1 |
| 18 | 86 41.0 -17 | 40.3 | 39 22.7 | 48 16.5 - 4 | 53.7 | 224 29.2 | 6 20.4 |
| 20 | 116 40.8 -17 | 39.0 | 69 27.7 | 78 16.0 - 4 | 51.2 | 254 34.5 | 6 20.7 |
| 22 | 146 40.6 -17 | 37.6 | 99 32.6 | 108 15.5 - 4 | 48.6 | 284 39.8 | 6 21.0 |
| Δ | -1 | 7 | | -2 | 13 | 26 | 1 |

| φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|-----------|-------------------------|-----------------|------------------|---------|-----------------|------------------|-------|-------------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ | |
| N | h min | h min | h min | h min | h min | min | h min | min | |
| 60 | 8 20 | 16 7 | 0 48 | 2 28 | 9 26 | .7 | 0 41 | 3.1 | |
| 55 | 7 55 | 16 32 | 0 40 | 2 7 | 9 46 | 1.0 | 0 22 | 2.9 | |
| 50 | 7 37 | 16 50 | 0 35 | 1 52 | 10 2 | 1.1 | 0 7 | 2.7 | |
| 45 | 7 23 | 17 4 | 0 32 | 1 41 | 10 15 | 1.3 | ... | 0 | |
| 40 | 7 11 | 17 16 | 0 29 | 1 33 | 10 26 | 1.4 | ... | 0 | |
| 35 | 7 1 | 17 26 | 0 27 | 1 27 | 10 35 | 1.5 | ... | 0 | |
| 30 | 6 52 | 17 35 | 0 25 | 1 22 | 10 43 | 1.5 | ... | 0 | |
| 20 | 6 36 | 17 50 | 0 23 | 1 16 | 10 56 | 1.7 | ... | 0 | |
| 10 | 6 23 | 18 4 | 0 22 | 1 13 | 11 9 | 1.8 | 23 55 | 2.0 | |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 11 20 | 1.9 | 23 42 | 1.9 | |
| 10 | 5 57 | 18 30 | 0 22 | 1 14 | 11 32 | 2.0 | 23 29 | 1.8 | |
| 20 | 5 43 | 18 44 | 0 23 | 1 19 | 11 44 | 2.1 | 23 15 | 1.7 | |
| 30 | 5 26 | 18 60 | 0 26 | 1 29 | 11 58 | 2.2 | 22 66 | 1.6 | |
| 35 | 5 17 | 19 9 | 0 28 | 1 37 | 12 6 | 2.3 | 22 51 | 1.5 | |
| 40 | 5 6 | 19 20 | 0 30 | 1 48 | 12 16 | 2.4 | 22 41 | 1.5 | |
| 45 | 4 53 | 19 33 | 0 34 | 2 4 | 12 27 | 2.5 | 22 29 | 1.4 | |
| 50 | 4 37 | 19 48 | 0 38 | 2 33 | 12 40 | 2.6 | 22 14 | 1.2 | |
| 55 | 4 17 | 20 8 | 0 46 | 2 4 | 12 57 | 2.8 | 21 56 | 1.1 | |
| 60 | 3 49 | 20 35 | 0 59 | 3 13 | 20 3.1 | 21 31 | | | |
| S | | | | | | | | | |
| SUNCE | | | | | | | | | |
| UT | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{f} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | -13 | 8.2 | -.4 | 16.3 | T _{m̄} | 17 31 | 1.9 | 54.3 | 14.8 |
| 12 | -13 13.2 | T _{m̄} | 12 h 13.2 min | Starost | 6.7 d | Faza | ● | | |

PLANETE

| Pl. | $T_{\bar{m}}$ | π | 360 - α | Vel. | Pl. | $T_{\bar{m}}$ | π | 360 - α | Vel. |
|-----|---------------|-------|----------------|------|-----|---------------|-------|----------------|------|
| | | | | | | | | | |
| Q | 14 47 | .1 | 10 | -3.8 | 4 | 17 25 | .0 | 329 | -1.9 |
| O | 3 5 | .1 | 185 | -.7 | h | 5 18 | .0 | 152 | -.8 |

31. JANUAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 40.4 -17 36.2 | 129 37.5 | 138 15.0 - 4 46.0 | 314 45.1 6 21.3 | | | | |
| 2 | 206 40.2 -17 34.8 | 159 42.5 | 168 14.5 - 4 43.4 | 344 50.4 6 21.6 | | | | |
| 4 | 236 40.0 -17 33.5 | 189 47.4 | 198 14.0 - 4 40.8 | 14 55.7 6 21.9 | | | | |
| 6 | 266 39.8 -17 32.1 | 219 52.3 | 228 13.6 - 4 38.3 | 45 1.0 6 22.2 | | | | |
| 8 | 296 39.6 -17 30.7 | 249 57.2 | 258 13.1 - 4 35.7 | 75 6.3 6 22.5 | | | | |
| 10 | 326 39.4 -17 29.3 | 280 2.2 | 288 12.6 - 4 33.1 | 105 11.6 6 22.8 | | | | |
| 12 | 356 39.2 -17 27.9 | 310 7.1 | 318 12.1 - 4 30.5 | 135 16.9 6 23.1 | | | | |
| 14 | 386 39.0 -17 26.5 | 340 12.0 | 348 11.7 - 4 27.9 | 165 22.2 6 23.5 | | | | |
| 16 | 55 38.8 -17 25.1 | 10 17.0 | 18 11.2 - 4 24.8 | 195 27.5 6 23.8 | | | | |
| 18 | 86 38.7 -17 23.7 | 40 21.9 | 48 10.7 - 4 22.8 | 225 32.9 6 24.1 | | | | |
| 20 | 116 38.5 -17 22.3 | 70 26.8 | 78 10.3 - 4 20.2 | 255 38.2 6 24.4 | | | | |
| 22 | 146 38.3 -17 20.9 | 100 31.7 | 108 9.8 - 4 17.6 | 285 43.6 6 24.7 | | | | |
| Δ | -1 | 7 | | -2 | 13 | | 27 | 2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----------------|-------------------------|-----------------|---------------------|-----------------|--------|-----------------|-------|---------|---------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 18 | 16 10 | 0 48 | 2 28 | 9 42 | 1.0 | 1 56 | 3.0 | |
| 55 | 7 54 | 16 34 | 0 40 | 2 7 | 10 10 | 1.2 | 1 30 | 2.8 | |
| 50 | 7 36 | 16 51 | 0 35 | 1 52 | 10 30 | 1.4 | 1 11 | 2.6 | |
| 45 | 7 22 | 17 6 | 0 31 | 1 41 | 10 46 | 1.5 | 0 56 | 2.5 | |
| 40 | 7 10 | 17 17 | 0 29 | 1 33 | 10 59 | 1.6 | 0 44 | 2.4 | |
| 35 | 7 0 | 17 27 | 0 27 | 1 27 | 11 10 | 1.6 | 0 33 | 2.3 | |
| 30 | 6 51 | 17 36 | 0 25 | 1 22 | 11 20 | 1.7 | 0 24 | 2.2 | |
| 20 | 6 36 | 17 51 | 0 23 | 1 16 | 11 37 | 1.8 | 0 8 | 2.1 | |
| 10 | 6 23 | 18 4 | 0 22 | 1 13 | 11 51 | 1.9 | ... . | 0 | |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 12 5 | 2.0 | ... . | 0 | |
| 10 | 5 57 | 18 30 | 0 22 | 1 14 | 12 19 | 2.0 | ... . | 0 | |
| 20 | 5 43 | 18 43 | 0 23 | 1 19 | 12 34 | 2.1 | 23 57 | 1.9 | |
| 30 | 5 27 | 18 59 | 0 26 | 1 29 | 12 52 | 2.2 | 23 39 | 1.8 | |
| S | | | | | | | | | |
| SUNCE | | | | | | | | | MJESEC |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _{ll} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | -13 18.2 | .4 | 16.3 | T _{m̄} | 18 17 | 2.0 | 54.2 | 14.8 | |
| 12 | -13 22.8 | T _{m̄} | 12 h 13.4 min | Starost | 7.7 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| φ | 14 47 | .1 | 9 | -3.8 | 4 | 17 22 | .0 | 329 | -1.9 |
| δ | 3 0 | .1 | 185 | -.7 | h | 5 14 | .0 | 152 | -.8 |

1. FEBRUAR

SRJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 94 19.9 135 | 17 4.5 | 74 | 98 55.5 11 19.9 | 281 19.8 - 8 53.6 | | | |
| 2 | 123 24.9 134 | 17 19.3 | 73 | 128 59.8 11 20.1 | 311 24.7 - 8 53.6 | | | |
| 4 | 152 29.7 133 | 17 33.9 | 71 | 159 4.2 11 20.3 | 341 29.5 - 8 53.6 | | | |
| 6 | 181 34.3 132 | 17 48.2 | 70 | 189 8.6 11 20.6 | 11 34.4 - 8 53.6 | | | |
| 8 | 210 38.8 132 | 18 2.2 | 68 | 219 13.0 11 20.8 | 41 39.3 - 8 53.6 | | | |
| 10 | 239 43.1 131 | 18 15.9 | 67 | 249 17.4 11 21.0 | 71 44.1 - 8 53.6 | | | |
| 12 | 268 47.3 130 | 18 29.2 | 65 | 275 21.8 11 21.4 | 101 49.0 - 8 53.6 | | | |
| 14 | 297 51.2 129 | 18 42.3 | 64 | 309 26.1 11 21.4 | 131 53.8 - 8 53.6 | | | |
| 16 | 326 55.0 128 | 18 55.0 | 62 | 339 30.5 11 21.7 | 161 58.7 - 8 53.6 | | | |
| 18 | 355 58.5 127 | 19 7.4 | 60 | 9 34.9 11 21.9 | 192 3.6 - 8 53.6 | | | |
| 20 | 25 1.9 126 | 19 19.4 | 59 | 39 39.3 11 22.1 | 222 8.4 - 8 53.6 | | | |
| 22 | 54 5.1 125 | 19 31.2 | 57 | 69 43.6 11 22.3 | 252 13.3 - 8 53.6 | | | |
| Δ | -1 | 7 | | 22 | 1 | | 24 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----------------|-------------------------|-----------------|---------------------|-----------------|--------|-----------------|-------|---------|---------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 15 | 16 13 | 0 48 | 2 27 | 10 6 | 1.4 | 3 9 | 2.8 | |
| 55 | 7 52 | 16 36 | 0 40 | 2 6 | 10 39 | 1.6 | 2 37 | 2.6 | |
| 50 | 7 34 | 16 53 | 0 35 | 1 52 | 11 3 | 1.7 | 2 13 | 2.5 | |
| 45 | 7 21 | 17 7 | 0 31 | 1 41 | 11 21 | 1.7 | 1 55 | 2.4 | |
| 40 | 7 9 | 17 18 | 0 29 | 1 33 | 11 36 | 1.8 | 1 41 | 2.3 | |
| 35 | 6 59 | 17 28 | 0 27 | 1 27 | 11 49 | 1.8 | 1 28 | 2.3 | |
| 30 | 6 51 | 17 37 | 0 25 | 1 22 | 12 1 | 1.9 | 1 18 | 2.2 | |
| 20 | 6 36 | 17 52 | 0 23 | 1 16 | 12 20 | 2.0 | 0 59 | 2.1 | |
| 10 | 6 23 | 18 5 | 0 22 | 1 13 | 12 37 | 2.0 | 0 43 | 2.1 | |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 12 53 | 2.1 | 0 28 | 2.0 | |
| 10 | 5 57 | 18 30 | 0 22 | 1 14 | 13 9 | 2.1 | 0 13 | 1.9 | |
| 20 | 5 44 | 18 43 | 0 23 | 1 19 | 13 26 | 2.1 | ... . | 0 | |
| 30 | 5 28 | 18 59 | 0 26 | 1 29 | 13 45 | 2.2 | ... . | 0 | |
| 35 | 5 19 | 19 8 | 0 28 | 1 36 | 13 57 | 2.2 | ... . | 0 | |
| 40 | 5 8 | 19 18 | 0 30 | 1 47 | 14 10 | 2.3 | 23 56 | 1.9 | |
| 45 | 4 56 | 19 30 | 0 33 | 2 3 | 14 26 | 2.3 | 23 40 | 1.9 | |
| 50 | 4 41 | 19 45 | 0 38 | 2 29 | 14 45 | 2.4 | 23 20 | 1.8 | |
| 55 | 4 21 | 20 5 | 0 45 | 2 33 | 15 2.5 | 2.5 | 22 54 | 1.8 | |
| 60 | 3 55 | 20 31 | 0 58 | 2 33 | 15 46 | 2.6 | 22 18 | 1.6 | |
| SUNCE | | | | | | | | | MJESEC |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _{ll} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | -13 27.4 | .3 | 16.3 | T _{m̄} | 19 | 2.1 | 54.4 | 14.8 | |
| 12 | -13 31.6 | T _{m̄} | 12 h 13.5 min | Starost | 8.7 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| φ | 14 48 | .1 | 8 | -3.8 | 4 | 17 18 | .0 | 329 | -1.9 |
| δ | 2 56 | .1 | 185 | -.7 | h | 5 10 | .0 | 152 | -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 36.0 -17 2.6 | 131 35.8 | 138 3.9 - 3 43.9 | 316 53.5 6 29.1 | | | | |
| 2 | 206 35.9 -17 1.1 | 161 40.7 | 168 3.4 - 3 41.3 | 346 58.9 6 29.5 | | | | |
| 4 | 236 35.7 -16 59.7 | 191 45.7 | 198 3.0 - 3 38.7 | 17 4.3 6 29.8 | | | | |
| 6 | 266 35.5 -16 58.3 | 221 50.6 | 228 2.5 - 3 36.1 | 47 9.7 6 30.2 | | | | |
| 8 | 296 35.4 -16 56.9 | 251 55.5 | 258 2.1 - 3 33.5 | 77 15.1 6 30.5 | | | | |
| 10 | 326 35.2 -16 55.4 | 282 .4 | 288 1.7 - 3 30.9 | 107 20.6 6 30.9 | | | | |
| 12 | 356 35.1 -16 54.0 | 312 5.4 | 318 1.2 - 3 28.3 | 137 26.0 6 31.2 | | | | |
| 14 | 26 34.9 -16 52.5 | 342 10.3 | 348 1.8 - 3 25.7 | 167 31.5 6 31.6 | | | | |
| 16 | 56 34.8 -16 51.1 | 12 15.2 | 18 .3 - 3 23.1 | 197 36.9 6 32.0 | | | | |
| 18 | 86 34.6 -16 49.7 | 42 20.2 | 47 59.9 - 3 20.5 | 227 42.4 6 32.3 | | | | |
| 20 | 116 34.4 -16 48.2 | 72 25.1 | 77 59.5 - 3 17.9 | 257 47.8 6 32.7 | | | | |
| 22 | 146 34.3 -16 46.8 | 102 30.0 | 107 59.0 - 3 15.3 | 287 53.3 6 33.1 | | | | |
| Δ | -1 | 7 | -2 | 13 | 27 | 2 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 13 | 16 15 | 0 47 | 2 27 | 10 39 | 1.9 | 4 16 | 2.4 | |
| 55 | 7 50 | 16 38 | 0 40 | 2 6 | 11 16 | 2.0 | 3 39 | 2.3 | |
| 50 | 7 33 | 16 55 | 0 35 | 1 51 | 11 43 | 2.0 | 3 13 | 2.3 | |
| 45 | 7 19 | 17 8 | 0 31 | 1 41 | 12 31 | 2.1 | 2 53 | 2.2 | |
| 40 | 7 8 | 17 20 | 0 29 | 1 33 | 12 20 | 2.1 | 2 38 | 2.2 | |
| 35 | 6 59 | 17 29 | 0 27 | 1 27 | 12 34 | 2.1 | 2 23 | 2.2 | |
| 30 | 6 50 | 17 38 | 0 25 | 1 22 | 12 46 | 2.1 | 2 11 | 2.2 | |
| 20 | 6 35 | 17 52 | 0 23 | 1 16 | 13 7 | 2.1 | 1 50 | 2.1 | |
| 10 | 6 22 | 18 5 | 0 22 | 1 12 | 13 25 | 2.1 | 1 33 | 2.1 | |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 13 42 | 2.1 | 1 16 | 2.1 | |
| 10 | 5 58 | 18 29 | 0 22 | 1 14 | 13 59 | 2.1 | 0 60 | 2.1 | |
| 20 | 5 44 | 18 43 | 0 23 | 1 19 | 14 17 | 2.1 | 0 42 | 2.0 | |
| 30 | 5 29 | 18 58 | 0 26 | 1 28 | 14 38 | 2.1 | 0 22 | 2.0 | |
| 35 | 5 20 | 19 7 | 0 27 | 1 36 | 14 51 | 2.2 | 0 10 | 2.0 | |
| 40 | 5 10 | 19 17 | 0 30 | 1 46 | 15 5 | 2.2 | .. .. | .. .. |  |
| 45 | 4 57 | 19 29 | 0 33 | 2 2 | 15 22 | 2.2 | .. .. | .. .. |  |
| 50 | 4 42 | 19 44 | 0 38 | 2 28 | 15 43 | 2.2 | .. .. | .. .. |  |
| 55 | 4 23 | 20 3 | 0 45 | 3 43 | 16 10 | 2.2 | 23 37 | 2.2 | |
| 60 | 3 57 | 20 28 | 0 57 | : :: | 16 49 | 2.2 | 22 58 | 2.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 71 29.2 113 21 30.7 | 33 | 100 40.4 11 25.2 | 283 16.6 - 8 53.6 | | | | |
| 2 | 100 29.8 112 21 37.2 | 31 | 130 44.8 11 25.5 | 313 21.5 - 8 53.6 | | | | |
| 4 | 129 30.1 111 21 43.3 | 29 | 160 49.1 11 25.7 | 343 26.3 - 8 53.6 | | | | |
| 6 | 158 30.3 110 21 49.0 | 26 | 190 53.5 11 25.9 | 13 31.2 - 8 53.6 | | | | |
| 8 | 187 30.3 109 21 54.3 | 24 | 220 57.8 11 26.1 | 43 36.1 - 8 53.6 | | | | |
| 10 | 216 30.2 108 21 59.2 | 22 | 251 2.2 11 26.4 | 73 41.0 - 8 53.6 | | | | |
| 12 | 245 29.8 107 22 3.6 | 20 | 281 6.6 11 26.6 | 103 45.8 - 8 53.6 | | | | |
| 14 | 274 29.3 107 22 7.6 | 18 | 311 10.9 11 26.8 | 133 50.7 - 8 53.6 | | | | |
| 16 | 303 28.7 106 22 11.2 | 16 | 341 15.3 11 27.0 | 163 55.6 - 8 53.6 | | | | |
| 18 | 332 27.8 105 22 14.4 | 14 | 11 19.6 11 27.3 | 194 .5 - 8 53.6 | | | | |
| 20 | 1 26.9 104 22 17.1 | 11 | 41 24.0 11 27.5 | 224 5.4 - 8 53.6 | | | | |
| 22 | 30 25.7 104 22 19.4 | 9 | 71 28.3 11 27.7 | 254 10.2 - 8 53.5 | | | | |
| Δ | -1 | 7 | 22 | 1 | 24 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | -13 35.7 | .3 | 16.3 | T _{m̄} | 19 54 | 2.1 | 54.7 | 14.9 | |
| 12 | -13 39.5 | T _{m̄} | 12 h 13.7 min | Starost | 9.7 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-ɔ | Vel. | Pl. | T _{m̄} | π | 360-ɔ | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 14 48 | .1 | 6 | -3.8 | 4 | 17 15 | .0 | 329 | -1.9 |
| ♂ | 2 52 | .1 | 185 | -7 | h | 5 6 | .0 | 152 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 59 24.5 103 22 21.2 | 7 | 101 32.7 11 28.0 | 284 15.1 - 8 53.5 | | | | |
| 2 | 88 23.0 102 22 22.6 | 5 | 131 37.0 11 28.2 | 314 20.0 - 8 53.5 | | | | |
| 4 | 117 21.5 102 22 23.6 | 3 | 161 41.3 11 28.4 | 344 24.9 - 8 53.5 | | | | |
| 6 | 146 19.8 101 22 24.1 | 0 | 191 45.7 11 28.7 | 14 29.8 - 8 53.5 | | | | |
| 8 | 175 18.0 100 22 24.1 | -2 | 221 50.0 11 28.9 | 44 34.7 - 8 53.5 | | | | |
| 10 | 204 16.0 100 22 23.7 | -4 | 251 54.4 11 29.1 | 74 39.5 - 8 53.5 | | | | |
| 12 | 233 14.0 99 22 22.8 | -7 | 281 58.7 11 29.3 | 104 44.4 - 8 53.5 | | | | |
| 14 | 262 11.8 99 22 21.5 | -9 | 312 3.1 11 29.6 | 134 49.3 - 8 53.5 | | | | |
| 16 | 291 9.5 98 22 19.7 | -11 | 342 7.4 11 29.8 | 164 54.2 - 8 53.5 | | | | |
| 18 | 320 7.1 98 22 17.4 | -14 | 12 11.7 11 30.0 | 194 59.1 - 8 53.5 | | | | |
| 20 | 349 4.6 97 22 14.7 | -16 | 42 16.1 11 30.3 | 225 4.0 - 8 53.5 | | | | |
| 22 | 18 2.1 97 22 11.5 | -18 | 72 20.4 11 30.5 | 255 8.9 - 8 53.4 | | | | |
| Δ | 22 | 1 | 24 | 0 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | -13 43.2 | .3 | 16.3 | T _{m̄} | 20 45 | 2.2 | 55.1 | 15.0 | |
| 12 | -13 46.6 | T _{m̄} | 12 h 13.8 min | Starost | 10.7 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-ɔ | Vel. | Pl. | T _{m̄} | π | 360-ɔ | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 14 48 | .1 | 5 | -3.9 | 4 | 17 11 | .0 | 329 | -1.9 |
| ♂ | 2 48 | .1 | 185 | -7 | h | 5 2 | .0 | 152 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 32.5 -16 | 27.7 | 133 34.1 | 137 53.5 - 2 | 41.5 | 319 4.8 | 6 38.0 | |
| 2 | 206 32.4 -16 | 26.3 | 163 39.0 | 167 53.1 - 2 | 38.9 | 349 10.3 | 6 38.4 | |
| 4 | 236 32.2 -16 | 24.8 | 193 43.9 | 197 52.7 - 2 | 36.3 | 19 15.9 | 6 38.8 | |
| 6 | 266 32.1 -16 | 23.3 | 223 48.9 | 227 52.3 - 2 | 33.7 | 49 21.4 | 6 39.2 | |
| 8 | 296 32.0 -16 | 21.8 | 253 53.8 | 257 51.9 - 2 | 31.1 | 79 27.0 | 6 39.6 | |
| 10 | 326 31.8 -16 | 20.3 | 283 58.7 | 287 51.5 - 2 | 28.4 | 109 32.5 | 6 40.0 | |
| 12 | 356 31.7 -16 | 18.9 | 314 3.7 | 317 51.0 - 2 | 25.8 | 139 38.1 | 6 40.5 | |
| 14 | 386 31.6 -16 | 17.4 | 344 8.6 | 347 50.6 - 2 | 23.2 | 169 43.7 | 6 40.9 | |
| 16 | 56 31.5 -16 | 15.9 | 14 13.5 | 17 50.2 - 2 | 20.6 | 199 49.2 | 6 41.3 | |
| 18 | 86 31.4 -16 | 14.4 | 44 18.4 | 47 49.8 - 2 | 18.0 | 229 54.8 | 6 41.7 | |
| 20 | 116 31.2 -16 | 12.9 | 74 23.4 | 77 49.4 - 2 | 15.4 | 260 4 | 6 42.1 | |
| 22 | 146 31.1 -16 | 11.4 | 104 28.3 | 107 49.0 - 2 | 12.8 | 290 6.0 | 6 42.5 | |
| Δ | -1 | 7 | | -2 | 13 | 28 | 2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 8 | 16 20 | 0 47 | 2 26 | 12 27 | 3.1 | 5 60 | 1.4 | |
| 55 | 7 46 | 16 42 | 0 39 | 2 5 | 13 31 | 2.9 | 5 23 | 1.6 | |
| 50 | 7 30 | 16 58 | 0 35 | 1 51 | 13 29 | 2.7 | 4 56 | 1.7 | |
| 45 | 7 17 | 17 11 | 0 31 | 1 40 | 13 49 | 2.6 | 4 36 | 1.8 | |
| 40 | 7 6 | 17 22 | 0 28 | 1 32 | 14 51 | 2.6 | 4 20 | 1.9 | |
| 35 | 6 57 | 17 31 | 0 26 | 1 26 | 14 19 | 2.5 | 4 6 | 1.9 | |
| 30 | 6 49 | 17 39 | 0 25 | 1 22 | 14 31 | 2.4 | 3 54 | 2.0 | |
| 20 | 6 35 | 17 53 | 0 23 | 1 15 | 14 51 | 2.3 | 3 33 | 2.1 | |
| 10 | 6 22 | 18 6 | 0 22 | 1 12 | 15 8 | 2.3 | 3 15 | 2.1 | |
| 0 | 6 10 | 18 17 | 0 22 | 1 12 | 15 25 | 2.2 | 2 58 | 2.2 | |
| 10 | 5 58 | 18 29 | 0 22 | 1 14 | 15 41 | 2.1 | 2 41 | 2.2 | |
| 20 | 5 46 | 18 42 | 0 23 | 1 18 | 15 59 | 2.0 | 2 23 | 2.3 | |
| 30 | 5 31 | 18 57 | 0 26 | 1 28 | 16 19 | 1.9 | 2 2 | 2.4 | |
| 35 | 5 22 | 19 5 | 0 27 | 1 35 | 16 31 | 1.9 | 1 49 | 2.4 | |
| 40 | 5 12 | 19 15 | 0 30 | 1 45 | 16 44 | 1.8 | 1 35 | 2.4 | |
| 45 | 5 0 | 19 27 | 0 33 | 2 0 | 17 0 | 1.7 | 1 18 | 2.5 | |
| 50 | 4 46 | 19 41 | 0 37 | 2 24 | 17 20 | 1.6 | 0 57 | 2.6 | |
| 55 | 4 28 | 19 59 | 0 44 | 3 24 | 17 45 | 1.4 | 0 30 | 2.7 | |
| 60 | 4 3 | 20 23 | 0 55 | : :: | 18 21 | 1.2 | ... . | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|-------------------|---|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 46 59.4 | 96 | 22 | 7.8 | -21 | 102 24.7 | 11 30.7 | 285 13.8 - 8 53.4 | |
| 2 | 75 56.7 | 96 | 22 | 3.7 | -23 | 132 29.1 | 11 31.0 | 315 18.6 - 8 53.4 | |
| 4 | 104 53.9 | 96 | 21 | 59.1 | -25 | 162 33.4 | 11 31.2 | 345 23.5 - 8 53.4 | |
| 6 | 133 51.0 | 95 | 21 | 54.0 | -28 | 192 37.7 | 11 31.4 | 15 48.4 - 8 53.4 | |
| 8 | 162 48.0 | 95 | 21 | 48.4 | -30 | 222 42.1 | 11 31.7 | 45 33.3 - 8 53.4 | |
| 10 | 191 45.1 | 95 | 21 | 42.4 | -33 | 252 46.4 | 11 31.9 | 75 38.2 - 8 53.4 | |
| 12 | 220 42.0 | 95 | 21 | 35.9 | -39 | 282 50.7 | 11 32.2 | 105 43.1 - 8 53.4 | |
| 14 | 249 38.9 | 94 | 21 | 28.9 | -37 | 312 55.1 | 11 32.4 | 135 48.0 - 8 53.4 | |
| 16 | 278 35.8 | 94 | 21 | 21.4 | -40 | 342 59.4 | 11 32.6 | 165 52.9 - 8 53.4 | |
| 18 | 307 32.6 | 94 | 21 | 13.5 | -42 | 13 3.7 | 11 32.9 | 195 57.8 - 8 53.3 | |
| 20 | 336 29.4 | 94 | 21 | 5.1 | -44 | 43 8.0 | 11 33.1 | 226 2.7 - 8 53.3 | |
| 22 | 5 26.2 | 94 | 20 | 56.2 | -47 | 73 12.4 | 11 33.3 | 256 7.6 - 8 53.3 | |
| Δ | -1 | 8 | | | | 22 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s | / | h min | min | / | h min | / | / | |
| 00 | -13 49.9 | .2 | 16.3 | T _{m̄} | 21 37 | 2.2 | 55.7 | 15.2 | |
| 12 | -13 52.8 | T _{m̄} | 12 h 13.9 min | Starost | 11 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 49 | .1 | 4 | -3.9 | 4 | 17 8 | .0 | 329 | -1.9 |
| ○ | 2 43 | .1 | 186 | -8 | h | 4 58 | .0 | 152 | -8 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|-------------------|---|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 34 23.0 | 94 | 20 | 46.9 | -49 | 103 16.7 | 11 33.6 | 286 12.5 - 8 53.3 | |
| 2 | 63 19.8 | 94 | 20 | 37.1 | -51 | 133 21.0 | 11 33.8 | 316 17.4 - 8 53.3 | |
| 4 | 92 16.5 | 94 | 20 | 26.8 | -54 | 163 25.3 | 11 34.0 | 346 22.3 - 8 53.3 | |
| 6 | 121 13.3 | 94 | 20 | 16.1 | -56 | 193 29.6 | 11 34.3 | 16 27.2 - 8 53.3 | |
| 8 | 150 10.1 | 94 | 20 | 4.9 | -58 | 223 34.0 | 11 34.8 | 46 32.1 - 8 53.3 | |
| 10 | 179 6.8 | 94 | 19 | 53.2 | -61 | 253 38.3 | 11 34.8 | 76 37.0 - 8 53.2 | |
| 12 | 208 3.6 | 94 | 19 | 41.1 | -63 | 283 42.6 | 11 35.0 | 106 41.9 - 8 53.2 | |
| 14 | 237 .4 | 94 | 19 | 28.5 | -65 | 313 46.9 | 11 35.2 | 136 46.8 - 8 53.2 | |
| 16 | 265 57.3 | 94 | 19 | 15.5 | -67 | 343 51.2 | 11 35.8 | 166 51.7 - 8 53.2 | |
| 18 | 294 54.2 | 95 | 19 | 2.0 | -70 | 13 55.5 | 11 35.7 | 196 56.6 - 8 53.2 | |
| 20 | 323 51.1 | 95 | 18 | 48.1 | -72 | 43 59.9 | 11 36.0 | 227 1.5 - 8 53.2 | |
| 22 | 352 48.0 | 95 | 18 | 33.7 | -74 | 74 4.2 | 11 36.2 | 257 6.4 - 8 53.1 | |
| Δ | - | | | | | 22 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s | / | h min | min | / | h min | / | / | |
| 00 | -13 55.7 | .2 | 16.3 | T _{m̄} | 22 30 | 2.2 | 56.4 | 15.4 | |
| 12 | -13 58.2 | T _{m̄} | 12 h 14.0 min | Starost | 12 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 49 | .1 | 4 | -3.9 | 4 | 17 4 | .0 | 329 | -1.9 |
| ○ | 2 39 | .1 | 186 | -8 | h | 4 54 | .0 | 152 | -8 |

6. FEBRUAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 29.8 -15 | 51.8 | | 135 | 32.4 | 137 | 43.9 - 1 |
| 2 | 206 | 29.7 -15 | 50.3 | | 165 | 37.3 | 167 | 43.5 - 1 |
| 4 | 236 | 29.6 -15 | 48.7 | | 195 | 42.2 | 197 | 43.1 - 1 |
| 6 | 266 | 29.5 -15 | 47.2 | | 225 | 47.1 | 227 | 42.7 - 1 |
| 8 | 296 | 29.4 -15 | 45.7 | | 255 | 52.1 | 257 | 42.3 - 1 |
| 10 | 326 | 29.3 -15 | 44.1 | | 285 | 57.0 | 287 | 41.9 - 1 |
| 12 | 356 | 29.2 -15 | 42.6 | | 316 | 1.9 | 317 | 41.6 - 1 |
| 14 | 26 | 29.1 -15 | 41.1 | | 346 | 6.9 | 347 | 41.2 - 1 |
| 16 | 56 | 29.0 -15 | 39.5 | | 116 | 11.8 | 17 | 40.8 - 1 |
| 18 | 86 | 29.0 -15 | 38.0 | | 46 | 16.7 | 47 | 40.4 - 1 |
| 20 | 116 | 28.9 -15 | 36.5 | | 76 | 21.6 | 77 | 40.1 - 1 |
| 22 | 146 | 28.8 -15 | 34.9 | | 106 | 26.6 | 107 | 39.7 - 1 |
| Δ | 0 | 8 | | | | -2 | 13 | 28 |
| | | | | | | | | 2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 3 | 16 26 | 0 46 | 2 25 | 15 5 | 3 7 | 6 58 | 8 | |
| 55 | 7 43 | 16 46 | 0 39 | 2 5 | 15 28 | 3 4 | 6 33 | 1 0 | |
| 57 | 7 27 | 17 2 | 0 34 | 1 51 | 15 46 | 3 1 | 6 14 | 1 3 | |
| 45 | 7 15 | 17 14 | 0 31 | 1 40 | 16 0 | 3 0 | 5 58 | 1 4 | |
| 40 | 7 4 | 17 24 | 0 28 | 1 32 | 16 12 | 2 8 | 5 46 | 1 5 | |
| 35 | 6 55 | 17 33 | 0 26 | 1 26 | 16 21 | 2 7 | 5 35 | 1 6 | |
| 30 | 6 48 | 17 41 | 0 25 | 1 21 | 16 30 | 2 6 | 5 26 | 1 7 | |
| 20 | 6 34 | 17 54 | 0 23 | 1 15 | 16 45 | 2 4 | 5 10 | 1 9 | |
| 10 | 6 22 | 18 6 | 0 22 | 1 12 | 16 57 | 2 3 | 4 56 | 2 0 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | 17 9 | 2 1 | 4 42 | 2 2 | |
| 10 | 5 59 | 18 29 | 0 22 | 1 13 | 17 21 | 2 0 | 4 29 | 2 3 | |
| 20 | 5 47 | 18 41 | 0 23 | 1 18 | 17 34 | 1 9 | 4 15 | 2 4 | |
| 30 | 5 32 | 18 55 | 0 25 | 1 27 | 17 48 | 1 7 | 3 58 | 2 6 | |
| 35 | 5 24 | 19 4 | 0 27 | 1 34 | 17 57 | 1 6 | 3 48 | 2 7 | |
| 40 | 5 14 | 19 13 | 0 29 | 1 44 | 18 6 | 1 5 | 3 37 | 2 8 | |
| 45 | 5 3 | 19 24 | 0 33 | 1 58 | 18 17 | 1 3 | 3 24 | 2 9 | |
| 50 | 4 49 | 19 38 | 0 37 | 2 21 | 18 31 | 1 2 | 3 8 | 3 1 | |
| 55 | 4 32 | 19 55 | 0 43 | 3 12 | 18 48 | 1 0 | 2 48 | 3 3 | |
| 60 | 4 9 | 20 18 | 0 54 | : :: | 19 10 | .7 | 2 20 | 3 6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 21 45.0 | 95 | 18 18.9 | -76 | 104 | 8.5 | 11 36.4 | |
| 2 | 50 42.0 | 95 | 18 3.7 | -78 | 134 | 12.8 | 11 36.7 | |
| 4 | 79 39.1 | 96 | 17 48.0 | -80 | 164 | 17.1 | 11 36.9 | |
| 6 | 108 36.2 | 96 | 17 31.9 | -82 | 194 | 21.4 | 11 37.2 | |
| 8 | 137 33.4 | 96 | 17 15.4 | -85 | 224 | 25.7 | 11 37.4 | |
| 10 | 166 30.6 | 96 | 16 58.5 | -87 | 254 | 30.0 | 11 37.7 | |
| 12 | 195 27.9 | 97 | 16 41.2 | -89 | 284 | 34.3 | 11 37.9 | |
| 14 | 224 25.2 | 97 | 16 23.5 | -91 | 314 | 38.6 | 11 38.1 | |
| 16 | 253 22.7 | 97 | 16 5.4 | -93 | 344 | 42.9 | 11 38.4 | |
| 18 | 282 20.1 | 98 | 15 46.9 | -94 | 14 47.2 | 11 38.6 | 197 | 55.5 - 8 53.0 |
| 20 | 311 17.7 | 98 | 15 28.0 | -96 | 44 51.5 | 11 38.9 | 228 | .4 - 8 53.0 |
| 22 | 340 15.3 | 98 | 15 8.7 | -98 | 74 55.8 | 11 39.1 | 258 | 5.3 - 8 52.9 |
| Δ | 0 | 8 | | | 22 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | h min min / | | | | |
| 00 | -14 .8 | .2 | 16.2 | T _{m̄} | 23 22 | 2.1 | 57.1 | 15.6 |
| 12 | -14 2.9 | T _{m̄} | 12 h 14.1 min | Starost | 13.7 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| | h min / | ° | | | h min / | ° | h min / | ° |
| ø | 14 49 .1 | 2 | -3.9 | 4 | 17 1 .0 | 329 | -1.9 | |
| ɔ | 2 34 .1 | 186 | -.8 | 450 | 4 50 .0 | 152 | .8 | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 9 13.0 | 99 | 14 49.1 | -100 | 105 .1 | 11 39.4 | 288 10.3 | - 8 52.9 |
| 2 | 38 10.7 | 99 | 14 29.1 | -102 | 135 4.4 | 11 39.6 | 318 15.2 | - 8 52.9 |
| 4 | 67 8.6 | 99 | 14 8.7 | -104 | 165 8.7 | 11 39.9 | 348 20.1 | - 8 52.9 |
| 6 | 96 6.4 | 100 | 13 48.0 | -105 | 195 13.0 | 11 40.1 | 1825.0 | - 8 52.9 |
| 8 | 125 4.4 | 100 | 13 27.0 | -107 | 225 17.3 | 11 40.4 | 48 29.9 | - 8 52.8 |
| 10 | 154 2.4 | 100 | 13 5.6 | -109 | 255 21.6 | 11 40.6 | 78 34.8 | - 8 52.8 |
| 12 | 183 .5 | 101 | 12 43.9 | -110 | 285 25.9 | 11 40.8 | 108 39.8 | - 8 52.8 |
| 14 | 211 58.7 | 101 | 12 21.8 | -112 | 315 30.2 | 11 41.1 | 138 44.7 | - 8 52.8 |
| 16 | 240 56.9 | 101 | 11 59.5 | -113 | 345 34.5 | 11 41.3 | 168 49.6 | - 8 52.8 |
| 18 | 269 55.2 | 102 | 11 36.9 | -115 | 15 38.8 | 11 41.6 | 198 54.5 | - 8 52.7 |
| 20 | 298 53.6 | 102 | 11 13.9 | -116 | 45 43.1 | 11 41.8 | 228 59.4 | - 8 52.7 |
| 22 | 327 52.0 | 102 | 10 50.7 | -117 | 75 47.3 | 11 42.1 | 259 4.4 | - 8 52.7 |
| Δ | 21 | 1 | | | 21 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | h min min / | | | | |
| 00 | -14 5.0 | -.1 | 16.2 | T _{m̄} |1 | 1.0 | 57.8 | 15.8 |
| 12 | -14 6.7 | T _{m̄} | 12 h 14.1 min | Starost | 14.7 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| | h min / | ° | | | h min / | ° | h min / | ° |
| ø | 14 50 .1 | 186 | -.8 | 447 | 4 47 .0 | 152 | .8 | |
| ɔ | 2 30 .1 | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 27.9 -15 | 14.7 | 137 30.6 | 137 34.9 - 0 | 36.0 | 323 36.3 | 6 59.2 | |
| 2 | 206 27.8 -15 | 13.1 | 167 35.6 | 167 34.5 - 0 | 33.3 | 353 42.1 | 6 59.7 | |
| 4 | 236 27.7 -15 | 11.6 | 197 40.5 | 197 34.2 - 0 | 30.7 | 23 47.9 | 7 .2 | |
| 6 | 266 27.7 -15 | 10.0 | 227 45.4 | 227 33.8 - 0 | 28.1 | 53 53.7 | 7 .7 | |
| 8 | 296 27.6 -15 | 8.4 | 257 50.4 | 257 33.4 - 0 | 25.5 | 83 59.5 | 7 1.2 | |
| 10 | 326 27.6 -15 | 6.9 | 287 55.3 | 287 33.1 - 0 | 22.9 | 114 5.3 | 7 1.7 | |
| 12 | 356 27.5 -15 | 5.3 | 318 .2 | 317 32.7 - 0 | 20.2 | 144 11.1 | 7 2.2 | |
| 14 | 26 27.5 -15 | 3.7 | 348 5.1 | 347 32.4 - 0 | 17.6 | 174 16.9 | 7 2.7 | |
| 16 | 56 27.4 -15 | 2.1 | 18 10.1 | 17 32.0 - 0 | 15.0 | 204 22.7 | 7 3.2 | |
| 18 | 86 27.4 -15 | .5 | 48 15.0 | 47 31.7 - 0 | 12.4 | 234 28.6 | 7 3.7 | |
| 20 | 116 27.3 -14 | 59.0 | 78 19.9 | 77 31.3 - 0 | 9.8 | 264 34.4 | 7 4.2 | |
| 22 | 146 27.3 -14 | 57.4 | 108 24.8 | 107 31.0 - 0 | 7.1 | 294 40.2 | 7 4.7 | |
| Δ | 0 | 8 | | -2 | 13 | 29 | 2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 58 | 16 31 | 0 46 | 2 24 | 18 3 | 3.8 | 7 30 | .5 | |
| 55 | 7 39 | 16 50 | 0 39 | 2 4 | 18 12 | 3.5 | 7 19 | .8 | |
| 50 | 7 24 | 17 5 | 0 34 | 1 50 | 18 19 | 3.3 | 7 10 | 1.0 | |
| 45 | 7 12 | 17 17 | 0 31 | 1 40 | 18 24 | 3.1 | 7 3 | 1.2 | |
| 40 | 7 2 | 17 27 | 0 28 | 1 32 | 18 29 | 2.9 | 6 57 | 1.3 | |
| 35 | 6 54 | 17 35 | 0 26 | 1 26 | 18 32 | 2.8 | 6 52 | 1.5 | |
| 30 | 6 46 | 17 43 | 0 25 | 1 21 | 18 36 | 2.7 | 6 47 | 1.6 | |
| 20 | 6 33 | 17 55 | 0 23 | 1 15 | 18 42 | 2.5 | 6 39 | 1.8 | |
| 10 | 6 22 | 18 7 | 0 22 | 1 12 | 18 47 | 2.3 | 6 32 | 1.9 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | 18 52 | 2.1 | 6 25 | 2.1 | |
| 10 | 5 60 | 18 29 | 0 22 | 1 13 | 18 57 | 1.9 | 6 18 | 2.3 | |
| 20 | 5 48 | 18 40 | 0 23 | 1 18 | 19 2 | 1.8 | 6 11 | 2.4 | |
| 30 | 5 34 | 18 54 | 0 25 | 1 27 | 19 7 | 1.6 | 6 3 | 2.6 | |
| 35 | 5 26 | 19 2 | 0 27 | 1 36 | 19 11 | 1.4 | 5 58 | 2.8 | |
| 40 | 5 17 | 19 11 | 0 29 | 1 43 | 19 14 | 1.3 | 5 52 | 2.9 | |
| 45 | 5 6 | 19 21 | 0 32 | 1 57 | 19 19 | 1.2 | 5 46 | 3.1 | |
| 50 | 4 53 | 19 34 | 0 37 | 2 19 | 19 24 | 1.0 | 5 38 | 3.2 | |
| 55 | 4 36 | 19 51 | 0 43 | 3 3 | 19 30 | .8 | 5 29 | 3.5 | |
| 60 | 4 14 | 20 12 | 0 53 | : :: | 19 38 | .5 | 5 16 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------------|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 356 50.5 103 | 10 27.2 -119 | 105 51.6 | 11 42.3 | 289 9.3 | - 8 52.7 | | |
| 2 | 25 49.0 103 | 10 3.5 -120 | 135 55.9 | 11 42.6 | 319 14.2 | - 8 52.7 | | |
| 4 | 54 47.6 103 | 9 39.5 -121 | 166 .2 | 11 42.8 | 349 19.1 | - 8 52.6 | | |
| 6 | 83 46.3 103 | 9 15.2 -122 | 196 4.5 | 11 43.1 | 249 24.1 | - 8 52.6 | | |
| 8 | 112 45.0 104 | 8 50.7 -124 | 226 8.8 | 11 43.3 | 49 29.0 | - 8 52.6 | | |
| 10 | 141 43.7 104 | 8 26.0 -125 | 256 13.1 | 11 43.6 | 79 33.9 | - 8 52.6 | | |
| 12 | 170 42.5 104 | 8 1.1 -126 | 286 17.3 | 11 43.8 | 109 38.8 | - 8 52.5 | | |
| 14 | 199 41.3 104 | 7 35.9 -127 | 316 21.6 | 11 44.1 | 139 43.8 | - 8 52.5 | | |
| 16 | 228 40.2 105 | 7 10.5 -128 | 346 25.9 | 11 44.3 | 169 48.7 | - 8 52.5 | | |
| 18 | 257 39.1 105 | 6 45.0 -129 | 16 30.2 | 11 44.6 | 199 53.6 | - 8 52.5 | | |
| 20 | 286 38.0 105 | 6 19.3 -129 | 46 34.4 | 11 44.8 | 229 58.6 | - 8 52.4 | | |
| 22 | 315 37.0 105 | 5 53.4 -130 | 76 38.7 | 11 45.1 | 260 3.5 | - 8 52.4 | | |
| Δ | 0 | 8 | | -2 | 13 | 25 | 0 | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | | |
| 00 | -14 8.4 | -.1 | 16.2 | T _{m̄} | 0 13 | 2.1 | 58.5 | 15.9 | | |
| 12 | -14 9.7 | T _{m̄} | 12 h 14.2 min | Starost | 15.7 d | Faza | ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-ɔ | Vel. | Pl. | T _{m̄} | π | 360-ɔ | Vel. |
| h min / | o | / | / | h min / | o | h min / | o | / | h min / | o |
| 0 | 14 50 | .1 | 0 | -3.9 | 4 | 16 54 | .0 | 328 | -1.9 | |
| ɔ | 2 25 | .1 | 186 | -.8 | h | 4 43 | .0 | 152 | -.7 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 344 36.0 105 | 5 27.3 -131 | 106 43.0 | 11 45.3 | 290 8.4 | - 8 52.4 | | |
| 2 | 13 35.0 105 | 5 1.1 -132 | 136 47.3 | 11 45.6 | 320 13.4 | - 8 52.4 | | |
| 4 | 42 34.0 105 | 4 34.8 -132 | 166 51.5 | 11 45.8 | 350 18.3 | - 8 52.3 | | |
| 6 | 71 33.0 105 | 4 8.3 -133 | 196 55.8 | 11 46.1 | 20 23.2 | - 8 52.3 | | |
| 8 | 100 32.0 105 | 3 41.7 -133 | 227 .1 | 11 46.4 | 50 28.2 | - 8 52.3 | | |
| 10 | 129 31.1 105 | 3 15.0 -134 | 257 4.4 | 11 46.6 | 80 33.1 | - 8 52.3 | | |
| 12 | 158 30.1 105 | 2 48.2 -134 | 287 8.6 | 11 46.9 | 110 38.0 | - 8 52.2 | | |
| 14 | 187 29.1 105 | 2 21.4 -135 | 317 12.9 | 11 47.1 | 140 43.0 | - 8 52.2 | | |
| 16 | 216 28.1 105 | 1 54.4 -135 | 347 17.2 | 11 47.4 | 170 47.9 | - 8 52.2 | | |
| 18 | 245 27.0 105 | 1 27.4 -135 | 17 21.4 | 11 47.6 | 200 52.8 | - 8 52.2 | | |
| 20 | 274 26.0 105 | 1 .4 -136 | 47 25.7 | 11 47.9 | 230 57.8 | - 8 52.1 | | |
| 22 | 303 24.9 104 | 0 33.2 -136 | 77 30.0 | 11 48.1 | 261 2.7 | - 8 52.1 | | |
| Δ | 21 | 1 | | 25 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | | |
| 00 | -14 11.0 | -.1 | 16.2 | T _{m̄} | 1 | 2.1 | 59.0 | 16.1 | | |
| 12 | -14 11.9 | T _{m̄} | 12 h 14.2 min | Starost | 16.7 d | Faza | ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-ɔ | Vel. | Pl. | T _{m̄} | π | 360-ɔ | Vel. |
| h min / | o | / | / | h min / | o | h min / | o | / | h min / | o |
| 0 | 14 50 | .1 | 359 | -3.9 | 4 | 16 51 | .0 | 328 | -1.9 | |
| ɔ | 2 20 | .1 | 186 | -.8 | h | 4 43 | .0 | 152 | -.7 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 26.8 -14 36.6 | 139 28.9 | 137 26.5 0 26.9 | 325 56.5 7 11.4 | | | | |
| 2 | 206 26.7 -14 35.0 | 169 33.8 | 167 26.1 0 29.6 | 356 2.4 7 11.9 | | | | |
| 4 | 236 26.7 -14 33.4 | 199 38.8 | 197 25.8 0 32.2 | 268 8.3 7 12.5 | | | | |
| 6 | 266 26.7 -14 31.8 | 229 43.7 | 227 25.5 0 34.8 | 56 14.2 7 13.0 | | | | |
| 8 | 296 26.7 -14 30.2 | 259 48.6 | 257 25.1 0 37.4 | 86 20.1 7 13.5 | | | | |
| 10 | 326 26.6 -14 28.6 | 289 53.6 | 287 24.8 0 40.0 | 116 26.1 7 14.1 | | | | |
| 12 | 356 26.6 -14 26.9 | 319 58.5 | 317 24.5 0 42.7 | 146 32.0 7 14.6 | | | | |
| 14 | 26 26.6 -14 25.3 | 350 3.4 | 347 24.1 0 45.3 | 176 37.9 7 15.1 | | | | |
| 16 | 56 26.6 -14 23.7 | 20 8.3 | 17 23.8 0 47.9 | 206 43.9 7 15.7 | | | | |
| 18 | 86 26.6 -14 22.1 | 50 13.3 | 47 23.5 0 50.5 | 236 49.8 7 16.2 | | | | |
| 20 | 116 26.5 -14 20.5 | 80 18.2 | 77 23.1 0 53.1 | 266 55.8 7 16.8 | | | | |
| 22 | 146 26.5 -14 18.8 | 110 23.1 | 107 22.8 0 55.8 | 297 1.7 7 17.3 | | | | |
| Δ | 0 8 | | -2 | 13 | 30 | 3 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 53 | 16 36 | 0 45 | 2 23 | 21 7 | 3 9 | 7 54 | .5 | |
| 55 | 7 33 | 16 55 | 0 39 | 2 3 | 21 1 | 3 6 | 7 56 | .8 | |
| 50 | 7 20 | 17 9 | 0 34 | 1 50 | 20 56 | 3 3 | 7 58 | 1.0 | |
| 45 | 7 9 | 17 20 | 0 31 | 1 39 | 20 52 | 3.1 | 7 59 | 1.2 | |
| 40 | 6 60 | 17 29 | 0 28 | 1 32 | 20 49 | 3.0 | 8 0 | 1.3 | |
| 35 | 6 52 | 17 37 | 0 26 | 1 26 | 20 47 | 2.8 | 8 1 | 1.5 | |
| 30 | 6 45 | 17 44 | 0 25 | 1 21 | 20 44 | 2.7 | 8 2 | 1.6 | |
| 20 | 6 32 | 17 57 | 0 23 | 1 15 | 20 40 | 2.5 | 8 4 | 1.8 | |
| 10 | 6 21 | 18 7 | 0 22 | 1 12 | 20 36 | 2.3 | 8 5 | 2.0 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | 20 33 | 2.2 | 8 6 | 2.1 | |
| 10 | 6 0 | 18 28 | 0 22 | 1 13 | 20 30 | 2.0 | 8 8 | 2.3 | |
| 20 | 5 49 | 18 39 | 0 23 | 1 17 | 20 26 | 1.8 | 8 9 | 2.5 | |
| 30 | 5 36 | 18 52 | 0 25 | 1 26 | 20 22 | 1.6 | 8 10 | 2.7 | |
| 35 | 5 28 | 18 60 | 0 27 | 1 33 | 20 20 | 1.5 | 8 11 | 2.8 | |
| 40 | 5 19 | 19 8 | 0 29 | 1 42 | 20 18 | 1.4 | 8 12 | 3.0 | |
| 45 | 5 9 | 19 19 | 0 32 | 1 55 | 20 15 | 1.2 | 8 13 | 3.1 | |
| 50 | 4 57 | 19 31 | 0 36 | 2 16 | 20 11 | 1.0 | 8 15 | 3.3 | |
| 55 | 4 41 | 19 46 | 0 42 | 2 56 | 20 7 | .8 | 8 16 | 3.5 | |
| 60 | 4 20 | 20 7 | 0 52 | : :: | 20 2 | .5 | 8 19 | 3.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|---------------------------|------------------|------------------|-----|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 332 23.8 104 0 6.1 -136 | 107 34.2 11 48.4 | 291 7.7 -8 52.1 | | | | | |
| 2 | 1 22 6 104 -0 21.0 -136 | 137 38.5 11 48.6 | 321 12.6 -8 52.1 | | | | | |
| 4 | 30 21.4 104 -0 48.2 -136 | 167 42.7 11 48.9 | 351 17.6 -8 52.0 | | | | | |
| 6 | 58 20.1 103 -1 15.4 -136 | 197 47.0 11 49.2 | 21 22.5 -8 52.0 | | | | | |
| 8 | 88 18.8 103 -1 42.5 -136 | 227 51.3 11 49.4 | 51 27.4 -8 52.0 | | | | | |
| 10 | 117 17.4 103 -2 9.6 -135 | 257 55.5 11 49.7 | 81 32.4 -8 51.9 | | | | | |
| 12 | 146 15.9 102 -2 36.7 -135 | 287 59.8 11 49.9 | 111 37.3 -8 51.9 | | | | | |
| 14 | 175 14.4 102 -3 3.7 -135 | 318 4.0 11 50.2 | 141 42.3 -8 51.9 | | | | | |
| 16 | 204 12.7 101 -3 30.7 -134 | 348 8.3 11 50.4 | 171 47.2 -8 51.8 | | | | | |
| 18 | 233 11.0 101 -3 57.6 -134 | 18 12.5 11 50.7 | 201 52.2 -8 51.8 | | | | | |
| 20 | 262 9.2 100 -4 24.4 -134 | 48 16.8 11 50.1 | 231 57.1 -8 51.8 | | | | | |
| 22 | 291 7.3 100 -4 51.1 -133 | 78 21.1 11 51.2 | 262 2.1 -8 51.8 | | | | | |
| Δ | 0 8 | | -2 | 13 | 25 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | -14 12.8 | .0 | 16.2 | T _{m̄} | 1 54 | 2.1 | 59.3 | 16.2 |
| 12 | -14 13.3 | T _{m̄} | 12 h 14.2 min | Starost | 17.7 d | Faza | ○ | |

| UT | PLANETE | | | |
|---------|---------|-----------------|-----|---------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min / | o | h min / |
| 0 | 14 50 | .1 | 358 | -3.9 |
| δ | 2 16 | .1 | 186 | -9 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | -14 13.8 | .0 | 16.2 | T _{m̄} | 2 45 | 2.2 | 59.5 | 16.2 |
| 12 | -14 13.9 | T _{m̄} | 12 h 14.2 min | Starost | 18.7 d | Faza | ○ | |

| UT | PLANETE | | | |
|---------|---------|-----------------|-----|---------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min / | o | h min / |
| 0 | 14 51 | .1 | 357 | -4.0 |
| δ | 2 11 | .1 | 187 | -9 |

12. FEBRUAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 26.4 | -13 | 57.5 | 141 | 27.2 | 137 | 18.6 |
| 2 | 206 | 26.4 | -13 | 55.9 | 171 | 32.1 | 167 | 18.3 |
| 4 | 236 | 26.4 | -13 | 54.2 | 201 | 37.1 | 197 | 18.0 |
| 6 | 266 | 26.4 | -13 | 52.6 | 231 | 42.0 | 227 | 17.6 |
| 8 | 296 | 26.5 | -13 | 50.9 | 261 | 46.9 | 257 | 17.3 |
| 10 | 326 | 26.5 | -13 | 49.3 | 291 | 51.8 | 287 | 17.0 |
| 12 | 356 | 26.5 | -13 | 47.6 | 321 | 56.8 | 317 | 16.7 |
| 14 | 26 | 26.5 | -13 | 46.0 | 352 | 1.7 | 347 | 16.4 |
| 16 | 56 | 26.5 | -13 | 44.3 | 22 | 6.6 | 17 | 16.1 |
| 18 | 86 | 26.5 | -13 | 42.7 | 52 | 11.5 | 47 | 15.8 |
| 20 | 116 | 26.5 | -13 | 41.0 | 82 | 16.5 | 77 | 15.4 |
| 22 | 146 | 26.5 | -13 | 39.3 | 112 | 21.4 | 107 | 15.1 |
| Δ | 0 | 8 | | | -2 | 13 | 30 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 48 | 16 42 | 0 45 | 2 22 | .. | .. | .0 | 8 20 | .7 |
| 55 | 7 30 | 16 59 | 0 38 | 2 3 | 23 52 | 3.5 | 8 36 | 1.0 | |
| 50 | 7 17 | 17 12 | 0 34 | 1 49 | 23 35 | 3.2 | 8 48 | 1.3 | |
| 45 | 7 6 | 17 23 | 0 30 | 1 39 | 23 23 | 3.1 | 8 58 | 1.4 | |
| 40 | 6 57 | 17 32 | 0 28 | 1 31 | 23 12 | 2.9 | 9 7 | 1.6 | |
| 35 | 6 50 | 17 39 | 0 26 | 1 25 | 23 3 | 2.8 | 9 14 | 1.7 | |
| 30 | 6 43 | 17 46 | 0 25 | 1 21 | 22 55 | 2.7 | 9 20 | 1.8 | |
| 20 | 6 31 | 17 58 | 0 23 | 1 15 | 22 41 | 2.6 | 9 31 | 2.0 | |
| 10 | 6 21 | 18 8 | 0 22 | 1 11 | 22 30 | 2.4 | 9 41 | 2.1 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | 22 19 | 2.3 | 9 50 | 2.3 | |
| 10 | 6 1 | 18 28 | 0 22 | 1 13 | 22 8 | 2.2 | 9 59 | 2.4 | |
| 20 | 5 50 | 18 38 | 0 23 | 1 17 | 21 56 | 2.1 | 9 10 | 2.6 | |
| 30 | 5 37 | 18 51 | 0 25 | 1 26 | 21 43 | 1.9 | 10 21 | 2.7 | |
| 35 | 5 30 | 18 58 | 0 27 | 1 32 | 21 35 | 1.8 | 10 27 | 2.8 | |
| 40 | 5 22 | 19 6 | 0 29 | 1 41 | 21 27 | 1.7 | 10 35 | 3.0 | |
| 45 | 5 12 | 19 16 | 0 32 | 1 54 | 21 17 | 1.6 | 10 43 | 3.1 | |
| 50 | 5 0 | 19 27 | 0 36 | 2 14 | 21 5 | 1.4 | 10 54 | 3.3 | |
| 55 | 4 45 | 19 42 | 0 42 | 2 49 | 20 50 | 1.2 | 11 7 | 3.5 | |
| 60 | 4 25 | 20 2 | 0 51 | : :: | 20 30 | .9 | 11 25 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|----------------|------|----------------|---|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | S _Ω | Δ | δ _Ω | Δ |
| h | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 307 | 31.4 | 91 | -10 24.8 | -121 | 109 | 16.2 | 11 54.6 | 293 | 6.4 | -8 51.3 | |
| 2 | 336 | 27.6 | 90 | -10 49.1 | -120 | 139 | 20.5 | 11 54.9 | 323 | 11.4 | -8 51.3 | |
| 4 | 5 | 23.7 | 89 | -11 13.0 | -118 | 169 | 24.7 | 11 55.1 | 353 | 16.4 | -8 51.3 | |
| 6 | 34 | 19.5 | 89 | -11 36.7 | -117 | 199 | 29.0 | 11 55.4 | 23 | 21.3 | -8 51.2 | |
| 8 | 63 | 15.2 | 88 | -12 | -116 | 229 | 33.2 | 11 55.7 | 53 | 26.3 | -8 51.2 | |
| 10 | 92 | 10.8 | 87 | -12 23.3 | -114 | 259 | 37.4 | 11 55.9 | 83 | 31.2 | -8 51.2 | |
| 12 | 121 | 6.1 | 86 | -12 46.1 | -113 | 284 | 41.7 | 11 56.2 | 113 | 36.2 | -8 51.1 | |
| 14 | 150 | 1.3 | 85 | -13 8.6 | -111 | 319 | 45.9 | 11 56.5 | 143 | 41.2 | -8 51.1 | |
| 16 | 178 | 56.3 | 84 | -13 30.8 | -109 | 349 | 50.1 | 11 56.7 | 173 | 46.1 | -8 51.1 | |
| 18 | 207 | 51.1 | 83 | -13 52.6 | -108 | 19 | 54.4 | 11 57.0 | 203 | 51.1 | -8 51.0 | |
| 20 | 236 | 45.7 | 82 | -14 14.1 | -106 | 49 | 58.6 | 11 57.3 | 233 | 56.0 | -8 51.0 | |
| 22 | 265 | 40.1 | 81 | -14 35.2 | -104 | 80 | 2.8 | 11 57.5 | 264 | 1.0 | -8 50.9 | |
| Δ | 0 | 8 | | | -2 | 1 | 25 | 0 | 21 | 1 | 25 | 0 |

| UT | SUNCE | | | | TRAJANJE SUMRAKA | | | | MJESEC | | | |
|----|-------|-------|-------|-------|---------------------|-------|-------|-------|--------|--|--|--|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | |
| N | h min | h min | min | h min | min | | | |
| 60 | 7 45 | 16 44 | 0 44 | 2 22 | 0 14 | 3.8 | 8 37 | 1.0 | | | | |
| 55 | 7 28 | 17 1 | 0 38 | 2 3 | .. .. | .. .. | 9 1 | 1.3 | | | | |
| 50 | 7 15 | 17 14 | 0 34 | 1 49 | .. .. | .. .. | 9 19 | 1.5 | | | | |
| 45 | 7 5 | 17 24 | 0 30 | 1 39 | .. .. | .. .. | 9 33 | 1.7 | | | | |
| 40 | 6 56 | 17 33 | 0 28 | 1 31 | .. .. | .. .. | 9 45 | 1.8 | | | | |
| 35 | 6 49 | 17 40 | 0 26 | 1 25 | .. .. | .. .. | 9 55 | 1.9 | | | | |
| 30 | 6 42 | 17 47 | 0 25 | 1 21 | .. .. | .. .. | 10 4 | 2.0 | | | | |
| 20 | 6 31 | 17 58 | 0 23 | 1 14 | 23 43 | 2.6 | 10 19 | 2.1 | | | | |
| 10 | 6 20 | 18 8 | 0 22 | 1 11 | 23 28 | 2.5 | 10 32 | 2.2 | | | | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | 23 14 | 2.4 | 10 45 | 2.4 | | | | |
| 10 | 6 1 | 18 27 | 0 22 | 1 12 | 23 | 0 2.3 | 10 57 | 2.5 | | | | |
| 20 | 5 50 | 18 38 | 0 23 | 1 17 | 22 45 | 2.2 | 11 11 | 2.6 | | | | |
| 30 | 5 38 | 18 50 | 0 25 | 1 25 | 22 28 | 2.1 | 11 26 | 2.7 | | | | |
| 35 | 5 31 | 18 57 | 0 27 | 1 32 | 22 19 | 2.0 | 11 35 | 2.8 | | | | |
| 40 | 5 23 | 19 5 | 0 29 | 1 41 | 22 | 7 | 11 46 | 2.9 | | | | |
| 45 | 5 13 | 19 14 | 0 32 | 1 53 | 21 54 | 1.8 | 11 58 | 3.0 | | | | |
| 50 | 5 2 | 19 26 | 0 36 | 2 12 | 21 38 | 1.7 | 12 31 | 3.2 | | | | |
| 55 | 4 47 | 19 40 | 0 41 | 2 47 | 21 18 | 1.5 | 12 31 | 3.4 | | | | |
| 60 | 4 28 | 19 59 | 0 50 | : :: | 20 51 | 1.2 | 12 57 | 3.7 | | | | |
| S | | | | | | | | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|----|-------------------------|------|-----------------|--------|--------|-----------------|-----------------------|--|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | |
| h | min | s | / | h min | min | / | / | |
| 00 | -14 | 13.6 | . | 0 | 16.2 | T _{m̄} | 4 32 | |
| 12 | -14 | 13.0 | T _{m̄} | 12 | 14.2 | min | Starost 20.7 d Faza ① | |

| UT | PLANETE | | | | | | | |
|----|---------|-----------------|--------------------|------|-------|-----------------|--------------------|------|
| | Pi. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pi. | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h | min | / | o | | h min | / | o | |
| 0 | 14 | 51 | . | 1 | 355 | -4.0 | 4 | 23 |
| 2 | 1 | . | 187 | -9 | h | 4 27 | 0 | 152 |
| Δ | 21 | 1 | 25 | 0 | | | | .7 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 26.8 -13 17.5 | 143 25.5 | 137 11.2 2 32.6 | 330 45.4 7 38.6 | | | | |
| 2 | 206 26.9 -13 15.9 | 173 30.4 | 167 10.9 2 35.2 | 0 51.5 7 39.2 | | | | |
| 4 | 236 26.9 -13 14.2 | 203 35.3 | 197 10.6 2 37.8 | 30 57.7 7 39.8 | | | | |
| 6 | 266 27.0 -13 12.5 | 233 40.3 | 227 10.3 2 40.4 | 61 3.8 7 40.5 | | | | |
| 8 | 296 27.0 -13 10.8 | 263 45.2 | 257 10.0 2 43.0 | 91 10.0 7 41.1 | | | | |
| 10 | 326 27.0 -13 9.1 | 293 50.1 | 287 9.7 2 45.6 | 121 16.1 7 41.7 | | | | |
| 12 | 356 27.1 -13 7.4 | 323 55.0 | 317 9.4 2 48.2 | 151 22.3 7 42.3 | | | | |
| 14 | 26 27.1 -13 5.7 | 354 0 | 347 9.1 2 50.8 | 181 28.5 7 42.9 | | | | |
| 16 | 56 27.1 -13 4.0 | 24 4.9 | 17 8.8 2 53.4 | 211 34.6 7 43.5 | | | | |
| 18 | 86 27.2 -13 2.3 | 54 9.8 | 47 8.5 2 56.0 | 241 40.8 7 44.1 | | | | |
| 20 | 116 27.2 -13 .6 | 84 14.8 | 77 8.2 2 58.7 | 271 47.0 7 44.8 | | | | |
| 22 | 146 27.3 -12 58.9 | 114 19.7 | 107 7.9 3 1.3 | 301 53.2 7 45.4 | | | | |
| Δ | 0 8 | | -1 13 | 31 3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 42 | 16 47 | 0 44 | 2 21 | 1 45 | 3.5 | 9 2 | 1.5 | |
| 55 | 7 26 | 17 3 | 0 38 | 2 3 | 1 15 | 3.2 | 9 33 | 1.7 | |
| 50 | 7 14 | 17 16 | 0 34 | 1 49 | 0 53 | 3.0 | 9 56 | 1.9 | |
| 45 | 7 3 | 17 26 | 0 30 | 1 39 | 0 37 | 2.9 | 10 13 | 2.0 | |
| 40 | 6 55 | 17 34 | 0 28 | 1 31 | 0 23 | 2.8 | 10 28 | 2.1 | |
| 35 | 6 48 | 17 41 | 0 26 | 1 25 | 0 11 | 2.8 | 10 40 | 2.1 | |
| 30 | 6 41 | 17 47 | 0 25 | 1 21 | 0 1 | 2.7 | 10 51 | 2.2 | |
| 20 | 6 30 | 17 58 | 0 23 | 1 14 | .. .. | .. .. | 11 10 | 2.3 | |
| 10 | 6 20 | 18 8 | 0 22 | 1 11 | .. .. | .. .. | 11 26 | 2.3 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 11 | .. .. | .. .. | 11 41 | 2.4 | |
| 10 | 6 1 | 18 27 | 0 22 | 1 12 | 23 55 | 2.4 | 11 57 | 2.5 | |
| 20 | 5 51 | 18 37 | 0 23 | 1 17 | 23 38 | 2.3 | 12 13 | 2.6 | |
| 30 | 5 39 | 18 49 | 0 25 | 1 25 | 23 18 | 2.3 | 12 32 | 2.6 | |
| 35 | 5 32 | 18 56 | 0 27 | 1 32 | 23 7 | 2.2 | 12 43 | 2.7 | |
| 40 | 5 24 | 19 4 | 0 29 | 1 40 | 22 54 | 2.2 | 12 55 | 2.7 | |
| 45 | 5 15 | 19 13 | 0 32 | 1 53 | 22 38 | 2.1 | 13 10 | 2.8 | |
| 50 | 5 4 | 19 24 | 0 35 | 2 11 | 22 19 | 2.1 | 13 28 | 2.9 | |
| 55 | 4 49 | 19 38 | 0 41 | 2 44 | 21 55 | 2.0 | 13 52 | 3.0 | |
| 60 | 4 31 | 19 56 | 0 50 | : :: | 21 21 | 1.8 | 14 25 | 3.2 | |
| S | | | | | | | | | |

15. FEBRUAR

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|--------------------------|-----------------|------------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 281 10.8 69 -18 33.5 -76 | 110 57.7 12 1.0 | 295 5.6 -8 50.4 | | | | | |
| 2 | 310 2.6 69 -18 48.7 -74 | 141 1.9 12 3.3 | 325 10.6 -8 50.4 | | | | | |
| 4 | 338 54.4 68 -19 3.4 -71 | 171 6.2 12 1.5 | 355 15.6 -8 50.4 | | | | | |
| 6 | 7 45.9 67 -19 17.6 -69 | 201 10.4 12 1.8 | 25 20.5 -8 50.3 | | | | | |
| 8 | 36 37.3 66 -19 31.3 -66 | 231 14.6 12 2.1 | 55 25.5 -8 50.3 | | | | | |
| 10 | 65 28.6 66 -19 44.6 -64 | 261 18.8 12 2.3 | 85 30.5 -8 50.2 | | | | | |
| 12 | 94 19.7 65 -19 57.3 -61 | 291 23.0 12 2.6 | 115 35.5 -8 50.2 | | | | | |
| 14 | 123 10.7 64 -20 9.4 -58 | 321 27.2 12 2.9 | 145 40.4 -8 50.2 | | | | | |
| 16 | 152 1.6 64 -20 21.1 -56 | 351 31.4 12 3.2 | 175 45.4 -8 50.1 | | | | | |
| 18 | 180 52.3 63 -20 32.2 -53 | 21 35.6 12 3.4 | 205 50.4 -8 50.1 | | | | | |
| 20 | 209 42.9 63 -20 42.8 -50 | 51 39.9 12 3.7 | 235 55.4 -8 50.0 | | | | | |
| 22 | 238 33.5 62 -20 52.9 -48 | 81 44.1 12 4.0 | 266 .4 -8 50.0 | | | | | |
| Δ | 0 9 | | -1 13 | 31 3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 40 | 16 50 | 0 44 | 2 21 | 3 9 | 2.9 | 9 37 | 2.1 | |
| 55 | 7 24 | 17 5 | 0 38 | 2 2 | 2 32 | 2.8 | 10 14 | 2.2 | |
| 50 | 7 12 | 17 17 | 0 33 | 1 49 | 2 7 | 2.7 | 10 41 | 2.3 | |
| 45 | 7 2 | 17 27 | 0 30 | 1 39 | 1 47 | 2.7 | 11 1 | 2.3 | |
| 40 | 6 54 | 17 35 | 0 28 | 1 31 | 1 31 | 2.6 | 11 18 | 2.3 | |
| 35 | 6 47 | 17 42 | 0 26 | 1 25 | 1 17 | 2.6 | 11 31 | 2.4 | |
| 30 | 6 40 | 17 48 | 0 24 | 1 20 | 1 5 | 2.6 | 11 44 | 2.4 | |
| 20 | 6 30 | 17 59 | 0 23 | 1 14 | 0 45 | 2.5 | 12 4 | 2.4 | |
| 10 | 6 20 | 18 9 | 0 21 | 1 11 | 0 28 | 2.5 | 12 22 | 2.4 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 10 | 0 11 | 2.4 | 12 39 | 2.4 | |
| 10 | 6 1 | 18 27 | 0 22 | 1 12 | .. .. | .. .. | 12 56 | 2.4 | |
| 20 | 5 51 | 18 37 | 0 23 | 1 17 | .. .. | .. .. | 13 14 | 2.5 | |
| 30 | 5 40 | 18 48 | 0 25 | 1 25 | .. .. | .. .. | 13 33 | 2.5 | |
| 35 | 5 33 | 18 55 | 0 27 | 1 31 | .. .. | .. .. | 13 47 | 2.5 | |
| 40 | 5 25 | 19 2 | 0 29 | 1 40 | 23 47 | 2.5 | 14 1 | 2.5 | |
| 45 | 5 16 | 19 11 | 0 31 | 1 52 | 23 30 | 2.5 | 14 18 | 2.5 | |
| 50 | 5 5 | 19 22 | 0 35 | 2 10 | 23 9 | 2.5 | 14 38 | 2.5 | |
| 55 | 4 52 | 19 35 | 0 41 | 2 42 | 22 42 | 2.5 | 15 5 | 2.5 | |
| 60 | 4 33 | 19 53 | 0 49 | : :: | 22 4 | 2.5 | 15 42 | 2.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | |
|----|--------------------------|-----------------|------------------|-----|----------------|----------------|
| | S _⊕ | Δ | S _γ | Δ | S _φ | δ _φ |
| h | o / | o / | o / | o / | o / | o / |
| 0 | 267 23.9 62 -21 2.4 -45 | 111 48.3 12 4.2 | 296 5.3 -8 50.0 | | | |
| 2 | 296 14.2 61 -21 11.3 -42 | 141 52.5 12 4.8 | 326 10.3 -8 49.9 | | | |
| 4 | 325 4.5 61 -21 19.7 -39 | 171 56.7 12 4.8 | 356 15.3 -8 49.9 | | | |
| 6 | 353 54.6 61 -21 27.6 -36 | 202 .9 12 5.1 | 26 20.3 -8 49.8 | | | |
| 8 | 22 44.8 60 -21 34.9 -34 | 232 5.1 12 5.3 | 58 25.3 -8 49.8 | | | |
| 10 | 51 34.8 60 -21 41.6 -31 | 262 9.3 12 5.6 | 86 30.3 -8 49.7 | | | |
| 12 | 80 24.8 60 -21 47.7 -28 | 292 13.5 12 5.9 | 116 35.3 -8 49.7 | | | |
| 14 | 109 14.8 60 -21 53.3 -25 | 322 17.7 12 6.2 | 146 40.2 -8 49.6 | | | |
| 16 | 138 4.8 60 -21 58.4 -22 | 352 21.9 12 6.4 | 176 45.2 -8 49.6 | | | |
| 18 | 166 54.7 60 -22 2.8 -19 | 22 26.1 12 6.7 | 206 50.2 -8 49.6 | | | |
| 20 | 195 44.7 60 -22 6.7 -17 | 52 30.3 12 7.0 | 236 55.2 -8 49.5 | | | |
| 22 | 224 34.6 60 -22 10.0 -14 | 82 34.5 12 7.3 | 267 .2 -8 49.5 | | | |
| Δ | 21 | 1 | 25 | 0 | | |

| UT | SUNCE | | MJESEC | | | | |
|---------|-----------------|------|-----------------|---------------|-----------------|-----------------|--------|
| | h min | s | s / | h min | min | / | / |
| 00 | -14 | 10.5 | .1 | 16.2 | T _{m̄} | 6 25 | 2.5 |
| 12 | -14 | 9.2 | T _{m̄} | 12 h 14.2 min | Starost | 22.7 d | Faza ① |
| PLANETE | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π |
| | h min | / | o | | h min | / | o |
| Q | 14 52 | .1 | 353 | -4.0 | 4 16 | 30 | .0 |
| ○ | 1 52 | .1 | 188 | - .9 | 4 15 | 0 | 152 |
| Δ | 21 | 1 | 25 | 0 | | | |

16. FEBRUAR

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 28.0 | -12 | 36.7 | 145 | 23.7 | 137 | 4.1 |
| 2 | 206 | 28.0 | -12 | 34.9 | 175 | 28.7 | 167 | 3.8 |
| 4 | 236 | 28.1 | -12 | 33.2 | 205 | 33.6 | 197 | 3.5 |
| 6 | 266 | 28.2 | -12 | 31.5 | 235 | 38.5 | 227 | 3.2 |
| 8 | 296 | 28.2 | -12 | 29.8 | 265 | 43.5 | 257 | 3.0 |
| 10 | 326 | 28.3 | -12 | 28.0 | 295 | 48.4 | 287 | 2.7 |
| 12 | 356 | 28.4 | -12 | 26.3 | 325 | 53.3 | 317 | 2.4 |
| 14 | 26 | 28.5 | -12 | 24.6 | 355 | 58.2 | 347 | 2.1 |
| 16 | 56 | 28.5 | -12 | 22.8 | 26 | 3.2 | 17 | 1.8 |
| 18 | 86 | 28.6 | -12 | 21.1 | 56 | 8.1 | 47 | 1.5 |
| 20 | 116 | 28.7 | -12 | 19.4 | 86 | 13.0 | 77 | 1.3 |
| 22 | 146 | 28.7 | -12 | 17.6 | 116 | 18.0 | 107 | 1.0 |
| Δ | 0 | 9 | | | -1 | 13 | 31 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 37 | 16 52 | 0 44 | 2 21 | 4 19 | 2 2 | 10 28 | 2 8 | |
| 55 | 7 22 | 17 7 | 0 38 | 2 2 | 3 39 | 2 2 | 11 8 | 2 7 | |
| 50 | 7 10 | 17 19 | 0 33 | 1 49 | 3 12 | 2 3 | 11 35 | 2 6 | |
| 45 | 7 0 | 17 28 | 0 30 | 1 39 | 2 51 | 2 3 | 11 56 | 2 6 | |
| 40 | 6 53 | 17 36 | 0 28 | 1 31 | 2 34 | 2 3 | 12 14 | 2 6 | |
| 35 | 6 46 | 17 43 | 0 26 | 1 25 | 2 19 | 2 4 | 12 28 | 2 5 | |
| 30 | 6 40 | 17 49 | 0 24 | 1 20 | 2 7 | 2 4 | 12 40 | 2 5 | |
| 20 | 6 29 | 17 59 | 0 22 | 1 14 | 1 45 | 2 4 | 13 2 | 2 5 | |
| 10 | 6 20 | 18 9 | 0 21 | 1 11 | 1 27 | 2 4 | 13 20 | 2 4 | |
| 0 | 6 11 | 18 18 | 0 21 | 1 10 | 1 10 | 2 4 | 13 37 | 2 4 | |
| 10 | 6 2 | 18 26 | 0 22 | 1 12 | 0 53 | 2 4 | 13 55 | 2 3 | |
| 20 | 5 52 | 18 36 | 0 23 | 1 16 | 0 34 | 2 4 | 14 13 | 2 3 | |
| 30 | 5 41 | 18 47 | 0 25 | 1 25 | 0 13 | 2 4 | 14 34 | 2 3 | |
| 35 | 5 34 | 18 54 | 0 26 | 1 31 | 0 1 | 2 4 | 14 47 | 2 2 | |
| 40 | 5 27 | 19 1 | 0 29 | 1 40 | ... | 0 | 15 15 | 2 2 | |
| 45 | 5 18 | 19 10 | 0 31 | 1 51 | ... | 0 | 15 18 | 2 1 | |
| 50 | 5 7 | 19 20 | 0 35 | 2 9 | ... | 0 | 15 38 | 2 1 | |
| 55 | 4 54 | 19 33 | 0 41 | 2 39 | 23 41 | 2 9 | 16 16 | 2 0 | |
| 60 | 4 36 | 19 50 | 0 49 | : :: | 23 3 | 3 1 | 16 44 | 1 8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o | / | o | / | o | / | o | / |
| 0 | 253 | 24.6 | 60 | -22 12.7 | -11 | 112 | 38.7 | 12 |
| 2 | 282 | 14.5 | 60 | -22 14.9 | -8 | 142 | 42.9 | 12 |
| 4 | 311 | 4.6 | 60 | -22 16.4 | -5 | 172 | 47.1 | 12 |
| 6 | 339 | 54.6 | 61 | -22 17.5 | -2 | 202 | 51.3 | 12 |
| 8 | 84 44.8 | 61 | -22 17.9 | 1 | 232 | 55.4 | 12 | 8.6 |
| 10 | 37 34.9 | 61 | -22 17.8 | 3 | 262 | 59.6 | 12 | 8.9 |
| 12 | 66 25.2 | 62 | -22 17.0 | 6 | 293 | 3.8 | 12 | 9.2 |
| 14 | 95 15.6 | 62 | -22 15.8 | 9 | 323 | 8.0 | 12 | 9.5 |
| 16 | 124 | 6.1 | 63 | -22 13.9 | 12 | 353 | 12.2 | 12 |
| 18 | 152 56.6 | 63 | -22 11.6 | 15 | 23 | 16.4 | 12 | 10.0 |
| 20 | 181 47.3 | 64 | -22 8.6 | 18 | 53 | 20.6 | 12 | 10.3 |
| 22 | 210 38.1 | 65 | -22 5.1 | 20 | 83 | 24.8 | 12 | 10.6 |
| Δ | 0 | 9 | | | -1 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|---------------------|----------------|---------|----------------|---------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | -14 7.9 | .1 | 16.2 | T _⊖ | 7 24 | 2.4 | 58.7 | 16.0 |
| 12 | -14 6.2 | T _⊕ | 12 h 14.1 min | Starost | 23 | 7 d | Faza | ● |
| PLANETE | Pl. | T _⊕ | π _{360-2x} | Vel. | Pl. | T _⊕ | π _{360-2x} | Vel. |
| h min / | ° | | | | h min / | ° | | |
| 0 | 14 52 | .1 | 352 | -4.0 | 4 27 | .0 | 327 | -1.8 |
| ○ | 1 47 | .1 | 188 | -9 | 4 11 | .0 | 152 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o | / | o | / | o | / | o | / |
| 0 | 239 | 29.1 | 66 | -22 1.0 | 23 | 113 | 29.0 | 12 |
| 2 | 268 | 20.2 | 66 | -21 56.4 | 26 | 143 | 33.1 | 12 |
| 4 | 297 | 11.5 | 67 | -21 51.3 | 28 | 173 | 37.3 | 12 |
| 6 | 326 | 2.9 | 68 | -21 45.6 | 31 | 203 | 41.5 | 12 |
| 8 | 354 | 54.5 | 69 | -21 39.4 | 34 | 233 | 45.7 | 12 |
| 10 | 23 46.3 | 70 | -21 32.6 | 36 | 263 | 49.9 | 12 | 12 |
| 12 | 52 38.3 | 71 | -21 25.4 | 39 | 293 | 54.0 | 12 | 12.5 |
| 14 | 81 30.5 | 72 | -21 17.6 | 41 | 323 | 58.2 | 12 | 12.8 |
| 16 | 110 22.9 | 73 | -21 9.3 | 44 | 354 | 2.4 | 12 | 13.1 |
| 18 | 139 15.5 | 74 | -21 5.5 | 46 | 24 | 6.6 | 12 | 13.4 |
| 20 | 168 8.4 | 75 | -20 51.2 | 49 | 54 | 10.7 | 12 | 13.6 |
| 22 | 197 1.5 | 76 | -20 41.4 | 51 | 84 | 14.9 | 12 | 13.9 |
| Δ | 0 | 9 | | | 21 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|---------------------|----------------|---------|----------------|---------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | -14 4.5 | .2 | 16.2 | T _⊖ | 8 21 | 2.3 | 58.3 | 15.9 |
| 12 | -14 2.5 | T _⊕ | 12 h 14.0 min | Starost | 24 | 7 d | Faza | ● |
| PLANETE | Pl. | T _⊕ | π _{360-2x} | Vel. | Pl. | T _⊕ | π _{360-2x} | Vel. |
| h min / | ° | | | | h min / | ° | | |
| 0 | 14 52 | .1 | 351 | -4.0 | 4 24 | .0 | 327 | -1.8 |
| ○ | 1 42 | .1 | 188 | -1.0 | 4 7 | .0 | 152 | .7 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 29.8 -11 55.0 | 147 22.0 | 136 57.4 4 37.3 | 335 45.1 8 9.2 | | | | |
| 2 | 206 29.9 -11 53.2 | 177 27.0 | 166 57.1 4 39.9 | 5 51.5 8 9.9 | | | | |
| 4 | 236 30.0 -11 51.4 | 207 31.9 | 196 56.8 4 42.5 | 35 57.9 8 10.6 | | | | |
| 6 | 266 30.1 -11 49.7 | 237 36.8 | 226 56.6 4 45.1 | 66 4.2 8 11.2 | | | | |
| 8 | 296 30.2 -11 47.9 | 267 41.7 | 256 56.3 4 47.7 | 96 10.6 8 11.9 | | | | |
| 10 | 326 30.3 -11 46.2 | 297 46.7 | 286 56.0 4 50.3 | 126 16.9 8 12.6 | | | | |
| 12 | 356 30.4 -11 44.4 | 327 51.6 | 316 55.7 4 52.8 | 156 23.3 8 13.3 | | | | |
| 14 | 386 30.5 -11 42.6 | 357 56.5 | 346 55.5 4 55.4 | 186 29.7 8 13.9 | | | | |
| 16 | 56 30.6 -11 40.9 | 28 1.5 | 16 55.2 4 58.0 | 216 36.1 8 14.6 | | | | |
| 18 | 86 30.7 -11 39.1 | 58 6.4 | 46 54.9 5 .6 | 246 42.5 8 15.3 | | | | |
| 20 | 116 30.8 -11 37.4 | 88 11.3 | 76 54.7 5 3.2 | 276 48.9 8 16.0 | | | | |
| 22 | 146 30.9 -11 35.6 | 118 16.2 | 106 54.4 5 5.7 | 306 55.2 8 16.6 | | | | |
| Δ | 0 9 | | -1 13 | 32 3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 32 | 16 57 | 0 44 | 2 20 | 5 47 | 1.0 | 12 55 | 3.5 | |
| 55 | 7 17 | 17 12 | 0 37 | 2 2 | 5 15 | 1.3 | 13 26 | 3.2 | |
| 50 | 7 6 | 17 22 | 0 33 | 1 48 | 4 51 | 1.5 | 13 48 | 3.0 | |
| 45 | 6 57 | 17 31 | 0 30 | 1 38 | 4 33 | 1.6 | 14 5 | 2.9 | |
| 40 | 6 50 | 17 39 | 0 28 | 1 31 | 4 18 | 1.7 | 14 19 | 2.7 | |
| 35 | 6 43 | 17 45 | 0 26 | 1 25 | 4 61 | 1.8 | 14 31 | 2.6 | |
| 30 | 6 38 | 17 51 | 0 24 | 1 20 | 3 55 | 1.9 | 14 42 | 2.6 | |
| 20 | 6 28 | 18 0 | 0 22 | 1 14 | 3 36 | 2.0 | 14 60 | 2.4 | |
| 10 | 6 19 | 18 9 | 0 21 | 1 11 | 3 19 | 2.1 | 15 15 | 2.3 | |
| 0 | 6 11 | 18 17 | 0 21 | 1 10 | 3 4 | 2.2 | 15 30 | 2.2 | |
| 10 | 6 2 | 18 26 | 0 21 | 1 12 | 2 48 | 2.3 | 15 44 | 2.1 | |
| 20 | 5 53 | 18 35 | 0 23 | 1 16 | 2 32 | 2.4 | 15 59 | 1.9 | |
| 30 | 5 42 | 18 45 | 0 25 | 1 24 | 2 13 | 2.6 | 16 17 | 1.8 | |
| 35 | 5 36 | 18 51 | 0 26 | 1 30 | 2 1 | 2.6 | 16 27 | 1.7 | |
| 40 | 5 29 | 18 58 | 0 28 | 1 39 | 1 49 | 2.7 | 16 38 | 1.6 | |
| 45 | 5 21 | 19 6 | 0 31 | 1 50 | 1 33 | 2.8 | 16 52 | 1.5 | |
| 50 | 5 11 | 19 16 | 0 35 | 2 7 | 1 15 | 3.0 | 17 8 | 1.3 | |
| 55 | 4 58 | 19 29 | 0 40 | 2 35 | 0 51 | 3.1 | 17 29 | 1.1 | |
| 60 | 4 41 | 19 45 | 0 48 | 3 50 | 0 17 | 3.4 | 17 57 | .9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 225 54.8 78 -20 31.2 | 54 | 114 19.1 12 14.2 | 299 5.1 - 8 48.3 | | | | |
| 2 | 254 48.3 79 -20 20.4 | 56 | 144 23.3 12 14.5 | 329 10.1 - 8 48.2 | | | | |
| 4 | 283 42.1 80 -20 9.2 | 58 | 174 27.4 12 14.8 | 359 15.2 - 8 48.1 | | | | |
| 6 | 312 36.1 81 -19 57.6 | 61 | 204 31.6 12 15.1 | 29 20.2 - 8 48.1 | | | | |
| 8 | 341 30.4 83 -19 45.4 | 63 | 234 35.8 12 15.3 | 59 25.2 - 8 48.0 | | | | |
| 10 | 10 25.0 84 -19 32.9 | 65 | 264 40.0 12 15.6 | 89 30.2 - 8 48.0 | | | | |
| 12 | 39 19.8 85 -19 19.9 | 67 | 294 44.1 12 15.9 | 119 35.2 - 8 47.9 | | | | |
| 14 | 68 14.9 87 -19 6.4 | 69 | 324 48.3 12 16.2 | 149 40.2 - 8 47.9 | | | | |
| 16 | 97 10.2 88 -18 52.6 | 71 | 354 52.5 12 16.5 | 179 45.2 - 8 47.8 | | | | |
| 18 | 126 5.9 90 -18 38.3 | 73 | 24 56.6 12 16.8 | 209 50.2 - 8 47.8 | | | | |
| 20 | 155 1.8 91 -18 23.6 | 75 | 55 .8 12 17.0 | 239 55.2 - 8 47.7 | | | | |
| 22 | 183 58.0 92 -18 8.6 | 77 | 85 5.0 12 17.3 | 270 .3 - 8 47.7 | | | | |
| Δ | 1 9 | | -1 13 | 32 3 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|----------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | -14 .5 | .2 | 16.2 | T _{m̄} | 9 17 | 2.2 | 57.9 | 15.8 |
| 12 | -13 58.2 | T _{m̄} | 12 h 14.0 min | Starost | 25.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-Ω} | Vel. | Pl. | T _{m̄} | π _{360-Ω} | Vel. |
| h min / | ° | h min / | ° | h min / | h min / | ° | h min / | ° |
| 0 | 14 52 .1 | 350 | -4.1 | 4 | 16 20 .0 | 327 | -1.8 | |
| ○ | 1 37 .1 | 188 | -1.0 | h | 4 3 | 0 | 152 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 212 54.4 94 -17 53.1 | 79 | 115 9.1 12 17.6 | 300 5.3 - 8 47.6 | | | | |
| 2 | 241 51.2 95 -17 37.3 | 81 | 145 13.3 12 17.9 | 330 10.3 - 8 47.6 | | | | |
| 4 | 270 48.2 97 -17 21.1 | 83 | 175 17.4 12 18.2 | 0 15.3 - 8 47.5 | | | | |
| 6 | 299 45.5 98 -17 4.6 | 84 | 205 21.6 12 18.5 | 30 20.3 - 8 47.5 | | | | |
| 8 | 328 43.1 99 -16 47.7 | 86 | 235 25.8 12 18.7 | 60 25.3 - 8 47.4 | | | | |
| 10 | 357 41.0 101 -16 30.4 | 88 | 265 29.9 12 19.0 | 90 30.4 - 8 47.3 | | | | |
| 12 | 26 39.1 102 -16 12.9 | 89 | 295 34.1 12 19.3 | 120 35.4 - 8 47.3 | | | | |
| 14 | 55 37.6 104 -15 55.0 | 91 | 325 38.2 12 19.6 | 150 40.4 - 8 47.2 | | | | |
| 16 | 84 36.3 105 -15 36.7 | 93 | 355 42.4 12 19.9 | 180 45.4 - 8 47.2 | | | | |
| 18 | 113 35.3 106 -15 18.2 | 94 | 25 46.6 12 20.2 | 210 50.4 - 8 47.1 | | | | |
| 20 | 142 34.6 108 -14 59.4 | 95 | 55 50.7 12 20.5 | 240 55.5 - 8 47.1 | | | | |
| 22 | 171 34.2 109 -14 40.3 | 97 | 85 54.9 12 20.7 | 271 .5 - 8 47.0 | | | | |
| Δ | 21 1 | | 25 0 | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|----------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | -13 55.8 | .2 | 16.2 | T _{m̄} | 10 10 | 2.0 | 57.4 | 15.7 |
| 12 | -13 53.1 | T _{m̄} | 12 h 13.9 min | Starost | 26.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-Ω} | Vel. | Pl. | T _{m̄} | π _{360-Ω} | Vel. |
| h min / | ° | h min / | ° | h min / | h min / | ° | h min / | ° |
| 0 | 14 53 .1 | 349 | -4.1 | 4 | 16 17 .0 | 327 | -1.8 | |
| ○ | 1 32 .1 | 189 | -1.0 | h | 3 59 .0 | 152 | .7 | |

20. FEBRUAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-------------------|---------------|-------------------------------|-----------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 32.3 -11 12.5 | 149 20.3 | 136 50.9 5 39.2 | 338 18.7 8 25.6 | | | |
| 2 | 206 32.5 -11 10.7 | 179 25.2 | 166 50.7 5 41.8 | 8 25.2 8 26.3 | | | |
| 4 | 236 32.6 -11 8.9 | 209 30.2 | 196 50.4 5 44.3 | 38 31.6 8 26.9 | | | |
| 6 | 266 32.7 -11 7.1 | 239 35.1 | 226 50.2 5 46.9 | 68 38.1 8 27.6 | | | |
| 8 | 296 32.8 -11 5.3 | 269 40.0 | 256 49.9 5 49.5 | 98 44.5 8 28.3 | | | |
| 10 | 326 33.0 -11 3.6 | 299 44.9 | 286 49.6 5 52.0 | 128 51.0 8 29.0 | | | |
| 12 | 356 33.1 -11 1.8 | 329 49.9 | 316 49.4 5 54.6 | 158 57.5 8 29.7 | | | |
| 14 | 386 33.2 -11 .0 | 359 54.8 | 346 49.1 5 57.1 | 189 3.9 8 30.4 | | | |
| 16 | 56 33.3 -10 58.2 | 29 59.7 | 16 48.8 5 59.7 | 219 10.4 8 31.1 | | | |
| 18 | 86 33.5 -10 56.4 | 60 4.7 | 46 48.6 6 2.3 | 249 16.9 8 31.8 | | | |
| 20 | 116 33.6 -10 54.6 | 90 9.6 | 76 48.3 6 4.8 | 279 23.4 8 32.5 | | | |
| 22 | 146 33.7 -10 52.8 | 120 14.5 | 106 48.1 6 7.4 | 309 29.9 8 33.2 | | | |
| Δ | 1 9 | | -1 | 13 | 32 | 3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 26 | 17 3 | 0 43 | 2 20 | 6 28 | .5 | 15 44 | 3.5 | |
| 55 | 7 13 | 17 16 | 0 37 | 2 1 | 6 10 | .8 | 15 60 | 3.2 | |
| 50 | 7 2 | 17 26 | 0 33 | 1 48 | 5 56 | 1.0 | 16 12 | 3.0 | |
| 45 | 6 54 | 17 34 | 0 30 | 1 38 | 5 45 | 1.2 | 16 22 | 2.8 | |
| 40 | 6 47 | 17 41 | 0 28 | 1 31 | 5 36 | 1.3 | 16 30 | 2.6 | |
| 35 | 6 41 | 17 47 | 0 26 | 1 25 | 5 28 | 1.4 | 16 37 | 2.5 | |
| 30 | 6 36 | 17 52 | 0 24 | 1 20 | 5 21 | 1.5 | 16 43 | 2.4 | |
| 20 | 6 27 | 18 1 | 0 22 | 1 14 | 5 9 | 1.7 | 16 53 | 2.2 | |
| 10 | 6 18 | 18 9 | 0 21 | 1 11 | 4 58 | 1.8 | 17 13 | 2.1 | |
| 0 | 6 10 | 18 17 | 0 21 | 1 10 | 4 48 | 2.0 | 17 11 | 1.9 | |
| 10 | 6 2 | 18 25 | 0 21 | 1 12 | 4 38 | 2.1 | 17 19 | 1.8 | |
| 20 | 5 54 | 18 34 | 0 23 | 1 16 | 4 27 | 2.3 | 17 28 | 1.6 | |
| 30 | 5 44 | 18 43 | 0 25 | 1 24 | 4 15 | 2.5 | 17 38 | 1.5 | |
| 35 | 5 38 | 18 49 | 0 26 | 1 30 | 4 7 | 2.6 | 17 44 | 1.4 | |
| 40 | 5 31 | 18 56 | 0 28 | 1 38 | 3 59 | 2.7 | 17 51 | 1.3 | |
| 45 | 5 24 | 19 3 | 0 31 | 1 49 | 3 50 | 2.8 | 17 58 | 1.1 | |
| 50 | 5 14 | 19 12 | 0 35 | 2 5 | 3 38 | 3.0 | 18 7 | 1.0 | |
| 55 | 5 2 | 19 24 | 0 40 | 2 31 | 3 24 | 3.2 | 18 18 | .8 | |
| 60 | 4 47 | 19 39 | 0 47 | 3 31 | 3 4 | 3.5 | 18 33 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------------------|----------|------------------|------------------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 200 34.0 111 -14 21.0 | 98 | 115 59.0 12 21.0 | 301 5.5 -8 46.9 | | | | |
| 2 | 229 34.1 112 -14 1.3 | 99 | 146 3.2 12 21.3 | 331 10.5 -8 46.9 | | | | |
| 4 | 258 34.5 113 -13 41.4 | 101 | 176 7.3 12 21.6 | 1 15.5 -8 46.8 | | | | |
| 6 | 287 35.1 115 -13 21.3 | 102 | 206 11.5 12 21.9 | 31 20.6 -8 46.8 | | | | |
| 8 | 316 36.0 116 -13 .9 | 103 | 236 15.6 12 22.2 | 61 25.6 -8 46.7 | | | | |
| 10 | 345 37.2 117 -12 40.3 | 104 | 266 19.8 12 22.5 | 91 30.6 -8 46.7 | | | | |
| 12 | 1 38.6 118 -12 19.4 | 105 | 296 23.9 12 22.8 | 121 35.6 -8 46.6 | | | | |
| 14 | 43 40.3 120 -11 58.4 | 106 | 326 28.1 12 23.0 | 151 40.7 -8 46.5 | | | | |
| 16 | 72 42.3 121 -11 37.1 | 107 | 356 32.2 12 23.3 | 181 45.7 -8 46.5 | | | | |
| 18 | 101 44.5 122 -11 15.7 | 108 | 26 36.4 12 23.6 | 211 50.7 -8 46.4 | | | | |
| 20 | 130 46.9 123 -10 54.0 | 109 | 56 40.5 12 23.9 | 241 55.8 -8 46.4 | | | | |
| 22 | 159 49.6 125 -10 32.2 | 110 | 86 44.6 12 24.2 | 272 .8 -8 46.3 | | | | |
| Δ | 1 9 | | -1 | 13 | 25 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-------------|-----------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_ζ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | -13 50.4 | .3 | 16.2 | T _{m̄} | 10 59 | 2.0 | 57.0 | 15.5 |
| 12 | -13 47.4 | T _{m̄} | 12 h 13.8 min | Starost | 27.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | h min / | o | h min / | o | h min / | o | h min / |
| 0 | 14 53 .1 | 348 | -4.1 | 4 | 16 14 .0 | 327 | -1.8 | |
| δ | 1 26 .1 | 189 | -1.0 | h | 3 55 .0 | 152 | -.7 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------------------|----------|------------------|------------------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 188 52.5 126 -10 10.2 | 111 | 116 48.8 12 24.5 | 302 5.8 -8 46.2 | | | | |
| 2 | 217 55.6 127 -9 48.1 | 111 | 146 52.9 12 24.8 | 332 10.9 -8 46.2 | | | | |
| 4 | 246 59.0 128 -9 25.8 | 112 | 176 57.1 12 25.1 | 2 15.9 -8 46.1 | | | | |
| 6 | 276 2.5 129 -9 3.3 | 113 | 207 1.2 12 25.4 | 32 20.9 -8 46.1 | | | | |
| 8 | 305 6.3 130 -8 40.8 | 114 | 237 5.4 12 25.7 | 62 26.0 -8 46.0 | | | | |
| 10 | 334 10.3 131 -8 18.1 | 114 | 267 9.5 12 25.9 | 92 31.0 -8 45.9 | | | | |
| 12 | 3 14.6 132 -7 55.2 | 115 | 297 13.6 12 26.2 | 122 36.0 -8 45.9 | | | | |
| 14 | 32 19.0 133 -7 32.3 | 115 | 327 17.8 12 26.5 | 152 41.1 -8 45.8 | | | | |
| 16 | 61 23.6 134 -7 9.3 | 116 | 357 21.9 12 26.8 | 182 46.1 -8 45.8 | | | | |
| 18 | 90 28.4 135 -6 46.1 | 116 | 27 26.0 12 27.1 | 212 51.1 -8 45.7 | | | | |
| 20 | 119 33.4 136 -6 22.9 | 116 | 57 30.2 12 27.4 | 242 56.2 -8 45.6 | | | | |
| 22 | 148 38.5 137 -5 59.6 | 117 | 87 34.3 12 27.7 | 273 1.2 -8 45.6 | | | | |
| Δ | 21 1 | | 25 | 0 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-------------|-----------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_ζ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | -13 44.4 | .3 | 16.2 | T _{m̄} | 11 47 | 1.9 | 56.5 | 15.4 |
| 12 | -13 41.0 | T _{m̄} | 12 h 13.7 min | Starost | 28.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | h min / | o | h min / | o | h min / | o | h min / |
| 0 | 14 53 .1 | 348 | -4.1 | 4 | 16 11 .0 | 326 | -1.8 | |
| δ | 1 21 .1 | 189 | -1.0 | h | 3 51 .0 | 152 | -.7 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 35.5 -10 29.3 | 151 18.6 | 136 44.7 | 6 40.6 | 340 54.5 | 8 42.4 | | |
| 2 | 206 35.7 -10 27.5 | 181 23.5 | 166 44.5 | 6 43.1 | 11 1.1 | 8 43.1 | | |
| 4 | 236 35.8 -10 25.7 | 211 28.4 | 196 44.2 | 6 45.6 | 41 7.6 | 8 43.8 | | |
| 6 | 266 36.0 -10 23.9 | 241 33.4 | 226 44.0 | 6 48.2 | 71 14.1 | 8 44.5 | | |
| 8 | 296 36.1 -10 22.1 | 271 38.3 | 256 43.7 | 6 50.7 | 101 20.7 | 8 45.3 | | |
| 10 | 326 36.3 -10 20.3 | 301 43.2 | 286 43.5 | 6 53.3 | 131 27.2 | 8 46.0 | | |
| 12 | 356 36.4 -10 18.4 | 331 48.2 | 316 43.2 | 6 55.8 | 161 33.8 | 8 46.7 | | |
| 14 | 26 36.6 -10 16.6 | 1 53.1 | 346 43.0 | 6 58.4 | 191 40.3 | 8 47.4 | | |
| 16 | 56 36.7 -10 14.8 | 31 58.0 | 16 42.7 | 7 .9 | 221 46.9 | 8 48.1 | | |
| 18 | 86 36.9 -10 13.0 | 62 2.9 | 46 42.5 | 7 3.4 | 251 53.5 | 8 48.8 | | |
| 20 | 116 37.0 -10 11.2 | 92 7.9 | 76 42.2 | 7 6.0 | 282 .0 | 8 49.5 | | |
| 22 | 146 37.2 -10 9.3 | 122 12.8 | 106 42.0 | 7 8.5 | 312 6.6 | 8 50.3 | | |
| Δ | 1 9 | | -1 | 13 | 33 | 4 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 20 | 17 8 | 0 43 | 2 20 | 6 52 | .4 | 18 27 | 3.3 | |
| 55 | 7 8 | 17 20 | 0 37 | 2 1 | 6 47 | .7 | 18 30 | 3.0 | |
| 50 | 6 59 | 17 29 | 0 33 | 1 48 | 6 43 | .8 | 18 32 | 2.8 | |
| 45 | 6 51 | 17 37 | 0 30 | 1 38 | 6 39 | 1.0 | 18 34 | 2.7 | |
| 40 | 6 45 | 17 43 | 0 27 | 1 30 | 6 36 | 1.1 | 18 35 | 2.5 | |
| 35 | 6 39 | 17 49 | 0 26 | 1 24 | 6 34 | 1.2 | 18 36 | 2.4 | |
| 30 | 6 34 | 17 54 | 0 24 | 1 20 | 6 31 | 1.3 | 18 37 | 2.3 | |
| 20 | 6 25 | 18 2 | 0 22 | 1 14 | 6 28 | 1.5 | 18 39 | 2.1 | |
| 10 | 6 18 | 18 10 | 0 21 | 1 11 | 6 24 | 1.7 | 18 41 | 2.0 | |
| 0 | 6 10 | 18 17 | 0 21 | 1 10 | 6 21 | 1.8 | 18 42 | 1.8 | |
| 10 | 6 3 | 18 24 | 0 21 | 1 11 | 6 18 | 2.0 | 18 44 | 1.7 | |
| 20 | 5 55 | 18 32 | 0 22 | 1 16 | 6 14 | 2.1 | 18 45 | 1.5 | |
| 30 | 5 45 | 18 41 | 0 25 | 1 23 | 6 11 | 2.3 | 18 47 | 1.3 | |
| 35 | 5 40 | 18 47 | 0 26 | 1 29 | 6 8 | 2.4 | 18 48 | 1.2 | |
| 40 | 5 34 | 18 53 | 0 28 | 1 37 | 6 6 | 2.5 | 18 49 | 1.1 | |
| 45 | 5 26 | 18 60 | 0 31 | 1 48 | 6 3 | 2.7 | 18 50 | 1.0 | |
| 50 | 5 18 | 19 8 | 0 34 | 2 3 | 5 60 | 2.8 | 18 51 | .8 | |
| 55 | 5 7 | 19 19 | 0 39 | 2 28 | 5 55 | 3.0 | 18 53 | .6 | |
| 60 | 4 52 | 19 33 | 0 46 | 3 19 | 5 50 | 3.3 | 18 55 | .4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|----------------|---------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 43.9 138 - 5 36.3 | 117 | 117 38.4 | 12 28.0 | 303 6.2 | - 8 45.5 | | |
| 2 | 206 49.4 138 - 5 12.8 | 117 | 147 42.6 | 12 28.3 | 333 11.3 | - 8 45.4 | | |
| 4 | 235 55.0 139 - 4 49.4 | 118 | 177 46.7 | 12 28.6 | 3 16.3 | - 8 45.4 | | |
| 6 | 265 -.9 140 - 4 25.8 | 118 | 207 50.8 | 12 28.9 | 33 21.4 | - 8 45.3 | | |
| 8 | 294 6.8 141 - 4 2.2 | 118 | 237 55.0 | 12 29.2 | 63 26.4 | - 8 45.3 | | |
| 10 | 323 13.0 141 - 3 38.6 | 118 | 267 59.1 | 12 29.5 | 93 31.4 | - 8 45.2 | | |
| 12 | 352 19.2 142 - 3 15.0 | 118 | 298 3.2 | 12 29.7 | 123 36.5 | - 8 45.1 | | |
| 14 | 21 25.6 143 - 2 51.4 | 118 | 328 7.3 | 12 30.0 | 153 41.5 | - 8 45.1 | | |
| 16 | 50 32.1 143 - 2 27.7 | 118 | 358 11.5 | 12 30.3 | 183 46.6 | - 8 45.0 | | |
| 18 | 79 38.8 144 - 2 4.0 | 118 | 28 15.6 | 12 30.6 | 213 51.6 | - 8 44.9 | | |
| 20 | 108 45.5 144 - 1 40.4 | 118 | 58 19.7 | 12 30.9 | 243 56.7 | - 8 44.9 | | |
| 22 | 137 52.4 145 - 1 16.7 | 118 | 88 23.8 | 12 31.2 | 274 1.7 | - 8 44.8 | | |
| Δ | 1 9 | | -1 | 13 | 33 | 4 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | h min | min / | h min | / | h min | / | |
| 00 | -13 37.7 | .3 | 16.2 | T _{m̄} | 12 32 | 1.8 | 56.0 | 15.2 | |
| 12 | -13 34.0 | T _{m̄} | 12 h 13.6 min | Starost | 1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 14 53 | .1 | 345 | -4.1 | 4 | 16 7 | .0 | 326 | -1.8 |
| ○ | 1 16 | .1 | 190 | -1.0 | h | 347 | .0 | 152 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|----------------|---------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 166 59.4 145 - 0 53.1 | 118 | 118 28.0 | 12 31.5 | 304 6.8 | - 8 44.7 | | |
| 2 | 196 6.5 146 - 0 29.4 | 118 | 148 32.1 | 12 31.8 | 334 11.8 | - 8 44.7 | | |
| 4 | 225 13.6 146 - 0 5.8 | 118 | 178 36.2 | 12 32.1 | 4 16.9 | - 8 44.6 | | |
| 6 | 254 20.9 147 0 17.7 | 118 | 208 40.3 | 12 32.4 | 34 21.9 | - 8 44.5 | | |
| 8 | 283 28.2 147 0 41.2 | 117 | 238 44.5 | 12 32.7 | 64 27.0 | - 8 44.5 | | |
| 10 | 312 35.6 147 1 4.7 | 117 | 268 48.6 | 12 33.0 | 94 32.0 | - 8 44.4 | | |
| 12 | 341 43.1 148 1 28.1 | 117 | 298 52.7 | 12 33.3 | 124 37.1 | - 8 44.3 | | |
| 14 | 10 50.7 148 1 51.5 | 116 | 328 56.8 | 12 33.6 | 154 42.1 | - 8 44.3 | | |
| 16 | 39 58.3 148 2 14.7 | 116 | 359 .9 | 12 33.9 | 184 47.2 | - 8 44.2 | | |
| 18 | 69 5.9 149 2 37.9 | 116 | 29 5.0 | 12 34.2 | 214 52.2 | - 8 44.1 | | |
| 20 | 98 13.6 149 3 1.1 | 115 | 59 9.2 | 12 34.5 | 244 57.3 | - 8 44.1 | | |
| 22 | 127 21.4 149 3 24.1 | 115 | 89 13.3 | 12 34.8 | 275 2.3 | - 8 44.0 | | |
| Δ | 21 1 | | 25 | 0 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | h min | min / | h min | / | h min | / | |
| 00 | -13 30.4 | .3 | 16.2 | T _{m̄} | 13 15 | 1.8 | 55.5 | 15.1 | |
| 12 | -13 26.4 | T _{m̄} | 12 h 13.4 min | Starost | 1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 14 53 | .1 | 344 | -4.1 | 4 | 16 4 | .0 | 326 | -1.8 |
| ○ | 1 11 | .1 | 190 | -1.0 | h | 343 | .0 | 152 | .7 |

24. FEBRUAR

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 39.4 - 9 45.5 | 153 | 16.9 | 136 | 38.7 7 41.3 | 343 | 32.3 8 59.6 |
| 2 | 206 | 39.5 - 9 43.7 | 183 | 21.8 | 166 | 38.5 7 43.9 | 138 | 38.9 9 1.4 |
| 4 | 236 | 39.7 - 9 41.8 | 213 | 26.7 | 196 | 38.2 7 46.4 | 43 | 45.5 9 1.1 |
| 6 | 266 | 39.9 - 9 40.0 | 243 | 31.6 | 226 | 38.0 7 48.9 | 73 | 52.1 9 1.8 |
| 8 | 296 | 40.1 - 9 38.2 | 273 | 36.6 | 256 | 37.7 7 51.4 | 103 | 58.8 9 2.5 |
| 10 | 326 | 40.2 - 9 36.3 | 303 | 41.1 | 286 | 37.5 7 53.9 | 134 | 5.4 9 3.3 |
| 12 | 356 | 40.4 - 9 34.5 | 333 | 46.4 | 316 | 37.2 7 56.4 | 164 | 12.0 9 4.0 |
| 14 | 26 | 40.6 - 9 32.6 | 3 | 51.4 | 346 | 37.0 7 59.0 | 194 | 18.6 9 4.7 |
| 16 | 56 | 40.8 - 9 30.8 | 33 | 56.3 | 16 | 36.8 8 1.5 | 224 | 25.3 9 5.4 |
| 18 | 86 | 40.9 - 9 28.9 | 64 | 1.2 | 46 | 36.5 8 4.0 | 254 | 31.9 9 6.2 |
| 20 | 116 | 41.1 - 9 27.1 | 94 | 6.1 | 76 | 36.3 8 6.5 | 284 | 38.5 9 6.9 |
| 22 | 146 | 41.3 - 9 25.2 | 124 | 11.1 | 106 | 36.0 8 9.0 | 314 | 45.2 9 7.6 |
| Δ | 1 | 9 | | | -1 | 13 | 33 | 4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 15 | 17 13 | 0 43 | 2 19 | 7 12 | .4 | 21 4 | 3 2 | |
| 55 | 7 3 | 17 24 | 0 37 | 2 1 | 7 18 | .7 | 20 54 | 2 9 | |
| 50 | 6 55 | 17 33 | 0 33 | 1 48 | 7 23 | .9 | 20 46 | 2 7 | |
| 45 | 6 48 | 17 40 | 0 30 | 1 38 | 7 27 | 1.0 | 20 40 | 2 6 | |
| 40 | 6 42 | 17 45 | 0 27 | 1 30 | 7 30 | 1.1 | 20 35 | 2 4 | |
| 35 | 6 37 | 17 51 | 0 26 | 1 24 | 7 33 | 1.2 | 20 31 | 2 3 | |
| 30 | 6 32 | 17 55 | 0 24 | 1 20 | 7 36 | 1.3 | 20 27 | 2 2 | |
| 20 | 6 24 | 18 3 | 0 22 | 1 14 | 7 40 | 1.5 | 20 20 | 2 1 | |
| 10 | 6 17 | 18 10 | 0 21 | 1 10 | 7 44 | 1.7 | 20 14 | 1.9 | |
| 0 | 6 10 | 18 17 | 0 21 | 1 10 | 7 48 | 1.8 | 20 9 | 1.8 | |
| 10 | 6 3 | 18 23 | 0 21 | 1 11 | 7 52 | 1.9 | 20 3 | 1.7 | |
| 20 | 5 56 | 18 31 | 0 22 | 1 15 | 7 56 | 2.1 | 19 57 | 1.5 | |
| 30 | 5 47 | 18 39 | 0 24 | 1 23 | 8 1 | 2.2 | 19 51 | 1.4 | |
| 35 | 5 42 | 18 44 | 0 26 | 1 29 | 8 4 | 2.3 | 19 47 | 1.3 | |
| 40 | 5 36 | 18 50 | 0 28 | 1 36 | 8 7 | 2.5 | 19 43 | 1.2 | |
| 45 | 5 29 | 18 57 | 0 31 | 1 47 | 8 10 | 2.6 | 19 38 | 1.0 | |
| 50 | 5 21 | 19 4 | 0 34 | 2 2 | 8 15 | 2.7 | 19 32 | .9 | |
| 55 | 5 11 | 19 14 | 0 39 | 2 25 | 8 20 | 2.9 | 19 24 | .7 | |
| 60 | 4 57 | 19 27 | 0 46 | 3 10 | 8 27 | 3.2 | 19 15 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|-------|----------------|--------|----------------|----------------|----------------|----------------|---------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 156 | 29.2 | 149 | 3 47.1 | 114 | 119 | 17.4 12 35.1 | 305 | 7.4 - 8 43.9 |
| 2 | 185 | 37.0 | 149 | 4 9.9 | 114 | 149 | 21.5 12 35.4 | 335 | 12.4 - 8 43.9 |
| 4 | 214 | 44.8 | 149 | 4 32.7 | 113 | 179 | 25.6 12 35.7 | 5 | 17.5 - 8 43.8 |
| 6 | 243 | 52.7 | 149 | 4 55.3 | 113 | 209 | 29.7 12 36.0 | 35 | 22.5 - 8 43.7 |
| 8 | 273 | 5.149 | 149 | 5 17.9 | 112 | 239 | 33.8 12 36.3 | 65 | 27.6 - 8 43.7 |
| 10 | 302 | 8.4 | 149 | 5 40.3 | 111 | 269 | 37.9 12 36.6 | 95 | 32.7 - 8 43.6 |
| 12 | 331 | 16.3 | 149 | 6 2.6 | 111 | 299 | 42.0 12 36.9 | 125 | 37.7 - 8 43.5 |
| 14 | 0 | 24.2 | 149 | 6 24.8 | 110 | 329 | 46.2 12 37.1 | 155 | 42.8 - 8 43.4 |
| 16 | 29 | 32.0 | 149 | 6 46.8 | 109 | 359 | 50.3 12 37.4 | 185 | 47.8 - 8 43.4 |
| 18 | 58 | 39.9 | 149 | 7 8.7 | 109 | 29 | 54.4 12 37.7 | 215 | 52.9 - 8 43.3 |
| 20 | 87 | 47.7 | 149 | 7 30.4 | 108 | 59 | 58.5 12 38.0 | 245 | 58.0 - 8 43.2 |
| 22 | 116 | 55.5 | 149 | 7 52.0 | 107 | 90 | 2.6 12 38.3 | 276 | 3.0 - 8 43.2 |
| Δ | 1 | 9 | | | -1 | 12 | 33 | 4 | |

| UT | SUNCE | | | | MJESEC | | | | | | | |
|---------|-------|-----------------|-----------------|---------|----------|-----------------|-----------------|---------------|---------|------|------|----|
| | h | min | s | / | h | min | min | / | | | | |
| 00 | -13 | 22.4 | . | 4 | 16.2 | T _{m̄} | 13.58 | 1.8 55.0 15.0 | | | | |
| 12 | -13 | 18.1 | T _{m̄} | 12 | 13.3 min | Starost | 2.1 d | Faza ● | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | | |
| | h | min | / | o | | h | min | / | o | | | |
| 0 | 14 | 54 | . | 1 | 343 | -4.2 | 4 | 16 | 1 | 326 | -1.8 | |
| 0' | 1 | 6 | . | 1 | 190 | -1.0 | h | 3 | 39 | 0 | 152 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|----------------|---------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 146 | 3.3 | 149 | 8 13.4 | 106 | 120 | 6.7 12 38.6 | 306 | 8.1 - 8 43.1 |
| 2 | 175 | 11.0 | 149 | 8 34.7 | 106 | 150 | 10.8 12 38.9 | 336 | 13.1 - 8 43.0 |
| 4 | 204 | 18.7 | 148 | 8 55.8 | 105 | 180 | 14.9 12 39.2 | 6 | 18.2 - 8 43.0 |
| 6 | 233 | 26.4 | 148 | 9 16.7 | 104 | 210 | 19.0 12 39.5 | 36 | 23.3 - 8 42.9 |
| 8 | 262 | 34.0 | 148 | 9 37.5 | 103 | 240 | 23.1 12 39.8 | 68 | 28.3 - 8 42.8 |
| 10 | 291 | 41.6 | 148 | 9 58.1 | 102 | 270 | 27.2 12 40.1 | 96 | 33.4 - 8 42.7 |
| 12 | 320 | 49.1 | 147 | 10 18.4 | 101 | 300 | 31.3 12 40.4 | 126 | 38.5 - 8 42.7 |
| 14 | 349 | 56.5 | 147 | 10 38.6 | 100 | 330 | 35.4 12 40.7 | 156 | 43.5 - 8 42.6 |
| 16 | 19 | 3.9 | 146 | 10 58.6 | 99 | 0 | 39.5 12 41.0 | 186 | 48.6 - 8 42.5 |
| 18 | 48 | 11.2 | 146 | 11 18.4 | 98 | 30 | 43.6 12 41.4 | 216 | 53.7 - 8 42.4 |
| 20 | 77 | 18.4 | 146 | 11 38.0 | 97 | 60 | 47.7 12 41.7 | 246 | 58.7 - 8 42.4 |
| 22 | 106 | 25.5 | 145 | 11 57.4 | 96 | 90 | 51.8 12 42.0 | 277 | 3.8 - 8 42.3 |
| Δ | 20 | 2 | | | 25 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | | | | | |
|---------|-------|-----------------|-----------------|---------|----------|-----------------|-----------------|---------------|---------|------|-----|------|
| | h | min | s | / | h | min | min | / | | | | |
| 00 | -13 | 13.8 | . | 4 | 16.2 | T _{m̄} | 14.41 | 1.8 54.6 14.9 | | | | |
| 12 | -13 | 9.2 | T _{m̄} | 12 | 13.2 min | Starost | 3.1 d | Faza ● | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | | |
| | h | min | / | o | | h | min | / | o | | | |
| 0 | 14 | 54 | . | 1 | 342 | -4.2 | 4 | 15 | 57 | 0 | 326 | -1.8 |
| 0' | 1 | 0 | . | 1 | 191 | -1.0 | h | 3 | 35 | 0 | 152 | .7 |

26. FEBRUAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|--------------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 43.8 - 9 | 1.1 | 155 15.1 | 136 32.9 | 8 41.5 | 346 11.8 | 9 17.1 |
| 2 | 206 44.0 - 8 | 59.3 | 185 20.1 | 166 32.6 | 8 44.0 | 16 18.4 | 9 17.8 |
| 4 | 236 44.2 - 8 | 57.4 | 215 25.0 | 196 32.4 | 8 46.4 | 46 25.1 | 9 18.6 |
| 6 | 266 44.4 - 8 | 55.5 | 245 29.9 | 226 32.1 | 8 48.9 | 76 31.8 | 9 19.3 |
| 8 | 296 44.6 - 8 | 53.7 | 275 34.9 | 256 31.9 | 8 51.4 | 106 38.5 | 9 20.0 |
| 10 | 326 44.8 - 8 | 51.8 | 305 39.8 | 286 31.7 | 8 53.9 | 136 45.2 | 9 20.8 |
| 12 | 356 45.0 - 8 | 49.9 | 335 44.7 | 316 31.4 | 8 56.4 | 166 51.9 | 9 21.5 |
| 14 | 386 45.2 - 8 | 48.1 | 364 31.2 | 346 31.0 | 8 58.9 | 196 58.6 | 9 22.2 |
| 16 | 56 45.4 - 8 | 46.2 | 35 54.6 | 16 31.0 | 9 1.3 | 227 5.3 | 9 23.0 |
| 18 | 86 45.6 - 8 | 44.3 | 65 59.5 | 46 30.7 | 9 3.8 | 257 12.0 | 9 23.7 |
| 20 | 116 45.8 - 8 | 42.5 | 96 4.4 | 76 30.5 | 9 6.3 | 287 18.6 | 9 24.4 |
| 22 | 146 46.0 - 8 | 40.6 | 126 9.3 | 106 30.2 | 9 8.8 | 317 25.4 | 9 25.2 |
| Δ | 1 | 9 | | -1 | 12 | 33 | 4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 9 | 17 18 | 0 42 | 2 19 | 7 34 | .6 | 23 36 | 3.1 | |
| 55 | 6 59 | 17 28 | 0 37 | 2 1 | 7 52 | .9 | 23 13 | 2.8 | |
| 50 | 6 51 | 17 36 | 0 33 | 1 48 | 8 6 | 1.1 | 22 56 | 2.6 | |
| 45 | 6 44 | 17 42 | 0 30 | 1 38 | 8 17 | 1.2 | 22 43 | 2.5 | |
| 40 | 6 39 | 17 48 | 0 27 | 1 30 | 8 27 | 1.3 | 22 32 | 2.4 | |
| 35 | 6 34 | 17 52 | 0 26 | 1 24 | 8 34 | 1.4 | 22 22 | 2.3 | |
| 30 | 6 30 | 17 56 | 0 24 | 1 20 | 8 42 | 1.5 | 22 14 | 2.2 | |
| 20 | 6 23 | 18 4 | 0 22 | 1 14 | 8 54 | 1.6 | 21 60 | 2.1 | |
| 10 | 6 16 | 18 10 | 0 21 | 1 10 | 9 4 | 1.8 | 21 48 | 2.0 | |
| 0 | 6 10 | 18 16 | 0 21 | 1 9 | 9 15 | 1.9 | 21 36 | 1.9 | |
| 10 | 6 3 | 18 23 | 0 21 | 1 11 | 9 25 | 2.0 | 21 24 | 1.8 | |
| 20 | 5 56 | 18 29 | 0 22 | 1 15 | 9 36 | 2.1 | 21 12 | 1.7 | |
| 30 | 5 48 | 18 37 | 0 24 | 1 23 | 9 48 | 2.2 | 20 58 | 1.6 | |
| 35 | 5 44 | 18 42 | 0 26 | 1 28 | 9 56 | 2.3 | 20 50 | 1.5 | |
| 40 | 5 38 | 18 47 | 0 28 | 1 36 | 10 4 | 2.4 | 20 41 | 1.4 | |
| 45 | 5 32 | 18 53 | 0 30 | 1 46 | 10 14 | 2.5 | 20 30 | 1.3 | |
| 50 | 5 24 | 19 0 | 0 34 | 2 0 | 10 25 | 2.7 | 20 17 | 1.2 | |
| 55 | 5 15 | 19 10 | 0 38 | 2 22 | 10 40 | 2.8 | 20 1 | 1.0 | |
| 60 | 5 3 | 19 22 | 0 45 | 3 2 | 11 0 | 3.1 | 19 39 | .7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 135 32.6 | 145 | 12 16.5 | 95 | 120 55.9 | 12 42.3 | 307 8.9 | - 8 42.2 |
| 2 | 164 39.6 | 144 | 12 35.5 | 94 | 150 60.0 | 12 42.6 | 337 13.9 | - 8 42.2 |
| 4 | 193 46.4 | 144 | 12 54.2 | 92 | 181 4.0 | 12 42.9 | 7 19.0 | - 8 42.1 |
| 6 | 222 53.2 | 143 | 13 12.7 | 91 | 211 8.1 | 12 43.2 | 37 24.1 | - 8 42.0 |
| 8 | 251 59.9 | 143 | 13 30.9 | 90 | 241 12.2 | 12 43.5 | 67 29.2 | - 8 41.9 |
| 10 | 281 6.4 | 142 | 13 48.9 | 89 | 271 16.3 | 12 43.8 | 97 34.2 | - 8 41.9 |
| 12 | 310 12.9 | 142 | 14 6.7 | 88 | 301 20.4 | 12 44.1 | 127 39.3 | - 8 41.8 |
| 14 | 339 19.3 | 141 | 14 24.2 | 86 | 331 24.5 | 12 44.4 | 157 44.4 | - 8 41.7 |
| 16 | 8 25.5 | 141 | 14 41.5 | 85 | 1 28.6 | 12 44.7 | 187 49.5 | - 8 41.6 |
| 18 | 37 31.6 | 140 | 14 58.5 | 84 | 31 32.7 | 12 45.0 | 217 54.5 | - 8 41.6 |
| 20 | 66 37.6 | 139 | 15 15.2 | 82 | 61 36.8 | 12 45.3 | 247 59.6 | - 8 41.5 |
| 22 | 95 43.5 | 139 | 15 31.7 | 81 | 91 40.8 | 12 45.6 | 278 4.7 | - 8 41.4 |
| Δ | 1 | 9 | | -1 | 12 | 34 | 4 | |
| | 20 | 2 | | 25 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|----------------|----------------|---------------|---------|----------------|----------------|-------|-------------|------|
| | h min s | s / | h min | min / | T _m | 15 25 | 1.9 | 54.3 14.8 | |
| 00 | -13 4.7 | .4 | 16.2 | | | | | | |
| 12 | -12 59.8 | T _m | 12 h 13.0 min | Starost | 4.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _m | π | 360 - π | Vel. | Pl. | T _m | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 54 | .1 | 341 | -4.2 | 4 | 15 54 | .0 | 326 | -1.8 |
| δ | 0 55 | .1 | 191 | -1.0 | h | 3 31 | .0 | 152 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 124 49.2 | 138 | 15 47.9 | 80 | 121 44.9 | 12 45.9 | 308 9.8 | - 8 41.1 |
| 2 | 153 54.8 | 137 | 16 3.9 | 78 | 151 49.0 | 12 46.2 | 338 14.8 | - 8 41.3 |
| 4 | 183 .3 | 137 | 16 19.5 | 77 | 181 53.1 | 12 46.5 | 8 19.9 | - 8 41.2 |
| 6 | 212 5.6 | 136 | 16 34.9 | 75 | 211 57.2 | 12 46.8 | 38 25.0 | - 8 41.1 |
| 8 | 241 10.8 | 136 | 16 49.9 | 74 | 242 1.3 | 12 47.1 | 68 30.1 | - 8 41.0 |
| 10 | 270 15.9 | 135 | 17 4.7 | 72 | 272 5.3 | 12 47.4 | 98 35.2 | - 8 40.9 |
| 12 | 299 20.8 | 134 | 17 19.2 | 71 | 302 9.4 | 12 47.7 | 128 40.2 | - 8 40.9 |
| 14 | 328 25.6 | 133 | 17 33.4 | 69 | 332 13.5 | 12 48.0 | 158 45.3 | - 8 40.8 |
| 16 | 357 30.2 | 132 | 17 47.3 | 68 | 2 17.6 | 12 48.3 | 188 50.4 | - 8 40.7 |
| 18 | 26 34.7 | 132 | 18 .8 | 66 | 32 21.7 | 12 48.6 | 218 55.5 | - 8 40.6 |
| 20 | 55 39.0 | 131 | 18 14.1 | 65 | 62 25.7 | 12 48.9 | 249 .6 | - 8 40.6 |
| 22 | 84 43.2 | 130 | 18 27.0 | 63 | 92 29.8 | 12 49.3 | 279 5.7 | - 8 40.5 |
| Δ | 20 | 2 | | 25 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|----------------|----------------|---------------|---------|----------------|----------------|-------|-------------|------|
| | h min s | s / | h min | min / | T _m | 16 10 | 2.0 | 54.2 14.8 | |
| 00 | -12 54.9 | .4 | 16.2 | | | | | | |
| 12 | -12 49.7 | T _m | 12 h 12.8 min | Starost | 5.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _m | π | 360 - π | Vel. | Pl. | T _m | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 54 | .1 | 340 | -4.2 | 4 | 15 51 | .0 | 326 | -1.8 |
| δ | 0 50 | .1 | 191 | -1.0 | h | 3 27 | .0 | 152 | .7 |

28. FEBRUAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _♀ | δ _♀ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 48.8 - 8 16.2 | 157 13.4 | 136 27.2 9 40.8 | 348 52.7 9 34.7 | | | | |
| 2 | 206 49.0 - 8 14.3 | 187 18.3 | 166 26.9 9 43.3 | 189 59.4 9 35.4 | | | | |
| 4 | 236 49.3 - 8 12.4 | 217 23.3 | 196 26.7 9 45.7 | 49 6.1 9 36.1 | | | | |
| 6 | 266 49.5 - 8 10.5 | 247 28.2 | 226 26.5 9 48.2 | 79 12.9 9 36.9 | | | | |
| 8 | 296 49.7 - 8 8.7 | 277 33.1 | 256 26.2 9 50.6 | 109 19.6 9 37.6 | | | | |
| 10 | 326 49.9 - 8 6.8 | 307 38.1 | 286 26.0 9 53.1 | 139 26.3 9 38.3 | | | | |
| 12 | 356 50.2 - 8 4.9 | 337 43.0 | 316 25.7 9 55.5 | 169 33.1 9 39.1 | | | | |
| 14 | 26 50.4 - 8 3.0 | 7 47.9 | 346 25.5 9 58.0 | 199 39.8 9 39.8 | | | | |
| 16 | 56 50.6 - 8 1.1 | 37 52.8 | 16 25.3 10 .4 | 229 46.5 9 40.5 | | | | |
| 18 | 86 50.8 - 7 59.2 | 67 57.8 | 46 25.0 10 2.9 | 259 53.3 9 41.3 | | | | |
| 20 | 116 51.1 - 7 57.3 | 98 2.7 | 76 24.8 10 5.3 | 290 .0 9 42.0 | | | | |
| 22 | 146 51.3 - 7 55.4 | 128 7.6 | 106 24.6 10 7.8 | 320 6.8 9 42.7 | | | | |
| Δ | 1 9 | | -1 | 12 | 34 | 4 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 3 | 17 23 | 0 42 | 2 19 | 8 10 | 1.2 | 0 50 | 2.9 | |
| 55 | 6 54 | 17 32 | 0 37 | 2 1 | 8 40 | 1.4 | 0 20 | 2.7 | |
| 50 | 6 47 | 17 39 | 0 33 | 1 48 | 9 21 | 1.5 | ... . | 0 | |
| 45 | 6 41 | 17 45 | 0 30 | 1 38 | 9 20 | 1.6 | ... . | 0 | |
| 40 | 6 36 | 17 50 | 0 27 | 1 30 | 9 34 | 1.7 | ... . | 0 | |
| 35 | 6 32 | 17 54 | 0 25 | 1 24 | 9 46 | 1.7 | ... . | 0 | |
| 30 | 6 28 | 17 58 | 0 24 | 1 20 | 9 56 | 1.8 | ... . | 0 | |
| 20 | 6 21 | 18 4 | 0 22 | 1 13 | 10 15 | 1.9 | 23 41 | 2.1 | |
| 10 | 6 15 | 18 10 | 0 21 | 1 10 | 10 31 | 1.9 | 23 24 | 2.1 | |
| 0 | 6 9 | 18 16 | 0 21 | 1 9 | 10 45 | 2.0 | 23 8 | 2.0 | |
| 10 | 6 3 | 18 22 | 0 21 | 1 11 | 11 0 | 2.1 | 22 53 | 2.0 | |
| 20 | 5 57 | 18 28 | 0 22 | 1 15 | 11 17 | 2.1 | 22 36 | 1.9 | |
| 30 | 5 50 | 18 35 | 0 24 | 1 22 | 11 35 | 2.2 | 22 16 | 1.9 | |
| 35 | 5 45 | 18 39 | 0 26 | 1 28 | 11 46 | 2.2 | 22 5 | 1.8 | |
| 40 | 5 41 | 18 44 | 0 28 | 1 35 | 11 58 | 2.3 | 21 52 | 1.8 | |
| 45 | 5 35 | 18 50 | 0 30 | 1 45 | 12 13 | 2.4 | 21 37 | 1.7 | |
| 50 | 5 28 | 18 56 | 0 34 | 1 59 | 12 31 | 2.4 | 21 18 | 1.7 | |
| 55 | 5 19 | 19 5 | 0 38 | 2 20 | 12 54 | 2.6 | 20 54 | 1.6 | |
| 60 | 5 8 | 19 16 | 0 45 | 2 56 | 13 27 | 2.7 | 20 21 | 1.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|------------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 113 47.2 129 | 18 39.6 | 61 | | 122 33.9 12 49.6 | 309 10.7 - 8 40.4 | | |
| 2 | 142 51.1 129 | 18 51.9 | 60 | | 152 38.0 12 49.9 | 339 15.8 - 8 40.3 | | |
| 4 | 171 54.8 128 | 19 3.9 | 58 | | 182 42.0 12 50.2 | 9 20.9 - 8 40.2 | | |
| 6 | 200 58.4 127 | 19 15.5 | 56 | | 212 46.1 12 50.5 | 39 26.0 - 8 40.2 | | |
| 8 | 230 1.8 126 | 19 26.8 | 55 | | 242 50.2 12 50.8 | 69 31.1 - 8 40.1 | | |
| 10 | 259 5.0 125 | 19 37.7 | 53 | | 272 54.3 12 51.1 | 99 36.2 - 8 40.0 | | |
| 12 | 288 8.1 125 | 19 48.3 | 51 | | 302 58.3 12 51.4 | 129 41.3 - 8 39.9 | | |
| 14 | 317 11.0 124 | 19 58.5 | 49 | | 333 2.4 12 51.7 | 159 46.4 - 8 39.8 | | |
| 16 | 346 13.8 123 | 20 8.4 | 48 | | 3 6.5 12 52.0 | 189 51.5 - 8 39.8 | | |
| 18 | 15 16.4 122 | 20 17.9 | 46 | | 33 10.5 12 52.3 | 219 56.5 - 8 39.7 | | |
| 20 | 44 18.9 122 | 20 27.0 | 44 | | 63 14.6 12 52.6 | 250 1.6 - 8 39.6 | | |
| 22 | 73 21.2 121 | 20 35.8 | 42 | | 93 18.7 12 52.9 | 280 6.7 - 8 39.5 | | |
| Δ | 1 9 | | | | 20 2 | 25 0 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | -12 44.6 | .5 | 16.2 | T _{m̄} | 16 57 | 2.0 | 54.2 | 14.8 |
| 12 | -12 39.1 | T _{m̄} | 12 h 12.7 min | Starost | 6.1 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|----------|-----------------|------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | / | o / | |
| φ | 14 54 .1 | 339 | -4.2 | 4 | 15 48 .0 |
| δ | 0 44 .1 | 192 | -1.0 | h | 3 23 .0 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|------------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 102 23.3 120 | 20 44.2 | 40 | | 123 22.7 12 53.2 | 310 11.8 - 8 39.4 | | |
| 2 | 131 25.3 119 | 20 52.3 | 38 | | 153 26.8 12 53.6 | 340 16.9 - 8 39.4 | | |
| 4 | 160 27.2 118 | 20 59.3 | 36 | | 183 30.9 12 53.9 | 10 22.0 - 8 39.3 | | |
| 6 | 189 28.8 118 | 21 7.2 | 34 | | 213 34.9 12 54.2 | 40 27.1 - 8 39.2 | | |
| 8 | 210 30.4 117 | 21 14.1 | 32 | | 243 39.0 12 54.8 | 70 32.2 - 8 39.1 | | |
| 10 | 247 31.8 116 | 21 20.6 | 31 | | 273 43.1 12 54.8 | 100 37.3 - 8 39.0 | | |
| 12 | 276 33.0 115 | 21 26.7 | 29 | | 303 47.1 12 55.1 | 130 42.4 - 8 38.9 | | |
| 14 | 305 34.1 115 | 21 32.4 | 27 | | 333 61.2 12 55.4 | 160 47.5 - 8 38.9 | | |
| 16 | 334 35.0 114 | 21 37.7 | 25 | | 3 55.2 12 55.7 | 190 52.6 - 8 38.8 | | |
| 18 | 3 35.8 113 | 21 42.6 | 22 | | 33 59.3 12 56.0 | 220 57.7 - 8 38.7 | | |
| 20 | 32 36.5 113 | 21 47.1 | 20 | | 64 3.4 12 56.3 | 251 2.8 - 8 38.6 | | |
| 22 | 61 37.0 112 | 21 51.1 | 18 | | 94 7.4 12 56.7 | 281 7.9 - 8 38.5 | | |
| Δ | 20 2 | 25 0 | | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | -12 33.7 | .5 | 16.2 | T _{m̄} | 17 45 | 2.1 | 54.3 | 14.8 |
| 12 | -12 28.0 | T _{m̄} | 12 h 12.5 min | Starost | 7.1 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|----------|-----------------|------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | / | o / | |
| φ | 14 54 .1 | 338 | -4.2 | 4 | 15 44 .0 |
| δ | 0 39 .1 | 192 | -1.0 | h | 3 19 .0 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 54.4 - 7 | 30.8 | 159 11.7 | 136 21.6 10 39.3 | 351 34.6 | 9 52.2 | | |
| 2 | 206 54.6 - 7 | 28.9 | 189 16.6 | 166 21.3 10 41.8 | 21 41.4 | 9 52.9 | | |
| 4 | 236 54.9 - 7 | 27.0 | 219 21.5 | 196 21.1 10 44.2 | 51 48.2 | 9 53.7 | | |
| 6 | 266 55.1 - 7 | 25.1 | 249 26.5 | 226 20.9 10 46.6 | 81 55.0 | 9 54.4 | | |
| 8 | 296 55.4 - 7 | 23.2 | 279 31.4 | 256 20.6 10 49.0 | 112 1.7 | 9 55.1 | | |
| 10 | 326 55.6 - 7 | 21.3 | 309 36.3 | 286 20.4 10 51.4 | 142 8.5 | 9 55.8 | | |
| 12 | 356 55.9 - 7 | 19.4 | 339 41.3 | 316 20.2 10 53.8 | 172 15.3 | 9 56.6 | | |
| 14 | 26 56.1 - 7 | 17.4 | 9 46.2 | 346 20.0 10 56.2 | 202 22.1 | 9 57.3 | | |
| 16 | 56 56.4 - 7 | 15.5 | 39 51.1 | 16 19.7 10 58.6 | 232 28.6 | 9 58.0 | | |
| 18 | 86 56.6 - 7 | 13.6 | 69 56.0 | 46 19.5 11 1.1 | 262 35.6 | 9 58.7 | | |
| 20 | 116 56.9 - 7 | 11.7 | 100 1.0 | 76 19.3 11 3.5 | 292 42.4 | 9 59.5 | | |
| 22 | 146 57.1 - 7 | 9.8 | 130 5.9 | 106 19.0 11 5.9 | 322 49.2 | 10 2.2 | | |
| Δ | 1 | 10 | | -1 | 12 | 34 | 4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------------|-----------------|--------|-----------------|--------|---------|--------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 57 | 17 28 | 0 42 | 2 19 | 9 18 | 2 2 | 2 60 | 2 1 | |
| 55 | 6 49 | 17 36 | 0 36 | 2 1 | 9 56 | 2 2 | 2 22 | 2 1 | |
| 50 | 6 43 | 17 43 | 0 32 | 1 48 | 10 23 | 2 2 | 1 56 | 2 1 | |
| 45 | 6 37 | 17 48 | 0 29 | 1 38 | 10 44 | 2 2 | 1 35 | 2 1 | |
| 40 | 6 33 | 17 52 | 0 27 | 1 30 | 11 0 | 2 2 | 1 19 | 2 1 | |
| 35 | 6 29 | 17 56 | 0 25 | 1 24 | 11 14 | 2 2 | 1 5 | 2 1 | |
| 30 | 6 26 | 17 59 | 0 24 | 1 20 | 11 27 | 2 1 | 0 53 | 2 1 | |
| 20 | 6 20 | 18 5 | 0 22 | 1 13 | 11 48 | 2 1 | 0 32 | 2 1 | |
| 10 | 6 14 | 18 11 | 0 21 | 1 10 | 12 6 | 2 1 | 0 14 | 2 1 | |
| 0 | 6 9 | 18 16 | 0 21 | 1 9 | 12 23 | 2 1 |0 | | |
| 10 | 6 4 | 18 21 | 0 21 | 1 11 | 12 40 | 2 1 |0 | | |
| 20 | 5 58 | 18 26 | 0 22 | 1 15 | 12 58 | 2 1 |0 | | |
| 30 | 5 51 | 18 33 | 0 24 | 1 22 | 13 19 | 2 1 | 23 51 | 2 2 | |
| S | | | | | | | | | |
| SUNCE | | | | | | | | | MJESEC |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | -12 22.3 | .5 | 16.2 | T _{m̄} | 18 35 | 2.1 | 54.6 | 14.9 | |
| 12 | -12 16.3 | T _{m̄} | 12 h 12.3 min | Starost | 8.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 14 55 | .1 | 337 | -4.2 | 4 | 15 41 | .0 | 325 | -1.7 |
| ♂ | 0 34 | .1 | 192 | -1.0 | h | 3 15 | .0 | 152 | .6 |

2. MART

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 57.4 - 7 | 7.9 | 160 10.8 | 136 18.8 11 8.3 | 352 56.0 | 10 .9 | | |
| 2 | 206 57.6 - 7 | 6.0 | 190 15.8 | 166 18.6 11 10.7 | 23 2.7 | 10 1.6 | | |
| 4 | 236 57.9 - 7 | 4.1 | 220 20.7 | 196 18.3 11 13.1 | 53 9.5 | 10 2.3 | | |
| 6 | 266 58.1 - 7 | 2.2 | 250 25.6 | 226 18.1 11 15.5 | 83 16.3 | 10 3.1 | | |
| 8 | 296 58.4 - 7 | .3 | 280 30.5 | 256 17.9 11 17.8 | 113 23.1 | 10 3.8 | | |
| 10 | 326 58.7 - 6 | 58.3 | 310 35.5 | 286 17.7 11 20.2 | 143 29.9 | 10 4.5 | | |
| 12 | 356 58.9 - 6 | 56.4 | 340 40.4 | 316 17.4 11 22.6 | 173 36.7 | 10 5.2 | | |
| 14 | 26 59.2 - 6 | 54.5 | 10 45.3 | 346 17.2 11 25.0 | 203 43.5 | 10 5.9 | | |
| 16 | 56 59.4 - 6 | 52.6 | 40 50.3 | 16 17.0 11 27.4 | 233 50.2 | 10 6.7 | | |
| 18 | 86 59.7 - 6 | 50.7 | 70 55.2 | 46 16.8 11 29.8 | 263 57.0 | 10 7.4 | | |
| 20 | 117 .0 - 6 | 48.8 | 101 .1 | 76 16.5 11 32.2 | 294 3.8 | 10 8.1 | | |
| 22 | 147 .2 - 6 | 46.9 | 131 5.0 | 106 16.3 11 34.6 | 324 10.6 | 10 8.8 | | |
| Δ | 1 | 10 | | -1 | 12 | 34 | 4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------------|-----------------|--------|-----------------|--------|---------|--------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 55 | 17 31 | 0 42 | 2 19 | 10 12 | 2.8 | 3 50 | 1.6 | |
| 55 | 6 47 | 17 38 | 0 36 | 2 1 | 10 49 | 2.6 | 3 13 | 1.8 | |
| 50 | 6 41 | 17 44 | 0 32 | 1 48 | 11 16 | 2.5 | 2 46 | 1.8 | |
| 45 | 6 36 | 17 49 | 0 29 | 1 38 | 11 36 | 2.5 | 2 26 | 1.9 | |
| 40 | 6 31 | 17 53 | 0 27 | 1 30 | 11 52 | 2.4 | 2 9 | 1.9 | |
| 35 | 6 28 | 17 57 | 0 25 | 1 24 | 12 6 | 2.4 | 1 55 | 2.0 | |
| 30 | 6 25 | 18 0 | 0 24 | 1 20 | 12 18 | 2.3 | 1 43 | 2.0 | |
| 20 | 6 19 | 18 6 | 0 22 | 1 13 | 13 39 | 2.2 | 1 22 | 2.1 | |
| 10 | 6 14 | 18 11 | 0 21 | 1 10 | 12 57 | 2.2 | 1 4 | 2.1 | |
| 0 | 6 9 | 18 15 | 0 21 | 1 9 | 13 13 | 2.1 | 0 47 | 2.1 | |
| 10 | 6 4 | 18 20 | 0 21 | 1 11 | 13 30 | 2.1 | 0 30 | 2.2 | |
| 20 | 5 58 | 18 26 | 0 22 | 1 14 | 13 48 | 2.0 | 0 12 | 2.2 | |
| 30 | 5 52 | 18 32 | 0 24 | 1 22 | 14 8 | 2.0 |0 | | |
| 35 | 5 48 | 18 35 | 0 26 | 1 27 | 14 20 | 1.9 |0 | | |
| 40 | 5 44 | 18 40 | 0 28 | 1 34 | 14 34 | 1.9 |0 | | |
| 45 | 5 39 | 18 44 | 0 30 | 1 44 | 14 51 | 1.8 |0 | | |
| 50 | 5 33 | 18 50 | 0 33 | 1 57 | 15 11 | 1.7 | 23 43 | 2.7 | |
| 55 | 5 26 | 18 57 | 0 38 | 2 16 | 15 37 | 1.6 | 23 18 | 2.8 | |
| 60 | 5 16 | 19 7 | 0 44 | 2 49 | 16 14 | 1.4 | 22 41 | 3.0 | |
| S | | | | | | | | | |
| SUNCE | | | | | | | | | MJESEC |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | -12 10.3 | .5 | 16.2 | T _{m̄} | 19 26 | 2.1 | 55.1 | 15.0 | |
| 12 | -12 4.1 | T _{m̄} | 12 h 12.1 min | Starost | 9.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 14 55 | .1 | 336 | -4.3 | 4 | 15 38 | .0 | 325 | -1.7 |
| ♂ | 0 28 | .1 | 193 | -1.0 | h | 3 11 | .0 | 152 | .6 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|------------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 .5 - 6 44.9 | 161 10.0 | 136 16.1 11 36.9 | 354 17.4 10 9.5 | | | | |
| 2 | 207 .7 - 6 43.0 | 191 14.9 | 166 15.8 11 39.3 | 24 24.2 10 10.3 | | | | |
| 4 | 237 1.0 - 6 41.1 | 221 19.8 | 196 15.6 11 41.7 | 54 31.0 10 11.0 | | | | |
| 6 | 267 1.3 - 6 39.2 | 251 24.8 | 226 15.4 11 44.1 | 84 37.8 10 11.7 | | | | |
| 8 | 297 1.5 - 6 37.3 | 281 29.7 | 256 15.2 11 46.4 | 114 44.6 10 12.4 | | | | |
| 10 | 327 1.8 - 6 35.3 | 311 34.6 | 286 14.9 11 48.8 | 144 51.4 10 13.1 | | | | |
| 12 | 357 2.1 - 6 33.4 | 341 39.5 | 316 14.7 11 51.2 | 174 58.2 10 13.8 | | | | |
| 14 | 387 2.4 - 6 31.5 | 346 44.5 11 53.5 | 205 5.0 10 14.5 | | | | | |
| 16 | 57 2.6 - 6 29.6 | 41 49.4 | 16 14.3 11 55.9 | 235 11.8 10 15.2 | | | | |
| 18 | 87 2.9 - 6 27.7 | 71 54.3 | 46 14.0 11 58.3 | 265 18.6 10 16.0 | | | | |
| 20 | 117 3.2 - 6 25.7 | 101 59.3 | 76 13.8 12 .6 | 295 25.4 10 16.7 | | | | |
| 22 | 147 3.4 - 6 23.8 | 132 4.2 | 106 13.6 12 3.0 | 325 32.2 10 17.4 | | | | |
| Δ | 1 | 10 | -1 | 12 | 34 | 4 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|---------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 52 | 17 33 | 0 42 | 2 20 | 11 19 | 3 2 | 4 29 | 1 2 | |
| 55 | 6 44 | 17 40 | 0 36 | 2 1 | 11 52 | 3 0 | 3 55 | 1 4 | |
| 50 | 6 39 | 17 46 | 0 32 | 1 48 | 12 16 | 2 8 | 3 30 | 1 6 | |
| 45 | 6 34 | 17 51 | 0 29 | 1 38 | 12 35 | 2 7 | 3 11 | 1 7 | |
| 40 | 6 30 | 17 54 | 0 27 | 1 30 | 12 50 | 2 6 | 2 56 | 1 8 | |
| 35 | 6 27 | 17 58 | 0 25 | 1 24 | 13 3 | 2 5 | 2 43 | 1 8 | |
| 30 | 6 23 | 18 1 | 0 24 | 1 19 | 13 14 | 2 4 | 2 31 | 1 9 | |
| 20 | 6 18 | 18 6 | 0 22 | 1 13 | 13 33 | 2 3 | 2 11 | 2 0 | |
| 10 | 6 13 | 18 11 | 0 21 | 1 10 | 13 49 | 2 2 | 1 54 | 2 1 | |
| 0 | 6 9 | 18 15 | 0 21 | 1 9 | 14 5 | 2 1 | 1 38 | 2 1 | |
| 10 | 6 4 | 18 20 | 0 21 | 1 10 | 14 20 | 2 1 | 1 22 | 2 2 | |
| 20 | 5 59 | 18 25 | 0 22 | 1 14 | 14 36 | 2 0 | 1 4 | 2 3 | |
| 30 | 5 53 | 18 31 | 0 24 | 1 22 | 14 55 | 1 8 | 0 44 | 2 4 | |
| 35 | 5 49 | 18 34 | 0 26 | 1 27 | 15 6 | 1 8 | 0 33 | 2 4 | |
| 40 | 5 45 | 18 38 | 0 27 | 1 34 | 15 19 | 1 7 | 0 19 | 2 5 | |
| 45 | 5 40 | 18 43 | 0 30 | 1 43 | 15 34 | 1 6 | 0 3 | 2 6 | |
| 50 | 5 35 | 18 48 | 0 33 | 1 56 | 15 52 | 1 5 | ... ... | 0 | |
| 55 | 5 28 | 18 55 | 0 38 | 2 15 | 16 15 | 1 3 | ... ... | 0 | |
| 60 | 5 18 | 19 4 | 0 44 | 2 47 | 16 47 | 1 0 | 23 54 | 3.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|-----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 66 14.6 101 | 21 12.7 | -37 | | 125 48.6 13 4.5 | 313 15.6 - 8 36.4 | | |
| 2 | 95 12.7 100 | 21 5.4 | -39 | | 155 52.7 13 4.8 | 343 20.7 - 8 36.3 | | |
| 4 | 124 10.8 100 | 20 57.6 | -41 | | 185 56.7 13 5.1 | 13 25.8 - 8 36.2 | | |
| 6 | 153 8.8 100 | 20 49.3 | -43 | | 216 .8 13 5.4 | 43 30.9 - 8 36.1 | | |
| 8 | 182 6.8 100 | 20 40.6 | -46 | | 246 4.8 13 5.7 | 73 36.0 - 8 36.0 | | |
| 10 | 211 4.8 100 | 20 31.5 | -48 | | 276 8.8 13 6.0 | 103 41.1 - 8 35.9 | | |
| 12 | 240 2.8 100 | 20 21.9 | -50 | | 306 12.9 13 6.4 | 133 46.3 - 8 35.8 | | |
| 14 | 269 .7 100 | 20 11.8 | -52 | | 336 16.9 13 6.7 | 163 51.4 - 8 35.8 | | |
| 16 | 297 58.6 100 | 20 1.3 | -55 | | 6 20.9 13 7.0 | 193 56.5 - 8 35.7 | | |
| 18 | 326 56.5 99 | 19 50.4 | -57 | | 36 25.0 13 7.3 | 224 1.6 - 8 35.6 | | |
| 20 | 355 54.4 99 | 19 39.0 | -59 | | 66 29.0 13 7.6 | 254 6.7 - 8 35.5 | | |
| 22 | 384 52.3 99 | 19 27.2 | -61 | | 96 33.0 13 7.9 | 284 11.9 - 8 35.4 | | |
| Δ | 1 | 10 | | | 20 2 | 26 0 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-----------------|----------------|----------|-----------------|-------|-------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | -11 57.9 | .5 16.2 | T _{m̄} | 20 17 | 2.1 | 55.8 | 15.2 | | |
| 12 | -11 51.4 | T _{m̄} | 12 h 11.9 min | Starost 10.1 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 55 .1 | 335 | -4.3 | 4 | 15 35 .0 | 325 | -1.7 | 0 | 152 -.6 |
| ○ | 0 23 .1 | 193 | -1.1 | h | 3 6 .0 | 0 | 152 | -.6 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|-----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 53 50.2 99 | 19 14.9 | -64 | | 126 37.1 13 8.3 | 314 17.0 - 8 35.3 | | |
| 2 | 82 48.1 99 | 19 2.2 | -66 | | 156 41.1 13 8.6 | 344 22.1 - 8 35.2 | | |
| 4 | 111 46.0 99 | 18 49.0 | -68 | | 186 45.1 13 8.9 | 14 27.2 - 8 35.1 | | |
| 6 | 140 43.8 99 | 18 35.4 | -70 | | 216 49.2 13 9.2 | 44 32.3 - 8 35.0 | | |
| 8 | 169 41.7 99 | 18 21.4 | -72 | | 246 53.2 13 9.5 | 74 37.5 - 8 34.9 | | |
| 10 | 198 39.6 100 | 18 7.0 | -74 | | 276 57.2 13 9.8 | 104 42.6 - 8 34.8 | | |
| 12 | 227 37.5 100 | 17 52.1 | -76 | | 307 1.2 13 10.2 | 134 47.7 - 8 34.8 | | |
| 14 | 256 35.4 100 | 17 36.9 | -78 | | 337 5.3 13 10.5 | 164 52.8 - 8 34.7 | | |
| 16 | 285 33.4 100 | 17 21.2 | -80 | | 7 9.3 13 10.8 | 194 58.0 - 8 34.6 | | |
| 18 | 314 31.3 100 | 17 5.1 | -83 | | 37 13.3 13 11.1 | 225 3.1 - 8 34.5 | | |
| 20 | 343 29.3 100 | 16 48.5 | -85 | | 67 17.3 13 11.4 | 255 8.2 - 8 34.4 | | |
| 22 | 372 27.2 100 | 16 31.6 | -87 | | 97 21.4 13 11.7 | 285 13.3 - 8 34.3 | | |
| Δ | 1 | 10 | | | 20 2 | 26 0 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-----------------|----------------|----------|-----------------|-------|-------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | -11 45.0 | .6 16.2 | T _{m̄} | 21 8 | 2.2 | 56.6 | 15.4 | | |
| 12 | -11 38.3 | T _{m̄} | 12 h 11.6 min | Starost 11.1 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 0 | 14 55 .1 | 335 | -4.3 | 4 | 15 31 .0 | 324 | -1.7 | 0 | 152 -.6 |
| ○ | 0 17 .1 | 193 | -1.1 | h | 3 2 .0 | 0 | 152 | -.6 | |

5. MART

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|-----------------|------------------|----------------|------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 7.1 - 5 58.7 | 163 8.2 | 136 10.7 12 33.5 | | 357 .6 10 26.5 | | | |
| 2 | 207 7.3 - 5 56.8 | 193 13.2 | 166 10.5 12 35.8 | | 27 .4 10 27.2 | | | |
| 4 | 237 7.6 - 5 54.9 | 223 18.1 | 196 10.2 12 38.2 | | 57 14.2 10 27.9 | | | |
| 6 | 267 7.9 - 5 52.9 | 253 23.0 | 226 10.0 12 40.5 | | 87 21.0 10 28.6 | | | |
| 8 | 297 8.2 - 5 51.0 | 283 28.0 | 256 9.8 12 42.8 | | 117 27.8 10 29.3 | | | |
| 10 | 327 8.5 - 5 49.1 | 313 32.9 | 286 9.6 12 45.1 | | 147 34.6 10 30.0 | | | |
| 12 | 357 8.8 - 5 47.1 | 343 37.8 | 316 9.4 12 47.5 | | 177 41.5 10 30.7 | | | |
| 14 | 387 9.1 - 5 44.2 | 346 9.1 12 49.8 | 207 48.3 10 31.4 | | | | | |
| 16 | 57 9.4 - 5 43.3 | 43 47.7 | 16 8.9 12 52.1 | | 237 55.1 10 32.1 | | | |
| 18 | 87 9.6 - 5 41.3 | 73 52.6 | 46 8.7 12 54.4 | | 268 1.9 10 32.8 | | | |
| 20 | 117 9.9 - 5 39.4 | 103 57.5 | 76 8.5 12 56.7 | | 298 8.7 10 33.5 | | | |
| 22 | 147 10.2 - 5 37.4 | 134 2.5 | 106 8.3 12 59.1 | | 328 15.5 10 34.2 | | | |
| Δ | 1 | 10 | -1 | 12 | 34 | 3 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 46 | 17 38 | 0 42 | 2 20 | 14 2 | 3 .7 | 5 19 | .7 | |
| 55 | 6 39 | 17 45 | 0 36 | 2 1 | 14 22 | 3 .4 | 4 57 | 1.0 | |
| 50 | 6 34 | 17 49 | 0 32 | 1 48 | 14 37 | 3 .2 | 4 41 | 1.2 | |
| 45 | 6 30 | 17 53 | 0 29 | 1 38 | 14 48 | 3 .0 | 4 28 | 1.3 | |
| 40 | 6 27 | 17 57 | 0 27 | 1 30 | 14 58 | 2 .9 | 4 17 | 1.5 | |
| 35 | 6 24 | 17 59 | 0 25 | 1 24 | 15 6 | 2 .7 | 4 7 | 1.6 | |
| 30 | 6 21 | 18 2 | 0 24 | 1 19 | 15 14 | 2 .6 | 3 59 | 1.7 | |
| 20 | 6 16 | 18 7 | 0 22 | 1 13 | 15 26 | 2 .4 | 3 45 | 1.9 | |
| 10 | 6 12 | 18 11 | 0 21 | 1 10 | 15 37 | 2 .3 | 3 32 | 2.0 | |
| 0 | 6 8 | 18 15 | 0 21 | 1 9 | 15 47 | 2 .1 | 3 21 | 2.1 | |
| 10 | 6 4 | 18 19 | 0 21 | 1 10 | 15 58 | 2 .0 | 3 9 | 2.3 | |
| 20 | 5 59 | 18 23 | 0 22 | 1 14 | 16 9 | 1 .8 | 2 56 | 2.4 | |
| 30 | 5 54 | 18 28 | 0 24 | 1 21 | 16 21 | 1 .6 | 2 42 | 2.6 | |
| 35 | 5 51 | 18 31 | 0 26 | 1 26 | 16 28 | 1 .5 | 2 33 | 2.7 | |
| 40 | 5 47 | 18 35 | 0 27 | 1 33 | 16 36 | 1 .4 | 2 23 | 2.8 | |
| 45 | 5 43 | 18 39 | 0 30 | 1 43 | 16 45 | 1 .3 | 2 12 | 2.9 | |
| 50 | 5 38 | 18 44 | 0 33 | 1 55 | 16 57 | 1 .1 | 1 58 | 3.1 | |
| 55 | 5 32 | 18 50 | 0 37 | 2 14 | 17 11 | .9 | 1 40 | 3.3 | |
| 60 | 5 23 | 18 58 | 0 43 | 2 43 | 17 29 | .6 | 1 16 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------------|------------------|-----|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 41 25.2 100 | 16 14.3 - 89 | 127 25.4 13 12.4 | | 315 18.5 - 8 34.2 | | | |
| 2 | 70 23.2 100 | 15 56.6 - 91 | 157 29.4 13 12.4 | | 345 23.6 - 8 34.1 | | | |
| 4 | 99 21.3 100 | 15 38.5 - 92 | 187 33.4 13 12.7 | | 15 28.7 - 8 34.0 | | | |
| 6 | 128 19.3 100 | 15 20.0 - 94 | 217 37.5 13 13.0 | | 45 33.9 - 8 33.9 | | | |
| 8 | 157 17.4 100 | 15 1.1 - 96 | 247 41.5 13 13.3 | | 75 39.0 - 8 33.8 | | | |
| 10 | 186 15.4 101 | 14 41.8 - 98 | 277 45.5 13 13.7 | | 105 44.1 - 8 33.7 | | | |
| 12 | 215 13.6 101 | 14 22.2 - 100 | 307 49.5 13 14.0 | | 135 49.3 - 8 33.6 | | | |
| 14 | 244 11.7 101 | 14 2.2 - 102 | 337 53.5 13 14.3 | | 165 54.4 - 8 33.5 | | | |
| 16 | 273 9.8 101 | 13 41.9 - 103 | 7 57.6 13 14.6 | | 198 59.5 - 8 33.4 | | | |
| 18 | 302 8.0 101 | 13 21.2 - 105 | 38 1.6 13 14.9 | | 226 4.7 - 8 33.3 | | | |
| 20 | 331 6.1 101 | 13 .1 - 107 | 68 5.6 13 15.2 | | 256 9.8 - 8 33.3 | | | |
| 22 | 0 4.3 101 | 12 38.8 - 109 | 98 9.6 13 15.6 | | 286 14.9 - 8 33.2 | | | |
| Δ | 1 | 10 | -1 | 11 | 34 | 3 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | -11 31.6 | .6 | 16.2 | T _{m̄} | 21 60 | 2.1 | 57.4 | 15.6 | |
| 12 | -11 24.7 | T _{m̄} | 12 h 11.4 min | Starost | 12.1 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| ♀ | 14 55 | .1 | 333 | -4.3 | 4 | 15 28 | .0 | 324 | -1.7 |
| ♂ | 0 12 | .1 | 194 | -1.1 | h | 2 58 | .0 | 152 | .6 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|---------------|------------------|-----|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 29 2.5 101 | 12 17.1 - 110 | 128 13.6 13 15.9 | | 316 20.1 - 8 33.1 | | | |
| 2 | 58 .7 101 | 11 55.0 - 112 | 158 17.6 13 16.2 | | 346 25.2 - 8 33.0 | | | |
| 4 | 86 59.0 101 | 11 32.7 - 113 | 188 21.7 13 16.5 | | 16 30.3 - 8 32.9 | | | |
| 6 | 115 57.2 101 | 11 10.0 - 115 | 218 25.7 13 16.8 | | 46 35.5 - 8 32.8 | | | |
| 8 | 144 55.4 101 | 10 47.1 - 116 | 248 29.7 13 17.2 | | 76 40.6 - 8 32.7 | | | |
| 10 | 173 53.7 101 | 10 23.8 - 118 | 278 33.7 13 17.5 | | 106 45.7 - 8 32.6 | | | |
| 12 | 202 51.9 101 | 10 .3 - 119 | 308 37.7 13 17.8 | | 136 50.9 - 8 32.5 | | | |
| 14 | 231 50.2 101 | 9 36.4 - 120 | 338 41.7 13 18.1 | | 166 56.0 - 8 32.4 | | | |
| 16 | 260 48.4 101 | 9 12.4 - 122 | 8 45.7 13 18.4 | | 197 1.2 - 8 32.3 | | | |
| 18 | 289 46.6 101 | 8 48.0 - 123 | 38 49.7 13 18.8 | | 227 6.3 - 8 32.2 | | | |
| 20 | 318 44.9 101 | 8 23.4 - 124 | 68 53.7 13 19.1 | | 257 11.4 - 8 32.1 | | | |
| 22 | 347 43.1 101 | 7 58.6 - 125 | 98 57.8 13 19.4 | | 287 16.6 - 8 32.0 | | | |
| Δ | 20 | 2 | 26 | 0 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | -11 17.7 | .6 | 16.1 | T _{m̄} | 22 51 | 2.1 | 58.3 | 15.9 | |
| 12 | -11 10.6 | T _{m̄} | 12 h 11.2 min | Starost | 13.1 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| ♀ | 14 56 | .1 | 332 | -4.3 | 4 | 15 25 | .0 | 324 | -1.7 |
| ♂ | 0 6 | .1 | 194 | -1.1 | h | 2 54 | .0 | 152 | .6 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|--------------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 14.1 - 5 | 12.2 | 165 6.5 | 136 5.4 | 13 29.0 | 359 43.9 | 10 43.1 |
| 2 | 207 14.4 - 5 | 10.3 | 195 11.5 | 166 5.2 | 13 31.2 | 29 50.7 | 10 43.7 |
| 4 | 237 14.7 - 5 | 8.3 | 225 16.4 | 196 5.0 | 13 33.5 | 59 57.5 | 10 44.4 |
| 6 | 267 15.0 - 5 | 6.4 | 255 21.3 | 226 4.8 | 13 35.8 | 90 4.3 | 10 45.1 |
| 8 | 297 15.3 - 5 | 4.4 | 285 26.2 | 256 4.5 | 13 38.1 | 120 11.2 | 10 45.8 |
| 10 | 327 15.6 - 5 | 2.5 | 315 31.2 | 286 4.3 | 13 40.4 | 150 18.0 | 10 46.4 |
| 12 | 357 15.9 - 5 | .5 | 345 36.1 | 316 4.1 | 13 42.6 | 180 24.8 | 10 47.1 |
| 14 | 27 16.2 - 4 | 58.6 | 15 41.0 | 346 3.9 | 13 44.9 | 210 31.6 | 10 47.8 |
| 16 | 57 16.5 - 4 | 56.6 | 45 46.0 | 16 3.7 | 13 47.2 | 240 38.4 | 10 48.4 |
| 18 | 87 16.8 - 4 | 54.7 | 75 50.9 | 46 3.5 | 13 49.4 | 270 45.2 | 10 49.1 |
| 20 | 117 17.1 - 4 | 52.7 | 105 55.8 | 76 3.2 | 13 51.7 | 300 51.9 | 10 49.8 |
| 22 | 147 17.4 - 4 | 50.8 | 136 .7 | 106 3.0 | 13 54.0 | 330 58.7 | 10 50.4 |
| Δ | 2 | 10 | | -1 | 11 | 34 | 3 |

| UT | SUNCE | | PROLJ. TAČKA S γ | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-----------|-------|-------------------------------|---------------------|--------|--------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 40 | 17 43 | 0 42 | 2 20 | 17 3 | 3.9 | 5 49 | .5 | |
| 55 | 6 34 | 17 49 | 0 36 | 2 1 | 17 7 | 3.6 | 5 41 | .8 | |
| 50 | 6 30 | 17 53 | 0 32 | 1 48 | 17 11 | 3.4 | 5 35 | 1.0 | |
| 45 | 6 27 | 17 56 | 0 29 | 1 38 | 17 14 | 3.2 | 5 30 | 1.2 | |
| 40 | 6 24 | 17 59 | 0 27 | 1 30 | 17 17 | 3.0 | 5 25 | 1.3 | |
| 35 | 6 21 | 18 1 | 0 25 | 1 24 | 17 19 | 2.9 | 5 22 | 1.5 | |
| 30 | 6 19 | 18 3 | 0 24 | 1 19 | 17 21 | 2.7 | 5 18 | 1.6 | |
| 20 | 6 15 | 18 7 | 0 22 | 1 13 | 17 24 | 2.5 | 5 13 | 1.8 | |
| 10 | 6 11 | 18 11 | 0 21 | 1 10 | 17 27 | 2.3 | 5 8 | 2.0 | |
| 0 | 6 8 | 18 14 | 0 21 | 1 9 | 17 30 | 2.2 | 5 3 | 2.1 | |
| 10 | 6 4 | 18 18 | 0 21 | 1 10 | 17 33 | 2.0 | 4 58 | 2.3 | |
| 20 | 5 60 | 18 22 | 0 22 | 1 14 | 17 36 | 1.8 | 4 53 | 2.5 | |
| 30 | 5 55 | 18 26 | 0 24 | 1 21 | 17 39 | 1.6 | 4 47 | 2.7 | |
| 35 | 5 53 | 18 29 | 0 25 | 1 26 | 17 41 | 1.5 | 4 44 | 2.8 | |
| 40 | 5 49 | 18 32 | 0 27 | 1 33 | 17 43 | 1.4 | 4 40 | 3.0 | |
| 45 | 5 46 | 18 35 | 0 30 | 1 42 | 17 46 | 1.2 | 4 35 | 3.1 | |
| 50 | 5 41 | 18 40 | 0 33 | 1 54 | 17 48 | 1.0 | 4 30 | 3.3 | |
| 55 | 5 36 | 18 45 | 0 37 | 2 12 | 17 52 | .8 | 4 23 | 3.6 | |
| 60 | 5 29 | 18 52 | 0 43 | 2 40 | 17 57 | .5 | 4 14 | 3.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|--------------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 16 41.3 101 | 7 | 33.5 - 126 | 129 1.8 | 13 19.7 | 317 21.7 - 8 | 31.9 | |
| 2 | 45 39.4 101 | 7 | 8.2 - 128 | 159 5.8 | 13 20.1 | 347 26.9 - 8 | 31.8 | |
| 4 | 74 37.6 101 | 6 | 42.7 - 129 | 189 9.8 | 13 20.4 | 17 32.0 - 8 | 31.7 | |
| 6 | 103 35.7 100 | 6 | 17.0 - 130 | 219 13.8 | 13 20.7 | 47 37.2 - 8 | 31.6 | |
| 8 | 132 33.8 100 | 5 | 51.1 - 130 | 249 17.8 | 13 21.0 | 77 42.3 - 8 | 31.5 | |
| 10 | 161 31.9 100 | 5 | 25.0 - 131 | 279 21.8 | 13 21.3 | 107 47.4 - 8 | 31.4 | |
| 12 | 190 29.9 100 | 4 | 58.7 - 132 | 305 25.8 | 13 21.7 | 137 52.6 - 8 | 31.3 | |
| 14 | 219 27.9 100 | 4 | 32.3 - 133 | 339 29.8 | 13 22.0 | 167 57.7 - 8 | 31.2 | |
| 16 | 248 25.8 99 | 4 | 5.7 - 134 | 9 33.8 | 13 22.3 | 198 2.9 - 8 | 31.1 | |
| 18 | 277 23.7 99 | 3 | 39.0 - 134 | 39 37.8 | 13 22.6 | 228 8.0 - 8 | 31.0 | |
| 20 | 306 21.5 99 | 3 | 12.1 - 135 | 69 41.8 | 13 22.9 | 258 13.2 - 8 | 30.9 | |
| 22 | 335 19.3 98 | 2 | 45.2 - 135 | 99 45.8 | 13 23.3 | 288 18.3 - 8 | 30.8 | |
| Δ | 2 | 10 | | -1 | 11 | 34 | 3 | |

| UT | MJESEC | | | | SUNCE | | | |
|---------|-------------------------|-----------------|---------------|----------------|-----------------|-------------------------|-------------|---------------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | UT | e = T _p - UT | $\Delta/24$ | π_{ζ} |
| h min s | s | / | h min | min / | T _{m̄} | h min | min / | / |
| 00 | -11 3.5 | .6 | 16.1 | 23 42 | 2.2 | 59.1 | 16.1 | |
| 12 | -10 56.2 | T _{m̄} | 12 h 10.9 min | Starost 14.1 d | Faza ○ | | | |

| UT | PLANETE | | | |
|----------|----------|-----------------|---------|-------------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min | h min / | Vel. |
| 0 | 14 56 .1 | 331 | -4.4 | 4 |
| δ | 0 1 | 195 | -1.1 | h |
| 0 | 2 50 | 250 | 0 | 152 |
| δ | 0 | 0 | 0 | .6 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-------------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 4 17.0 98 | 2 | 18.1 - 136 | 129 49.8 | 13 23.6 | 318 23.5 - 8 | 30.7 | |
| 2 | 33 14.6 98 | 1 | 50.9 - 136 | 159 53.8 | 13 23.9 | 348 28.6 - 8 | 30.6 | |
| 4 | 62 12.1 97 | 1 | 23.7 - 137 | 189 57.8 | 13 24.2 | 18 33.8 - 8 | 30.5 | |
| 6 | 91 9.6 97 | 0 | 56.3 - 137 | 220 1.8 | 13 24.6 | 48 38.9 - 8 | 30.4 | |
| 8 | 120 7.0 96 | 0 | 28.9 - 137 | 250 5.8 | 13 24.9 | 78 44.1 - 8 | 30.3 | |
| 10 | 149 4.3 96 | 0 | 1.5 - 137 | 280 9.8 | 13 25.2 | 108 49.2 - 8 | 30.2 | |
| 12 | 178 1.5 96 | - | 0 26.0 - 138 | 310 13.8 | 13 25.5 | 138 54.4 - 8 | 30.1 | |
| 14 | 206 58.6 95 | - | 0 53.5 - 138 | 340 17.8 | 13 25.9 | 168 59.5 - 8 | 30.0 | |
| 16 | 238 55.6 94 | - | 1 21.0 - 138 | 10 21.8 | 13 26.2 | 199 4.7 - 8 | 29.9 | |
| 18 | 264 52.5 94 | - | 1 48.5 - 138 | 40 25.8 | 13 26.5 | 229 9.8 - 8 | 29.8 | |
| 20 | 293 49.3 93 | - | 2 16.0 - 137 | 70 29.8 | 13 26.8 | 259 15.0 - 8 | 29.7 | |
| 22 | 322 45.9 93 | - | 2 43.5 - 137 | 100 33.8 | 13 27.2 | 289 20.1 - 8 | 29.6 | |
| Δ | 20 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|----------|-------------------------|---------------|----------------|-----------------|-------|-------------------------|-------------|---------------|
| | UT | e = T _p - UT | $\Delta/24$ | t | Prolaz | UT | e = T _p - UT | $\Delta/24$ | π_{ζ} |
| h min s | s | / | h min | min / | T _{m̄} | h min | min / | / | |
| 00 | -10 48.8 | .6 | 16.1 | 1.0 | 59.8 | 16.3 | | | |
| 12 | -10 41.3 | T _{m̄} | 12 h 10.7 min | Starost 15.1 d | Faza ○ | | | | |

| UT | PLANETE | | | |
|----------|----------|-----------------|---------|-------------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min | h min / | Vel. |
| 0 | 14 56 .1 | 330 | -4.4 | 4 |
| δ | 0 1 | 195 | -1.0 | h |
| 0 | 2 50 | 246 | 0 | 152 |
| δ | 0 | 0 | 0 | .6 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|-----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 177 | 21.5 - 4 | 25.4 | 167 | 4.8 | 136 .2 | 14 23.2 | 2 27.0 10 59.0 |
| 2 | 207 | 21.8 - 4 | 23.4 | 197 | 9.7 | 166 .0 | 14 25.5 | 32 33.8 10 59.6 |
| 4 | 237 | 22.1 - 4 | 21.5 | 227 | 14.7 | 195 59.8 | 14 27.7 | 62 40.6 11 .3 |
| 6 | 267 | 22.5 - 4 | 19.5 | 257 | 19.6 | 225 59.6 | 14 29.9 | 92 47.4 11 .9 |
| 8 | 297 | 22.8 - 4 | 17.6 | 287 | 24.5 | 255 59.4 | 14 32.2 | 122 54.2 11 1.6 |
| 10 | 327 | 23.1 - 4 | 15.6 | 317 | 29.4 | 285 59.2 | 14 34.4 | 153 1.0 11 2.2 |
| 12 | 357 | 23.4 - 4 | 13.6 | 347 | 34.4 | 315 59.0 | 14 36.6 | 183 7.8 11 2.9 |
| 14 | 387 | 23.7 - 4 | 11.7 | 378 | 39.3 | 345 58.8 | 14 38.8 | 213 14.5 11 3.5 |
| 16 | 57 | 24.1 - 4 | 9.7 | 47 | 44.2 | 15 58.5 | 14 41.0 | 243 21.3 11 4.1 |
| 18 | 87 | 24.4 - 4 | 7.8 | 77 | 49.2 | 45 58.3 | 14 43.3 | 273 28.1 11 4.8 |
| 20 | 117 | 24.7 - 4 | 5.8 | 107 | 54.1 | 75 58.1 | 14 45.5 | 303 34.9 11 5.4 |
| 22 | 147 | 25.0 - 4 | 3.9 | 137 | 59.0 | 105 57.9 | 14 47.7 | 333 41.6 11 6.1 |
| Δ | 2 | 10 | | | -1 | 11 | 34 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 34 | 17 48 | 0 41 | 2 21 | 20 12 | 4.0 | 6 13 | .6 | |
| 55 | 6 29 | 17 53 | 0 36 | 2 2 | 20 1 | 3.7 | 6 19 | .9 | |
| 50 | 6 26 | 17 56 | 0 32 | 1 48 | 19 53 | 3.4 | 6 24 | 1.1 | |
| 45 | 6 23 | 17 59 | 0 29 | 1 38 | 19 47 | 3.2 | 6 27 | 1.3 | |
| 40 | 6 21 | 18 1 | 0 27 | 1 30 | 19 42 | 3.1 | 6 30 | 1.4 | |
| 35 | 6 19 | 18 3 | 0 25 | 1 24 | 19 37 | 2.9 | 6 33 | 1.6 | |
| 30 | 6 17 | 18 5 | 0 24 | 1 19 | 19 33 | 2.8 | 6 36 | 1.7 | |
| 20 | 6 13 | 18 8 | 0 22 | 1 13 | 19 27 | 2.6 | 6 40 | 1.9 | |
| 10 | 6 10 | 18 11 | 0 21 | 1 10 | 19 21 | 2.4 | 6 43 | 2.1 | |
| 0 | 6 7 | 18 14 | 0 21 | 1 9 | 19 15 | 2.3 | 6 47 | 2.2 | |
| 10 | 6 4 | 18 17 | 0 21 | 1 10 | 19 10 | 2.1 | 6 50 | 2.4 | |
| 20 | 6 1 | 18 20 | 0 22 | 1 14 | 19 4 | 2.0 | 6 54 | 2.6 | |
| 30 | 5 57 | 18 24 | 0 24 | 1 21 | 18 57 | 1.8 | 6 58 | 2.8 | |
| 35 | 5 54 | 18 26 | 0 25 | 1 26 | 18 53 | 1.6 | 7 1 | 2.9 | |
| 40 | 5 52 | 18 29 | 0 27 | 1 32 | 18 49 | 1.5 | 7 3 | 3.1 | |
| 45 | 5 48 | 18 32 | 0 30 | 1 41 | 18 44 | 1.4 | 7 7 | 3.2 | |
| 50 | 5 45 | 18 35 | 0 33 | 1 53 | 18 38 | 1.2 | 7 11 | 3.4 | |
| 55 | 5 40 | 18 40 | 0 37 | 2 10 | 18 31 | .9 | 7 15 | 3.7 | |
| 60 | 5 34 | 18 46 | 0 43 | 2 37 | 18 22 | .6 | 7 22 | 4.0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|------------|----------------|----------------|----------------|-------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 351 | 42.5 | 92 - 3 | 10.9 - 137 | 130 | 37.7 | 13 27.5 | 319 25.3 - 8 29.5 |
| 2 | 20 | 38.9 | 91 - 3 | 38.3 - 137 | 160 | 41.7 | 13 27.8 | 349 30.5 - 8 29.4 |
| 4 | 49 | 35.2 | 91 - 4 | 5.7 - 136 | 190 | 45.7 | 13 28.1 | 19 35.6 - 8 29.3 |
| 6 | 78 | 31.3 | 90 - 4 | 32.9 - 136 | 220 | 49.7 | 13 28.4 | 49 40.8 - 8 29.2 |
| 8 | 107 | 27.3 | 89 - 5 | 1 - 135 | 250 | 53.7 | 13 28.8 | 79 45.9 - 8 29.1 |
| 10 | 136 | 23.2 | 89 - 5 | 27.1 - 135 | 280 | 57.7 | 13 29.1 | 109 51.1 - 8 29.0 |
| 12 | 165 | 18.9 | 88 - 5 | 54.0 - 134 | 311 | 1.7 | 13 29.4 | 139 56.2 - 8 28.9 |
| 14 | 194 | 14.5 | 87 - 6 | 20.9 - 133 | 341 | 5.7 | 13 29.7 | 170 1.4 - 8 28.8 |
| 16 | 223 | 9.9 | 86 - 6 | 47.5 - 133 | 311 | 9.7 | 13 30.1 | 200 6.6 - 8 28.7 |
| 18 | 252 | 5.1 | 85 - 7 | 14.0 - 132 | 41 | 13.6 | 13 30.4 | 230 11.7 - 8 28.6 |
| 20 | 281 | .2 | 85 - 7 | 40.4 - 131 | 71 | 17.6 | 13 30.7 | 260 16.9 - 8 28.5 |
| 22 | 309 | 55.1 | 84 - 8 | 6.5 - 130 | 101 | 21.6 | 13 31.0 | 290 22.0 - 8 28.4 |
| Δ | 2 | 10 | | | -1 | 11 | 34 | 3 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|-----------------|---------------|-----------------|----------------|-----------------|-----------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h | min | s | / | h min | min | / | / | | | |
| 00 | -10 | 33.8 | .6 | 16.1 | T _{m̄} | 0 34 | 2.3 | 60.2 16.4 | | |
| 12 | -10 | 26.1 | T _{m̄} | 12 h 10.4 min | Starost | 16.1 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | o | / | h min | / | o | / | h min | / |
| ♀ | 14 56 | .1 | 329 | -4.4 | 4 | 15 15 | .0 | 324 | -1.7 | |
| ♂ | 23 45 | .1 | 196 | -1.0 | h | 2 42 | .0 | 152 | -.6 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|------------|----------------|----------------|----------------|-------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 338 | 49.9 | 83 - 8 | 32.5 - 129 | 131 | 25.6 | 13 31.4 | 320 27.2 - 8 28.3 |
| 2 | 7 | 44.4 | 82 - 8 | 58.3 - 128 | 161 | 29.6 | 13 31.7 | 350 32.4 - 8 28.2 |
| 4 | 36 | 38.8 | 81 - 9 | 23.8 - 127 | 191 | 33.6 | 13 32.0 | 20 37.5 - 8 28.1 |
| 6 | 65 | 33.1 | 80 - 9 | 49.1 - 125 | 221 | 37.5 | 13 32.4 | 50 42.7 - 8 27.9 |
| 8 | 94 | 27.1 | 79 - 10 | 14.2 - 124 | 251 | 41.5 | 13 32.7 | 80 47.9 - 8 27.8 |
| 10 | 123 | 21.0 | 78 - 10 | 39.0 - 123 | 281 | 45.6 | 13 33.0 | 110 53.0 - 8 27.7 |
| 12 | 152 | 14.6 | 77 - 11 | 3.5 - 121 | 311 | 49.5 | 13 33.3 | 140 58.2 - 8 27.6 |
| 14 | 181 | 8.1 | 76 - 11 | 27.7 - 120 | 341 | 53.5 | 13 33.7 | 171 3.3 - 8 27.5 |
| 16 | 210 | 1.4 | 76 - 11 | 51.7 - 118 | 11 | 57.4 | 13 34.0 | 201 8.5 - 8 27.4 |
| 18 | 238 | 54.5 | 75 - 12 | 15.3 - 117 | 42 | 1.4 | 13 34.3 | 231 13.7 - 8 27.3 |
| 20 | 267 | 47.4 | 74 - 12 | 38.6 - 115 | 72 | 5.4 | 13 34.6 | 261 18.8 - 8 27.2 |
| 22 | 296 | 40.2 | 73 - 13 | 1.6 - 113 | 102 | 9.4 | 13 35.0 | 291 24.0 - 8 27.1 |
| Δ | 20 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|-----------------|---------------|-----------------|----------------|-----------------|-----------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h | min | s | / | h min | min | / | / | | | |
| 00 | -10 | 18.4 | .7 | 16.1 | T _{m̄} | 1 28 | 2.3 | 60.5 16.5 | | |
| 12 | -10 | 10.6 | T _{m̄} | 12 h 10.2 min | Starost | 17.1 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | o | / | h min | / | o | / | h min | / |
| ♀ | 14 56 | .1 | 328 | -4.4 | 4 | 15 12 | .0 | 323 | -1.7 | |
| ♂ | 23 39 | .1 | 196 | -1.0 | h | 2 38 | .0 | 152 | -.6 | |

11. MART

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|------------------|----------------|------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 29.3 - 3 38.4 | 169 3.1 | 135 55.2 15 16.2 | | 5 9.6 11 14.2 | | | |
| 2 | 207 29.6 - 3 36.4 | 199 8.0 | 165 55.0 15 18.4 | | 35 16.4 11 14.8 | | | |
| 4 | 237 29.9 - 3 34.4 | 229 12.9 | 195 54.8 15 20.6 | | 65 23.1 11 15.4 | | | |
| 6 | 267 30.3 - 3 32.5 | 259 17.9 | 225 54.6 15 22.8 | | 95 29.9 11 16.0 | | | |
| 8 | 297 30.6 - 3 30.5 | 289 22.8 | 255 54.4 15 24.9 | | 125 36.6 11 16.7 | | | |
| 10 | 327 30.9 - 3 28.5 | 319 27.7 | 285 54.2 15 27.1 | | 155 43.4 11 17.3 | | | |
| 12 | 357 31.3 - 3 26.6 | 349 32.7 | 315 54.0 15 29.3 | | 185 50.1 11 17.9 | | | |
| 14 | 387 31.6 - 3 24.6 | 19 37.6 | 345 53.7 15 31.4 | | 215 56.9 11 18.5 | | | |
| 16 | 57 31.9 - 3 22.6 | 49 42.5 | 15 53.5 15 33.6 | | 246 3.6 11 19.1 | | | |
| 18 | 87 32.3 - 3 20.7 | 79 47.4 | 45 53.3 15 35.8 | | 276 10.4 11 19.7 | | | |
| 20 | 117 32.6 - 3 18.7 | 109 52.4 | 75 53.1 15 37.9 | | 306 17.1 11 20.3 | | | |
| 22 | 147 32.9 - 3 16.7 | 139 57.3 | 105 52.9 15 40.1 | | 336 23.9 11 20.9 | | | |
| Δ | 2 | 10 | | -1 | 11 | 34 | 3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 28 | 17 53 | 0 41 | 2 22 | 23 23 | 3.7 | 6 44 | 1.0 | |
| 55 | 6 24 | 17 57 | 0 36 | 2 2 | 22 57 | 3.4 | 7 5 | 1.3 | |
| 50 | 6 22 | 17 59 | 0 32 | 1 48 | 22 37 | 3.2 | 7 20 | 1.5 | |
| 45 | 6 19 | 18 1 | 0 29 | 1 38 | 22 22 | 3.1 | 7 33 | 1.7 | |
| 40 | 6 18 | 18 3 | 0 27 | 1 30 | 22 9 | 3.0 | 7 43 | 1.8 | |
| 35 | 6 16 | 18 5 | 0 25 | 1 24 | 21 59 | 2.9 | 7 52 | 1.9 | |
| 30 | 6 14 | 18 6 | 0 24 | 1 19 | 21 49 | 2.8 | 7 60 | 2.0 | |
| 20 | 6 12 | 18 9 | 0 22 | 1 13 | 21 33 | 2.7 | 8 13 | 2.1 | |
| 10 | 6 9 | 18 11 | 0 21 | 1 10 | 21 20 | 2.5 | 8 25 | 2.3 | |
| 0 | 6 7 | 18 13 | 0 21 | 1 9 | 21 7 | 2.4 | 8 37 | 2.4 | |
| 10 | 6 4 | 18 16 | 0 21 | 1 10 | 20 54 | 2.3 | 8 48 | 2.5 | |
| 20 | 6 1 | 18 18 | 0 22 | 1 14 | 20 40 | 2.2 | 8 60 | 2.7 | |
| 30 | 5 58 | 18 21 | 0 24 | 1 20 | 20 25 | 2.1 | 9 14 | 2.8 | |
| 35 | 5 56 | 18 23 | 0 25 | 1 25 | 20 16 | 2.0 | 9 22 | 2.9 | |
| 40 | 5 54 | 18 25 | 0 27 | 1 32 | 20 6 | 1.9 | 9 31 | 3.0 | |
| 45 | 5 51 | 18 28 | 0 29 | 1 41 | 19 54 | 1.8 | 9 42 | 3.2 | |
| 50 | 5 48 | 18 31 | 0 33 | 1 52 | 19 40 | 1.7 | 9 55 | 3.3 | |
| 55 | 5 44 | 18 35 | 0 37 | 2 9 | 19 22 | 1.5 | 10 11 | 3.5 | |
| 60 | 5 39 | 18 40 | 0 42 | 2 34 | 18 58 | 1.2 | 10 33 | 3.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|---------------------------|------------------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 325 32.7 72 -13 24.3 -111 | 132 13.4 13 35.3 | | 321 29.2 -8 27.0 | | | | |
| 2 | 354 25.1 71 -13 46.5 -110 | 162 17.3 13 35.6 | | 351 34.3 -8 26.9 | | | | |
| 4 | 23 17.3 70 -14 8.4 -108 | 192 21.3 13 35.9 | | 21 39.5 -8 26.8 | | | | |
| 6 | 52 9.2 69 -14 30.0 -106 | 222 25.3 13 36.3 | | 51 44.7 -8 26.7 | | | | |
| 8 | 81 1.0 68 -14 51.1 -104 | 252 29.3 13 36.6 | | 81 49.9 -8 26.6 | | | | |
| 10 | 109 52.7 67 -15 11.8 -102 | 282 33.2 13 36.9 | | 111 55.0 -8 26.5 | | | | |
| 12 | 138 44.1 66 -15 32.2 -99 | 312 37.2 13 37.3 | | 142 .2 -8 26.4 | | | | |
| 14 | 167 35.4 65 -15 52.0 -97 | 342 41.2 13 37.6 | | 172 5.4 -8 26.2 | | | | |
| 16 | 196 26.4 65 -16 11.5 -95 | 12 45.1 13 37.9 | | 202 10.5 -8 26.1 | | | | |
| 18 | 225 17.4 64 -16 30.5 -93 | 42 49.1 13 38.2 | | 232 15.7 -8 26.0 | | | | |
| 20 | 254 8.1 63 -16 49.1 -90 | 72 53.1 13 38.6 | | 262 20.9 -8 25.9 | | | | |
| 22 | 282 58.7 62 -17 7.2 -88 | 102 57.1 13 38.9 | | 292 26.1 -8 25.8 | | | | |
| Δ | 2 | 10 | | -1 | 11 | 34 | 3 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | |
| 00 | -10 2.7 | .7 | 16.1 | T _{m̄} | 2 23 | 2.4 | 60.5 | 16.5 | |
| 12 | - 9 54.7 | T _{m̄} | 12 h | 9.9 min | Starost | 18.1 d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | / | h min / | o | h min / | o | h min / | o | Vel. |
| φ | 14 56 .1 | 327 | -4.4 | 4 | 15 9 .0 | 323 | -1.7 | | |
| δ | 23 34 .1 | 196 | -1.0 | h | 2 24 .0 | 152 | .6 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|------------------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 311 49.1 61 -17 24.8 -86 | 133 1.0 13 39.2 | | 322 31.2 -8 25.7 | | | | |
| 2 | 340 39.4 61 -17 41.9 -83 | 163 5.0 13 39.6 | | 352 36.4 -8 25.6 | | | | |
| 4 | 9 29.5 60 -17 58.6 -81 | 193 9.0 13 39.9 | | 22 41.6 -8 25.5 | | | | |
| 6 | 38 19.5 59 -18 14.7 -78 | 223 12.9 13 40.2 | | 52 46.8 -8 25.4 | | | | |
| 8 | 67 9.3 59 -18 30.4 -76 | 253 16.9 13 40.5 | | 82 51.9 -8 25.3 | | | | |
| 10 | 95 59.0 58 -18 45.5 -73 | 283 20.9 13 40.9 | | 112 57.1 -8 25.2 | | | | |
| 12 | 124 48.6 57 -19 1. -70 | 313 24.8 13 41.2 | | 143 2.3 -8 25.1 | | | | |
| 14 | 153 38.1 57 -19 14.2 -68 | 343 28.8 13 41.5 | | 173 7.5 -8 24.9 | | | | |
| 16 | 182 27.4 56 -19 27.7 -65 | 13 32.8 13 41.9 | | 203 12.6 -8 24.8 | | | | |
| 18 | 211 16.7 56 -19 40.7 -62 | 43 36.7 13 42.2 | | 233 17.8 -8 24.7 | | | | |
| 20 | 240 5.9 55 -19 53.1 -59 | 73 40.7 13 42.5 | | 263 23.0 -8 24.6 | | | | |
| 22 | 268 55.0 55 -20 5.0 -57 | 103 44.6 13 42.8 | | 293 28.2 -8 24.5 | | | | |
| Δ | 20 | 2 | | -1 | 11 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | |
| 00 | - 9 46.7 | .7 | 16.1 | T _{m̄} | 3 20 | 2.5 | 60.2 | 16.4 | |
| 12 | - 9 38.6 | T _{m̄} | 12 h | 9.6 min | Starost | 19.1 d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | / | h min / | o | h min / | o | h min / | o | Vel. |
| φ | 14 57 .1 | 326 | -4.4 | 4 | 15 6 .0 | 323 | -1.7 | | |
| δ | 23 29 .1 | 196 | -1.0 | h | 2 29 .0 | 152 | .6 | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|------------------|----------------|------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 37.3 - 2 51.1 | 171 1.4 | 135 50.3 16 7.9 | | 7 51.3 11 28.6 | | | |
| 2 | 207 37.7 - 2 49.2 | 201 6.3 | 165 50.1 16 10.0 | | 37 58.0 11 29.2 | | | |
| 4 | 237 38.0 - 2 47.2 | 231 11.2 | 195 49.9 16 12.2 | | 68 4.8 11 29.8 | | | |
| 6 | 267 38.4 - 2 45.2 | 261 16.1 | 225 49.7 16 14.3 | | 98 11.5 11 30.3 | | | |
| 8 | 297 38.7 - 2 43.3 | 291 21.1 | 255 49.5 16 16.4 | | 128 18.2 11 30.9 | | | |
| 10 | 327 39.0 - 2 41.3 | 321 26.0 | 285 49.3 16 18.5 | | 158 24.9 11 31.5 | | | |
| 12 | 357 39.4 - 2 39.3 | 351 30.9 | 315 49.1 16 20.6 | | 188 31.6 11 32.1 | | | |
| 14 | 387 39.7 - 2 37.3 | 315 35.9 | 345 48.9 16 22.7 | | 218 38.3 11 32.6 | | | |
| 16 | 51 40.1 - 2 35.4 | 51 40.8 | 15 46.7 16 24.8 | | 248 45.0 11 33.2 | | | |
| 18 | 87 40.4 - 2 33.4 | 81 45.7 | 45 48.5 16 26.9 | | 278 51.7 11 33.8 | | | |
| 20 | 117 40.8 - 2 31.4 | 111 50.6 | 175 48.3 16 29.0 | | 308 58.4 11 34.3 | | | |
| 22 | 147 41.1 - 2 29.4 | 141 55.6 | 105 48.1 16 31.1 | | 339 5.1 11 34.9 | | | |
| Δ | 2 | 10 | -1 | 11 | 34 | 3 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 22 | 17 58 | 0 41 | 2 22 | 0 53 | 3.2 | 7 40 | 2.0 | |
| 55 | 6 19 | 18 0 | 0 36 | 2 3 | 0 19 | 3.0 | 8 15 | 2.1 | |
| 50 | 6 17 | 18 2 | 0 32 | 1 49 | ... . | 0 | 8 40 | 2.2 | |
| 45 | 6 16 | 18 4 | 0 29 | 1 38 | ... . | 0 | 8 59 | 2.2 | |
| 40 | 6 14 | 18 5 | 0 27 | 1 30 | ... . | 0 | 9 15 | 2.3 | |
| 35 | 6 13 | 18 6 | 0 25 | 1 24 | ... . | 0 | 9 28 | 2.3 | |
| 30 | 6 12 | 18 7 | 0 24 | 1 20 | ... . | 0 | 9 40 | 2.4 | |
| 20 | 6 10 | 18 9 | 0 22 | 1 13 | 23 39 | 2.5 | 9 60 | 2.4 | |
| 10 | 6 8 | 18 11 | 0 21 | 1 10 | 23 21 | 2.4 | 10 17 | 2.4 | |
| 0 | 6 6 | 18 13 | 0 21 | 1 9 | 23 4 | 2.4 | 10 33 | 2.5 | |
| 10 | 6 4 | 18 14 | 0 21 | 1 10 | 22 48 | 2.4 | 10 50 | 2.5 | |
| 20 | 6 2 | 18 17 | 0 22 | 1 14 | 22 30 | 2.4 | 11 7 | 2.5 | |
| 30 | 5 59 | 18 19 | 0 24 | 1 20 | 22 9 | 2.4 | 11 27 | 2.6 | |
| 35 | 5 58 | 18 21 | 0 25 | 1 25 | 21 57 | 2.4 | 11 39 | 2.6 | |
| 40 | 5 56 | 18 22 | 0 27 | 1 32 | 21 43 | 2.4 | 11 52 | 2.6 | |
| 45 | 5 54 | 18 24 | 0 29 | 1 40 | 21 27 | 2.4 | 12 8 | 2.6 | |
| 50 | 5 51 | 18 27 | 0 32 | 1 52 | 21 7 | 2.4 | 12 28 | 2.7 | |
| 55 | 5 48 | 18 30 | 0 36 | 2 8 | 20 41 | 2.3 | 12 53 | 2.7 | |
| 60 | 5 44 | 18 34 | 0 42 | 2 32 | 20 5 | 2.3 | 13 29 | 2.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | |
|----|--------------------------|------------------|----------------|-------------------|-----|----------------|----------------|-----|----------------|
| | S _⊖ | Δ | δ _⊖ | S _⊕ | Δ | δ _⊕ | S _⊖ | Δ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 297 44.0 55 -20 16.4 -54 | 133 48.6 13 43.2 | | 323 33.4 - 8 24.4 | | | | | |
| 2 | 326 33.9 54 -20 27.1 -51 | 163 52.6 13 43.5 | | 353 38.5 - 8 24.3 | | | | | |
| 4 | 355 21.8 54 -20 37.4 -48 | 193 56.5 13 43.8 | | 23 43.7 - 8 24.2 | | | | | |
| 6 | 24 10.7 54 -20 47.0 -45 | 224 .5 13 44.2 | | 53 48.9 - 8 24.1 | | | | | |
| 8 | 52 59.5 54 -20 56.0 -42 | 254 .4 13 44.5 | | 83 54.1 - 8 24.0 | | | | | |
| 10 | 81 48.3 54 -21 4.5 -40 | 284 .8 13 44.8 | | 113 59.3 - 8 23.8 | | | | | |
| 12 | 110 37.0 54 -21 12.4 -37 | 314 12.4 13 45.1 | | 144 4.4 - 8 23.7 | | | | | |
| 14 | 139 25.8 54 -21 19.8 -34 | 344 16.3 13 45.5 | | 174 9.6 - 8 23.6 | | | | | |
| 16 | 168 14.6 54 -21 26.5 -31 | 14 20.3 13 45.8 | | 204 14.8 - 8 23.5 | | | | | |
| 18 | 197 3.4 54 -21 32.6 -28 | 44 24.2 13 46.1 | | 234 20.0 - 8 23.4 | | | | | |
| 20 | 225 52.2 54 -21 38.2 -25 | 74 28.2 13 46.5 | | 264 25.2 - 8 23.3 | | | | | |
| 22 | 254 41.0 54 -21 43.2 -22 | 104 32.1 13 46.8 | | 294 30.4 - 8 23.2 | | | | | |
| Δ | 2 | 10 | -1 | 10 | 33 | 3 | | | |

| UT | SUNCE | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t |
| h min s | s | / | h min | min | / | h min | / |
| 00 - 9 30.5 | .7 | 16.1 | T _{m̄} | 4 19 | 2.5 | 59.8 | 16.3 |
| 12 - 9 22.2 | T _{m̄} | 12 h | 9.4 min | Starost | 20.1 d | Faza | 0 |

| UT | PLANETE | | | | | | | |
|------------|----------|-----------------|---------|----------|------|-----------------|---------|---------|
| | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o / | h min | / | h min | o / | h min | / | h min |
| 0 14 57 .1 | 325 -4.5 | 4 | 15 3 .0 | 323 -1.7 | 6 25 | 153 .6 | 0 | 153 -.6 |

14. MART

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|------------------|----------------|-------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 41.5 - 2 27.5 | 172 .5 | 135 47.9 16 33.2 | | 324 35.6 - 8 23.1 | | | |
| 2 | 207 41.8 - 2 25.5 | 202 5.4 | 165 47.7 16 35.3 | | 354 40.7 - 8 22.9 | | | |
| 4 | 237 42.2 - 2 23.5 | 232 10.4 | 195 47.5 16 37.4 | | 69 25.1 11 36.6 | | | |
| 6 | 267 42.5 - 2 21.6 | 262 15.3 | 225 47.3 16 39.5 | | 99 31.8 11 37.1 | | | |
| 8 | 297 42.9 - 2 19.6 | 292 20.2 | 255 47.1 16 41.6 | | 129 38.5 11 37.7 | | | |
| 10 | 327 43.2 - 2 17.6 | 322 25.1 | 285 46.9 16 43.7 | | 159 45.2 11 38.2 | | | |
| 12 | 357 43.6 - 2 15.6 | 352 30.1 | 315 46.7 16 45.7 | | 189 51.9 11 38.8 | | | |
| 14 | 387 43.9 - 2 13.7 | 325 35.0 | 345 46.5 16 47.8 | | 219 58.5 11 39.3 | | | |
| 16 | 57 44.3 - 2 11.7 | 52 39.9 | 15 46.3 16 49.9 | | 250 5.2 11 39.9 | | | |
| 18 | 87 44.6 - 2 9.7 | 82 44.9 | 45 46.1 16 52.0 | | 280 11.9 11 40.4 | | | |
| 20 | 117 45.0 - 2 7.7 | 112 49.8 | 75 45.9 16 54.0 | | 310 18.5 11 41.0 | | | |
| 22 | 147 45.3 - 2 5.8 | 142 54.7 | 105 45.7 16 56.1 | | 340 25.2 11 41.5 | | | |
| Δ | 2 | 10 | -1 | 10 | 33 | 3 | | |

| UT | SUNCE | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t |
| h min s | s | / | h min | min | / | h min | / |
| 00 - 9 14.0 | .7 | 16.1 | T _{m̄} | 5 19 | 2.4 | 59.2 | 16.1 |
| 12 - 9 5.6 | T _{m̄} | 12 h | 9.1 min | Starost | 21.1 d | Faza | 0 |

| UT | PLANETE | | | | | | | |
|------------|----------|-----------------|---------|----------|------|-----------------|---------|---------|
| | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o / | h min | / | h min | o / | h min | / | h min |
| 0 14 57 .1 | 325 -4.5 | 4 | 15 3 .0 | 323 -1.7 | 6 25 | 153 .6 | 0 | 153 -.6 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|------------------|----------------|------------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 177 45.7 - 2 | 3.8 | 172 59.6 | | 135 45.5 16 58.2 | | 100 51.8 11 43.7 | |
| 2 | 207 46.0 - 2 | 1.8 | 203 4.6 | | 165 45.3 17 .2 | | 40 38.5 11 42.6 | |
| 4 | 237 46.4 - 1 | 59.8 | 233 9.5 | | 195 45.1 17 2.3 | | 70 45.2 11 43.1 | |
| 6 | 267 46.7 - 1 | 57.9 | 263 14.4 | | 225 44.9 17 4.3 | | 100 51.8 11 43.7 | |
| 8 | 297 47.1 - 1 | 55.9 | 293 19.3 | | 255 44.7 17 6.4 | | 130 58.5 11 44.2 | |
| 10 | 327 47.4 - 1 | 53.9 | 323 24.3 | | 285 44.5 17 8.5 | | 161 5.1 11 44.7 | |
| 12 | 357 47.8 - 1 | 51.9 | 353 29.2 | | 315 44.3 17 10.5 | | 191 11.8 11 45.3 | |
| 14 | 27 48.1 - 1 | 50.0 | 23 34.1 | | 345 44.2 17 12.5 | | 221 18.4 11 45.8 | |
| 16 | 57 48.5 - 1 | 48.0 | 53 39.1 | | 15 44.0 17 14.6 | | 251 25.1 11 46.3 | |
| 18 | 87 48.8 - 1 | 46.0 | 83 44.0 | | 45 43.8 17 16.6 | | 281 31.7 11 46.9 | |
| 20 | 117 49.2 - 1 | 44.0 | 113 48.9 | | 75 43.6 17 18.7 | | 311 38.4 11 47.4 | |
| 22 | 147 49.5 - 1 | 42.1 | 143 53.8 | | 105 43.4 17 20.7 | | 341 45.0 11 47.9 | |
| Δ | 2 | 10 | | | -1 | 10 | 33 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 16 | 18 3 | 0 41 | 2 23 | 3 7 | 1 7 | 9 29 | 3.1 | |
| 55 | 6 14 | 18 4 | 0 36 | 2 3 | 2 29 | 1 9 | 10 7 | 2.9 | |
| 50 | 6 13 | 18 6 | 0 32 | 1 49 | 2 21 | 1 10 | 10 33 | 2.8 | |
| 45 | 6 12 | 18 6 | 0 29 | 1 38 | 1 42 | 2.1 | 10 54 | 2.7 | |
| 40 | 6 11 | 18 7 | 0 27 | 1 30 | 1 25 | 2.1 | 11 10 | 2.6 | |
| 35 | 6 10 | 18 8 | 0 25 | 1 24 | 1 11 | 2.2 | 11 24 | 2.6 | |
| 30 | 6 10 | 18 9 | 0 24 | 1 20 | 0 59 | 2.2 | 11 36 | 2.5 | |
| 20 | 6 8 | 18 10 | 0 22 | 1 13 | 0 38 | 2.3 | 11 56 | 2.4 | |
| 10 | 6 7 | 18 11 | 0 21 | 1 10 | 0 20 | 2.3 | 12 14 | 2.4 | |
| 0 | 6 6 | 18 12 | 0 21 | 1 9 | 0 3 | 2.4 | 12 31 | 2.3 | |
| 10 | 6 4 | 18 13 | 0 21 | 1 10 | ... . | 0 | 12 47 | 2.2 | |
| 20 | 6 2 | 18 15 | 0 22 | 1 13 | ... . | 0 | 13 5 | 2.2 | |
| 30 | 6 0 | 18 17 | 0 24 | 1 20 | ... . | 0 | 13 25 | 2.1 | |
| 35 | 5 59 | 18 18 | 0 25 | 1 25 | 23 56 | 2.6 | 13 37 | 2.0 | |
| 40 | 5 58 | 18 19 | 0 27 | 1 31 | 23 43 | 2.7 | 13 50 | 2.0 | |
| 45 | 5 56 | 18 21 | 0 29 | 1 40 | 23 28 | 2.8 | 14 6 | 1.9 | |
| 50 | 5 54 | 18 22 | 0 32 | 1 51 | 23 9 | 2.9 | 14 25 | 1.8 | |
| 55 | 5 52 | 18 25 | 0 36 | 2 6 | 22 44 | 3.0 | 14 51 | 1.6 | |
| 60 | 5 49 | 18 28 | 0 42 | 2 29 | 22 9 | 3.3 | 15 26 | 1.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|---|------------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 269 24.4 | 62 -21 55.0 | 15 | | 135 23.5 13 51.1 | | 325 37.8 - 8 21.7 | |
| 2 | 298 14.9 | 63 -21 51.9 | 18 | | 165 27.5 13 51.4 | | 355 43.0 - 8 21.6 | |
| 4 | 327 5.6 | 64 -21 48.3 | 21 | | 195 31.4 13 51.5 | | 25 48.2 - 8 21.5 | |
| 6 | 355 56.5 | 65 -21 44.1 | 24 | | 225 35.3 13 52.1 | | 55 53.4 - 8 21.4 | |
| 8 | 24 47.6 | 67 -21 39.4 | 26 | | 255 39.3 13 52.4 | | 85 58.6 - 8 21.2 | |
| 10 | 53 38.9 | 68 -21 34.1 | 29 | | 285 43.2 13 52.8 | | 116 3.8 - 8 21.1 | |
| 12 | 82 30.4 | 69 -21 28.4 | 31 | | 315 47.2 13 53.1 | | 146 9.0 - 8 21.0 | |
| 14 | 111 22.2 | 70 -21 22.1 | 34 | | 345 51.1 13 53.4 | | 176 14.2 - 8 20.9 | |
| 16 | 140 14.2 | 71 -21 15.3 | 37 | | 15 55.1 13 53.8 | | 206 19.4 - 8 20.8 | |
| 18 | 169 6.5 | 73 -21 8.0 | 39 | | 45 59.0 13 54.1 | | 236 24.6 - 8 20.7 | |
| 20 | 197 59.0 | 74 -21 .1 | 42 | | 76 2.9 13 54.4 | | 266 29.8 - 8 20.6 | |
| 22 | 226 51.7 | 75 -20 51.8 | 44 | | 106 6.9 13 54.8 | | 296 35.0 - 8 20.4 | |
| Δ | 2 | 10 | | | -1 | 10 | 33 | 3 |

| UT | SUNCE | | | | MJESEC | | | | |
|-------------|-------------------------|------|----------------|----------|--------|----------------|-------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 - 8 57.2 | .7 | 16.1 | T _⊖ | 6 17 | 2.3 | 58.6 | 16.0 | | |
| 12 - 8 48.7 | T _⊖ | 12 h | 8.8 min | Starost | 22.1 d | Faza | 1 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _⊖ | π | 360 - π | Vel. | Pl. | T _⊖ | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | o | / | h min | |
| ♀ 14 57 .1 | 323 | -4.5 | 4 | 14 56 .0 | 322 | -1.7 | | | |
| ♂ 23 13 .1 | 198 | -1.0 | h | 2 17 | 0 .0 | 153 | .6 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|---|------------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 255 44.7 | 76 -20 43.0 | 46 | | 136 10.8 13 55.1 | | 326 40.2 - 8 20.3 | |
| 2 | 284 38.0 | 78 -20 33.8 | 49 | | 166 14.8 13 55.4 | | 356 45.4 - 8 20.2 | |
| 4 | 313 31.6 | 79 -20 24.0 | 51 | | 196 18.7 13 55.8 | | 26 50.6 - 8 20.1 | |
| 6 | 342 25.4 | 81 -20 13.8 | 53 | | 226 22.6 13 56.1 | | 56 55.8 - 8 20.0 | |
| 8 | 11 19.6 | 82 -20 3.1 | 56 | | 256 26.6 13 56.4 | | 87 1.0 - 8 19.9 | |
| 10 | 40 14.0 | 83 -19 52.0 | 58 | | 286 30.5 13 56.8 | | 117 6.2 - 8 19.7 | |
| 12 | 69 8.7 | 85 -19 40.5 | 60 | | 316 34.5 13 57.1 | | 147 11.4 - 8 19.6 | |
| 14 | 98 3.7 | 86 -19 28.5 | 62 | | 346 38.4 13 57.4 | | 177 16.6 - 8 19.5 | |
| 16 | 126 58.9 | 88 -19 16.0 | 66 | | 16 42.3 13 57.8 | | 207 21.8 - 8 19.4 | |
| 18 | 155 54.5 | 89 -19 3.2 | 66 | | 46 46.3 13 58.1 | | 237 27.0 - 8 19.3 | |
| 20 | 184 50.4 | 91 -18 50.0 | 68 | | 76 50.2 13 58.4 | | 267 32.2 - 8 19.2 | |
| 22 | 213 46.5 | 92 -18 36.3 | 70 | | 106 54.1 13 58.8 | | 297 37.4 - 8 19.0 | |
| Δ | 20 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|-------------|-------------------------|------|----------------|----------|--------|----------------|-------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 - 8 40.3 | .7 | 16.1 | T _⊖ | 7 13 | 2.2 | 58.0 | 15.8 | | |
| 12 - 8 31.7 | T _⊖ | 12 h | 8.5 min | Starost | 23.1 d | Faza | 1 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _⊖ | π | 360 - π | Vel. | Pl. | T _⊖ | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | o | / | h min | |
| ♀ 14 57 .1 | 322 | -4.5 | 4 | 14 53 .0 | 322 | -1.7 | | | |
| ♂ 23 7 .1 | 198 | -1.0 | h | 2 13 | 0 .0 | 153 | .6 | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 54.2 - 1 | 16.4 | 174 57.9 | | 135 40.9 | 17 46.9 | 13 11.0 | 11 54.5 |
| 2 | 207 54.5 - 1 | 14.4 | 205 2.8 | | 165 40.7 | 17 48.9 | 43 17.6 | 11 55.0 |
| 4 | 237 54.9 - 1 | 12.4 | 235 7.8 | | 195 40.6 | 17 50.9 | 73 24.1 | 11 55.5 |
| 6 | 267 55.3 - 1 | 10.4 | 265 12.7 | | 225 40.4 | 17 52.9 | 103 30.7 | 11 56.0 |
| 8 | 297 55.6 - 1 | 8.4 | 295 17.6 | | 255 40.2 | 17 54.9 | 133 37.3 | 11 56.5 |
| 10 | 327 56.0 - 1 | 6.5 | 325 22.6 | | 285 40.0 | 17 56.9 | 163 43.9 | 11 57.0 |
| 12 | 357 56.3 - 1 | 4.5 | 355 27.5 | | 315 39.8 | 17 58.9 | 193 50.5 | 11 57.5 |
| 14 | 387 56.7 - 1 | 2.5 | 385 32.4 | | 345 39.6 | 18 .9 | 223 57.0 | 11 58.0 |
| 16 | 417 57.1 - 1 | .5 | 415 37.3 | | 15 39.5 | 18 2.9 | 254 3.6 | 11 58.4 |
| 18 | 87 57.4 - 0 | 58.6 | 85 42.3 | | 45 39.3 | 18 4.8 | 284 10.2 | 11 58.9 |
| 20 | 117 57.8 - 0 | 56.6 | 115 47.2 | | 75 39.1 | 18 6.8 | 314 16.7 | 11 59.4 |
| 22 | 147 58.1 - 0 | 54.6 | 145 52.1 | | 105 38.9 | 18 8.8 | 344 23.3 | 11 59.9 |
| Δ | 2 | 10 | | | -1 | 10 | 33 | 2 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 10 | 18 8 | 0 42 | 2 25 | 4 15 | .8 | 12 7 | 3.5 | |
| 55 | 6 9 | 18 8 | 0 36 | 2 4 | 3 48 | 1.1 | 12 32 | 3.2 | |
| 50 | 6 9 | 18 9 | 0 32 | 1 49 | 3 28 | 1.3 | 12 51 | 3.0 | |
| 45 | 6 8 | 18 9 | 0 29 | 1 39 | 3 13 | 1.4 | 13 6 | 2.8 | |
| 40 | 6 8 | 18 9 | 0 27 | 1 31 | 2 60 | 1.5 | 13 18 | 2.7 | |
| 35 | 6 8 | 18 10 | 0 25 | 1 24 | 2 48 | 1.6 | 13 28 | 2.6 | |
| 30 | 6 7 | 18 10 | 0 24 | 1 20 | 2 39 | 1.7 | 13 37 | 2.5 | |
| 20 | 6 6 | 18 10 | 0 22 | 1 13 | 2 22 | 1.9 | 13 53 | 2.3 | |
| 10 | 6 6 | 18 11 | 0 21 | 1 10 | 2 7 | 2.0 | 14 6 | 2.2 | |
| 0 | 6 5 | 18 12 | 0 21 | 1 9 | 1 54 | 2.1 | 14 18 | 2.1 | |
| 10 | 6 4 | 18 12 | 0 21 | 1 10 | 1 40 | 2.2 | 14 31 | 1.9 | |
| 20 | 6 3 | 18 13 | 0 22 | 1 13 | 1 25 | 2.4 | 14 44 | 1.8 | |
| 30 | 6 2 | 18 14 | 0 24 | 1 20 | 1 8 | 2.5 | 14 59 | 1.6 | |
| 35 | 6 1 | 18 15 | 0 25 | 1 25 | 0 58 | 2.6 | 15 7 | 1.5 | |
| 40 | 6 0 | 18 16 | 0 27 | 1 31 | 0 47 | 2.7 | 15 17 | 1.4 | |
| 45 | 5 59 | 18 17 | 0 29 | 1 39 | 0 34 | 2.8 | 15 29 | 1.3 | |
| 50 | 5 58 | 18 18 | 0 32 | 1 50 | 0 18 | 2.9 | 15 43 | 1.2 | |
| 55 | 5 56 | 18 20 | 0 36 | 2 5 | .. .. | 0 | 15 60 | 1.0 | |
| 60 | 5 54 | 18 22 | 0 42 | 2 28 | .. .. | 0 | 16 23 | .7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | |
|----|----------------|--------------|----------------|----------------|---------|----------------|----------------|----------|----------------|
| | S _⊖ | Δ | δ _⊖ | S _⊕ | Δ | δ _⊕ | S _⊖ | Δ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 242 43.0 | 94 -18 22.3 | 72 | 136 58.1 | 13 59.1 | | 327 42.6 | - 8 18.9 | |
| 2 | 271 39.8 | 95 -18 7.9 | 74 | 167 2.0 | 13 59.4 | | 357 47.8 | - 8 18.8 | |
| 4 | 300 36.8 | 97 -17 53.1 | 76 | 197 5.9 | 13 59.8 | | 27 53.0 | - 8 18.7 | |
| 6 | 329 34.2 | 98 -17 38.0 | 78 | 227 9.8 | 14 .1 | | 57 58.2 | - 8 18.6 | |
| 8 | 358 31.8 | 100 -17 22.5 | 79 | 257 13.8 | 14 .4 | | 88 3.4 | - 8 18.5 | |
| 10 | 27 29.8 | 101 -17 6.6 | 81 | 287 17.7 | 14 .8 | | 118 8.6 | - 8 18.3 | |
| 12 | 55 28.0 | 103 -16 50.4 | 83 | 317 21.6 | 14 1.1 | | 148 13.8 | - 8 18.2 | |
| 14 | 85 26.6 | 104 -16 33.9 | 84 | 347 25.6 | 14 1.4 | | 178 19.0 | - 8 18.1 | |
| 16 | 114 25.4 | 106 -16 17.0 | 86 | 17 29.5 | 14 1.8 | | 208 24.2 | - 8 18.0 | |
| 18 | 143 24.6 | 107 -15 59.9 | 87 | 47 33.4 | 14 2.1 | | 238 29.4 | - 8 17.9 | |
| 20 | 172 24.0 | 109 -15 42.4 | 89 | 77 37.4 | 14 2.4 | | 268 34.6 | - 8 17.7 | |
| 22 | 201 23.7 | 110 -15 24.6 | 90 | 107 41.3 | 14 2.8 | | 298 39.8 | - 8 17.6 | |
| Δ | 2 | 10 | | -1 | 10 | | 26 | 1 | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 7 | 18 11 | 0 42 | 2 25 | 4 35 | .6 | 13 30 | 3.4 | |
| 55 | 6 7 | 18 10 | 0 36 | 2 4 | 4 14 | .9 | 13 48 | 3.1 | |
| 50 | 6 7 | 18 10 | 0 32 | 1 50 | 3 59 | 1.1 | 14 2 | 2.9 | |
| 45 | 6 6 | 18 10 | 0 29 | 1 39 | 3 47 | 1.2 | 14 13 | 2.7 | |
| 40 | 6 6 | 18 10 | 0 27 | 1 31 | 3 37 | 1.4 | 14 22 | 2.6 | |
| 35 | 6 6 | 18 10 | 0 25 | 1 25 | 3 28 | 1.5 | 14 30 | 2.5 | |
| 30 | 6 6 | 18 10 | 0 24 | 1 20 | 3 20 | 1.6 | 14 36 | 2.4 | |
| 20 | 6 6 | 18 11 | 0 22 | 1 13 | 3 7 | 1.7 | 14 48 | 2.2 | |
| 10 | 6 5 | 18 11 | 0 21 | 1 10 | 2 55 | 1.9 | 14 58 | 2.1 | |
| 0 | 6 5 | 18 11 | 0 21 | 1 9 | 2 44 | 2.0 | 15 8 | 1.9 | |
| 10 | 6 4 | 18 12 | 0 21 | 1 10 | 2 33 | 2.1 | 15 17 | 1.8 | |
| 20 | 6 3 | 18 12 | 0 22 | 1 13 | 2 22 | 2.3 | 15 27 | 1.7 | |
| 30 | 6 2 | 18 13 | 0 24 | 1 20 | 2 8 | 2.4 | 15 38 | 1.5 | |
| 35 | 6 2 | 18 14 | 0 25 | 1 25 | 2 0 | 2.5 | 15 45 | 1.4 | |
| 40 | 6 1 | 18 14 | 0 27 | 1 31 | 1 52 | 2.6 | 15 52 | 1.3 | |
| 45 | 6 0 | 18 15 | 0 29 | 1 39 | 1 41 | 2.8 | 16 0 | 1.2 | |
| 50 | 5 59 | 18 16 | 0 32 | 1 50 | 1 28 | 2.9 | 16 11 | 1.0 | |
| 55 | 5 58 | 18 17 | 0 36 | 2 5 | 1 12 | 3.1 | 16 23 | .8 | |
| 60 | 5 56 | 18 19 | 0 42 | 2 27 | 0 51 | 3.4 | 16 40 | .5 | |
| S | | | | | | | | | |

| UT | SUNCE | | | MJESEC | | | |
|----|-------------------------|------|-----------------|--------|-----------------|----------------|-----------------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t |
| h | min | s | / | h min | min | / | / |
| 00 | - 8 | 5.8 | .7 | 16.1 | T _{m̄} | 8 56 | 2.0 |
| 12 | - 7 | 57.0 | T _{m̄} | 12 h | 8.0 min | Starost | 25.1 d Faza (●) |

| UT | PLANETE | | | | | | | | |
|----|---------|-----------------|--------------------|------|-------|-----------------|--------------------|------|------|
| | Pi. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pi. | T _{m̄} | π ₃₆₀₋₂ | Vel. | |
| h | min | / | o | | h min | / | o | | |
| 0 | 14 58 | .1 | 320 | -4.6 | 4 | 14 47 | .0 | 322 | -1.7 |
| ○ | 22 57 | .1 | 199 | -1.0 | h | 2 5 | .0 | 153 | .5 |

19. MART

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 2.9 - 0 28.9 | 176 56.2 | 135 36.6 18 34.2 | 15 48.3 12 5.9 | | | | |
| 2 | 208 3.2 - 0 26.9 | 207 1.1 | 165 36.4 18 36.1 | 45 54.8 12 6.4 | | | | |
| 4 | 238 3.6 - 0 24.9 | 237 6.0 | 195 36.3 18 38.0 | 76 1.3 12 6.8 | | | | |
| 6 | 268 4.0 - 0 23.0 | 267 11.0 | 225 36.1 18 39.9 | 106 7.8 12 7.3 | | | | |
| 8 | 298 4.3 - 0 21.0 | 297 15.9 | 255 35.9 18 41.9 | 136 14.3 12 7.7 | | | | |
| 10 | 328 4.7 - 0 19.0 | 327 20.8 | 285 35.7 18 43.8 | 166 20.8 12 8.1 | | | | |
| 12 | 358 5.1 - 0 17.0 | 357 25.8 | 315 35.6 18 45.7 | 196 27.3 12 8.6 | | | | |
| 14 | 38 5.4 - 0 15.1 | 27 30.7 | 345 35.4 18 47.6 | 226 33.8 12 9.0 | | | | |
| 16 | 58 5.8 - 0 13.1 | 57 35.6 | 15 35.2 18 49.5 | 256 40.3 12 9.5 | | | | |
| 18 | 88 6.2 - 0 11.1 | 87 40.5 | 45 35.1 18 51.4 | 286 46.8 12 9.9 | | | | |
| 20 | 118 6.5 - 0 9.1 | 117 45.5 | 75 34.9 18 53.4 | 316 53.3 12 10.3 | | | | |
| 22 | 148 6.9 - 0 7.1 | 147 50.4 | 105 34.7 18 55.3 | 346 59.8 12 10.7 | | | | |
| Δ | 2 | 10 | -1 | 10 | 32 | 2 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 4 | 18 13 | 0 42 | 2 26 | 4 49 | .5 | 14 52 | 3.3 | |
| 55 | 6 4 | 18 12 | 0 36 | 2 5 | 4 35 | .7 | 15 3 | 3.1 | |
| 50 | 6 4 | 18 12 | 0 32 | 1 50 | 4 25 | .9 | 15 12 | 2.9 | |
| 45 | 6 5 | 18 12 | 0 29 | 1 39 | 4 16 | 1.1 | 15 19 | 2.7 | |
| 40 | 6 5 | 18 11 | 0 27 | 1 31 | 4 9 | 1.2 | 15 25 | 2.6 | |
| 35 | 6 5 | 18 11 | 0 25 | 1 25 | 4 3 | 1.3 | 15 30 | 2.4 | |
| 30 | 6 5 | 18 11 | 0 24 | 1 20 | 3 58 | 1.4 | 15 34 | 2.3 | |
| 20 | 6 5 | 18 11 | 0 22 | 1 13 | 3 48 | 1.6 | 15 42 | 2.2 | |
| 10 | 6 5 | 18 11 | 0 21 | 1 10 | 3 40 | 1.8 | 15 48 | 2.0 | |
| 0 | 6 4 | 18 11 | 0 21 | 1 9 | 3 32 | 1.9 | 15 54 | 1.9 | |
| 10 | 6 4 | 18 11 | 0 21 | 1 10 | 3 24 | 2.0 | 16 0 | 1.7 | |
| 20 | 6 4 | 18 11 | 0 22 | 1 13 | 3 16 | 2.2 | 16 17 | 1.6 | |
| 30 | 6 3 | 18 12 | 0 24 | 1 20 | 3 7 | 2.4 | 16 14 | 1.4 | |
| 35 | 6 3 | 18 12 | 0 25 | 1 25 | 3 1 | 2.5 | 16 18 | 1.3 | |
| 40 | 6 2 | 18 13 | 0 27 | 1 31 | 2 55 | 2.6 | 16 23 | 1.2 | |
| 45 | 6 1 | 18 13 | 0 29 | 1 39 | 2 48 | 2.7 | 16 28 | 1.1 | |
| 50 | 6 1 | 18 14 | 0 32 | 1 50 | 2 39 | 2.9 | 16 35 | .9 | |
| 55 | 5 60 | 18 14 | 0 36 | 2 5 | 2 28 | 3.1 | 16 43 | .7 | |
| 60 | 5 58 | 18 16 | 0 42 | 2 26 | 2 13 | 3.4 | 16 53 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 218 44.5 127 -11 10.6 | 105 | 138 32.3 14 7.1 | 329 47.6 - 8 16.1 | | | | |
| 2 | 247 47.8 128 -10 49.6 | 106 | 168 36.2 14 7.5 | 359 52.8 - 8 15.9 | | | | |
| 4 | 276 51.4 129 -10 28.4 | 107 | 198 40.1 14 7.8 | 29 58.0 - 8 15.8 | | | | |
| 6 | 305 55.2 130 -10 7.0 | 108 | 228 44.0 14 8.1 | 60 3.2 - 8 15.7 | | | | |
| 8 | 334 59.2 131 -9 45.5 | 108 | 258 48.0 14 8.5 | 90 8.4 - 8 15.6 | | | | |
| 10 | 4 3.4 132 -9 23.8 | 109 | 288 51.9 14 8.8 | 120 13.6 - 8 15.5 | | | | |
| 12 | 33 7.9 133 -9 2.0 | 110 | 318 55.8 14 9.1 | 150 18.9 - 8 15.3 | | | | |
| 14 | 62 12.5 134 -8 40.0 | 110 | 348 59.7 14 9.5 | 180 24.1 - 8 15.2 | | | | |
| 16 | 91 17.3 135 -8 17.9 | 111 | 19 3.6 14 9.8 | 210 29.3 - 8 15.1 | | | | |
| 18 | 120 22.3 136 -7 55.7 | 112 | 49 7.5 14 10.2 | 240 34.5 - 8 15.0 | | | | |
| 20 | 149 27.5 137 -7 33.4 | 112 | 79 11.5 14 10.5 | 270 39.7 - 8 14.9 | | | | |
| 22 | 178 32.9 138 -7 11.0 | 113 | 109 15.4 14 10.8 | 300 45.0 - 8 14.7 | | | | |
| Δ | 2 | 10 | -1 | 9 | 32 | 2 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | | |
|-------------|-------------------------|------|-----------------|---------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 - 7 48.3 | .7 | 16.1 | T _{m̄} | 9 43 | 1.9 | 56.2 | 15.3 | | |
| 12 - 7 39.5 | T _{m̄} | 12 h | 7.7 min | Starost | 26.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ 14 58 .1 | 319 | -4.6 | 4 | 14 44 | .0 | 322 | -1.7 | | |
| ♂ 22 52 .1 | 199 | -1.0 | h | 2 0 | .0 | 153 | .5 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 207 38.5 139 -6 48.5 | 113 | 139 19.3 14 11.2 | 330 50.2 - 8 14.6 | | | | |
| 2 | 236 44.2 139 -6 25.9 | 113 | 169 23.2 14 11.5 | 0 55.4 - 8 14.5 | | | | |
| 4 | 265 50.0 140 -6 3.2 | 114 | 199 27.1 14 11.8 | 31 .6 - 8 14.4 | | | | |
| 6 | 294 56.1 141 -5 40.4 | 114 | 229 31.0 14 12.2 | 61 5.8 - 8 14.2 | | | | |
| 8 | 324 2.3 142 -5 17.6 | 115 | 259 34.9 14 12.5 | 91 11.0 - 8 14.1 | | | | |
| 10 | 353 8.6 142 -4 54.7 | 115 | 289 38.8 14 12.8 | 121 16.3 - 8 14.0 | | | | |
| 12 | 22 15.0 143 -4 31.7 | 115 | 319 42.8 14 13.2 | 151 21.5 - 8 13.9 | | | | |
| 14 | 51 21.6 144 -4 8.7 | 115 | 349 46.7 14 13.5 | 181 26.7 - 8 13.7 | | | | |
| 16 | 80 28.4 144 -3 45.7 | 115 | 19 50.6 14 13.9 | 211 31.9 - 8 13.6 | | | | |
| 18 | 109 35.2 145 -3 22.6 | 116 | 49 54.5 14 14.2 | 241 37.2 - 8 13.5 | | | | |
| 20 | 138 42.1 145 -2 59.5 | 116 | 79 58.4 14 14.5 | 271 42.4 - 8 13.4 | | | | |
| 22 | 167 49.2 146 -2 36.3 | 116 | 110 2.3 14 14.9 | 301 47.6 - 8 13.3 | | | | |
| Δ | 20 | 2 | 26 | 1 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|-------------|-------------------------|------|-----------------|---------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 - 7 30.7 | .7 | 16.1 | T _{m̄} | 10 28 | 1.8 | 55.8 | 15.2 | | |
| 12 - 7 21.8 | T _{m̄} | 12 h | 7.4 min | Starost | 27.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ 14 58 .1 | 318 | -4.6 | 4 | 14 41 | .0 | 321 | -1.7 | | |
| ♂ 22 47 .1 | 199 | -1.0 | h | 1 56 | .0 | 153 | .5 | | |

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 11.7 | 0 18.5 | 178 54.5 | 135 32.6 | 19 19.8 | 18 23.6 | 12 16.1 |
| 2 | 208 12.1 | 0 20.5 | 208 59.4 | 165 32.5 | 19 21.6 | 48 30.1 | 12 16.5 |
| 4 | 238 12.5 | 0 22.5 | 239 4.3 | 195 32.3 | 19 23.5 | 78 36.5 | 12 16.9 |
| 6 | 268 12.8 | 0 24.5 | 269 9.3 | 225 32.1 | 19 25.3 | 108 42.9 | 12 17.3 |
| 8 | 298 13.2 | 0 26.4 | 299 14.2 | 255 32.0 | 19 27.2 | 138 49.3 | 12 17.7 |
| 10 | 328 13.6 | 0 28.4 | 329 19.1 | 285 31.8 | 19 29.0 | 168 55.7 | 12 18.1 |
| 12 | 358 13.9 | 0 30.4 | 359 24.0 | 315 31.7 | 19 30.9 | 199 2.1 | 12 18.5 |
| 14 | 28 14.3 | 0 32.4 | 29 29.0 | 345 31.5 | 19 32.7 | 229 8.5 | 12 18.9 |
| 16 | 58 14.7 | 0 34.3 | 59 33.9 | 15 31.4 | 19 34.6 | 259 14.9 | 12 19.3 |
| 18 | 88 15.1 | 0 36.3 | 89 38.8 | 45 31.2 | 19 36.4 | 289 21.3 | 12 19.7 |
| 20 | 118 15.4 | 0 38.3 | 119 43.8 | 75 31.1 | 19 38.3 | 319 27.7 | 12 20.0 |
| 22 | 148 15.8 | 0 40.3 | 149 48.7 | 105 30.9 | 19 40.1 | 349 34.1 | 12 20.4 |
| Δ | 2 | 10 | | -1 | 9 | 32 | 2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 58 | 18 18 | 0 42 | 2 28 | 5 11 | .4 | 17 30 | 3.2 | |
| 55 | 5 59 | 18 16 | 0 36 | 2 5 | 5 9 | .7 | 17 29 | 3.0 | |
| 50 | 6 0 | 18 15 | 0 32 | 1 50 | 5 8 | .8 | 17 27 | 2.8 | |
| 45 | 6 1 | 18 14 | 0 29 | 1 39 | 5 7 | 1.0 | 17 27 | 2.6 | |
| 40 | 6 1 | 18 13 | 0 27 | 1 31 | 5 6 | 1.1 | 17 26 | 2.5 | |
| 35 | 6 2 | 18 13 | 0 25 | 1 25 | 5 5 | 1.2 | 17 25 | 2.4 | |
| 30 | 6 2 | 18 12 | 0 24 | 1 20 | 5 5 | 1.3 | 17 25 | 2.3 | |
| 20 | 6 3 | 18 11 | 0 22 | 1 13 | 5 3 | 1.5 | 17 24 | 2.1 | |
| 10 | 6 3 | 18 11 | 0 21 | 1 10 | 5 2 | 1.6 | 17 23 | 1.9 | |
| 0 | 6 4 | 18 10 | 0 21 | 1 9 | 5 1 | 1.8 | 17 22 | 1.8 | |
| 10 | 6 4 | 18 10 | 0 21 | 1 10 | 5 1 | 1.9 | 17 21 | 1.6 | |
| 20 | 6 4 | 18 10 | 0 22 | 1 13 | 4 60 | 2.1 | 17 20 | 1.5 | |
| 30 | 6 4 | 18 9 | 0 24 | 1 20 | 4 59 | 2.3 | 17 19 | 1.3 | |
| 35 | 6 4 | 18 9 | 0 25 | 1 24 | 4 58 | 2.4 | 17 19 | 1.2 | |
| 40 | 6 4 | 18 9 | 0 27 | 1 31 | 4 57 | 2.5 | 17 18 | 1.1 | |
| 45 | 6 4 | 18 9 | 0 29 | 1 39 | 4 57 | 2.6 | 17 17 | 1.0 | |
| 50 | 6 4 | 18 9 | 0 32 | 1 49 | 4 56 | 2.8 | 17 16 | .8 | |
| 55 | 6 4 | 18 9 | 0 36 | 2 4 | 4 54 | 3.0 | 17 15 | .7 | |
| 60 | 6 3 | 18 9 | 0 41 | 2 25 | 4 53 | 3.2 | 17 14 | .4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 196 56.4 | 146 | - 2 13.2 | 116 | 140 6.2 | 14 15.2 | 331 52.8 | - 8 13.1 |
| 2 | 226 3.6 | 147 | - 1 50.0 | 116 | 170 10.1 | 14 15.5 | 158.1 | - 8 13.0 |
| 4 | 255 11.0 | 147 | - 1 26.8 | 116 | 200 14.0 | 14 15.9 | 32 3.3 | - 8 12.9 |
| 6 | 284 18.4 | 148 | - 1 3.7 | 116 | 230 17.9 | 14 16.2 | 62 8.5 | - 8 12.8 |
| 8 | 313 25.9 | 148 | - 0 40.5 | 116 | 260 21.8 | 14 16.6 | 92 13.7 | - 8 12.6 |
| 10 | 342 33.5 | 148 | - 0 17.4 | 116 | 290 25.7 | 14 16.9 | 122 19.0 | - 8 12.5 |
| 12 | 11 41.2 | 149 | 0 5.7 | 115 | 320 29.6 | 14 17.2 | 152 24.2 | - 8 12.4 |
| 14 | 40 48.9 | 149 | 0 28.8 | 115 | 350 33.5 | 14 17.6 | 182 29.4 | - 8 12.3 |
| 16 | 69 56.6 | 149 | 0 51.8 | 115 | 20 37.4 | 14 17.9 | 212 34.6 | - 8 12.1 |
| 18 | 99 4.5 | 149 | 1 14.8 | 115 | 50 41.3 | 14 18.2 | 242 39.9 | - 8 12.0 |
| 20 | 128 12.3 | 150 | 1 37.8 | 115 | 80 45.3 | 14 18.6 | 272 45.1 | - 8 11.9 |
| 22 | 157 20.2 | 150 | 2 7 | 114 | 110 49.2 | 14 18.9 | 302 50.3 | - 8 11.8 |
| Δ | 2 | 10 | | | -1 | 9 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 11 12 | 1.8 | 55.3 | 15.1 |
| 00 | - 7 13.0 | .7 | 16.1 | T _{m̄} | 11 12 | 1.8 | 55.3 | 15.1 |
| 12 | - 7 4.0 | T _{m̄} | 12 h | 7.1 min | Starost | 28.1 d | Faza | ● |

| UT | PLANETE | | | | | | | |
|---------|----------|-----------------|------|---------|----------|-----|------|----|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | | |
| h min / | o | h min / | o | h min / | Vel. | | | |
| φ | 14 58 .1 | 317 | -4.6 | 4 | 14 38 .0 | 321 | -1.7 | |
| δ | 22 42 .1 | 199 | -1.0 | h | 1 52 | .0 | 153 | .5 |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 186 28.2 | 150 | 2 23.5 | 114 | 140 53.1 | 14 19.3 | 332 55.5 | - 8 11.6 |
| 2 | 215 36.2 | 150 | 2 46.3 | 114 | 170 57.0 | 14 19.6 | 3 .8 | - 8 11.5 |
| 4 | 244 44.1 | 150 | 3 9.0 | 113 | 201 .9 | 14 19.9 | 33 6.0 | - 8 11.4 |
| 6 | 273 52.2 | 150 | 3 31.7 | 113 | 231 4.8 | 14 20.3 | 63 11.2 | - 8 11.3 |
| 8 | 303 .2 | 150 | 3 54.2 | 112 | 261 8.7 | 14 20.6 | 93 16.5 | - 8 11.1 |
| 10 | 332 8.2 | 150 | 4 16.7 | 112 | 291 12.5 | 14 20.9 | 123 21.7 | - 8 11.0 |
| 12 | 1 16.2 | 150 | 4 39.0 | 111 | 321 16.4 | 14 21.3 | 153 26.9 | - 8 10.9 |
| 14 | 30 24.3 | 150 | 5 1.3 | 111 | 351 20.3 | 14 21.6 | 183 32.2 | - 8 10.8 |
| 16 | 59 32.3 | 150 | 5 23.5 | 110 | 21 24.2 | 14 22.0 | 213 37.4 | - 8 10.6 |
| 18 | 88 40.3 | 150 | 5 45.5 | 110 | 51 28.1 | 14 22.3 | 243 42.6 | - 8 10.5 |
| 20 | 117 48.3 | 150 | 6 7.4 | 109 | 81 32.0 | 14 22.6 | 273 47.9 | - 8 10.4 |
| 22 | 146 56.3 | 150 | 6 29.2 | 108 | 111 35.9 | 14 23.0 | 303 53.1 | - 8 10.2 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 11 55 | 1.8 | 54.9 | 15.0 |
| 00 | - 6 55.1 | .7 | 16.1 | T _{m̄} | 11 55 | 1.8 | 54.9 | 15.0 |
| 12 | - 6 46.1 | T _{m̄} | 12 h | 6.8 min | Starost | 29.1 d | Faza | ● |

| UT | PLANETE | | | | | | | |
|---------|----------|-----------------|------|---------|----------|-----|------|----|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | | |
| h min / | o | h min / | o | h min / | Vel. | | | |
| φ | 14 58 .1 | 316 | -4.7 | 4 | 14 35 .0 | 321 | -1.7 | |
| δ | 22 37 .1 | 200 | -1.0 | h | 1 48 | .0 | 153 | .5 |

23. MART

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 178 20.7 | 1 5.9 | 180 52.7 | 135 29.0 | 20 3.7 | 20 56.7 | 12 25.2 |
| 2 | 208 21.0 | 1 7.9 | 210 57.7 | 165 28.9 | 20 5.4 | 51 3.1 | 12 25.5 |
| 4 | 238 21.4 | 1 9.9 | 241 2.6 | 195 28.7 | 20 7.2 | 81 9.4 | 12 25.9 |
| 6 | 268 21.8 | 1 11.8 | 271 7.5 | 225 28.6 | 20 9.0 | 111 15.7 | 12 26.2 |
| 8 | 298 22.2 | 1 13.8 | 301 12.5 | 255 28.5 | 20 10.8 | 141 22.0 | 12 26.6 |
| 10 | 328 22.5 | 1 15.8 | 331 17.4 | 285 28.3 | 20 12.6 | 171 28.3 | 12 26.9 |
| 12 | 358 22.9 | 1 17.7 | 1 22.3 | 315 28.2 | 20 14.4 | 201 34.6 | 12 27.2 |
| 14 | 28 23.3 | 1 19.7 | 31 27.2 | 345 28.1 | 20 16.1 | 231 40.9 | 12 27.6 |
| 16 | 58 23.7 | 1 21.7 | 61 32.2 | 15 27.9 | 20 17.9 | 261 47.2 | 12 27.9 |
| 18 | 88 24.0 | 1 23.6 | 91 37.1 | 45 27.8 | 20 19.7 | 291 53.5 | 12 28.2 |
| 20 | 118 24.4 | 1 25.6 | 121 42.0 | 75 27.7 | 20 21.4 | 321 59.8 | 12 28.6 |
| 22 | 148 24.8 | 1 27.6 | 151 47.0 | 105 27.5 | 20 23.2 | 352 6.1 | 12 28.9 |
| Δ | 2 | 10 | | -1 | 9 | 32 | 2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 52 | 18 23 | 0 42 | 2 29 | 5 31 | .5 | 20 3 | 3 1 | |
| 55 | 5 54 | 18 20 | 0 36 | 2 6 | 5 41 | .7 | 19 50 | 2 9 | |
| 50 | 5 56 | 18 18 | 0 32 | 1 51 | 5 48 | .9 | 19 39 | 2 7 | |
| 45 | 5 57 | 18 17 | 0 29 | 1 40 | 5 55 | 1.1 | 19 31 | 2 5 | |
| 40 | 5 58 | 18 15 | 0 27 | 1 31 | 5 60 | 1.2 | 19 26 | 2 4 | |
| 35 | 5 59 | 18 14 | 0 25 | 1 25 | 6 4 | 1.3 | 19 18 | 2 3 | |
| 30 | 5 60 | 18 13 | 0 24 | 1 20 | 6 8 | 1.4 | 19 13 | 2 2 | |
| 20 | 6 1 | 18 12 | 0 22 | 1 13 | 6 15 | 1.5 | 19 3 | 2 1 | |
| 10 | 6 2 | 18 11 | 0 21 | 1 10 | 6 21 | 1.7 | 18 56 | 1 9 | |
| 0 | 6 3 | 18 10 | 0 21 | 1 9 | 6 27 | 1.8 | 18 48 | 1 8 | |
| 10 | 6 4 | 18 9 | 0 21 | 1 10 | 6 33 | 1.9 | 18 41 | 1 7 | |
| 20 | 6 5 | 18 8 | 0 22 | 1 13 | 6 39 | 2.1 | 18 33 | 1 6 | |
| 30 | 6 5 | 18 7 | 0 24 | 1 20 | 6 47 | 2.2 | 18 24 | 1 4 | |
| 35 | 6 6 | 18 7 | 0 25 | 1 24 | 6 51 | 2.3 | 18 19 | 1 3 | |
| 40 | 6 6 | 18 6 | 0 27 | 1 30 | 6 56 | 2.4 | 18 13 | 1 2 | |
| 45 | 6 7 | 18 6 | 0 29 | 1 38 | 7 1 | 2.6 | 18 6 | 1 1 | |
| 50 | 6 7 | 18 5 | 0 32 | 1 49 | 7 8 | 2.7 | 17 58 | 1 0 | |
| 55 | 6 8 | 18 4 | 0 36 | 2 3 | 7 16 | 2.9 | 17 48 | .8 | |
| 60 | 6 8 | 18 3 | 0 41 | 2 23 | 7 27 | 3.2 | 17 35 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 176 4.2 | 150 | 6 50.9 | 108 | 141 39.8 | 14 23.3 | 333 58.3 | - 8 10.1 |
| 2 | 205 12.1 | 149 | 7 12.5 | 107 | 171 43.7 | 14 23.6 | 4 3.6 | 8 10.0 |
| 4 | 234 20.0 | 149 | 7 33.9 | 106 | 201 47.6 | 14 24.0 | 34 8.8 | - 8 9.9 |
| 6 | 263 27.8 | 149 | 7 55.1 | 106 | 231 51.5 | 14 24.3 | 64 14.0 | - 8 9.7 |
| 8 | 292 35.6 | 149 | 8 16.2 | 105 | 261 55.4 | 14 24.7 | 94 19.3 | - 8 9.6 |
| 10 | 321 43.3 | 148 | 8 37.2 | 104 | 291 59.3 | 14 25.0 | 124 24.5 | - 8 9.5 |
| 12 | 350 51.0 | 148 | 8 58.0 | 103 | 322 3.2 | 14 25.3 | 154 29.7 | - 8 9.4 |
| 14 | 19 58.7 | 148 | 9 18.6 | 102 | 352 7.1 | 14 25.7 | 184 35.0 | - 8 9.2 |
| 16 | 49 6.2 | 147 | 9 39.0 | 101 | 22 11.0 | 14 26.0 | 214 40.2 | - 8 9.1 |
| 18 | 78 13.7 | 147 | 9 59.3 | 100 | 52 14.8 | 14 26.4 | 244 45.4 | - 8 9.0 |
| 20 | 107 21.1 | 147 | 10 19.4 | 100 | 82 18.7 | 14 26.7 | 274 50.7 | - 8 8.8 |
| 22 | 136 28.5 | 146 | 10 39.3 | 99 | 112 22.6 | 14 27.0 | 304 55.9 | - 8 8.7 |
| Δ | 2 | 10 | | -1 | 9 | | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|----------------|--------------|----------------|--------|----------------|----------------|------|
| | h min | s | s / | T _m | h min | min / | T _m | t' |
| 00 | - 6 37.2 | .7 | 16.1 | T _m | 12 38 | 1.8 | 54.6 | 14.9 |
| 12 | - 6 28.2 | T _m | 12 h 6.5 min | Starost | .4 d | Faza | ● | |
| PLANETE | Pl. | T _m | π 360°-z | Vel. | Pl. | T _m | π 360°-z | Vel. |
| | h min | / | o | | h min | / | o | |
| Q | 14 58 | .1 | 315 | -4.7 | 4 | 14 31 | .0 | 321 |
| D | 22 31 | .1 | 200 | - .9 | h | 1 44 | .0 | 153 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 165 35.7 | 146 | 10 59.0 | 98 | 142 26.5 | 14 27.4 | 335 1.1 | - 8 8.6 |
| 2 | 194 42.9 | 146 | 11 18.5 | 97 | 172 30.4 | 14 27.7 | 5 6.4 | - 8 8.5 |
| 4 | 223 50.0 | 145 | 11 37.8 | 96 | 202 34.3 | 14 28.1 | 35 11.6 | - 8 8.3 |
| 6 | 252 57.0 | 145 | 11 56.9 | 94 | 232 38.2 | 14 28.4 | 65 16.9 | - 8 8.2 |
| 8 | 282 4.0 | 144 | 12 15.8 | 93 | 262 42.1 | 14 28.7 | 95 22.1 | - 8 8.1 |
| 10 | 311 10.8 | 144 | 12 34.5 | 92 | 292 46.0 | 14 29.1 | 125 27.3 | - 8 7.9 |
| 12 | 340 17.5 | 143 | 12 52.9 | 91 | 322 49.8 | 14 29.4 | 155 32.6 | - 8 7.8 |
| 14 | 9 24.1 | 143 | 13 11.1 | 90 | 352 53.7 | 14 29.7 | 185 37.8 | - 8 7.7 |
| 16 | 36 30.7 | 142 | 13 29.1 | 89 | 22 57.6 | 14 30.1 | 215 43.1 | - 8 7.6 |
| 18 | 67 37.1 | 141 | 13 46.9 | 88 | 53 1.5 | 14 30.4 | 245 48.3 | - 8 7.4 |
| 20 | 96 43.4 | 141 | 14 4.4 | 86 | 83 5.4 | 14 30.8 | 275 53.5 | - 8 7.3 |
| 22 | 125 49.5 | 140 | 14 21.6 | 85 | 113 9.3 | 14 31.1 | 305 58.8 | - 8 7.2 |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|----------------|--------------|----------------|--------|----------------|----------------|------|
| | h min | s | s / | T _m | h min | min / | T _m | t' |
| 00 | - 6 19.2 | .8 | 16.1 | T _m | 13 21 | 1.9 | 54.3 | 14.8 |
| 12 | - 6 10.2 | T _m | 12 h 6.2 min | Starost | .4 d | Faza | ● | |
| PLANETE | Pl. | T _m | π 360°-z | Vel. | Pl. | T _m | π 360°-z | Vel. |
| | h min | / | o | | h min | / | o | |
| Q | 14 58 | .1 | 314 | -4.7 | 4 | 14 28 | .0 | 321 |
| D | 22 26 | .1 | 200 | - .9 | h | 1 40 | .0 | 153 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 29.7 | 1 53.2 | 182 51.0 | 135 25.9 | 20 45.8 | 23 27.4 | 12 33.0 |
| 2 | 208 30.0 | 1 55.1 | 212 56.0 | 165 25.8 | 20 47.5 | 53 33.6 | 12 33.3 |
| 4 | 238 30.4 | 1 57.1 | 243 .9 | 195 25.7 | 20 49.2 | 83 39.8 | 12 33.5 |
| 6 | 268 30.8 | 1 59.1 | 273 5.8 | 225 25.6 | 20 50.9 | 113 46.1 | 12 33.8 |
| 8 | 298 31.2 | 2 1.0 | 303 10.7 | 255 25.5 | 20 52.6 | 143 52.3 | 12 34.1 |
| 10 | 328 31.5 | 2 3.0 | 333 15.7 | 285 25.4 | 20 54.4 | 173 58.5 | 12 34.4 |
| 12 | 358 31.9 | 2 4.9 | 3 20.6 | 315 25.3 | 20 56.1 | 204 4.7 | 12 34.7 |
| 14 | 38 32.3 | 2 6.9 | 33 25.5 | 345 25.2 | 20 57.8 | 234 10.9 | 12 35.0 |
| 16 | 58 32.7 | 2 8.9 | 63 30.5 | 15 25.0 | 20 59.4 | 264 17.0 | 12 35.3 |
| 18 | 88 33.1 | 2 10.8 | 93 35.4 | 45 24.9 | 21 1.1 | 294 23.2 | 12 35.6 |
| 20 | 118 33.4 | 2 12.8 | 123 40.3 | 75 24.8 | 21 2.8 | 324 29.4 | 12 35.8 |
| 22 | 148 33.8 | 2 14.8 | 153 45.2 | 105 24.7 | 21 4.5 | 354 35.6 | 12 36.1 |
| Δ | 2 | 10 | | -1 | 8 | 31 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 46 | 18 28 | 0 42 | 2 31 | 5 58 | .8 | 22 33 | 2.9 | |
| 55 | 5 49 | 18 24 | 0 37 | 2 8 | 6 19 | 1.0 | 22 7 | 2.7 | |
| 50 | 5 51 | 18 21 | 0 32 | 1 52 | 6 35 | 1.2 | 21 47 | 2.5 | |
| 45 | 5 53 | 18 19 | 0 29 | 1 40 | 6 48 | 1.3 | 21 32 | 2.4 | |
| 40 | 5 55 | 18 17 | 0 27 | 1 32 | 6 59 | 1.4 | 21 20 | 2.3 | |
| 35 | 5 56 | 18 16 | 0 25 | 1 25 | 7 9 | 1.5 | 21 9 | 2.3 | |
| 30 | 5 58 | 18 15 | 0 24 | 1 20 | 7 17 | 1.6 | 20 60 | 2.2 | |
| 20 | 5 60 | 18 13 | 0 22 | 1 14 | 7 31 | 1.7 | 20 44 | 2.1 | |
| 10 | 6 1 | 18 11 | 0 21 | 1 10 | 7 43 | 1.8 | 20 30 | 2.0 | |
| 0 | 6 3 | 18 9 | 0 21 | 1 9 | 7 55 | 1.9 | 20 17 | 1.9 | |
| 10 | 6 4 | 18 8 | 0 21 | 1 10 | 8 7 | 2.0 | 20 4 | 1.8 | |
| 20 | 6 5 | 18 6 | 0 22 | 1 13 | 8 19 | 2.1 | 19 50 | 1.8 | |
| 30 | 6 7 | 18 5 | 0 24 | 1 19 | 8 34 | 2.2 | 19 34 | 1.6 | |
| 35 | 6 7 | 18 4 | 0 25 | 1 24 | 8 42 | 2.3 | 19 25 | 1.6 | |
| 40 | 6 8 | 18 3 | 0 27 | 1 30 | 8 52 | 2.4 | 19 15 | 1.5 | |
| 45 | 6 9 | 18 2 | 0 29 | 1 38 | 9 3 | 2.5 | 19 3 | 1.4 | |
| 50 | 6 10 | 18 1 | 0 32 | 1 48 | 9 17 | 2.6 | 18 48 | 1.3 | |
| 55 | 6 11 | 17 59 | 0 36 | 2 2 | 9 35 | 2.8 | 18 29 | 1.1 | |
| 60 | 6 13 | 17 57 | 0 41 | 2 22 | 9 58 | 3.0 | 18 4 | .9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 154 55.6 | 140 | 14 38.6 | 84 | 143 13.1 | 14 31.4 | 336 4.0 | - 8 7.0 |
| 2 | 184 1.6 | 139 | 14 55.3 | 82 | 173 17.0 | 14 31.8 | 6 9.3 | - 8 6.9 |
| 4 | 213 7.4 | 139 | 15 11.8 | 81 | 203 20.9 | 14 32.1 | 36 14.5 | - 8 6.8 |
| 6 | 242 13.1 | 138 | 15 28.0 | 80 | 233 24.8 | 14 32.5 | 66 19.8 | - 8 6.7 |
| 8 | 271 18.7 | 137 | 15 44.0 | 78 | 263 28.7 | 14 32.8 | 95 25.0 | - 8 6.5 |
| 10 | 300 24.2 | 137 | 15 59.6 | 77 | 293 32.5 | 14 33.1 | 126 30.2 | - 8 6.4 |
| 12 | 328 29.5 | 136 | 16 15.0 | 75 | 323 36.4 | 14 33.5 | 156 35.5 | - 8 6.3 |
| 14 | 358 34.7 | 135 | 16 30.1 | 74 | 353 40.3 | 14 33.8 | 186 40.7 | - 8 6.1 |
| 16 | 387 39.8 | 135 | 16 44.9 | 73 | 23 44.2 | 14 34.2 | 216 46.0 | - 8 6.0 |
| 18 | 56 44.7 | 134 | 16 59.4 | 71 | 53 48.1 | 14 34.5 | 246 51.2 | - 8 5.9 |
| 20 | 85 49.5 | 133 | 17 13.6 | 70 | 83 51.9 | 14 34.8 | 276 56.5 | - 8 5.8 |
| 22 | 114 54.2 | 133 | 17 27.5 | 68 | 113 55.8 | 14 35.2 | 307 1.7 | - 8 5.6 |
| Δ | 2 | 10 | | 0 | 8 | 31 | 1 | |

| UT | MJESEC | | | | SUNCE | | | | |
|----------|-------------------------|----------------|-------------|-------------------|-------------|----------------|---------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 6 1.2 | .8 | 16.1 | T _m 14 | 6 | 1.9 | 54.1 | 14.7 | |
| 12 | - 5 52.1 | T _m | 12 h | 5.9 min | Starost | 2.4 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _m | π | 360 - π | Vel. | Pl. | T _m | π | 360 - π | Vel. |
| h min / | o | / | o | h min / | h min / | o | h min / | o | h min / |
| 0 | 14 58 | .1 | 313 | -4.7 | 4 | 14 25 | .0 | 320 | -1.6 |
| δ | 22 22 | .1 | 201 | - .9 | h | 1 35 | .0 | 153 | -.5 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 143 58.8 | 132 | 17 41.1 | 66 | 143 59.7 | 14 35.5 | 337 7.0 | - 8 5.5 |
| 2 | 173 3.2 | 131 | 17 54.4 | 65 | 174 3.6 | 14 35.9 | 7 12.2 | - 8 5.4 |
| 4 | 202 7.5 | 131 | 18 7.3 | 63 | 204 7.4 | 14 36.2 | 37 17.4 | - 8 5.2 |
| 6 | 231 11.6 | 130 | 18 20.0 | 62 | 234 11.3 | 14 36.5 | 67 22.7 | - 8 5.1 |
| 8 | 260 15.6 | 129 | 18 32.3 | 60 | 264 15.2 | 14 36.9 | 97 27.9 | - 8 5.0 |
| 10 | 289 19.5 | 129 | 18 44.3 | 58 | 294 19.1 | 14 37.2 | 127 33.2 | - 8 4.8 |
| 12 | 318 23.2 | 128 | 18 55.9 | 57 | 324 22.9 | 14 37.6 | 157 38.4 | - 8 4.7 |
| 14 | 347 26.8 | 127 | 19 7.3 | 55 | 354 26.8 | 14 37.9 | 187 43.7 | - 8 4.6 |
| 16 | 1 30.3 | 127 | 19 18.2 | 53 | 24 30.7 | 14 38.2 | 217 48.9 | - 8 4.4 |
| 18 | 45 33.6 | 126 | 19 28.9 | 51 | 54 34.6 | 14 38.6 | 247 54.2 | - 8 4.3 |
| 20 | 74 36.8 | 125 | 19 39.2 | 50 | 84 38.4 | 14 38.9 | 277 59.4 | - 8 4.2 |
| 22 | 103 39.8 | 125 | 19 49.1 | 48 | 114 42.3 | 14 39.3 | 308 4.7 | - 8 4.1 |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | MJESEC | | | | SUNCE | | | | |
|----------|-------------------------|----------------|-------------|----------------------|-------------|----------------|---------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 5 43.1 | .8 | 16.1 | T _m 14 52 | 2.0 | 54.0 | 14.7 | | |
| 12 | - 5 34.0 | T _m | 12 h | 5.6 min | Starost | 3.4 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _m | π | 360 - π | Vel. | Pl. | T _m | π | 360 - π | Vel. |
| h min / | o | / | o | h min / | h min / | o | h min / | o | h min / |
| 0 | 14 58 | .1 | 312 | -4.7 | 4 | 14 22 | .0 | 320 | -1.6 |
| δ | 22 17 | .1 | 201 | - .9 | h | 1 31 | .0 | 153 | -.5 |

27. MART

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 38.7 | 2 40.2 | 184 49.3 | 135 23.5 | 21 26.1 | 25 55.4 | 12 39.5 |
| 2 | 208 39.1 | 2 42.2 | 214 54.2 | 165 23.4 | 21 27.8 | 56 1.5 | 12 39.7 |
| 4 | 238 39.5 | 2 44.1 | 244 59.2 | 195 23.3 | 21 29.4 | 86 7.7 | 12 40.0 |
| 6 | 268 39.8 | 2 46.1 | 275 4.1 | 225 23.2 | 21 31.0 | 116 13.8 | 12 40.2 |
| 8 | 298 40.2 | 2 48.1 | 305 9.0 | 255 23.2 | 21 32.7 | 146 19.8 | 12 40.5 |
| 10 | 328 40.6 | 2 50.0 | 335 13.9 | 285 23.1 | 21 34.3 | 176 25.9 | 12 40.7 |
| 12 | 358 41.0 | 2 52.0 | 5 18.9 | 315 23.0 | 21 35.9 | 206 32.0 | 12 40.9 |
| 14 | 28 41.3 | 2 53.9 | 35 23.8 | 345 22.9 | 21 37.5 | 236 38.1 | 12 41.2 |
| 16 | 58 41.7 | 2 55.9 | 65 28.7 | 15 22.8 | 21 39.2 | 266 44.2 | 12 41.4 |
| 18 | 88 42.1 | 2 57.8 | 95 33.7 | 45 22.8 | 21 40.8 | 296 50.2 | 12 41.6 |
| 20 | 118 42.5 | 2 59.8 | 125 38.6 | 75 22.7 | 21 42.4 | 326 56.3 | 12 41.8 |
| 22 | 148 42.8 | 3 1.7 | 155 43.5 | 105 22.6 | 21 44.0 | 357 2.4 | 12 42.1 |
| Δ | 2 | 10 | | 0 | 8 | 30 | 1 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 39 | 18 33 | 0 42 | 2 34 | 6 42 | 1.5 | ... | 0 | |
| 55 | 5 44 | 18 28 | 0 37 | 2 9 | 7 15 | 1.6 | ... | 0 | |
| 50 | 5 47 | 18 25 | 0 33 | 1 52 | 7 38 | 1.7 | 23 46 | 2.2 | |
| 45 | 5 50 | 18 22 | 0 30 | 1 41 | 7 57 | 1.8 | 23 26 | 2.1 | |
| 40 | 5 52 | 18 20 | 0 27 | 1 32 | 8 12 | 1.8 | 23 10 | 2.1 | |
| 35 | 5 54 | 18 18 | 0 25 | 1 25 | 8 25 | 1.9 | 22 56 | 2.1 | |
| 30 | 5 55 | 18 16 | 0 24 | 1 20 | 8 36 | 1.9 | 22 45 | 2.1 | |
| 20 | 5 58 | 18 13 | 0 22 | 1 14 | 8 55 | 1.9 | 22 25 | 2.1 | |
| 10 | 6 0 | 18 11 | 0 21 | 1 10 | 9 12 | 2.0 | 22 7 | 2.1 | |
| 0 | 6 2 | 18 9 | 0 21 | 1 9 | 9 28 | 2.0 | 21 51 | 2.0 | |
| 10 | 6 4 | 18 6 | 0 21 | 1 10 | 9 43 | 2.1 | 21 35 | 2.0 | |
| 20 | 6 6 | 18 4 | 0 22 | 1 13 | 10 0 | 2.1 | 21 17 | 2.0 | |
| 30 | 6 8 | 18 2 | 0 24 | 1 19 | 10 20 | 2.1 | 20 57 | 2.0 | |
| 35 | 6 9 | 18 1 | 0 25 | 1 24 | 10 31 | 2.2 | 20 45 | 1.9 | |
| 40 | 6 10 | 17 60 | 0 27 | 1 30 | 10 44 | 2.2 | 20 32 | 1.9 | |
| 45 | 6 12 | 17 58 | 0 29 | 1 38 | 10 60 | 2.2 | 20 16 | 1.9 | |
| 50 | 6 13 | 17 56 | 0 32 | 1 48 | 11 19 | 2.3 | 19 57 | 1.9 | |
| 55 | 6 15 | 17 54 | 0 36 | 2 2 | 11 44 | 2.4 | 19 31 | 1.8 | |
| 60 | 6 18 | 17 51 | 0 41 | 2 21 | 12 19 | 2.5 | 18 56 | 1.7 | |
| S | | | | | | | | | |

28. MART

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 132 42.8 124 | 19 58.7 | 46 | 144 46.2 | 14 39.6 | 338 9.9 | - 8 3.9 |
| 2 | 161 45.6 123 | 20 7.9 | 44 | 174 50.0 | 14 39.9 | 8 15.2 | - 8 3.8 |
| 4 | 190 48.2 123 | 20 16.7 | 42 | 204 53.9 | 14 40.3 | 38 20.4 | - 8 3.7 |
| 6 | 219 50.8 122 | 20 25.2 | 41 | 234 57.8 | 14 40.6 | 68 25.7 | - 8 3.5 |
| 8 | 248 53.2 121 | 20 33.3 | 39 | 265 1.7 | 14 41.0 | 98 30.9 | - 8 3.4 |
| 10 | 277 55.4 121 | 20 41.1 | 37 | 295 5.5 | 14 41.3 | 128 36.2 | - 8 3.3 |
| 12 | 306 57.6 120 | 20 48.4 | 35 | 325 9.4 | 14 41.6 | 158 41.4 | - 8 3.1 |
| 14 | 335 59.7 120 | 20 55.4 | 33 | 355 13.3 | 14 42.0 | 188 46.7 | - 8 3.0 |
| 16 | 5 1.6 119 | 21 2.0 | 31 | 25 17.1 | 14 42.3 | 218 51.9 | - 8 2.9 |
| 18 | 34 3.4 118 | 21 8.2 | 29 | 55 21.0 | 14 42.7 | 248 57.2 | - 8 2.7 |
| 20 | 63 5.1 118 | 21 14.1 | 27 | 85 24.9 | 14 43.0 | 279 2.4 | - 8 2.6 |
| 22 | 92 6.6 117 | 21 19.5 | 25 | 115 28.7 | 14 43.3 | 309 7.7 | - 8 2.5 |
| Δ | 2 | 10 | | 0 | 8 | 30 | 1 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 36 | 18 35 | 0 43 | 2 35 | 7 17 | 2.0 | 0 47 | 2.2 | |
| 55 | 5 41 | 18 30 | 0 37 | 2 9 | 7 53 | 2.0 | 0 11 | 2.2 | |
| 50 | 5 45 | 18 26 | 0 33 | 1 53 | 8 19 | 2.0 | ... | 0 | |
| 45 | 5 48 | 18 23 | 0 30 | 1 41 | 8 39 | 2.0 | ... | 0 | |
| 40 | 5 50 | 18 21 | 0 27 | 1 32 | 8 55 | 2.0 | ... | 0 | |
| 35 | 5 52 | 18 18 | 0 25 | 1 26 | 9 9 | 2.0 | 23 47 | 2.0 | |
| 30 | 5 54 | 18 17 | 0 24 | 1 21 | 9 21 | 2.0 | 23 35 | 2.0 | |
| 20 | 5 57 | 18 13 | 0 22 | 1 14 | 9 42 | 2.0 | 23 15 | 2.0 | |
| 10 | 5 59 | 18 11 | 0 21 | 1 10 | 9 59 | 2.1 | 22 57 | 2.0 | |
| 0 | 6 2 | 18 8 | 0 21 | 1 9 | 10 16 | 2.1 | 22 40 | 2.1 | |
| 10 | 6 4 | 18 6 | 0 21 | 1 10 | 10 33 | 2.1 | 22 23 | 2.1 | |
| 20 | 6 6 | 18 4 | 0 22 | 1 13 | 10 51 | 2.1 | 22 5 | 2.1 | |
| 30 | 6 8 | 18 1 | 0 24 | 1 19 | 11 11 | 2.1 | 21 44 | 2.1 | |
| 35 | 6 10 | 17 60 | 0 25 | 1 24 | 11 23 | 2.1 | 21 32 | 2.1 | |
| 40 | 6 11 | 17 58 | 0 27 | 1 30 | 11 37 | 2.1 | 21 18 | 2.1 | |
| 45 | 6 13 | 17 56 | 0 29 | 1 38 | 11 54 | 2.1 | 21 2 | 2.2 | |
| 50 | 6 15 | 17 54 | 0 32 | 1 48 | 12 14 | 2.0 | 20 41 | 2.2 | |
| 55 | 6 17 | 17 52 | 0 36 | 2 2 | 12 40 | 2.0 | 20 14 | 2.2 | |
| 60 | 6 20 | 17 48 | 0 41 | 2 21 | 13 18 | 2.0 | 19 37 | 2.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | PROLJ. TAČKA S _T | JUPITER | | SATURN | |
|----|----------------|---------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 121 8.1 117 | 21 24.6 | 23 | 145 32.6 | 14 43.7 | 339 13.0 | - 8 2.3 |
| 2 | 150 9.5 116 | 21 29.2 | 21 | 175 36.5 | 14 44.4 | 9 18.2 | - 8 2.2 |
| 4 | 179 10.7 116 | 21 33.4 | 19 | 205 40.3 | 14 44.4 | 39 23.5 | - 8 2.1 |
| 6 | 208 11.9 115 | 21 37.3 | 17 | 235 44.2 | 14 44.7 | 69 28.7 | - 8 1.9 |
| 8 | 237 12.9 115 | 21 40.7 | 15 | 265 48.0 | 14 45.0 | 99 34.0 | - 8 1.8 |
| 10 | 266 13.9 114 | 21 43.8 | 13 | 295 51.9 | 14 45.4 | 129 39.2 | - 8 1.7 |
| 12 | 295 14.7 114 | 21 46.4 | 11 | 325 55.8 | 14 45.7 | 159 44.5 | - 8 1.5 |
| 14 | 324 15.5 113 | 21 48.6 | 9 | 355 59.6 | 14 46.1 | 189 49.7 | - 8 1.4 |
| 16 | 353 16.2 113 | 21 50.4 | 7 | 26 3.5 | 14 46.4 | 219 55.0 | - 8 1.3 |
| 18 | 22 16.8 113 | 21 51.8 | 5 | 56 7.4 | 14 46.7 | 250 2.2 | - 8 1.1 |
| 20 | 51 17.3 112 | 21 52.8 | 3 | 86 11.2 | 14 47.1 | 280 5.5 | - 8 1.0 |
| 22 | 80 17.7 112 | 21 53.3 | 1 | 116 15.1 | 14 47.4 | 310 10.8 | - 8 .9 |
| Δ | 19 | 2 | | 26 | 1 | | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 36 | 18 35 | 0 43 | 2 35 | 7 17 | 2.0 | 0 47 | 2.2 | |
| 55 | 5 41 | 18 30 | 0 37 | 2 9 | 7 53 | 2.0 | 0 11 | 2.2 | |
| 50 | 5 45 | 18 26 | 0 33 | 1 53 | 8 19 | 2.0 | ... | 0 | |
| 45 | 5 48 | 18 23 | 0 30 | 1 41 | 8 39 | 2.0 | ... | 0 | |
| 40 | 5 50 | 18 21 | 0 27 | 1 32 | 8 55 | 2.0 | ... | 0 | |
| 35 | 5 52 | 18 18 | 0 25 | 1 26 | 9 9 | 2.0 | 23 47 | 2.0 | |
| 30 | | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 47.7 | 3 27.1 | 186 47.6 | 135 21.8 | 22 4.6 | 28 20.7 | 12 44.8 |
| 2 | 208 48.1 | 3 29.0 | 216 52.5 | 165 21.8 | 22 6.2 | 58 26.7 | 12 44.9 |
| 4 | 238 48.5 | 3 31.0 | 246 57.4 | 195 21.7 | 22 7.7 | 88 32.7 | 12 45.1 |
| 6 | 268 48.9 | 3 32.9 | 277 2.4 | 225 21.7 | 22 9.3 | 118 38.7 | 12 45.3 |
| 8 | 298 49.2 | 3 34.9 | 307 7.3 | 255 21.7 | 22 10.8 | 148 44.7 | 12 45.5 |
| 10 | 328 49.6 | 3 36.8 | 337 12.2 | 285 21.6 | 22 12.4 | 178 50.6 | 12 45.7 |
| 12 | 358 50.0 | 3 38.8 | 7 17.1 | 315 21.6 | 22 13.9 | 208 56.6 | 12 45.9 |
| 14 | 28 50.4 | 3 40.7 | 37 22.1 | 345 21.5 | 22 15.5 | 239 2.6 | 12 46.1 |
| 16 | 58 50.7 | 3 42.7 | 67 27.0 | 15 21.5 | 22 17.0 | 269 8.5 | 12 46.2 |
| 18 | 88 51.1 | 3 44.6 | 97 31.9 | 45 21.5 | 22 18.5 | 299 14.5 | 12 46.4 |
| 20 | 118 51.5 | 3 46.5 | 127 36.9 | 75 21.4 | 22 20.1 | 329 20.4 | 12 46.6 |
| 22 | 148 51.9 | 3 48.5 | 157 41.8 | 105 21.4 | 22 21.6 | 359 26.4 | 12 46.8 |
| Δ | 2 | 10 | | 0 | 8 | 30 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 33 | 18 37 | 0 43 | 2 36 | 8 4 | 2.5 | 1 41 | 1.8 | |
| 55 | 5 39 | 18 32 | 0 37 | 2 10 | 8 41 | 2.4 | 1 4 | 1.9 | |
| 50 | 5 43 | 18 28 | 0 33 | 1 53 | 9 8 | 2.3 | 0 38 | 1.9 | |
| 45 | 5 46 | 18 24 | 0 30 | 1 41 | 9 28 | 2.3 | 0 18 | 1.9 | |
| 40 | 5 48 | 18 22 | 0 27 | 1 32 | 9 44 | 2.3 | 0 1 | 2.0 | |
| 35 | 5 51 | 18 19 | 0 25 | 1 26 | 9 58 | 2.2 | ... . | 0 | |
| 30 | 5 53 | 18 17 | 0 24 | 1 21 | 10 10 | 2.2 | ... . | 0 | |
| 20 | 5 56 | 18 14 | 0 22 | 1 14 | 10 31 | 2.2 | ... . | 0 | |
| 10 | 5 59 | 18 11 | 0 21 | 1 10 | 10 49 | 2.1 | 23 46 | 2.0 | |
| 0 | 6 1 | 18 8 | 0 21 | 1 9 | 11 5 | 2.1 | 23 29 | 2.1 | |
| 10 | 6 4 | 18 5 | 0 21 | 1 10 | 11 22 | 2.0 | 23 13 | 2.1 | |
| 20 | 6 6 | 18 3 | 0 22 | 1 13 | 11 40 | 2.0 | 22 55 | 2.2 | |
| 30 | 6 9 | 17 60 | 0 24 | 1 19 | 12 1 | 2.0 | 22 35 | 2.3 | |
| 35 | 6 11 | 17 58 | 0 25 | 1 24 | 12 13 | 1.9 | 22 23 | 2.3 | |
| 40 | 6 12 | 17 56 | 0 27 | 1 30 | 12 26 | 1.9 | 22 10 | 2.4 | |
| 45 | 6 14 | 17 54 | 0 29 | 1 38 | 12 43 | 1.8 | 21 53 | 2.4 | |
| 50 | 6 17 | 17 52 | 0 32 | 1 48 | 13 3 | 1.8 | 21 33 | 2.5 | |
| 55 | 6 19 | 17 49 | 0 36 | 2 1 | 13 29 | 1.7 | 21 7 | 2.6 | |
| 60 | 6 23 | 17 45 | 0 41 | 2 21 | 14 6 | 1.5 | 20 30 | 2.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 109 18.1 | 111 | 21 53.5 | -1 | 146 18.9 | 14 47.8 | 340 16.0 | -8 .7 |
| 2 | 138 18.4 | 111 | 21 53.2 | -4 | 176 22.8 | 14 48.1 | 10 21.3 | -8 .6 |
| 4 | 167 18.6 | 111 | 21 52.5 | -6 | 206 26.7 | 14 48.5 | 40 26.5 | -8 .5 |
| 6 | 196 18.8 | 111 | 21 51.3 | -8 | 236 30.5 | 14 48.8 | 70 31.8 | -8 .3 |
| 8 | 225 18.9 | 110 | 21 49.8 | -10 | 266 34.4 | 14 49.1 | 100 37.0 | -8 .2 |
| 10 | 254 19.0 | 110 | 21 47.8 | -12 | 296 38.2 | 14 49.5 | 130 42.3 | -8 .1 |
| 12 | 283 19.0 | 110 | 21 45.4 | -14 | 326 42.1 | 14 49.8 | 160 47.6 | -7 59.9 |
| 14 | 312 18.9 | 110 | 21 42.6 | -16 | 356 45.9 | 14 50.2 | 190 52.8 | -7 59.8 |
| 16 | 341 18.8 | 109 | 21 39.3 | -18 | 26 49.8 | 14 50.5 | 220 58.1 | -7 59.7 |
| 18 | 10 18.7 | 109 | 21 35.6 | -21 | 56 53.7 | 14 50.8 | 251 3.3 | -7 59.5 |
| 20 | 39 18.5 | 109 | 21 31.5 | -23 | 86 57.5 | 14 51.2 | 281 8.6 | -7 59.4 |
| 22 | 68 18.3 | 109 | 21 27.0 | -25 | 117 1.4 | 14 51.5 | 311 13.9 | -7 59.3 |
| Δ | 2 | 10 | | | 19 | 2 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-----------------------|----------|--------|-----------------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s / | / | h min min / | h min | min / | / | / | |
| 00 - 4 48.9 | .8 | 16.0 | T _{m̄} 17 17 | 2.1 | 54.6 | 14.9 | | |
| 12 - 4 39.9 | T _{m̄} 12 h | 4.7 min | Starost | 6.4 d | Faza | 0 | | |
| PLANETE | Pl. | T _{m̄} | π 360-ɔ | Vel. | Pl. | T _{m̄} | π 360-ɔ | Vel. |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / |
| 0 14 59 .1 | 309 | -4.8 | 4 | 14 13 .0 | 320 | -1.6 | | |
| 0 22 2 .1 | 202 | - .9 | h | 1 19 | 153 | - .5 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 97 18.0 | 109 | 21 22.0 | -27 | 147 5.2 | 14 51.9 | 341 19.1 | -7 59.1 |
| 2 | 126 17.7 | 108 | 21 16.6 | -29 | 177 9.1 | 14 52.2 | 11 24.4 | -7 59.0 |
| 4 | 155 17.4 | 108 | 21 10.8 | -31 | 207 12.9 | 14 52.5 | 41 29.6 | -7 58.9 |
| 6 | 184 17.1 | 108 | 21 4.5 | -33 | 237 16.8 | 14 52.9 | 71 34.9 | -7 58.7 |
| 8 | 213 16.8 | 108 | 20 57.8 | -36 | 267 20.6 | 14 53.2 | 101 40.2 | -7 58.6 |
| 10 | 242 16.4 | 108 | 20 50.7 | -38 | 297 24.5 | 14 53.6 | 131 45.4 | -7 58.5 |
| 12 | 271 16.0 | 108 | 20 43.2 | -40 | 327 28.3 | 14 53.9 | 161 50.7 | -7 58.3 |
| 14 | 300 15.6 | 108 | 20 35.2 | -42 | 357 32.2 | 14 54.2 | 191 56.0 | -7 58.2 |
| 16 | 320 15.2 | 108 | 20 26.8 | -44 | 27 36.1 | 14 54.6 | 222 1.2 | -7 58.1 |
| 18 | 358 14.8 | 108 | 20 18.0 | -46 | 57 39.9 | 14 54.9 | 252 6.5 | -7 57.9 |
| 20 | 27 14.3 | 108 | 20 8.8 | -48 | 87 43.8 | 14 55.3 | 282 11.7 | -7 57.8 |
| 22 | 56 13.9 | 108 | 19 59.2 | -50 | 117 47.6 | 14 55.6 | 312 17.0 | -7 57.7 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|--------------------|----------|--------|-----------------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s / | / | h min min / | h min | min / | / | / | |
| 00 - 4 30.9 | .7 | 16.0 | T _{m̄} 18 | 2.1 | 55.0 | 15.0 | | |
| 12 - 4 21.9 | T _{m̄} 12 h | 4.4 min | Starost | 7.4 d | Faza | 0 | | |
| PLANETE | Pl. | T _{m̄} | π 360-ɔ | Vel. | Pl. | T _{m̄} | π 360-ɔ | Vel. |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / |
| 0 14 59 .1 | 308 | -4.8 | 4 | 14 10 .0 | 319 | -1.6 | | |
| 0 21 58 .1 | 202 | - .9 | h | 1 15 | 154 | - .5 | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | | φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-----------|-----------|-------------------------------|-------------|-------------|------------|------------|---|---------|-------|---------------------|--------|--------|------|-------|------|
| | S \odot | δ \odot | | S φ | δ φ | S σ | δ σ | | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| h | o / | o / | | o / | o / | o / | o / | | h min | h min | h min | h min | h min | min | h min | min |
| 0 | 178 56.7 | 4 13.7 | 188 45.9 | 135 21.1 | 22 41.2 | 30 43.1 | 12 48.8 | | 60 5 27 | 18 42 | 0 43 | 2 39 | 10 16 | 3.3 | 2 56 | 1.0 |
| 2 | 208 57.1 | 4 15.6 | 218 50.8 | 165 21.1 | 22 42.6 | 60 49.0 | 12 48.9 | | 55 5 34 | 18 36 | 0 37 | 2 12 | 10 45 | 3.0 | 2 25 | 1.2 |
| 4 | 238 57.5 | 4 17.5 | 248 55.7 | 195 21.1 | 22 44.1 | 90 54.9 | 12 49.0 | | 50 5 38 | 18 31 | 0 33 | 1 54 | 11 7 | 2.8 | 2 3 | 1.4 |
| 6 | 268 57.8 | 4 19.5 | 279 .6 | 225 21.1 | 22 45.6 | 121 .7 | 12 49.2 | | 45 5 42 | 18 27 | 0 30 | 1 42 | 11 23 | 2.7 | 1 46 | 1.5 |
| 8 | 298 58.2 | 4 21.4 | 309 5.6 | 255 21.1 | 22 47.1 | 151 6.6 | 12 49.3 | | 40 5 45 | 18 24 | 0 27 | 1 33 | 11 37 | 2.6 | 1 33 | 1.6 |
| 10 | 328 58.6 | 4 23.3 | 339 10.5 | 285 21.1 | 22 48.5 | 181 12.4 | 12 49.4 | | 35 5 48 | 18 21 | 0 25 | 1 26 | 11 49 | 2.5 | 1 19 | 1.7 |
| 12 | 358 59.0 | 4 25.3 | 9 15.4 | 315 21.1 | 22 50.0 | 211 18.3 | 12 49.6 | | 30 5 50 | 18 18 | 0 24 | 1 21 | 11 59 | 2.4 | 1 9 | 1.8 |
| 14 | 28 59.3 | 4 27.2 | 39 20.4 | 345 21.1 | 22 51.4 | 241 24.1 | 12 49.7 | | 20 5 54 | 18 14 | 0 22 | 1 14 | 12 16 | 2.3 | 0 50 | 1.9 |
| 16 | 58 59.7 | 4 29.1 | 69 25.3 | 15 21.1 | 22 52.9 | 271 30.0 | 12 49.8 | | 10 5 58 | 18 11 | 0 21 | 1 10 | 12 31 | 2.2 | 0 34 | 2.0 |
| 18 | 89 .1 | 4 31.1 | 99 30.2 | 45 21.2 | 22 54.4 | 301 35.8 | 12 49.9 | | 0 6 1 | 18 7 | 0 21 | 1 9 | 12 45 | 2.1 | 0 19 | 2.1 |
| 20 | 119 .5 | 4 33.0 | 129 35.1 | 75 21.2 | 22 55.8 | 331 41.6 | 12 50.1 | | 10 6 4 | 18 4 | 0 21 | 1 10 | 12 59 | 2.0 | 0 4 | 2.2 |
| 22 | 149 .8 | 4 34.9 | 159 40.1 | 105 21.2 | 22 57.3 | 1 47.4 | 12 50.2 | | 20 6 7 | 18 1 | 0 22 | 1 13 | 13 14 | 1.9 | .. .. | 0 |
| Δ | 2 | 10 | | 0 | 7 | 29 | 1 | | 30 6 10 | 17 57 | 0 24 | 1 19 | 13 31 | 1.7 | .. .. | 0 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | |
|----|-----------|--------|-----------|-----|-------------|-------------|----------|----------|--------|----------|-------|---------|---------|----------|----------|----------|----------|----------|----------|
| | S ζ | Δ | δ ζ | Δ | S φ | δ φ | S η | δ η | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | h min | h min | h min | h min | h min | min | h min | min | | | |
| 0 | 85 13.5 | 108 | 19 49.1 | -52 | 147 51.5 | 14 56.0 | 342 22.3 | - 7 57.5 | | 114 13.1 | 108 | 19 38.6 | -55 | 177 55.3 | 14 56.3 | 12 27.5 | - 7 57.4 | | |
| 2 | 209 1.6 | 4 38.8 | 219 49.9 | | 268 6.8 | 14 57.3 | 102 43.3 | - 7 57.0 | | 4 143 | 12.6 | 108 | 19 27.7 | -57 | 207 59.1 | 14 56.6 | 42 32.8 | - 7 57.3 | |
| 4 | 239 1.9 | 4 40.7 | 249 54.9 | | 298 10.7 | 14 57.7 | 132 48.6 | - 7 56.8 | | 6 | 172 | 12.2 | 108 | 19 16.4 | -59 | 238 3.0 | 14 57.0 | 72 38.1 | - 7 57.1 |
| 8 | 201 11.8 | 108 | 19 4.6 | -61 | 268 6.8 | 14 57.3 | 102 43.3 | - 7 57.0 | | 10 | 230 | 11.4 | 108 | 18 52.5 | -63 | 288 10.6 | 108 | 18 27.0 | -67 |
| 10 | 317 10.2 | 108 | 18 13.6 | -69 | 282 22.2 | 14 58.7 | 223 4.4 | - 7 56.4 | | 12 | 254 | 11.0 | 108 | 18 39.9 | -71 | 324 14.5 | 14 58.0 | 162 53.9 | - 7 56.7 |
| 16 | 346 9.8 | 108 | 17 59.8 | -71 | 58 26.1 | 14 59.0 | 253 9.6 | - 7 56.3 | | 20 | 15 | 9.5 | 108 | 17 45.7 | -73 | 88 29.9 | 14 59.4 | 283 14.9 | - 7 56.2 |
| 22 | 44 9.1 | 108 | 17 31.1 | -75 | 118 33.8 | 14 59.7 | 313 20.2 | - 7 56.0 | | Δ | 2 | 10 | | 0 | 7 | 19 | 2 | 26 | 1 |

| UT | SUNCE | | | | PROLJ. TAČKA S γ | VENERA | | | | MARS | | | | φ | SUNCE | | TRAJANJE SUMRAKA | | | | | | | |
|----|-----------|-----------|-------------|-------------|-------------------------------|------------|------------|-------------|-------------|------------|------------|-------------|-------------|---|----------|---------|---------------------|----------|---------|-------|-------|------|-------|-----|
| | S \odot | δ \odot | S φ | δ φ | | S σ | δ σ | S φ | δ φ | S σ | δ σ | S φ | δ φ | | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | |
| h | o / | o / | o / | o / | | o / | o / | o / | o / | o / | o / | o / | o / | | h min | h min | h min | h min | h min | min | h min | min | | |
| 0 | 179 1.2 | 4 36.9 | 189 45.0 | | 135 21.2 | 22 58.7 | 31 53.3 | 12 50.3 | | 2 | 209 1.6 | 4 38.8 | 219 49.9 | | 165 21.2 | 23 .1 | 61 59.1 | 12 50.4 | 60 5 24 | 18 45 | 0 43 | 2 41 | 11 35 | 3.5 |
| 4 | 239 1.9 | 4 40.7 | 249 54.9 | | 195 21.2 | 23 1.6 | 92 4.9 | 12 50.5 | | 10 | 4 239 | 1.9 | 4 40.7 | | 177 55.3 | 14 56.3 | 12 27.5 | - 7 57.4 | 55 5 31 | 18 38 | 0 37 | 2 12 | 11 58 | 3.2 |
| 6 | 269 2.3 | 4 42.6 | 279 59.8 | | 225 21.3 | 23 3.0 | 122 10.7 | 12 50.6 | | 12 | 4 239 | 1.9 | 4 40.7 | | 255 21.3 | 23 4.4 | 152 16.5 | 12 50.7 | 50 5 36 | 18 32 | 0 33 | 1 55 | 12 15 | 3.0 |
| 8 | 299 2.7 | 4 44.6 | 310 4.7 | | 255 21.3 | 23 5.9 | 182 22.3 | 12 50.9 | | 16 | 4 239 | 1.9 | 4 40.7 | | 281 21.3 | 23 7.3 | 212 28.0 | 12 51.0 | 45 5 40 | 18 28 | 0 30 | 1 42 | 12 28 | 2.9 |
| 10 | 329 3.1 | 4 46.5 | 340 9.6 | | 285 21.3 | 23 5.9 | 182 22.3 | 12 50.9 | | 20 | 4 239 | 1.9 | 4 40.7 | | 255 21.3 | 23 8.7 | 242 33.8 | 12 51.1 | 40 5 44 | 18 25 | 0 27 | 1 33 | 12 40 | 2.7 |
| 12 | 359 3.4 | 4 48.4 | 10 14.6 | | 315 21.3 | 23 7.3 | 212 28.0 | 12 51.0 | | 24 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 10.1 | 272 39.6 | 12 51.2 | 35 5 47 | 18 22 | 0 26 | 1 26 | 12 49 | 2.6 |
| 14 | 29 3.8 | 4 50.3 | 40 19.5 | | 345 21.4 | 23 8.7 | 192 59.1 | 12 51.1 | | 28 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 12.9 | 252 41.2 | 12 51.3 | 30 5 49 | 18 19 | 0 24 | 1 21 | 12 57 | 2.5 |
| 16 | 59 4.2 | 4 52.3 | 70 24.4 | | 15 21.4 | 23 10.1 | 272 39.6 | 12 51.2 | | 32 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 15.9 | 322 42.7 | 12 51.4 | 20 5 53 | 18 14 | 0 22 | 1 14 | 13 11 | 2.4 |
| 18 | 89 4.5 | 4 54.2 | 100 29.4 | | 45 21.4 | 23 11.5 | 302 45.4 | 12 51.3 | | 36 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 19.9 | 332 51.1 | 12 51.3 | 10 5 57 | 18 11 | 0 21 | 1 10 | 13 35 | 2.1 |
| 20 | 119 4.9 | 4 56.1 | 130 34.3 | | 75 21.5 | 23 12.9 | 332 51.1 | 12 51.3 | | 40 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 22.7 | 352 55.1 | 12 51.4 | 12 5 58 | 18 8 | 0 21 | 1 10 | 13 47 | 1.9 |
| 22 | 149 5.3 | 4 58.0 | 160 39.2 | | 105 21.5 | 23 14.3 | 2 56.9 | 12 51.4 | | 44 | 4 239 | 1.9 | 4 40.7 | | 195 21.2 | 23 28.5 | 372 59.1 | 12 51.5 | 30 6 11 | 17 56 | 0 24 | 1 19 | 14 13 | 1.6 |
| Δ | 2 | 10 | | 0 | 7 | 29 | 1 | | S | | | | | | | | | | | | | | | |

| UT | MJESEC | | | | PROLJ. TAČKA S γ | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | | | | | |
|----|-----------|-----|-----------|-----|-------------------------------|-------------|-------------|----------|----------|--------|---------|-------|---------|-----|----------|-------|---------|----------|---------|-------|------|------|-------|-----|
| | S ζ | Δ | δ ζ | Δ | | S φ | δ φ | S η | δ η | IZLAZ | ZALAZ | GRAD. | AS TR. | | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | | | | |
| h | o / | o / | o / | o / | | o / | o / | o / | o / | h min | h min | h min | h min | | h min | min | h min | min | | | | | | |
| 0 | 73 8.8 | 108 | 17 16.1 | -77 | 148 37.6 | 15 .0 | 343 25.4 | - 7 55.9 | | 2 | 102 8.4 | 108 | 17 .8 | -79 | 178 41.5 | 15 .4 | 13 30.7 | - 7 55.8 | 55 5 35 | 18 38 | 0 37 | 2 12 | 11 58 | 3.2 |
| 2 | 102 8.4 | 108 | 17 .8 | -79 | 268 53.0 | 15 .4 | 103 46.5 | - 7 55.4 | | 4 | 131 8.1 | 108 | 16 45.1 | -81 | 208 45.3 | 15 .7 | 43 36.0 | - 7 55.6 | 50 5 36 | 18 32 | 0 33 | 1 55 | 12 15 | 3.0 |
| 4 | 131 8.1 | 108 | 16 45.1 | -81 | 298 56.8 | 15 .8 | 133 51.8 | - 7 55.2 | | 6 | 160 7.8 | 109 | 16 29. | | | | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 5.6 | 4 59.9 | 190 44.1 | 135 21.6 | 23 15.7 | 33 2.6 | 12 51.5 |
| 2 | 209 6.0 | 5 1.9 | 220 49.1 | 165 21.6 | 23 17.1 | 63 8.4 | 12 51.6 |
| 4 | 239 6.4 | 5 3.8 | 250 54.0 | 195 21.7 | 23 18.5 | 93 14.1 | 12 51.7 |
| 6 | 269 6.8 | 5 5.7 | 280 58.9 | 225 21.7 | 23 19.9 | 123 19.9 | 12 51.8 |
| 8 | 299 7.1 | 5 7.6 | 311 3.8 | 255 21.8 | 23 21.3 | 153 25.6 | 12 51.9 |
| 10 | 329 7.5 | 5 9.5 | 341 8.8 | 285 21.8 | 23 22.7 | 183 31.3 | 12 52.0 |
| 12 | 359 7.9 | 5 11.5 | 11 13.7 | 315 21.9 | 23 24.1 | 213 37.0 | 12 52.0 |
| 14 | 29 8.2 | 5 13.4 | 41 18.6 | 345 21.9 | 23 25.5 | 243 42.8 | 12 52.1 |
| 16 | 59 8.6 | 5 15.3 | 71 23.6 | 15 22.0 | 23 26.8 | 273 48.5 | 12 52.2 |
| 18 | 89 9.0 | 5 17.2 | 101 28.5 | 45 22.1 | 23 28.2 | 303 54.2 | 12 52.3 |
| 20 | 119 9.3 | 5 19.1 | 131 33.4 | 75 22.1 | 23 29.6 | 333 59.9 | 12 52.3 |
| 22 | 149 9.7 | 5 21.0 | 161 38.3 | 105 22.2 | 23 30.9 | 4 5.6 | 12 52.4 |
| Δ | 2 | 10 | | 0 | 7 | 29 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 21 | 18 47 | 0 43 | 2 42 | 12 60 | 3.7 | 3 38 | .6 | |
| 55 | 5 28 | 18 40 | 0 37 | 2 13 | 13 16 | 3.4 | 3 20 | .9 | |
| 50 | 5 34 | 18 34 | 0 33 | 1 55 | 13 28 | 3.2 | 3 6 | 1.1 | |
| 45 | 5 38 | 18 29 | 0 30 | 1 43 | 13 37 | 3.0 | 2 56 | 1.3 | |
| 40 | 5 42 | 18 26 | 0 27 | 1 33 | 13 45 | 2.8 | 2 46 | 1.4 | |
| 35 | 5 45 | 18 22 | 0 26 | 1 26 | 13 52 | 2.7 | 2 39 | 1.5 | |
| 30 | 5 48 | 18 20 | 0 24 | 1 21 | 13 58 | 2.6 | 2 32 | 1.6 | |
| 20 | 5 53 | 18 15 | 0 22 | 1 14 | 14 8 | 2.4 | 2 20 | 1.8 | |
| 10 | 5 57 | 18 11 | 0 21 | 1 10 | 14 17 | 2.2 | 2 9 | 1.9 | |
| 0 | 6 0 | 18 7 | 0 21 | 1 9 | 14 25 | 2.1 | 1 59 | 2.1 | |
| 10 | 6 4 | 18 3 | 0 21 | 1 10 | 14 33 | 1.9 | 1 49 | 2.2 | |
| 20 | 6 7 | 17 59 | 0 22 | 1 13 | 14 42 | 1.8 | 1 38 | 2.4 | |
| 30 | 6 11 | 17 55 | 0 24 | 1 19 | 14 52 | 1.6 | 1 26 | 2.6 | |
| 35 | 6 14 | 17 53 | 0 25 | 1 24 | 14 58 | 1.5 | 1 19 | 2.7 | |
| 40 | 6 16 | 17 50 | 0 27 | 1 30 | 15 5 | 1.4 | 1 11 | 2.8 | |
| 45 | 6 19 | 17 47 | 0 29 | 1 37 | 15 12 | 1.2 | 1 1 | 2.9 | |
| 50 | 6 23 | 17 43 | 0 32 | 1 47 | 15 22 | 1.1 | 0 49 | 3.1 | |
| 55 | 6 27 | 17 39 | 0 36 | 2 1 | 15 33 | .8 | 0 35 | 3.3 | |
| 60 | 6 32 | 17 33 | 0 41 | 2 19 | 15 47 | .6 | 0 15 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|------------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 61 5.4 | 109 13 | 47.3 -99 | 149 23.7 | 15 4.1 | 344 28.7 -7 54.3 | | |
| 2 | 90 5.1 | 109 13 | 27.6 -100 | 179 27.6 | 15 4.5 | 64 33.9 -7 54.1 | | |
| 4 | 119 4.8 | 109 13 | 7.5 -102 | 209 31.4 | 15 4.8 | 44 39.2 -7 54.0 | | |
| 6 | 148 4.6 | 109 12 | 47.1 -104 | 239 35.2 | 15 5.2 | 74 44.5 -7 53.9 | | |
| 8 | 177 4.3 | 108 12 | 26.4 -105 | 269 39.1 | 15 5.5 | 104 49.7 -7 53.7 | | |
| 10 | 206 4.0 | 108 12 | 5.4 -107 | 299 42.9 | 15 5.8 | 134 55.0 -7 53.6 | | |
| 12 | 235 3.7 | 108 11 | 44.0 -108 | 329 46.7 | 15 6.2 | 165 .3 -7 53.4 | | |
| 14 | 264 3.3 | 108 11 | 22.4 -110 | 359 50.6 | 15 6.5 | 195 5.6 -7 53.3 | | |
| 16 | 293 3.0 | 108 11 | 4.4 -111 | 29 54.4 | 15 6.9 | 225 10.8 -7 53.2 | | |
| 18 | 322 2.6 | 108 10 | 38.2 -113 | 59 58.3 | 15 7.2 | 255 16.1 -7 53.0 | | |
| 20 | 351 2.2 | 108 10 | 15.6 -114 | 90 2.1 | 15 7.6 | 285 21.4 -7 52.9 | | |
| 22 | 20 1.7 | 108 9 | 52.8 -116 | 120 5.9 | 15 7.9 | 315 26.6 -7 52.8 | | |
| Δ | 2 | 10 | | 0 | 7 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|---------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 3 37.2 | .7 | 16.0 | T _{m̄} | 20 37 | 2.1 | 57.3 | 15.6 | |
| 12 | - 3 28.4 | T _{m̄} | 12 h | 3.5 min | Starost | 10.4 d | Faza | 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / | h min / |
| Q | 14 59 .1 | 305 | -4.9 | 4 | 14 1 .0 | 319 | -1.6 | | |
| Q' | 21 44 .1 | 202 | -8 | h | 1 2 .0 | 0 | 154 | .5 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|------------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 49 1.2 | 107 9 | 29.7 -117 | 150 9.8 | 15 8.2 | 345 31.9 -7 52.6 | | |
| 2 | 78 .7 | 107 9 | 6.3 -118 | 180 13.6 | 15 8.6 | 15 37.2 -7 52.5 | | |
| 4 | 107 .1 | 107 8 | 42.7 -119 | 210 17.4 | 15 8.9 | 45 42.5 -7 52.4 | | |
| 6 | 135 59.5 | 107 8 | 18.8 -121 | 240 21.3 | 15 9.3 | 75 47.7 -7 52.2 | | |
| 8 | 164 58.8 | 106 7 | 54.6 -122 | 270 25.1 | 15 9.6 | 105 53.0 -7 52.1 | | |
| 10 | 193 58.1 | 106 7 | 30.3 -123 | 300 28.9 | 15 9.9 | 135 58.3 -7 51.9 | | |
| 12 | 222 57.3 | 106 7 | 5.7 -124 | 330 32.8 | 15 10.3 | 166 3.5 -7 51.8 | | |
| 14 | 251 56.4 | 105 6 | 40.8 -125 | 0 36.6 | 15 10.6 | 196 8.8 -7 51.7 | | |
| 16 | 280 55.5 | 105 6 | 15.8 -126 | 30 40.4 | 15 11.0 | 226 14.1 -7 51.5 | | |
| 18 | 309 54.4 | 104 5 | 50.5 -127 | 60 44.3 | 15 11.3 | 256 19.4 -7 51.4 | | |
| 20 | 338 53.3 | 104 5 | 25.1 -128 | 90 48.1 | 15 11.6 | 286 24.6 -7 51.3 | | |
| 22 | 7 52.1 | 104 4 | 59.4 -129 | 120 51.9 | 15 12.0 | 316 29.9 -7 51.1 | | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|---------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | - 3 19.6 | .7 | 16.0 | T _{m̄} | 21 27 | 2.2 | 58.3 | 15.9 | |
| 12 | - 3 10.8 | T _{m̄} | 12 h | 3.2 min | Starost | 11.4 d | Faza | 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / | h min / |
| Q | 14 58 .1 | 304 | -4.9 | 4 | 13 58 .0 | 318 | -1.6 | | |
| Q' | 21 39 .1 | 202 | -8 | h | 0 58 .0 | 0 | 154 | .5 | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 14.5 | 5 45.9 | 192 42.4 | 135 23.3 | 23 48.3 | 35 19.2 | 12 53.1 |
| 2 | 209 14.8 | 5 47.8 | 222 47.3 | 165 23.4 | 23 49.7 | 65 24.8 | 12 53.1 |
| 4 | 239 15.2 | 5 49.7 | 252 52.3 | 195 23.6 | 23 51.0 | 95 30.4 | 12 53.1 |
| 6 | 269 15.5 | 5 51.6 | 282 57.2 | 225 23.7 | 23 52.3 | 125 36.0 | 12 53.2 |
| 8 | 299 15.9 | 5 53.5 | 313 2.1 | 255 23.8 | 23 53.6 | 155 41.6 | 12 53.2 |
| 10 | 329 16.3 | 5 55.4 | 343 7.1 | 285 23.9 | 23 54.9 | 185 47.2 | 12 53.2 |
| 12 | 359 16.6 | 5 57.3 | 13 12.0 | 315 24.0 | 23 56.2 | 215 52.8 | 12 53.3 |
| 14 | 29 17.0 | 5 59.2 | 43 16.9 | 345 24.1 | 23 57.5 | 245 58.4 | 12 53.3 |
| 16 | 59 17.4 | 6 1.1 | 73 21.8 | 15 24.3 | 23 58.8 | 276 4.0 | 12 53.3 |
| 18 | 89 17.7 | 6 3.0 | 103 26.8 | 45 24.4 | 24 .0 | 306 9.6 | 12 53.3 |
| 20 | 119 18.1 | 6 4.9 | 133 31.7 | 75 24.5 | 24 1.3 | 336 15.2 | 12 53.4 |
| 22 | 149 18.4 | 6 6.8 | 163 36.6 | 105 24.7 | 24 2.6 | 6 20.7 | 12 53.4 |
| Δ | 2 | 10 | | 1 | 6 | 28 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 15 | 18 52 | 0 44 | 2 46 | 15 59 | 3.9 | 4 6 | .5 | |
| 55 | 5 23 | 18 44 | 0 38 | 2 15 | 16 1 | 3.6 | 4 1 | .8 | |
| 50 | 5 30 | 18 37 | 0 33 | 1 56 | 16 2 | 3.4 | 3 58 | 1.0 | |
| 45 | 5 35 | 18 32 | 0 30 | 1 43 | 16 2 | 3.2 | 3 55 | 1.2 | |
| 40 | 5 39 | 18 28 | 0 28 | 1 34 | 16 3 | 3.0 | 3 52 | 1.4 | |
| 35 | 5 42 | 18 24 | 0 26 | 1 27 | 16 4 | 2.9 | 3 50 | 1.5 | |
| 30 | 5 46 | 18 21 | 0 24 | 1 21 | 16 4 | 2.8 | 3 48 | 1.6 | |
| 25 | 5 51 | 18 15 | 0 22 | 1 14 | 16 5 | 2.5 | 3 45 | 1.8 | |
| 10 | 5 55 | 18 11 | 0 21 | 1 10 | 16 6 | 2.4 | 3 42 | 2.0 | |
| 0 | 5 60 | 18 6 | 0 21 | 1 9 | 16 6 | 2.2 | 3 39 | 2.2 | |
| 10 | 6 4 | 18 2 | 0 21 | 1 10 | 16 7 | 2.0 | 3 37 | 2.3 | |
| 20 | 6 8 | 17 58 | 0 22 | 1 13 | 16 8 | 1.8 | 3 34 | 2.5 | |
| 30 | 6 13 | 17 53 | 0 24 | 1 19 | 16 9 | 1.6 | 3 30 | 2.7 | |
| 35 | 6 15 | 17 50 | 0 25 | 1 24 | 16 9 | 1.5 | 3 28 | 2.8 | |
| 40 | 6 18 | 17 47 | 0 27 | 1 30 | 16 10 | 1.4 | 3 26 | 3.0 | |
| 45 | 6 22 | 17 43 | 0 29 | 1 37 | 16 11 | 1.2 | 3 23 | 3.1 | |
| 50 | 6 26 | 17 39 | 0 32 | 1 47 | 16 12 | 1.0 | 3 20 | 3.3 | |
| 55 | 6 31 | 17 34 | 0 36 | 2 1 | 16 13 | .8 | 3 16 | 3.6 | |
| 60 | 6 37 | 17 27 | 0 42 | 2 19 | 16 14 | .5 | 3 11 | 3.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 36 50.8 | 103 | 4 33.6 | -130 | 150 55.8 | 15 12.3 | 346 35.2 | -7 51.0 |
| 2 | 65 49.5 | 103 | 4 7.6 | -131 | 180 59.6 | 15 12.7 | 16 40.5 | -7 50.8 |
| 4 | 94 48.0 | 102 | 3 41.5 | -131 | 211 3.4 | 15 13.0 | 46 45.7 | -7 50.7 |
| 6 | 123 46.4 | 101 | 3 15.2 | -132 | 241 7.2 | 15 13.3 | 76 51.0 | -7 50.6 |
| 8 | 152 44.7 | 101 | 2 48.8 | -133 | 271 11.1 | 15 13.7 | 106 56.3 | -7 50.4 |
| 10 | 181 42.8 | 100 | 2 22.2 | -133 | 301 14.9 | 15 14.0 | 137 1.6 | -7 50.3 |
| 12 | 210 40.9 | 100 | 1 55.5 | -134 | 331 18.7 | 15 14.4 | 167 6.8 | -7 50.2 |
| 14 | 239 38.8 | 99 | 1 28.7 | -134 | 1 22.6 | 15 14.7 | 197 12.1 | -7 50.0 |
| 16 | 268 36.5 | 98 | 1 1.8 | -135 | 31 26.4 | 15 15.1 | 227 17.4 | -7 49.9 |
| 18 | 297 34.1 | 97 | 0 34.8 | -135 | 61 30.2 | 15 15.4 | 257 22.7 | -7 49.7 |
| 20 | 326 31.6 | 97 | 0 7.8 | -136 | 91 34.0 | 15 15.7 | 287 27.9 | -7 49.6 |
| 22 | 355 28.9 | 96 | -0 19.3 | -136 | 121 37.9 | 15 16.1 | 317 33.2 | -7 49.5 |
| Δ | 2 | 9 | | | 1 | 6 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------|-------------|-------------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | | |
| h min s | s | / | h min min / | T _{m̄} | 22 19 | 2.2 | 59.2 | 16.1 | |
| 00 | - 3 2.0 | .7 | 16.0 | | | | | | |
| 12 | - 2 53.3 | T _{m̄} | 12 h | 2.9 min | Starost | 12.4 d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | / | o | h min min / | h min / | o | / | o | h min min / |
| 0 | 14 58 | .1 | 303 | -5.0 | 4 | 13 55 | .0 | 318 | -1.6 |
| ○ | 21 35 | .1 | 203 | -8 | h | 0 53 | .0 | 154 | -5 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 24 26.1 | 95 | - 0 46.5 | -136 | 151 41.7 | 15 16.4 | 347 38.5 | -7 49.3 |
| 2 | 53 23.1 | 94 | - 1 13.7 | -136 | 181 45.5 | 15 16.8 | 17 43.8 | -7 49.2 |
| 4 | 82 19.9 | 93 | - 1 41.0 | -136 | 211 49.3 | 15 17.1 | 47 49.1 | -7 49.0 |
| 6 | 111 16.6 | 92 | - 2 8.2 | -136 | 241 53.2 | 15 17.4 | 77 54.3 | -7 48.9 |
| 8 | 140 13.0 | 91 | - 2 35.5 | -136 | 271 57.0 | 15 17.8 | 107 59.6 | -7 48.8 |
| 10 | 169 9.3 | 90 | - 3 2.8 | -136 | 302 .8 | 15 18.1 | 138 4.9 | -7 48.6 |
| 12 | 198 5.4 | 89 | - 3 30.0 | -136 | 332 4.6 | 15 18.5 | 168 10.2 | -7 48.5 |
| 14 | 227 1.3 | 88 | - 3 57.2 | -136 | 2 8.5 | 15 18.8 | 198 15.4 | -7 48.4 |
| 16 | 255 57.0 | 87 | - 4 24.4 | -136 | 32 12.3 | 15 19.1 | 228 20.7 | -7 48.2 |
| 18 | 284 52.5 | 86 | - 4 51.4 | -135 | 62 16.1 | 15 19.5 | 258 26.0 | -7 48.1 |
| 20 | 313 47.8 | 85 | - 5 18.5 | -135 | 92 19.9 | 15 19.8 | 288 31.3 | -7 47.9 |
| 22 | 342 42.8 | 84 | - 5 45.4 | -134 | 122 23.8 | 15 20.2 | 318 36.6 | -7 47.8 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-------|-------------|-------------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | | |
| h min s | s | / | h min min / | T _{m̄} | 23 12 | 2.3 | 60.1 | 16.4 | |
| 00 | - 2 44.6 | .7 | 16.0 | | | | | | |
| 12 | - 2 36.0 | T _{m̄} | 12 h | 2.6 min | Starost | 13.4 d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | / | o | h min min / | h min / | o | / | o | h min min / |
| 0 | 14 58 | .1 | 302 | -5.0 | 4 | 13 51 | .0 | 318 | -1.6 |
| ○ | 21 30 | .1 | 203 | -8 | h | 0 49 | .0 | 154 | -5 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 23.1 | 6 31.4 | 194 40.7 | 135 26.7 | 24 18.9 | 37 32.7 | 12 53.4 |
| 2 | 209 23.5 | 6 33.2 | 224 45.6 | 165 26.8 | 24 20.1 | 67 38.2 | 12 53.4 |
| 4 | 239 23.8 | 6 35.1 | 254 50.5 | 195 27.0 | 24 21.4 | 97 43.7 | 12 53.4 |
| 6 | 269 24.2 | 6 37.0 | 284 55.5 | 225 27.2 | 24 22.6 | 127 49.2 | 12 53.4 |
| 8 | 299 24.5 | 6 38.9 | 315 59.4 | 255 27.4 | 24 23.8 | 157 54.7 | 12 53.4 |
| 10 | 329 24.9 | 6 40.8 | 345 5.3 | 285 27.6 | 24 25.0 | 188 1.2 | 12 53.3 |
| 12 | 359 25.2 | 6 42.7 | 15 10.3 | 315 27.8 | 24 26.2 | 218 5.6 | 12 53.3 |
| 14 | 29 25.6 | 6 44.6 | 45 15.2 | 345 28.0 | 24 27.4 | 248 11.1 | 12 53.3 |
| 16 | 59 25.9 | 6 46.4 | 75 20.1 | 15 28.2 | 24 28.6 | 278 16.6 | 12 53.3 |
| 18 | 89 26.3 | 6 48.3 | 105 25.0 | 45 28.4 | 24 29.8 | 308 22.0 | 12 53.2 |
| 20 | 119 26.7 | 6 50.2 | 135 30.0 | 75 28.6 | 24 31.0 | 338 27.5 | 12 53.2 |
| 22 | 149 27.0 | 6 52.1 | 165 34.9 | 105 28.8 | 24 32.2 | 8 32.9 | 12 53.2 |
| Δ | 2 | 9 | | 1 | 6 | 27 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 9 | 18 57 | 0 44 | 2 50 | 19 11 | 4 1 | 4 32 | 7 | |
| 55 | 5 18 | 18 48 | 0 38 | 2 17 | 18 57 | 3 8 | 4 41 | 1 0 | |
| 50 | 5 25 | 18 40 | 0 33 | 1 57 | 18 46 | 3 5 | 4 48 | 1 2 | |
| 45 | 5 31 | 18 34 | 0 30 | 1 44 | 18 37 | 3 3 | 4 54 | 1 4 | |
| 40 | 5 36 | 18 30 | 0 28 | 1 34 | 18 30 | 3 2 | 4 59 | 1 5 | |
| 35 | 5 40 | 18 26 | 0 26 | 1 27 | 18 24 | 3 0 | 5 3 | 1 7 | |
| 30 | 5 43 | 18 22 | 0 24 | 1 22 | 18 19 | 2 9 | 5 7 | 1 8 | |
| 20 | 5 49 | 18 16 | 0 22 | 1 14 | 18 9 | 2 7 | 5 13 | 2 0 | |
| 10 | 5 54 | 18 10 | 0 21 | 1 11 | 18 1 | 2 5 | 5 19 | 2 2 | |
| 0 | 5 59 | 18 6 | 0 21 | 1 9 | 17 54 | 2 4 | 5 25 | 2 3 | |
| 10 | 6 4 | 18 1 | 0 21 | 1 10 | 17 46 | 2 2 | 5 30 | 2 5 | |
| 20 | 6 8 | 17 56 | 0 22 | 1 13 | 17 38 | 2 1 | 5 36 | 2 7 | |
| 30 | 6 14 | 17 50 | 0 24 | 1 19 | 17 30 | 1 9 | 5 43 | 2 9 | |
| 35 | 6 17 | 17 47 | 0 25 | 1 24 | 17 24 | 1 8 | 5 46 | 3 0 | |
| 40 | 6 20 | 17 44 | 0 27 | 1 30 | 17 19 | 1 6 | 5 51 | 3 1 | |
| 45 | 6 24 | 17 40 | 0 29 | 1 37 | 17 12 | 1 5 | 5 56 | 3 3 | |
| 50 | 6 29 | 17 35 | 0 32 | 1 47 | 17 4 | 1 3 | 6 2 | 3 5 | |
| 55 | 6 35 | 17 29 | 0 36 | 2 0 | 16 54 | 1 1 | 6 10 | 3 7 | |
| 60 | 6 42 | 17 21 | 0 42 | 2 19 | 16 42 | 0 8 | 6 20 | 4 1 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|--------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 11 37.6 | 83 - 6 12.2 | -134 | 152 27.6 | 15 20.5 | 348 41.8 | - 7 47.7 | |
| 2 | 40 32.3 | 82 - 6 38.9 | -133 | 182 31.4 | 15 20.8 | 18 47.1 | - 7 47.5 | |
| 4 | 69 26.6 | 81 - 7 5.5 | -132 | 212 35.2 | 15 21.2 | 48 52.4 | - 7 47.4 | |
| 6 | 98 20.8 | 80 - 7 32.0 | -131 | 242 39.0 | 15 21.5 | 78 57.7 | - 7 47.3 | |
| 8 | 127 14.7 | 78 - 7 58.2 | -131 | 272 42.9 | 15 21.9 | 109 3.0 | - 7 47.1 | |
| 10 | 156 8.4 | 77 - 8 24.4 | -130 | 302 46.7 | 15 22.2 | 139 8.2 | - 7 47.0 | |
| 12 | 185 1.8 | 76 - 8 50.3 | -129 | 332 50.5 | 15 22.5 | 169 13.5 | - 7 46.8 | |
| 14 | 213 55.0 | 75 - 9 16.0 | -128 | 2 54.3 | 15 22.9 | 199 18.8 | - 7 46.7 | |
| 16 | 242 48.0 | 74 - 9 41.5 | -126 | 32 58.1 | 15 23.2 | 229 24.1 | - 7 46.6 | |
| 18 | 271 40.7 | 72 - 10 6.8 | -125 | 63 1.9 | 15 23.6 | 259 29.4 | - 7 46.4 | |
| 20 | 300 33.1 | 71 - 10 31.8 | -124 | 93 5.8 | 15 23.9 | 289 34.6 | - 7 46.3 | |
| 22 | 329 25.3 | 70 - 10 56.6 | -123 | 123 9.6 | 15 24.3 | 319 39.9 | - 7 46.1 | |
| Δ | 2 | 9 | | 1 | 6 | 26 | 1 | |

| UT | MJESEC | | | | SUNCE | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|-------------------------|-------------|---------------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | UT | e = T _p - UT | $\Delta/24$ | π_{ζ} |
| h min s | s | / | h min min / | h min min / | h min s | s | / | / |
| 00 | - 2 27.4 | .7 | 16.0 | T _{m̄} | ... 0 | 1.0 | 60.7 | 16.5 |
| 12 | - 2 18.9 | T _{m̄} | 12 h | 2.3 min | Starost | 14.4 d | Faza | ○ |

| PLANETE | | | | | | | | | |
|----------|-----------------|---------|-------------|-------------|----------|-----------------|---------|-------------|-------------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min min / | h min / | o / | h min / | o / | h min min / |
| 0 | 14 58 .1 | 301 | -5.0 | 7 | 13 48 .0 | 13 45 | .0 | 318 | -1.6 |
| δ | 21 26 .1 | 203 | -.8 | \hbar | 0 45 | .0 | 154 | .5 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 358 17.3 | 68 -11 21.1 | -121 | 153 13.4 | 15 24.6 | 349 45.2 | - 7 46.0 | |
| 2 | 27 9.0 | 67 -11 45.4 | -120 | 183 17.2 | 15 24.9 | 19 50.5 | - 7 45.9 | |
| 4 | 56 .4 | 66 -12 9.3 | -118 | 213 21.0 | 15 25.3 | 49 55.8 | - 7 45.7 | |
| 6 | 84 51.6 | 65 -12 32.9 | -116 | 243 24.8 | 15 25.6 | 80 1.0 | - 7 45.6 | |
| 8 | 113 42.5 | 63 -12 56.2 | -115 | 273 28.7 | 15 26.0 | 110 6.3 | - 7 45.4 | |
| 10 | 142 33.2 | 62 -13 19.1 | -113 | 303 32.5 | 15 26.3 | 140 11.6 | - 7 45.3 | |
| 12 | 171 23.7 | 61 -13 41.7 | -111 | 333 36.3 | 15 26.6 | 170 16.9 | - 7 45.2 | |
| 14 | 200 13.8 | 60 -14 3.9 | -109 | 3 40.1 | 15 27.0 | 200 22.2 | - 7 45.0 | |
| 16 | 229 3.8 | 59 -14 25.7 | -107 | 33 43.9 | 15 27.3 | 230 27.4 | - 7 44.9 | |
| 18 | 257 53.5 | 57 -14 47.1 | -105 | 63 47.7 | 15 27.7 | 260 32.7 | - 7 44.8 | |
| 20 | 286 43.0 | 56 -15 8.1 | -103 | 93 51.5 | 15 28.0 | 290 38.0 | - 7 44.6 | |
| 22 | 315 32.2 | 55 -15 28.7 | -101 | 123 55.4 | 15 28.3 | 320 43.3 | - 7 44.5 | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| SUNCE | | | | | | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|-------------------------|-------------|---------------|---------|-------------------------|-------------|---------------|
| UT | e = T _p - UT | $\Delta/24$ | t | Prolaz | UT | e = T _p - UT | $\Delta/24$ | π_{ζ} | UT | e = T _p - UT | $\Delta/24$ | π_{ζ} |
| h min s | s | / | h min min / | h min min / | h min s | s | / | / | h min s | s | / | / |
| 00 | - 2 10.4 | .7 | 16.0 | T _{m̄} | 0 | 2.4 | 61.1 | 16.7 | 00 | 1.0 | 60.7 | 16.5 |
| 12 | - 2 2.0 | T _{m̄} | 12 h | 2.0 min | Starost | 15.4 d | Faza | ○ | 12 | 1.0 | 7 57 | 4.0 |

| PLANETE | | | | | | | | | |
|----------|-----------------|---------|-------------|-------------|----------|-----------------|---------|-------------|-------------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min min / | h min / | o / | h min / | o / | h min min / |
| 0 | 14 58 .1 | 301 | -5.0 | 7 | 13 45 .0 | 13 45 | .0 | 318 | -1.6 |
| δ | 21 22 .1 | 203 | -.7 | \hbar </ | | | | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 31.6 | 7 16.4 | 196 39.0 | 135 31.8 | 24 47.4 | 39 43.3 | 12 52.6 |
| 2 | 209 31.9 | 7 18.3 | 226 43.9 | 165 32.0 | 24 48.6 | 69 48.7 | 12 52.5 |
| 4 | 239 32.3 | 7 20.2 | 256 48.8 | 195 32.3 | 24 49.7 | 99 54.0 | 12 52.5 |
| 6 | 269 32.6 | 7 22.0 | 286 53.8 | 225 32.6 | 24 50.8 | 129 59.4 | 12 52.4 |
| 8 | 299 32.9 | 7 23.9 | 316 58.7 | 255 32.8 | 24 52.4 | 160 45.8 | 12 52.4 |
| 10 | 329 33.3 | 7 25.7 | 347 3.6 | 285 33.1 | 24 53.1 | 190 10.1 | 12 52.3 |
| 12 | 359 33.6 | 7 27.6 | 17 8.5 | 315 33.4 | 24 54.2 | 220 15.5 | 12 52.2 |
| 14 | 29 34.0 | 7 29.5 | 47 13.5 | 345 33.7 | 24 55.3 | 250 20.8 | 12 52.1 |
| 16 | 59 34.3 | 7 31.3 | 77 18.4 | 15 33.9 | 24 56.5 | 280 26.1 | 12 52.1 |
| 18 | 89 34.7 | 7 33.2 | 107 23.3 | 45 34.2 | 24 57.6 | 310 31.5 | 12 52.0 |
| 20 | 119 35.0 | 7 35.1 | 137 28.3 | 75 34.5 | 24 58.7 | 340 36.8 | 12 51.9 |
| 22 | 149 35.4 | 7 36.9 | 167 33.2 | 105 34.8 | 24 59.8 | 10 42.1 | 12 51.8 |
| Δ | 2 | 9 | | 1 | 6 | 27 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 3 | 19 2 | 0 45 | 2 55 | 22 25 | 3.6 | 5 9 | 1 2 | |
| 55 | 5 13 | 18 51 | 0 38 | 2 19 | 21 54 | 3.3 | 5 33 | 1 5 | |
| 50 | 5 21 | 18 43 | 0 34 | 1 59 | 21 32 | 3.2 | 5 51 | 1.7 | |
| 45 | 5 27 | 18 37 | 0 30 | 1 45 | 21 15 | 3.0 | 6 6 | 1 9 | |
| 40 | 5 33 | 18 32 | 0 28 | 1 38 | 21 1 | 3.0 | 6 18 | 2.0 | |
| 35 | 5 37 | 18 27 | 0 26 | 1 28 | 20 49 | 2.9 | 6 28 | 2.1 | |
| 30 | 5 41 | 18 23 | 0 24 | 1 22 | 20 38 | 2.8 | 6 37 | 2.2 | |
| 25 | 5 47 | 18 16 | 0 22 | 1 15 | 20 21 | 2.7 | 6 53 | 2.3 | |
| 10 | 5 53 | 18 10 | 0 21 | 1 11 | 20 5 | 2.6 | 7 6 | 2.4 | |
| 0 | 5 58 | 18 5 | 0 21 | 1 9 | 19 51 | 2.6 | 7 19 | 2.5 | |
| 10 | 6 6 | 17 60 | 0 21 | 1 10 | 19 37 | 2.5 | 7 32 | 2.6 | |
| 20 | 6 9 | 17 54 | 0 22 | 1 13 | 19 22 | 2.4 | 7 46 | 2.8 | |
| 30 | 6 15 | 17 48 | 0 24 | 1 19 | 19 4 | 2.3 | 8 8 | 2.9 | |
| 35 | 6 18 | 17 45 | 0 25 | 1 24 | 18 54 | 2.2 | 8 11 | 3.0 | |
| 40 | 6 22 | 17 41 | 0 27 | 1 30 | 18 43 | 2.1 | 8 22 | 3.1 | |
| 45 | 6 27 | 17 36 | 0 29 | 1 37 | 18 30 | 2.0 | 8 34 | 3.2 | |
| 50 | 6 32 | 17 31 | 0 32 | 1 47 | 18 14 | 1.9 | 8 49 | 3.3 | |
| 55 | 6 39 | 17 24 | 0 36 | 2 0 | 17 53 | 1.8 | 9 9 | 3.5 | |
| 60 | 6 47 | 17 16 | 0 42 | 2 19 | 17 25 | 1.5 | 9 35 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 344 21.2 | 54 -15 48.9 | -99 | 153 59.2 | 15 28.7 | 350 48.6 | - 7 44.3 | |
| 2 | 13 10.0 | 53 -16 8.6 | -96 | 184 3.0 | 15 29.0 | 20 53.9 | - 7 44.2 | |
| 4 | 41 58.5 | 52 -16 27.8 | -94 | 214 6.8 | 15 29.4 | 50 59.1 | - 7 44.1 | |
| 6 | 70 46.8 | 51 -16 46.6 | -91 | 244 10.6 | 15 29.7 | 81 4.4 | - 7 43.9 | |
| 8 | 99 35.0 | 50 -17 4.9 | -89 | 274 14.4 | 15 30.0 | 111 9.7 | - 7 43.8 | |
| 10 | 128 22.9 | 49 -17 22.7 | -86 | 304 18.2 | 15 30.4 | 141 15.0 | - 7 43.6 | |
| 12 | 157 10.7 | 48 -17 39.9 | -84 | 334 22.0 | 15 30.7 | 171 20.3 | - 7 43.5 | |
| 14 | 185 58.2 | 47 -17 56.7 | -81 | 4 25.9 | 15 31.1 | 201 25.6 | - 7 43.4 | |
| 16 | 214 45.6 | 46 -18 12.9 | -79 | 34 29.7 | 15 31.4 | 231 30.8 | - 7 43.2 | |
| 18 | 243 32.8 | 45 -18 28.6 | -76 | 64 33.5 | 15 31.7 | 261 36.1 | - 7 43.1 | |
| 20 | 272 19.9 | 45 -18 43.8 | -73 | 94 37.3 | 15 32.1 | 291 41.4 | - 7 42.9 | |
| 22 | 301 6.8 | 44 -18 58.4 | -70 | 124 41.1 | 15 32.4 | 321 46.7 | - 7 42.8 | |
| Δ | 2 | 9 | | 19 | 2 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-------------|-------|-----------------|-------------|---------------|-----|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 - 1 | 53.6 | .7 | 16.0 | T _{m̄} | 1 | 5 | 2.5 | 61.2 16.7 |
| 12 - 1 | 45.3 | | | | | | | |

| PLANETE | | | |
|---------|-----------------|----------|-------------|
| Pl. | T _{m̄} | π | 360 - π |
| h min | / | o | Vel. |
| 0 | 14 58 .1 | 299 -5.1 | 13 42 .0 |
| o | 21 17 .1 | 203 -.7 | 0 37 .0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 329 53.6 | 43 -19 12.4 | -67 | 154 44.9 | 15 32.8 | 351 52.0 | - 7 42.7 | |
| 2 | 358 40.2 | 43 -19 25.9 | -64 | 184 48.7 | 15 33.1 | 21 57.3 | - 7 42.5 | |
| 4 | 27 26.7 | 42 -19 38.8 | -62 | 214 52.5 | 15 33.4 | 52 2.5 | - 7 42.4 | |
| 6 | 56 13.2 | 42 -19 51.1 | -59 | 244 56.3 | 15 33.8 | 82 7.8 | - 7 42.3 | |
| 8 | 88 59.5 | 41 -20 2.8 | -56 | 275 .1 | 15 34.1 | 112 13.1 | - 7 42.1 | |
| 10 | 113 45.8 | 41 -20 14.0 | -53 | 305 3.9 | 15 34.5 | 142 18.4 | - 7 42.0 | |
| 12 | 142 32.0 | 41 -20 24.5 | -50 | 335 7.7 | 15 34.8 | 172 23.7 | - 7 41.8 | |
| 14 | 171 18.1 | 41 -20 34.4 | -47 | 5 11.5 | 15 35.1 | 202 29.0 | - 7 41.7 | |
| 16 | 200 4.2 | 40 -20 43.7 | -43 | 35 15.3 | 15 35.5 | 232 34.2 | - 7 41.6 | |
| 18 | 228 50.3 | 40 -20 52.4 | -40 | 65 19.2 | 15 35.8 | 262 39.5 | - 7 41.4 | |
| 20 | 257 36.3 | 40 -21 .5 | -37 | 95 23.0 | 15 36.1 | 292 44.8 | - 7 41.3 | |
| 22 | 286 22.4 | 40 -21 7.9 | -34 | 125 26.8 | 15 36.5 | 322 50.1 | - 7 41.1 | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-------------|-------|-----------------|-------------|---------------|-----|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 - 1 | 37.0 | .7 | 16.0 | T _{m̄} | 2 | 6 | 2.5 | 60.9 16.6 |
| 12 - 1 | 28.9 | | | | | | | |

| PLANETE | | | |
|---------|-----------------|----------|-------------|
| Pl. | T _{m̄} | π | 360 - π |
| h min | / | o | Vel. |
| 0 | 14 58 .1 | 298 -5.1 | 13 39 .0 |
| o | 21 13 .1 | 203 -.7 | 0 32 .0 |

10. APRIL

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 39.8 | 8 1.0 | 198 37.2 | 135 38.9 | 25 13.9 | 41 50.9 | 12 50.7 |
| 2 | 209 40.1 | 8 2.8 | 228 42.2 | 165 39.3 | 25 14.9 | 71 56.2 | 12 50.5 |
| 4 | 239 40.4 | 8 4.7 | 258 47.1 | 195 39.6 | 25 16.0 | 102 1.4 | 12 50.4 |
| 6 | 269 40.8 | 8 6.5 | 288 52.0 | 225 40.0 | 25 17.0 | 132 6.7 | 12 50.3 |
| 8 | 299 41.1 | 8 8.4 | 318 57.0 | 255 40.4 | 25 18.0 | 162 11.9 | 12 50.2 |
| 10 | 329 41.4 | 8 10.2 | 349 1.9 | 285 40.7 | 25 19.1 | 192 17.1 | 12 50.1 |
| 12 | 359 41.8 | 8 12.1 | 19 6.8 | 315 41.1 | 25 20.1 | 222 22.4 | 12 50.0 |
| 14 | 29 42.1 | 8 13.9 | 49 11.7 | 345 41.5 | 25 21.2 | 252 27.6 | 12 49.9 |
| 16 | 59 42.4 | 8 15.7 | 79 16.7 | 15 41.8 | 25 22.2 | 282 32.8 | 12 49.8 |
| 18 | 89 42.8 | 8 17.6 | 109 21.6 | 45 42.2 | 25 23.2 | 312 38.0 | 12 49.6 |
| 20 | 119 43.1 | 8 19.4 | 139 26.5 | 75 42.6 | 25 24.3 | 342 43.2 | 12 49.5 |
| 22 | 149 43.4 | 8 21.2 | 169 31.5 | 105 43.0 | 25 25.3 | 12 48.4 | 12 49.4 |
| Δ | 2 | 9 | | 2 | 5 | 26 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 57 | 19 7 | 0 45 | 3 0 | ... | ... | 0 | 6 21 | 2.5 |
| 55 | 5 8 | 18 55 | 0 38 | 2 22 | ... | ... | 0 | 6 58 | 2.5 |
| 50 | 5 17 | 18 47 | 0 34 | 1 60 | 23 53 | 2.2 | 7 24 | 2.5 | |
| 45 | 5 24 | 18 40 | 0 30 | 1 46 | 23 32 | 2.3 | 7 44 | 2.5 | |
| 40 | 5 29 | 18 34 | 0 28 | 1 36 | 23 16 | 2.3 | 8 1 | 2.5 | |
| 35 | 5 34 | 18 29 | 0 26 | 1 28 | 23 2 | 2.3 | 8 14 | 2.5 | |
| 30 | 5 39 | 18 24 | 0 24 | 1 22 | 22 50 | 2.4 | 8 26 | 2.5 | |
| 20 | 5 46 | 18 17 | 0 22 | 1 15 | 22 29 | 2.4 | 8 47 | 2.5 | |
| 10 | 5 52 | 18 10 | 0 21 | 1 11 | 22 11 | 2.4 | 9 5 | 2.5 | |
| 0 | 5 58 | 18 5 | 0 21 | 1 9 | 21 54 | 2.5 | 9 22 | 2.5 | |
| 10 | 6 4 | 17 59 | 0 21 | 1 10 | 21 37 | 2.5 | 9 38 | 2.5 | |
| 20 | 6 10 | 17 53 | 0 22 | 1 13 | 21 19 | 2.5 | 9 56 | 2.5 | |
| 30 | 6 16 | 17 46 | 0 24 | 1 20 | 20 58 | 2.6 | 10 17 | 2.5 | |
| 35 | 6 20 | 17 42 | 0 25 | 1 24 | 20 46 | 2.6 | 10 29 | 2.5 | |
| 40 | 6 24 | 17 38 | 0 27 | 1 30 | 20 32 | 2.6 | 10 43 | 2.5 | |
| 45 | 6 29 | 17 32 | 0 30 | 1 37 | 20 16 | 2.6 | 10 59 | 2.5 | |
| 50 | 6 35 | 17 27 | 0 33 | 1 47 | 19 56 | 2.7 | 11 19 | 2.5 | |
| 55 | 6 42 | 17 19 | 0 36 | 2 0 | 19 29 | 2.7 | 11 45 | 2.5 | |
| 60 | 6 52 | 17 10 | 0 42 | 2 19 | 18 52 | 2.8 | 12 22 | 2.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 315 8.5 | 41 -21 14.7 | -31 | 155 30.6 | 15 36.8 | 352 55.4 | - 7 41.0 | |
| 2 | 343 54.6 | 41 -21 20.9 | -28 | 185 34.4 | 15 37.2 | 23 | - 7 40.9 | |
| 4 | 12 40.8 | 41 -21 26.5 | -25 | 215 38.2 | 15 37.5 | 53 6.0 | - 7 40.7 | |
| 6 | 41 27.0 | 41 -21 31.5 | -22 | 245 42.0 | 15 37.8 | 83 11.2 | - 7 40.6 | |
| 8 | 70 13.3 | 42 -21 35.8 | -19 | 275 45.8 | 15 38.2 | 113 16.5 | - 7 40.4 | |
| 10 | 98 59.6 | 42 -21 39.5 | -15 | 305 49.6 | 15 38.5 | 143 21.8 | - 7 40.3 | |
| 12 | 127 46.1 | 43 -21 42.6 | -12 | 335 53.4 | 15 38.9 | 173 27.1 | - 7 40.2 | |
| 14 | 156 32.7 | 44 -21 45.1 | -9 | 5 57.2 | 15 39.2 | 203 32.4 | - 7 40.0 | |
| 16 | 185 19.4 | 44 -21 46.9 | -6 | 36 1.0 | 15 39.5 | 233 37.7 | - 7 39.9 | |
| 18 | 214 6.3 | 45 -21 48.1 | -3 | 66 4.8 | 15 39.9 | 263 43.0 | - 7 39.7 | |
| 20 | 242 53.3 | 46 -21 48.8 | 0 | 96 8.6 | 15 40.2 | 293 48.2 | - 7 39.6 | |
| 22 | 271 40.5 | 47 -21 48.8 | 3 | 126 12.4 | 15 40.6 | 323 53.5 | - 7 39.5 | |
| Δ | 2 | 9 | | 2 | 5 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|-------------|---------------|-------|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t | |
| h min s | s | / | h min | min / | h min | min / | h min | min / |
| 00 | - 1 20.8 | .7 | 16.0 | T _{m̄} | 3 | 7 | 2.5 | 60.4 16.5 |
| 12 | - 1 12.8 | T _{m̄} | 12 h | 1.2 min | Starost | 18.4 d | Faza | 0 |

| UT | PLANETE | | | | | | | | |
|----------|---------|-----------------|-------|-------------|-------|------|-----|------|----|
| | Pl. | T _{m̄} | π | 360 - π | Vel. | | | | |
| h min / | o / | h min | min / | o / | h min | | | | |
| 0 | 14 57 | .1 | 297 | -5.1 | 13 36 | .0 | 317 | -1.6 | |
| δ | 21 9 | .1 | 203 | -7 | h | 0 28 | .0 | 154 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 300 27.8 | 48 -21 48.2 | 6 | 156 16.2 | 15 40.9 | 353 58.8 | - 7 39.3 | |
| 2 | 329 15.4 | 49 -21 47.0 | 9 | 186 20.0 | 15 41.2 | 24 4.1 | - 7 39.2 | |
| 4 | 358 3.1 | 50 -21 45.2 | 12 | 216 23.8 | 15 41.6 | 54 9.4 | - 7 39.1 | |
| 6 | 26 51.1 | 51 -21 42.8 | 15 | 246 27.6 | 15 41.9 | 84 14.7 | - 7 38.9 | |
| 8 | 55 39.3 | 52 -21 39.8 | 18 | 276 31.4 | 15 42.3 | 114 20.0 | - 7 38.8 | |
| 10 | 84 27.7 | 53 -21 36.3 | 21 | 306 35.2 | 15 42.6 | 144 25.2 | - 7 38.6 | |
| 12 | 113 16.4 | 55 -21 32.1 | 23 | 336 39.0 | 15 42.9 | 174 30.5 | - 7 38.5 | |
| 14 | 142 5.4 | 56 -21 27.5 | 26 | 6 42.8 | 15 43.3 | 204 35.8 | - 7 38.4 | |
| 16 | 170 54.6 | 57 -21 22.2 | 29 | 36 46.6 | 15 43.6 | 234 41.1 | - 7 38.2 | |
| 18 | 199 44.1 | 59 -21 16.4 | 32 | 66 50.4 | 15 44.0 | 264 46.4 | - 7 38.1 | |
| 20 | 228 33.9 | 60 -21 10.1 | 34 | 96 54.2 | 15 44.3 | 294 51.7 | - 7 37.9 | |
| 22 | 257 23.9 | 62 -21 3.2 | 37 | 126 58.0 | 15 44.6 | 324 57.0 | - 7 37.8 | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|-------------|---------------|-------|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t | |
| h min s | s | / | h min | min / | h min | min / | h min | min / |
| 00 | - 1 4.8 | .7 | 16.0 | T _{m̄} | 4 | 8 | 2.5 | 59.7 16.3 |
| 12 | - 0 56.9 | T _{m̄} | 12 h | 1.0 min | Starost | 19.4 d | Faza | 0 |

| UT | PLANETE | | | | | | | | |
|----------|---------|-----------------|-------|-------------|-------|------|-----|------|----|
| | Pl. | T _{m̄} | π | 360 - π | Vel. | | | | |
| h min / | o / | h min | min / | o / | h min | | | | |
| 0 | 14 57 | .1 | 296 | -5.2 | 13 33 | .0 | 317 | -1.6 | |
| δ | 21 5 | .1 | 203 | -7 | h | 0 24 | .0 | 154 | .4 |

12. APRIL

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 47.7 | 8 45.0 | 200 35.5 | 135 48.4 | 25 38.2 | 43 55.6 | 12 47.6 |
| 2 | 209 48.0 | 8 46.9 | 230 40.5 | 165 48.8 | 25 39.2 | 74 .7 | 12 47.5 |
| 4 | 239 48.3 | 8 48.7 | 260 45.4 | 195 49.3 | 25 40.1 | 104 5.9 | 12 47.3 |
| 6 | 269 48.6 | 8 50.5 | 290 50.3 | 225 49.8 | 25 41.1 | 134 11.0 | 12 47.1 |
| 8 | 299 49.0 | 8 52.3 | 320 55.2 | 255 50.2 | 25 42.0 | 164 16.1 | 12 47.0 |
| 10 | 329 49.3 | 8 54.1 | 351 51.2 | 285 50.7 | 25 43.0 | 194 21.2 | 12 46.8 |
| 12 | 359 49.6 | 8 55.9 | 311 51.1 | 315 51.2 | 25 44.0 | 224 26.3 | 12 46.7 |
| 14 | 29 49.9 | 8 57.8 | 51 10.0 | 345 51.6 | 25 44.9 | 254 31.4 | 12 46.5 |
| 16 | 59 50.2 | 8 59.6 | 61 15.0 | 15 52.1 | 25 45.9 | 284 36.5 | 12 46.3 |
| 18 | 89 50.6 | 9 1.4 | 111 19.9 | 45 52.6 | 25 46.8 | 314 41.6 | 12 46.2 |
| 20 | 119 50.9 | 9 3.2 | 141 24.8 | 75 53.1 | 25 47.7 | 344 46.7 | 12 46.0 |
| 22 | 149 51.2 | 9 5.0 | 171 29.7 | 105 53.6 | 25 48.7 | 14 51.8 | 12 45.8 |
| Δ | 2 | 9 | | 2 | 5 | 26 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 51 | 19 12 | 0 46 | 3 7 | 1 46 | 1.3 | 8 34 | 3.4 |
| 55 | 5 3 | 18 59 | 0 39 | 2 24 | 1 11 | 1.6 | 9 7 | 3.1 |
| 50 | 5 13 | 18 50 | 0 34 | 2 1 | 0 46 | 1.8 | 9 32 | 3.0 |
| 45 | 5 20 | 18 42 | 0 31 | 1 47 | 0 27 | 1.9 | 9 50 | 2.8 |
| 40 | 5 26 | 18 36 | 0 28 | 1 36 | 0 11 | 2.0 | 10 5 | 2.7 |
| 35 | 5 32 | 18 30 | 0 26 | 1 29 | ... . | 0 | 10 18 | 2.6 |
| 30 | 5 36 | 18 26 | 0 24 | 1 23 | ... . | 0 | 10 29 | 2.6 |
| 20 | 5 44 | 18 17 | 0 22 | 1 15 | ... . | 0 | 10 48 | 2.5 |
| 10 | 5 51 | 18 10 | 0 21 | 1 11 | ... . | 0 | 11 15 | 2.4 |
| 0 | 5 57 | 18 4 | 0 21 | 1 10 | 23 49 | 2.2 | 11 20 | 2.3 |
| 10 | 6 4 | 17 58 | 0 21 | 1 10 | 23 35 | 2.3 | 11 36 | 2.2 |
| 20 | 6 10 | 17 51 | 0 22 | 1 14 | 23 20 | 2.4 | 11 52 | 2.1 |
| 30 | 6 17 | 17 44 | 0 24 | 1 20 | 23 2 | 2.5 | 12 11 | 2.0 |
| 35 | 6 22 | 17 39 | 0 25 | 1 24 | 22 52 | 2.6 | 12 21 | 1.9 |
| 40 | 6 26 | 17 34 | 0 27 | 1 30 | 22 40 | 2.7 | 12 34 | 1.8 |
| 45 | 6 32 | 17 29 | 0 30 | 1 38 | 22 26 | 2.8 | 12 48 | 1.7 |
| 50 | 6 38 | 17 22 | 0 33 | 1 47 | 22 9 | 3.0 | 13 6 | 1.6 |
| 55 | 6 46 | 17 14 | 0 37 | 2 1 | 21 47 | 3.2 | 13 29 | 1.4 |
| 60 | 6 56 | 17 4 | 0 42 | 2 19 | 21 17 | 3.4 | 13 60 | 1.1 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 286 14.3 | 63 -20 55.8 | 40 | 157 1.8 | 15 45.0 | 355 2.3 | - 7 37.7 | |
| 2 | 315 5.0 | 65 -20 47.9 | 42 | 187 5.6 | 15 45.3 | 25 7.5 | - 7 37.5 | |
| 4 | 343 56.0 | 67 -20 39.4 | 45 | 217 9.4 | 15 45.6 | 55 12.8 | - 7 37.4 | |
| 6 | 12 47.4 | 68 -20 30.5 | 47 | 247 13.1 | 15 46.0 | 85 18.1 | - 7 37.2 | |
| 8 | 41 39.0 | 70 -20 21.1 | 50 | 277 16.9 | 15 46.3 | 115 23.4 | - 7 37.1 | |
| 10 | 70 31.0 | 72 -20 11.2 | 52 | 307 20.7 | 15 46.7 | 145 28.7 | - 7 37.0 | |
| 12 | 99 23.3 | 73 -20 8.8 | 54 | 337 24.5 | 15 47.0 | 175 34.0 | - 7 36.8 | |
| 14 | 128 16.0 | 75 -19 50.0 | 56 | 7 28.3 | 15 47.3 | 205 39.3 | - 7 36.7 | |
| 16 | 157 9.0 | 77 -19 38.7 | 59 | 37 32.1 | 15 47.7 | 235 44.6 | - 7 36.5 | |
| 18 | 186 2.4 | 79 -19 26.9 | 61 | 67 35.9 | 15 48.0 | 265 49.8 | - 7 36.4 | |
| 20 | 214 56.1 | 80 -19 14.7 | 63 | 97 39.7 | 15 48.4 | 295 55.1 | - 7 36.3 | |
| 22 | 243 50.2 | 82 -19 2.1 | 65 | 127 43.5 | 15 48.7 | 326 .4 | - 7 36.1 | |
| Δ | 2 | 9 | | 19 | 2 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|--------------------|----------|--------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π_{ζ} | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 - 0 49.1 | .6 | 16.0 | T _{m̄} | 5 | 2.3 | 58.9 | 16.1 | |
| 12 - 0 41.4 | T _{m̄} | 12 h | .7 min | Starost | 20.4 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h min / | o | | | h min / | o | | h min / | |
| ♀ 14 57 .1 | 295 | -5.2 | 4 | 13 30 .0 | 316 | -1.6 | | |
| ♂ 21 1 .1 | 203 | -7 | h | 0 20 .0 | 154 | -.4 | | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|-----------|--------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 272 44.6 | 84 -18 49.1 | 67 | 157 47.3 | 15 49.0 | 356 5.7 | - 7 36.0 | |
| 2 | 301 39.4 | 86 -18 35.7 | 69 | 187 51.1 | 15 49.4 | 26 11.0 | - 7 35.9 | |
| 4 | 330 34.5 | 87 -18 21.8 | 71 | 217 54.9 | 15 49.7 | 56 16.3 | - 7 35.7 | |
| 6 | 359 30.0 | 89 -18 7.6 | 73 | 247 58.7 | 15 50.0 | 86 21.6 | - 7 35.6 | |
| 8 | 28 25.8 | 91 -17 53.0 | 75 | 278 2.5 | 15 50.4 | 118 26.9 | - 7 35.4 | |
| 10 | 57 22.0 | 93 -17 38.0 | 77 | 308 6.2 | 15 50.7 | 146 32.1 | - 7 35.3 | |
| 12 | 86 18.6 | 95 -17 22.7 | 78 | 338 10.0 | 15 51.1 | 176 37.4 | - 7 35.2 | |
| 14 | 115 15.5 | 96 -17 7.0 | 80 | 8 13.8 | 15 51.4 | 206 42.7 | - 7 35.0 | |
| 16 | 144 12.8 | 98 -16 51.0 | 82 | 38 17.6 | 15 51.7 | 236 48.0 | - 7 34.9 | |
| 18 | 173 10.4 | 100 -16 34.7 | 83 | 68 21.4 | 15 52.1 | 266 53.3 | - 7 34.7 | |
| 20 | 202 8.3 | 101 -16 18.0 | 85 | 98 25.2 | 15 52.4 | 296 58.6 | - 7 34.6 | |
| 22 | 231 6.6 | 103 -16 1.0 | 86 | 128 29.0 | 15 52.7 | 327 3.9 | - 7 34.5 | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|--------------------|----------|--------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π_{ζ} | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 - 0 33.8 | .6 | 16.0 | T _{m̄} | 6 | 2.2 | 58.1 | 15.8 | |
| 12 - 0 26.3 | T _{m̄} | 12 h | .4 min | Starost | 21.4 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h min / | o | | | h min / | o | | h min / | |
| ♀ 14 56 .1 | 294 | -5.2 | 4 | 13 27 .0 | 316 | -1.6 | | |
| ♂ 20 57 .1 | 203 | -6 | h | 0 16 .0 | 155 | -.4 | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 55.3 | 9 28.5 | 202 33.8 | 136 .4 26 .5 | 45 57.4 | 12 43.5 | | |
| 2 | 209 55.6 | 9 30.3 | 232 38.7 | 166 1.0 26 1.3 | 76 2.5 | 12 43.3 | | |
| 4 | 239 55.9 | 9 32.1 | 262 43.7 | 196 1.6 26 2.2 | 106 7.5 | 12 43.1 | | |
| 6 | 269 56.2 | 9 33.9 | 292 48.6 | 226 2.1 26 3.1 | 136 12.5 | 12 42.9 | | |
| 8 | 299 56.5 | 9 35.7 | 322 53.5 | 256 2.7 26 4.0 | 166 17.5 | 12 42.7 | | |
| 10 | 329 56.8 | 9 37.5 | 352 58.4 | 286 3.3 26 4.8 | 196 22.5 | 12 42.5 | | |
| 12 | 359 57.1 | 9 39.3 | 23 3.4 | 316 3.9 26 5.7 | 226 27.5 | 12 42.3 | | |
| 14 | 29 57.4 | 9 41.1 | 53 8.3 | 346 4.5 26 6.5 | 256 32.4 | 12 42.1 | | |
| 16 | 59 57.7 | 9 42.8 | 63 13.2 | 16 5.1 26 7.4 | 286 37.4 | 12 41.9 | | |
| 18 | 89 58.0 | 9 44.6 | 113 18.2 | 46 5.7 26 8.3 | 316 42.4 | 12 41.7 | | |
| 20 | 119 58.3 | 9 46.4 | 143 23.1 | 76 6.3 26 9.1 | 346 47.4 | 12 41.5 | | |
| 22 | 149 58.6 | 9 48.2 | 173 28.0 | 106 6.9 26 10.0 | 16 52.3 | 12 41.3 | | |
| Δ | 2 | 9 | | 3 | 4 | 25 | -1 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|---------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 45 | 19 17 | 0 46 | 3 15 | 2 40 | .7 | 11 19 | 3.4 | |
| 55 | 4 59 | 19 3 | 0 39 | 2 27 | 2 18 | .9 | 11 39 | 3.1 | |
| 50 | 5 9 | 18 53 | 0 34 | 2 3 | 2 2 | 1.1 | 11 54 | 2.9 | |
| 45 | 5 17 | 18 45 | 0 31 | 1 48 | 1 48 | 1.3 | 12 6 | 2.8 | |
| 40 | 5 23 | 18 38 | 0 28 | 1 37 | 1 38 | 1.4 | 12 16 | 2.6 | |
| 35 | 5 29 | 18 32 | 0 26 | 1 29 | 1 28 | 1.5 | 12 24 | 2.5 | |
| 30 | 5 34 | 18 27 | 0 25 | 1 23 | 1 20 | 1.6 | 12 31 | 2.4 | |
| 20 | 5 43 | 18 18 | 0 22 | 1 15 | 1 6 | 1.8 | 12 44 | 2.3 | |
| 10 | 5 50 | 18 11 | 0 21 | 1 11 | 0 53 | 1.9 | 12 55 | 2.1 | |
| 0 | 5 57 | 18 4 | 0 21 | 1 10 | 0 42 | 2.0 | 13 5 | 2.0 | |
| 10 | 6 4 | 17 57 | 0 21 | 1 10 | 0 30 | 2.2 | 13 16 | 1.8 | |
| 20 | 6 11 | 17 49 | 0 22 | 1 14 | 0 17 | 2.3 | 13 26 | 1.7 | |
| 30 | 6 19 | 17 41 | 0 24 | 1 20 | 0 3 | 2.5 | 13 39 | 1.5 | |
| 35 | 6 23 | 17 37 | 0 26 | 1 24 | .. .. | .. .. | 0 13 46 | 1.4 | |
| 40 | 6 28 | 17 31 | 0 27 | 1 30 | .. .. | .. .. | 0 13 54 | 1.3 | |
| 45 | 6 34 | 17 25 | 0 30 | 1 38 | .. .. | .. .. | 0 14 3 | 1.2 | |
| 50 | 6 41 | 17 18 | 0 33 | 1 48 | .. .. | .. .. | 0 14 14 | 1.1 | |
| 55 | 6 50 | 17 10 | 0 37 | 2 1 | .. .. | .. .. | 0 14 28 | .9 | |
| 60 | 7 1 | 16 58 | 0 42 | 2 19 | .. .. | .. .. | 0 14 46 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 260 5.3 105 -15 43.8 | 88 | 158 32.8 | 15 53.1 | 357 9.2 | -7 34.3 | | |
| 2 | 289 4.2 107 -15 26.2 | 89 | 188 36.6 | 15 53.4 | 27 14.5 | -7 34.2 | | |
| 4 | 318 3.6 108 -15 8.3 | 91 | 218 40.3 | 15 53.8 | 57 19.7 | -7 34.0 | | |
| 6 | 347 3.2 110 -14 50.2 | 92 | 248 44.1 | 15 54.1 | 87 25.0 | -7 33.9 | | |
| 8 | 16 3.2 111 -14 31.8 | 93 | 278 47.9 | 15 54.4 | 117 30.3 | -7 33.8 | | |
| 10 | 45 3.4 113 -14 13.2 | 94 | 308 51.7 | 15 54.8 | 147 35.6 | -7 33.6 | | |
| 12 | 74 4.0 115 -13 54.3 | 96 | 338 55.5 | 15 55.1 | 177 40.9 | -7 33.5 | | |
| 14 | 103 5.0 116 -13 35.1 | 97 | 8 59.3 | 15 55.4 | 207 46.2 | -7 33.4 | | |
| 16 | 132 6.2 118 -13 15.8 | 98 | 39 3.1 | 15 55.8 | 237 51.5 | -7 33.2 | | |
| 18 | 161 7.7 119 -12 56.2 | 99 | 69 6.9 | 15 56.1 | 267 56.8 | -7 33.1 | | |
| 20 | 190 9.5 121 -12 36.4 | 100 | 99 10.6 | 15 56.5 | 298 2.1 | -7 32.9 | | |
| 22 | 219 11.6 122 -12 16.4 | 101 | 129 14.4 | 15 56.8 | 328 7.3 | -7 32.8 | | |
| Δ | 1 | 9 | | 3 | 4 | 25 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-------------|---------------------|-----------------|-------------|----------------|----|--|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | | | |
| 00 - 0 18.8 | .6 | 16.0 | 6 54 | 2.0 | 57.3 | 15.6 | | |
| 12 - 0 11.4 | T _{m̄} | 12 h .2 min | Starost 22.4 d Faza | ● | | | | |

PLANETE

| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| Q | 14 56 | .1 | 293 | -5.2 | 4 | 13 24 | .0 | 316 | -1.6 |
| Ø | 20 53 | .1 | 203 | -6 | h | 0 11 | .0 | 155 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 248 14.0 123 -11 56.2 | 102 | 159 18.2 | 15 57.1 | 358 12.6 | -7 32.7 | | |
| 2 | 277 16.7 125 -11 35.8 | 103 | 189 22.0 | 15 57.5 | 28 17.9 | -7 32.5 | | |
| 4 | 306 19.6 126 -11 15.2 | 104 | 219 25.8 | 15 57.8 | 58 23.2 | -7 32.4 | | |
| 6 | 335 22.8 127 -10 54.5 | 105 | 249 29.6 | 15 58.1 | 88 28.5 | -7 32.2 | | |
| 8 | 4 26.3 129 -10 33.5 | 105 | 279 33.3 | 15 58.5 | 118 33.8 | -7 32.1 | | |
| 10 | 33 30.0 130 -10 12.5 | 106 | 309 37.1 | 15 58.8 | 148 39.1 | -7 32.0 | | |
| 12 | 62 34.0 131 -9 51.3 | 107 | 339 40.9 | 15 59.1 | 178 44.4 | -7 31.8 | | |
| 14 | 91 38.2 132 -9 29.9 | 107 | 9 44.7 | 15 59.3 | 208 49.7 | -7 31.7 | | |
| 16 | 120 42.6 133 -9 8.4 | 108 | 39 48.5 | 15 59.8 | 238 55.0 | -7 31.6 | | |
| 18 | 149 47.3 134 -8 46.8 | 109 | 69 52.3 | 16 .2 | 269 2 | -7 31.4 | | |
| 20 | 178 52.2 136 -8 25.0 | 109 | 99 56.0 | 16 .5 | 299 5.5 | -7 31.3 | | |
| 22 | 207 57.3 137 -8 3.2 | 110 | 129 59.8 | 16 .8 | 329 10.8 | -7 31.1 | | |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|------------|-------------------------|---------------|---------------------|-----------------|-------------|----------------|----|--|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | | | |
| 00 - 0 4.1 | .6 | 16.0 | 7 42 | 1.9 | 56.5 | 15.4 | | |
| 12 - 0 3.0 | T _{m̄} | 11 h 60.0 min | Starost 23.4 d Faza | ● | | | | |

| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| Q | 14 55 | .1 | 293 | -5.3 | 4 | 13 21 | .0 | 316 | -1.6 |
| Ø | 20 49 | .1 | 203 | -6 | h | 0 7 | .0 | 155 | .4 |

16. APRIL

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-----------------|----------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 2.5 10 11.3 | 204 32.1 | 136 15.4 26 20.6 | 47 56.4 12 38.3 | | | | |
| 2 | 210 2.8 10 13.1 | 234 37.0 | 166 16.1 26 21.4 | 78 1.3 12 38.1 | | | | |
| 4 | 240 3.1 10 14.9 | 264 41.9 | 196 16.8 26 22.2 | 108 6.2 12 37.9 | | | | |
| 6 | 270 3.4 10 16.6 | 294 46.9 | 226 17.5 26 23.0 | 138 11.1 12 37.6 | | | | |
| 8 | 300 3.7 10 18.4 | 324 51.8 | 256 18.2 26 23.8 | 168 16.0 12 37.4 | | | | |
| 10 | 330 4.0 10 20.2 | 354 56.7 | 286 18.9 26 24.5 | 198 20.9 12 37.1 | | | | |
| 12 | 0 4.2 10 21.9 | 25 | 316 19.6 26 25.3 | 228 25.8 12 36.9 | | | | |
| 14 | 30 4.5 10 23.7 | 55 6.6 | 346 20.3 26 26.1 | 258 30.6 12 36.6 | | | | |
| 16 | 60 4.8 10 25.5 | 85 11.5 | 16 21.1 26 26.9 | 288 35.5 12 36.4 | | | | |
| 18 | 90 5.1 10 27.2 | 115 16.4 | 46 21.8 26 27.6 | 318 40.4 12 36.1 | | | | |
| 20 | 120 5.4 10 29.0 | 145 21.4 | 76 22.6 26 28.4 | 348 45.2 12 35.9 | | | | |
| 22 | 150 5.7 10 30.7 | 175 26.3 | 106 23.3 26 29.1 | 18 50.1 12 35.6 | | | | |
| Δ | 1 9 | | 4 4 | 24 -1 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 40 | 19 22 | 0 47 | 3 26 | 3 9 | .4 | 14 1 | 3.2 |
| 55 | 4 54 | 19 7 | 0 39 | 2 30 | 2 59 | .7 | 14 7 | 3.0 |
| 50 | 5 5 | 18 56 | 0 34 | 2 5 | 2 52 | .9 | 14 12 | 2.8 |
| 45 | 5 13 | 18 47 | 0 31 | 1 49 | 2 47 | 1.0 | 14 17 | 2.6 |
| 40 | 5 20 | 18 40 | 0 28 | 1 38 | 2 42 | 1.2 | 14 20 | 2.5 |
| 35 | 5 26 | 18 34 | 0 26 | 1 30 | 2 37 | 1.3 | 14 23 | 2.4 |
| 30 | 5 32 | 18 28 | 0 25 | 1 24 | 2 34 | 1.4 | 14 26 | 2.3 |
| 20 | 5 41 | 18 19 | 0 23 | 1 16 | 2 27 | 1.5 | 14 30 | 2.1 |
| 10 | 5 49 | 18 11 | 0 21 | 1 11 | 2 22 | 1.7 | 14 34 | 1.9 |
| 0 | 5 56 | 18 3 | 0 21 | 1 10 | 2 16 | 1.8 | 14 38 | 1.8 |
| 10 | 6 4 | 17 56 | 0 21 | 1 11 | 2 11 | 2.0 | 14 41 | 1.7 |
| 20 | 6 11 | 17 48 | 0 22 | 1 14 | 2 5 | 2.1 | 14 45 | 1.5 |
| 30 | 6 20 | 17 39 | 0 24 | 1 20 | 1 59 | 2.3 | 14 49 | 1.3 |
| S | | | | | | | | |
| 35 | 6 25 | 17 34 | 0 26 | 1 24 | 1 55 | 2.4 | 14 52 | 1.2 |
| 40 | 6 30 | 17 29 | 0 27 | 1 30 | 1 51 | 2.5 | 14 55 | 1.1 |
| 45 | 6 37 | 17 22 | 0 30 | 1 38 | 1 46 | 2.6 | 14 58 | 1.0 |
| 50 | 6 44 | 17 14 | 0 33 | 1 48 | 1 40 | 2.8 | 15 1 | .9 |
| 55 | 6 54 | 17 5 | 0 37 | 2 1 | 1 33 | 3.0 | 15 6 | .7 |
| 60 | 7 6 | 16 52 | 0 43 | 2 19 | 1 23 | 3.3 | 15 12 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 237 2.6 138 - 7 41.2 | 110 | 160 3.6 16 1.2 | 359 16.1 - 7 31.0 | | | | |
| 2 | 266 8.1 139 - 7 19.1 | 111 | 190 7.4 16 1.5 | 29 21.4 - 7 30.9 | | | | |
| 4 | 295 13.8 139 - 6 57.0 | 111 | 220 11.2 16 1.8 | 59 26.7 - 7 30.7 | | | | |
| 6 | 324 19.7 140 - 6 34.7 | 112 | 250 14.9 16 2.2 | 89 30.0 - 7 30.6 | | | | |
| 8 | 353 25.8 141 - 6 12.4 | 112 | 280 18.7 16 2.5 | 119 37.3 - 7 30.4 | | | | |
| 10 | 22 32.1 142 - 5 50.0 | 112 | 310 22.5 16 2.8 | 149 42.6 - 7 30.3 | | | | |
| 12 | 53 38.5 143 - 5 27.5 | 113 | 340 26.3 16 3.2 | 179 47.9 - 7 30.2 | | | | |
| 14 | 80 45.0 144 - 5 5.0 | 113 | 10 30.1 16 3.5 | 209 53.1 - 7 30.0 | | | | |
| 16 | 109 51.8 144 - 4 42.4 | 113 | 40 33.8 16 3.9 | 239 58.4 - 7 29.9 | | | | |
| 18 | 138 58.6 145 - 4 19.8 | 113 | 70 37.6 16 4.2 | 270 3.7 - 7 29.8 | | | | |
| 20 | 168 5.7 146 - 3 57.2 | 113 | 100 41.4 16 4.5 | 300 9.0 - 7 29.6 | | | | |
| 22 | 197 12.8 146 - 3 34.5 | 114 | 130 45.2 16 4.9 | 330 14.3 - 7 29.5 | | | | |
| Δ | 1 9 | | 4 2 | 26 1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 0 10.2 | .6 | 16.0 | T _{m̄} | 8 27 | 1.8 | 55.9 | 15.2 |
| 12 | 0 17.1 | T _{m̄} | 11 h 59.7 min | Starost 24.4 d | Faza 0 | | | |

PLANETE

| Pl. | T _{m̄} | π | 360-ω | Vel. | Pl. | T _{m̄} | π | 360-ω | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| Q | 14 55 | .1 | 292 | -5.3 | 4 | 13 18 | .0 | 316 | -1.6 |
| ɔ | 20 45 | .1 | 203 | -6 | h | 23 54 | .0 | 155 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 226 20.1 147 - 3 11.7 | 114 | 160 49.0 16 5.2 | 0 19.6 - 7 29.3 | | | | |
| 2 | 255 27.5 148 - 2 49.0 | 114 | 190 52.7 16 5.5 | 30 24.9 - 7 29.2 | | | | |
| 4 | 284 35.0 148 - 2 26.2 | 114 | 220 56.5 16 5.9 | 60 30.2 - 7 29.1 | | | | |
| 6 | 313 42.6 149 - 2 3.4 | 114 | 251 .3 16 6.2 | 90 35.5 - 7 28.9 | | | | |
| 8 | 342 50.3 149 - 1 40.6 | 114 | 281 4.1 16 6.5 | 120 40.7 - 7 28.8 | | | | |
| 10 | 11 58.1 149 - 1 17.9 | 114 | 311 7.8 16 6.9 | 150 46.0 - 7 28.7 | | | | |
| 12 | 41 6.0 150 - 0 55.1 | 114 | 341 11.6 16 7.2 | 180 51.3 - 7 28.5 | | | | |
| 14 | 70 14.0 150 - 0 32.3 | 114 | 11 15.4 16 7.5 | 210 56.6 - 7 28.4 | | | | |
| 16 | 99 22.0 151 - 0 9.6 | 114 | 41 19.2 16 7.9 | 241 1.9 - 7 28.2 | | | | |
| 18 | 128 30.1 151 0 13.1 | 113 | 71 23.0 16 8.2 | 271 7.2 - 7 28.1 | | | | |
| 20 | 157 38.3 151 0 35.8 | 113 | 101 26.7 16 8.6 | 301 12.5 - 7 28.0 | | | | |
| 22 | 186 46.5 151 0 58.5 | 113 | 131 30.5 16 8.9 | 331 17.8 - 7 27.8 | | | | |
| Δ | 19 2 | | 26 1 | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 0 24.0 | .6 | 16.0 | T _{m̄} | 9 11 | 1.7 | 55.3 | 15.1 |
| 12 | 0 30.8 | T _{m̄} | 11 h 59.5 min | Starost 25.4 d | Faza 0 | | | |

PLANETE

| Pl. | T _{m̄} | π | 360-ω | Vel. | Pl. | T _{m̄} | π | 360-ω | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| Q | 14 54 | .1 | 291 | -5.3 | 4 | 13 15 | .0 | 315 | -1.6 |
| ɔ | 20 41 | .1 | 203 | -6 | h | 23 54 | .0 | 155 | .4 |

18. APRIL

2012.

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | | | | | | | | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|------|-----|------|-----|------|----|------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ | | | | | | | |
| h | o / | o / | o / | o / | o / | o / | o / | | | | | | | |
| 0 | 180 | 9.3 | 10 | 53.5 | 206 | 30.4 | 136 | 33.6 | 26 | 38.7 | 49 | 52.7 | 12 | 32.2 |
| 2 | 210 | 9.6 | 10 | 55.2 | 236 | 35.3 | 166 | 34.4 | 26 | 39.4 | 79 | 57.5 | 12 | 31.9 |
| 4 | 240 | 9.9 | 10 | 57.0 | 266 | 40.2 | 196 | 35.3 | 26 | 40.1 | 110 | 2.2 | 12 | 31.6 |
| 6 | 270 | 10.2 | 10 | 58.7 | 296 | 45.1 | 226 | 36.1 | 26 | 40.8 | 140 | 7.0 | 12 | 31.3 |
| 8 | 300 | 10.4 | 11 | 5.5 | 326 | 50.1 | 256 | 37.0 | 26 | 41.5 | 170 | 11.8 | 12 | 31.1 |
| 10 | 330 | 10.7 | 11 | 2.2 | 356 | 55.0 | 286 | 37.8 | 26 | 42.2 | 200 | 16.5 | 12 | 30.8 |
| 12 | 0 | 11.0 | 11 | 3.9 | 316 | 38.7 | 26 | 42.9 | 230 | 21.3 | 12 | 30.5 | | |
| 14 | 30 | 11.3 | 11 | 5.7 | 346 | 39.6 | 26 | 43.5 | 260 | 26.1 | 12 | 30.2 | | |
| 16 | 60 | 11.5 | 11 | 7.4 | 67 | 9.8 | 16 | 40.4 | 26 | 44.2 | 290 | 30.8 | 12 | 29.9 |
| 18 | 90 | 11.8 | 11 | 9.1 | 117 | 14.7 | 46 | 41.3 | 26 | 44.9 | 320 | 35.6 | 12 | 29.6 |
| 20 | 120 | 12.1 | 11 | 10.9 | 147 | 19.6 | 76 | 42.2 | 26 | 45.6 | 350 | 40.3 | 12 | 29.3 |
| 22 | 150 | 12.3 | 11 | 12.6 | 177 | 24.6 | 106 | 43.1 | 26 | 46.3 | 20 | 45.0 | 12 | 29.0 |
| Δ | 1 | 9 | | | | | 4 | 3 | | | 24 | -1 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | MJESEC | | | | |
|----|-------|-------|---------------------|--------|--------|-------|-------|-------|
| | IZLAZ | ZALAZ | | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ |
| N | h min | h min | h min | h min | h min | h min | min | h min |
| 60 | 4 34 | 19 26 | 0 48 | 3 40 | 3 29 | .4 | 16 35 | 3.2 |
| 55 | 4 49 | 19 11 | 0 40 | 2 34 | 3 32 | .7 | 16 29 | 2.9 |
| 50 | 5 0 | 18 59 | 0 35 | 2 6 | 3 34 | .8 | 16 25 | 2.7 |
| 45 | 5 10 | 18 50 | 0 31 | 1 50 | 3 35 | 1.0 | 16 22 | 2.6 |
| 40 | 5 17 | 18 42 | 0 28 | 1 38 | 3 36 | 1.1 | 16 19 | 2.4 |
| 35 | 5 24 | 18 35 | 0 26 | 1 30 | 3 37 | 1.2 | 16 16 | 2.3 |
| 30 | 5 30 | 18 29 | 0 25 | 1 24 | 3 38 | 1.3 | 16 14 | 2.2 |
| 25 | 5 40 | 18 19 | 0 23 | 1 16 | 3 40 | 1.5 | 16 10 | 2.1 |
| 20 | 5 48 | 18 11 | 0 21 | 1 12 | 3 42 | 1.6 | 16 | 1.9 |
| 10 | 5 56 | 18 3 | 0 21 | 1 10 | 3 43 | 1.8 | 16 | 1.8 |
| 6 | 6 4 | 17 55 | 0 21 | 1 11 | 3 45 | 1.9 | 16 | 1.6 |
| 2 | 6 12 | 17 46 | 0 22 | 1 14 | 3 46 | 2.1 | 15 | 1.5 |
| 30 | 6 21 | 17 37 | 0 24 | 1 20 | 3 48 | 2.2 | 15 | 1.3 |
| 35 | 6 26 | 17 32 | 0 26 | 1 25 | 3 49 | 2.3 | 15 | 1.2 |
| 40 | 6 32 | 17 26 | 0 28 | 1 30 | 3 50 | 2.4 | 15 | 1.1 |
| 45 | 6 39 | 17 19 | 0 30 | 1 38 | 3 52 | 2.6 | 15 | 1.0 |
| 50 | 6 47 | 17 10 | 0 33 | 1 48 | 3 54 | 2.7 | 15 | 0.9 |
| 55 | 6 58 | 17 0 | 0 37 | 2 1 | 3 56 | 2.9 | 15 | 0.8 |
| 60 | 7 11 | 16 47 | 0 43 | 2 19 | 3 59 | 3.2 | 15 | 0.5 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | | | | | | | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|----|------|-----|------|---|---|------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | | | | | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | | | | | | | |
| 0 | 215 | 54.8 | 152 | 1 | 21.1 | 113 | 161 | 34.3 | 16 | 9.2 | 1 | 23.1 | - | 7 | 27.7 |
| 2 | 245 | 3.1 | 152 | 1 | 43.7 | 113 | 191 | 38.0 | 16 | 9.6 | 31 | 28.4 | - | 7 | 27.6 |
| 4 | 274 | 11.5 | 152 | 2 | 6.2 | 112 | 221 | 41.8 | 16 | 9.9 | 61 | 33.6 | - | 7 | 27.4 |
| 6 | 303 | 19.8 | 152 | 2 | 28.6 | 112 | 251 | 45.6 | 16 | 10.2 | 91 | 38.9 | - | 7 | 27.3 |
| 8 | 332 | 28.3 | 152 | 2 | 51.0 | 112 | 281 | 49.4 | 16 | 10.6 | 121 | 44.2 | - | 7 | 27.1 |
| 10 | 1 | 36.7 | 152 | 3 | 13.3 | 111 | 311 | 53.1 | 16 | 10.9 | 151 | 49.5 | - | 7 | 27.0 |
| 12 | 30 | 45.1 | 152 | 3 | 35.6 | 111 | 341 | 56.9 | 16 | 11.2 | 181 | 54.8 | - | 7 | 26.9 |
| 14 | 59 | 53.5 | 152 | 3 | 57.8 | 110 | 12 | 57 | 16 | 11.6 | 212 | .. | - | 7 | 26.7 |
| 16 | 89 | 2.0 | 152 | 4 | 19.8 | 110 | 42 | 4.5 | 16 | 11.9 | 242 | 5.4 | - | 7 | 26.6 |
| 18 | 118 | 10.4 | 152 | 4 | 41.8 | 109 | 72 | 8.2 | 16 | 12.2 | 272 | 10.7 | - | 7 | 26.5 |
| 20 | 147 | 18.9 | 152 | 5 | 3.7 | 109 | 102 | 12.0 | 16 | 12.6 | 302 | 16.0 | - | 7 | 26.3 |
| 22 | 176 | 27.3 | 152 | 5 | 25.5 | 108 | 132 | 15.8 | 16 | 12.9 | 332 | 21.2 | - | 7 | 26.2 |
| Δ | 1 | 9 | | | | | 19 | 2 | | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 0 37.5 | .5 | 16.0 | T _{m̄} | 9 53 | 1.8 | 54.9 | 14.9 |
| 12 | 0 44.1 | T _{m̄} | 11 h 59.3 min | Starost | 26.4 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | h min | / | h min | o | h min | h min | / |
| 0 | 14 53 | .1 | 290 | -5.4 | 4 | 13 12 | .0 | 315 |
| ɔ | 20 37 | .1 | 203 | -6 | h | 23 50 | .0 | 155 |

| UT | MJESEC | | | | JUPITER | | SATURN | | | | | | | | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|----|------|-----|------|---|---|------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | | | | | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | | | | | | | |
| 0 | 205 | 35.6 | 152 | 5 | 47.2 | 108 | 162 | 19.5 | 16 | 13.2 | 2 | 26.5 | - | 7 | 26.0 |
| 2 | 234 | 44.0 | 152 | 6 | 8.8 | 107 | 192 | 23.3 | 16 | 13.6 | 321 | 31.8 | - | 7 | 25.9 |
| 4 | 263 | 52.3 | 151 | 6 | 30.3 | 107 | 222 | 27.1 | 16 | 13.9 | 62 | 37.1 | - | 7 | 25.8 |
| 6 | 293 | .6 | 151 | 6 | 51.6 | 106 | 252 | 30.9 | 16 | 14.2 | 92 | 42.4 | - | 7 | 25.6 |
| 8 | 322 | 8.9 | 151 | 7 | 12.8 | 105 | 282 | 34.6 | 16 | 14.6 | 122 | 47.7 | - | 7 | 25.5 |
| 10 | 351 | 17.1 | 151 | 7 | 33.9 | 105 | 312 | 38.4 | 16 | 14.9 | 152 | 53.0 | - | 7 | 25.4 |
| 12 | 20 | 25.2 | 150 | 7 | 54.8 | 104 | 342 | 42.2 | 16 | 15.2 | 182 | 58.3 | - | 7 | 25.2 |
| 14 | 49 | 33.3 | 150 | 8 | 15.6 | 103 | 12 | 45.9 | 16 | 15.6 | 213 | 3.6 | - | 7 | 25.1 |
| 16 | 78 | 41.4 | 150 | 8 | 36.3 | 102 | 42 | 49.7 | 16 | 15.9 | 243 | 8.8 | - | 7 | 25.0 |
| 18 | 107 | 49.3 | 149 | 8 | 56.8 | 102 | 72 | 53.5 | 16 | 16.2 | 273 | 14.1 | - | 7 | 24.8 |
| 20 | 136 | 57.2 | 149 | 9 | 17.1 | 101 | 102 | 57.2 | 16 | 16.6 | 303 | 19.4 | - | 7 | 24.7 |
| 22 | 166 | 5.1 | 149 | 9 | 37.3 | 100 | 133 | 1.0 | 16 | 16.9 | 333 | 24.7 | - | 7 | 24.5 |
| Δ | 1 | 9 | | | | | 19 | 2 | | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 0 50.6 | .5 | 15.9 | T _{m̄} | 10 36 | 1.8 | 54.5 | 14.9 |
| 12 | 0 57.0 | T _{m̄} | 11 h 59.1 min | Starost | 27.4 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | h min | / | h min | o | h min | h min | / |
| 0 | 14 53 | .1 | 289 | -5.4 | 4 | 13 9 | .0 | 315 |
| ɔ | 20 33 | .1 | 203 | -6 | h | 23 46 | .0 | 155 |

20. APRIL

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 15.8 | 11 34.9 | 208 28.6 | 136 55.4 | 26 54.6 | 51 46.2 | 12 25.0 | |
| 2 | 210 16.0 | 11 36.7 | 238 33.6 | 166 56.4 | 26 55.3 | 81 50.9 | 12 24.7 | |
| 4 | 240 16.3 | 11 38.4 | 268 38.5 | 196 57.4 | 26 55.9 | 111 55.5 | 12 24.4 | |
| 6 | 270 16.6 | 11 40.1 | 298 43.4 | 226 58.4 | 26 56.5 | 142 .2 | 12 24.1 | |
| 8 | 300 16.8 | 11 41.8 | 328 48.3 | 256 59.4 | 26 57.1 | 172 4.8 | 12 23.8 | |
| 10 | 330 17.1 | 11 43.5 | 358 53.3 | 287 .5 | 26 57.7 | 202 9.5 | 12 23.4 | |
| 12 | 0 17.3 | 11 45.2 | 28 58.2 | 317 1.5 | 26 58.3 | 232 14.1 | 12 23.1 | |
| 14 | 30 17.6 | 11 46.9 | 59 3.1 | 347 2.5 | 26 58.9 | 262 18.8 | 12 22.8 | |
| 16 | 60 17.8 | 11 48.6 | 89 6.1 | 17 3.6 | 26 59.5 | 292 23.4 | 12 22.4 | |
| 18 | 90 18.1 | 11 50.3 | 119 13.0 | 47 4.6 | 27 .1 | 322 28.1 | 12 22.1 | |
| 20 | 120 18.3 | 11 52.0 | 149 17.9 | 77 5.7 | 27 .7 | 352 32.7 | 12 21.8 | |
| 22 | 150 18.6 | 11 53.7 | 179 22.8 | 107 6.8 | 27 1.3 | 22 37.3 | 12 21.4 | |
| Δ | 1 | 9 | | 5 | 3 | 23 | -2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 28 | 19 31 | 0 48 | 4 10 | 3 51 | .6 | 19 6 | 3 1 | |
| 55 | 4 44 | 19 15 | 0 40 | 2 37 | 4 5 | .8 | 18 48 | 2 8 | |
| 50 | 4 57 | 19 2 | 0 35 | 2 8 | 4 15 | 1.0 | 18 38 | 2.7 | |
| 45 | 5 6 | 18 52 | 0 31 | 1 51 | 4 24 | 1.1 | 18 24 | 2.5 | |
| 40 | 5 15 | 18 44 | 0 28 | 1 39 | 4 31 | 1.3 | 18 15 | 2.4 | |
| 35 | 5 21 | 18 37 | 0 26 | 1 31 | 4 37 | 1.3 | 18 7 | 2.3 | |
| 30 | 5 28 | 18 31 | 0 25 | 1 24 | 4 43 | 1.4 | 18 1 | 2.2 | |
| 20 | 5 38 | 18 20 | 0 23 | 1 16 | 4 52 | 1.6 | 17 49 | 2.1 | |
| 10 | 5 47 | 18 11 | 0 22 | 1 12 | 5 1 | 1.7 | 17 39 | 2.0 | |
| 0 | 5 55 | 18 2 | 0 21 | 1 10 | 5 8 | 1.8 | 17 30 | 1.9 | |
| 10 | 6 4 | 17 54 | 0 21 | 1 11 | 5 16 | 1.9 | 17 20 | 1.7 | |
| 20 | 6 13 | 17 45 | 0 22 | 1 14 | 5 25 | 2.1 | 17 10 | 1.6 | |
| 30 | 6 22 | 17 35 | 0 24 | 1 20 | 5 35 | 2.2 | 16 59 | 1.5 | |
| 35 | 6 28 | 17 29 | 0 26 | 1 25 | 5 40 | 2.3 | 16 52 | 1.4 | |
| 40 | 6 34 | 17 23 | 0 28 | 1 31 | 5 47 | 2.4 | 16 45 | 1.3 | |
| 45 | 6 42 | 17 15 | 0 30 | 1 38 | 5 55 | 2.5 | 16 36 | 1.2 | |
| 50 | 6 50 | 17 6 | 0 33 | 1 48 | 6 4 | 2.7 | 16 26 | 1.1 | |
| 55 | 7 1 | 16 55 | 0 37 | 2 1 | 6 15 | 2.9 | 16 13 | .9 | |
| 60 | 7 16 | 16 41 | 0 43 | 2 20 | 6 30 | 3.1 | 15 56 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 195 12.8 | 148 | 9 57.3 | 99 | 163 4.8 | 16 17.2 | 3 30.0 | - 7 24.4 |
| 2 | 224 20.5 | 148 | 10 17.1 | 98 | 193 8.6 | 16 17.6 | 33 35.3 | - 7 24.3 |
| 4 | 253 28.0 | 147 | 10 36.8 | 97 | 223 12.3 | 16 17.9 | 63 40.6 | - 7 24.1 |
| 6 | 282 35.1 | 147 | 10 56.2 | 96 | 253 16.1 | 16 18.2 | 93 45.9 | - 7 24.0 |
| 8 | 311 42.9 | 146 | 11 15.5 | 95 | 283 19.9 | 16 18.6 | 123 51.2 | - 7 23.9 |
| 10 | 340 50.2 | 146 | 11 34.6 | 94 | 313 23.6 | 16 18.9 | 153 56.4 | - 7 23.7 |
| 12 | 9 57.4 | 145 | 11 53.4 | 93 | 343 27.4 | 16 19.2 | 184 1.7 | - 7 23.6 |
| 14 | 39 4.5 | 145 | 12 12.1 | 92 | 131 32.1 | 16 19.6 | 214 7.0 | - 7 23.5 |
| 16 | 68 11.5 | 144 | 12 30.5 | 91 | 43 34.9 | 16 19.9 | 244 12.3 | - 7 23.3 |
| 18 | 97 18.4 | 144 | 12 48.8 | 90 | 73 38.7 | 16 20.2 | 274 17.6 | - 7 23.2 |
| 20 | 126 25.1 | 143 | 13 6.8 | 89 | 103 42.5 | 16 20.6 | 304 22.9 | - 7 23.0 |
| 22 | 155 31.8 | 143 | 13 24.6 | 88 | 133 46.2 | 16 20.9 | 334 28.2 | - 7 22.9 |
| Δ | 1 | 8 | | | 19 | 2 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 1 3.3 | .5 | 15.9 | T _{m̄} | 11 19 | 1.8 | 54.2 | 14.8 | |
| 12 | 1 9.4 | T _{m̄} | 11 h 58.8 min | Starost | 28.4 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | Vel. |
| ♀ | 14 52 | .1 | 288 | -5.4 | 4 | 13 6 | .0 | 315 | -1.6 |
| ♂ | 20 30 | .1 | 203 | -5 | h | 23 42 | .0 | 155 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 184 38.3 | 142 | 13 42.1 | 87 | 163 50.0 | 16 21.2 | 4 33.5 | - 7 22.8 |
| 2 | 213 44.7 | 141 | 13 59.5 | 85 | 193 53.7 | 16 21.6 | 34 38.7 | - 7 22.6 |
| 4 | 242 51.0 | 141 | 14 16.5 | 84 | 223 57.5 | 16 21.9 | 64 44.0 | - 7 22.5 |
| 6 | 271 57.1 | 140 | 14 33.4 | 83 | 254 1.3 | 16 22.2 | 94 49.3 | - 7 22.4 |
| 8 | 301 3.2 | 139 | 14 50.0 | 82 | 284 5.0 | 16 22.6 | 124 54.6 | - 7 22.2 |
| 10 | 330 9.0 | 139 | 15 6.3 | 80 | 314 8.8 | 16 22.9 | 154 59.9 | - 7 22.1 |
| 12 | 359 14.8 | 138 | 15 22.3 | 79 | 344 12.6 | 16 23.2 | 185 5.2 | - 7 22.0 |
| 14 | 28 20.4 | 137 | 15 38.1 | 78 | 14 16.3 | 16 23.6 | 215 10.5 | - 7 21.8 |
| 16 | 57 25.9 | 137 | 15 53.7 | 76 | 44 20.1 | 16 23.9 | 245 15.8 | - 7 21.7 |
| 18 | 86 31.3 | 136 | 16 8.9 | 75 | 74 23.9 | 16 24.2 | 275 21.0 | - 7 21.6 |
| 20 | 115 36.5 | 135 | 16 23.9 | 73 | 104 27.6 | 16 24.5 | 305 26.3 | - 7 21.4 |
| 22 | 144 41.6 | 135 | 16 38.5 | 72 | 134 31.4 | 16 24.9 | 335 31.6 | - 7 21.3 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 1 15.5 | .5 | 15.9 | T _{m̄} | 12 3 | 1.9 | 54.1 | 14.7 | |
| 12 | 1 21.4 | T _{m̄} | 11 h 58.6 min | Starost | 29.4 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | Vel. |
| ♀ | 14 51 | .1 | 288 | -5.4 | 4 | 13 3 | .0 | 314 | -1.6 |
| ♂ | 20 26 | .1 | 203 | -5 | h | 23 38 | .0 | 155 | .4 |

22. APRIL

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 21.8 | 12 15.6 | 210 26.9 | 137 21.3 | 27 8.5 | 53 37.0 | 12 17.0 | |
| 2 | 210 22.0 | 12 17.3 | 240 31.8 | 167 22.5 | 27 9.1 | 83 41.6 | 12 16.6 | |
| 4 | 240 22.3 | 12 19.0 | 270 36.8 | 197 23.6 | 27 9.6 | 113 46.2 | 12 16.2 | |
| 6 | 270 22.5 | 12 20.7 | 300 41.7 | 227 24.8 | 27 10.1 | 143 50.7 | 12 15.9 | |
| 8 | 300 22.7 | 12 22.3 | 330 46.6 | 257 26.0 | 27 10.7 | 173 55.3 | 12 15.5 | |
| 10 | 330 23.0 | 12 24.0 | 0 51.6 | 287 27.2 | 27 11.2 | 203 59.8 | 12 15.2 | |
| 12 | 0 23.2 | 12 25.7 | 30 56.5 | 317 28.4 | 27 11.7 | 234 4.4 | 12 14.8 | |
| 14 | 30 23.5 | 12 27.3 | 61 1.4 | 347 29.7 | 27 12.2 | 264 8.9 | 12 14.4 | |
| 16 | 60 23.7 | 12 29.0 | 91 6.3 | 17 30.9 | 27 12.7 | 294 13.4 | 12 14.1 | |
| 18 | 90 23.9 | 12 30.7 | 121 11.3 | 47 32.1 | 27 13.2 | 324 17.9 | 12 13.7 | |
| 20 | 120 24.2 | 12 32.3 | 151 16.2 | 77 33.4 | 27 13.7 | 354 22.5 | 12 13.3 | |
| 22 | 150 24.4 | 12 34.0 | 181 21.1 | 107 34.6 | 27 14.2 | 24 27.0 | 12 12.9 | |
| Δ | 1 | 8 | | 6 | 3 | 23 | -2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|--|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | |
| 60 | 4 22 | 19 36 | 0 49 | : :: | 4 23 | 1 0 | 21 32 | 2 8 | | |
| 55 | 4 39 | 19 19 | 0 41 | 2 42 | 4 48 | 1 2 | 21 2 | 2 6 | | |
| 50 | 4 53 | 19 5 | 0 35 | 2 10 | 5 7 | 1 4 | 20 40 | 2 4 | | |
| 45 | 5 3 | 18 55 | 0 31 | 1 52 | 5 22 | 1 5 | 20 23 | 2 4 | | |
| 40 | 5 12 | 18 46 | 0 29 | 1 40 | 5 34 | 1 5 | 20 9 | 2 3 | | |
| 35 | 5 19 | 18 38 | 0 27 | 1 31 | 5 45 | 1 6 | 19 57 | 2 2 | | |
| 30 | 5 26 | 18 32 | 0 25 | 1 25 | 5 54 | 1 7 | 19 47 | 2 2 | | |
| 20 | 5 37 | 18 21 | 0 23 | 1 17 | 6 10 | 1 8 | 19 29 | 2 1 | | |
| 10 | 5 46 | 18 11 | 0 22 | 1 12 | 6 24 | 1 9 | 19 14 | 2 0 | | |
| 0 | 5 55 | 18 2 | 0 21 | 1 10 | 6 37 | 1 9 | 18 60 | 2 0 | | |
| 10 | 6 4 | 17 53 | 0 21 | 1 11 | 6 51 | 2 0 | 18 46 | 1 9 | | |
| 20 | 6 13 | 17 44 | 0 22 | 1 14 | 7 5 | 2 1 | 18 30 | 1 8 | | |
| 30 | 6 24 | 17 33 | 0 24 | 1 20 | 7 21 | 2 2 | 18 13 | 1 8 | | |
| 35 | 6 30 | 17 27 | 0 26 | 1 25 | 7 31 | 2 3 | 18 3 | 1 7 | | |
| 40 | 6 36 | 17 20 | 0 28 | 1 31 | 7 42 | 2 3 | 17 51 | 1 6 | | |
| 45 | 6 44 | 17 12 | 0 30 | 1 38 | 7 55 | 2 4 | 17 38 | 1 6 | | |
| 50 | 6 54 | 17 3 | 0 33 | 1 48 | 8 11 | 2 5 | 17 21 | 1 5 | | |
| 55 | 7 5 | 16 51 | 0 38 | 2 2 | 8 31 | 2 7 | 16 60 | 1 3 | | |
| 60 | 7 20 | 16 36 | 0 44 | 2 20 | 8 58 | 2 9 | 16 31 | 1 1 | | |
| S | | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|--|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 173 46.6 | 134 16 52.9 | 70 | 164 35.1 | 16 25.2 | 5 36.9 | - 7 21.2 | | |
| 2 | 202 51.4 | 133 17 7.0 | 69 | 194 38.9 | 16 25.5 | 35 42.2 | - 7 21.0 | | |
| 4 | 231 56.0 | 133 17 20.8 | 67 | 224 42.7 | 16 25.9 | 65 47.5 | - 7 20.9 | | |
| 6 | 261 | - 6 132 | 17 34.3 | 66 | 254 46.4 | 16 26.2 | 95 52.8 | - 7 20.8 | |
| 8 | 290 | 50.0 | 131 17 47.5 | 64 | 284 50.2 | 16 26.5 | 125 58.1 | - 7 20.6 | |
| 10 | 319 | 9.2 | 131 18 .4 | 63 | 314 54.0 | 16 26.9 | 156 3.3 | - 7 20.5 | |
| 12 | 348 | 13.3 | 130 18 12.9 | 61 | 344 57.7 | 16 27.2 | 186 8.6 | - 7 20.3 | |
| 14 | 17 | 17.3 | 129 18 25.1 | 60 | 15 1.5 | 16 27.5 | 216 13.9 | - 7 20.2 | |
| 16 | 46 | 21.1 | 128 18 37.0 | 58 | 45 5.2 | 16 27.9 | 246 19.2 | - 7 20.1 | |
| 18 | 75 | 24.8 | 128 18 48.6 | 56 | 75 9.0 | 16 28.2 | 276 24.5 | - 7 19.9 | |
| 20 | 104 | 28.4 | 127 18 59.8 | 54 | 105 12.8 | 16 28.5 | 306 29.8 | - 7 19.8 | |
| 22 | 133 | 31.8 | 126 19 10.7 | 53 | 135 16.5 | 16 28.9 | 336 35.1 | - 7 19.7 | |
| Δ | 1 | 8 | | 7 | 2 | 22 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 1 27.3 | .5 | 15.9 | T _{m̄} | 12 49 | 2.0 | 54.0 | 14.7 |
| 12 | 1 33.0 | T _{m̄} | 11 h 58.5 min | Starost | 7 d | Faza ● | | |

PLANETE

| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| ♀ | 14 50 | .1 | 287 | -5.5 | 4 | 13 0 | .0 | 314 | -1.6 |
| ♂ | 20 22 | .1 | 203 | -5.5 | h | 23 33 | .0 | 155 | .4 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|--|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 162 35.1 | 126 19 21.3 | 51 | 165 20.3 | 16 29.2 | 6 40.3 | - 7 19.5 | | |
| 2 | 191 38.3 | 125 19 31.5 | 49 | 195 24.0 | 16 29.5 | 36 45.6 | - 7 19.4 | | |
| 4 | 220 41.3 | 125 19 41.3 | 48 | 225 27.8 | 16 29.8 | 66 50.9 | - 7 19.3 | | |
| 6 | 249 44.2 | 124 19 50.8 | 46 | 255 31.5 | 16 30.2 | 96 56.2 | - 7 19.1 | | |
| 8 | 278 | 47.0 | 123 20 .0 | 44 | 285 35.3 | 16 30.5 | 127 1.5 | - 7 19.0 | |
| 10 | 307 49.6 | 123 20 8.7 | 42 | 315 39.1 | 16 30.8 | 157 6.8 | - 7 18.9 | | |
| 12 | 336 52.2 | 122 20 17.1 | 40 | 345 42.8 | 16 31.2 | 187 12.1 | - 7 18.7 | | |
| 14 | 5 54.6 | 121 20 25.2 | 38 | 15 46.6 | 16 31.5 | 217 17.3 | - 7 18.6 | | |
| 16 | 34 56.9 | 121 20 32.9 | 37 | 45 50.3 | 16 31.8 | 247 22.6 | - 7 18.5 | | |
| 18 | 63 59.0 | 120 20 40.2 | 35 | 75 54.1 | 16 32.2 | 277 27.9 | - 7 18.3 | | |
| 20 | 93 1.1 | 120 20 47.1 | 33 | 105 57.9 | 16 32.5 | 307 33.2 | - 7 18.2 | | |
| 22 | 122 3.1 | 119 20 53.6 | 31 | 136 1.6 | 16 32.8 | 337 38.5 | - 7 18.1 | | |
| Δ | 19 | 2 | | 26 | 1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 1 38.7 | .5 | 15.9 | T _{m̄} | 13 36 | 2.0 | 54.0 | 14.7 |
| 12 | 1 44.1 | T _{m̄} | 11 h 58.3 min | Starost | 7 d | Faza ● | | |

| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| | | | | | | | | | |
| ♀ | 14 49 | .1 | 286 | -5.5 | 4 | 12 57 | .0 | 314 | -1.6 |
| ♂ | 20 19 | .1 | 203 | -5.5 | h | 23 29 | .0 | 155 | .4 |

24. APRIL

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 | 27.3 | 12 | 55.5 | 212 | 25.2 | 137 | 51.6 |
| 2 | 210 | 27.6 | 12 | 57.1 | 242 | 30.1 | 167 | 53.0 |
| 4 | 240 | 27.8 | 12 | 58.8 | 272 | 35.0 | 197 | 54.4 |
| 6 | 270 | 28.0 | 13 | .4 | 302 | 40.0 | 227 | 55.8 |
| 8 | 300 | 28.2 | 13 | 2.1 | 332 | 44.9 | 257 | 57.2 |
| 10 | 330 | 28.4 | 13 | 3.7 | 249.8 | 49.8 | 287 | 58.6 |
| 12 | 0 | 28.7 | 13 | 5.3 | 32 | 54.8 | 317 | 60.0 |
| 14 | 30 | 28.9 | 13 | 7.0 | 153 | 14.5 | 348 | 1.4 |
| 16 | 60 | 29.1 | 13 | 8.6 | 93 | 4.6 | 18 | 2.8 |
| 18 | 90 | 29.3 | 13 | 10.2 | 123 | 9.5 | 48 | 4.3 |
| 20 | 120 | 29.5 | 13 | 11.9 | 153 | 14.5 | 78 | 5.7 |
| 22 | 150 | 29.7 | 13 | 13.5 | 183 | 19.4 | 108 | 7.2 |
| Δ | 1 | 8 | | | | | 7 | 2 |
| | | | | | | | 22 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 16 | 19 41 | 0 50 | : :: | 5 18 | 1.8 | 23 35 | 1.9 |
| 55 | 4 35 | 19 23 | 0 41 | 2 46 | 5 53 | 1.9 | 22 58 | 2.0 |
| 50 | 4 49 | 19 8 | 0 36 | 2 12 | 6 18 | 1.9 | 22 32 | 2.0 |
| 45 | 4 60 | 18 57 | 0 32 | 1 53 | 6 37 | 1.9 | 22 12 | 2.0 |
| 40 | 5 9 | 18 48 | 0 29 | 1 41 | 6 53 | 2.0 | 21 56 | 2.0 |
| 35 | 5 17 | 18 40 | 0 27 | 1 32 | 7 7 | 2.0 | 21 42 | 2.0 |
| 30 | 5 24 | 18 33 | 0 25 | 1 25 | 7 18 | 2.0 | 21 30 | 2.0 |
| 20 | 5 35 | 18 21 | 0 23 | 1 17 | 7 38 | 2.0 | 21 10 | 2.0 |
| 10 | 5 45 | 18 11 | 0 22 | 1 12 | 7 56 | 2.0 | 20 52 | 2.0 |
| 0 | 5 55 | 18 1 | 0 21 | 1 11 | 8 12 | 2.0 | 20 36 | 2.0 |
| 10 | 6 6 | 17 52 | 0 22 | 1 11 | 8 28 | 2.0 | 20 19 | 2.0 |
| 20 | 6 14 | 17 42 | 0 23 | 1 14 | 8 46 | 2.1 | 20 1 | 2.1 |
| 30 | 6 25 | 17 31 | 0 25 | 1 21 | 9 6 | 2.1 | 19 41 | 2.1 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 151 | 4.9 | 119 | 20 | 59.8 | 29 | 166 | 5.4 |
| 2 | 180 | 6.7 | 118 | 21 | 5.5 | 27 | 196 | 9.1 |
| 4 | 209 | 8.3 | 118 | 21 | 10.9 | 25 | 226 | 12.9 |
| 6 | 238 | 9.9 | 117 | 21 | 15.9 | 23 | 256 | 16.6 |
| 8 | 267 | 11.3 | 117 | 21 | 20.5 | 21 | 286 | 20.4 |
| 10 | 296 | 12.7 | 116 | 21 | 24.7 | 19 | 316 | 24.1 |
| 12 | 325 | 14.0 | 116 | 21 | 28.5 | 17 | 346 | 27.9 |
| 14 | 354 | 15.2 | 116 | 21 | 31.9 | 15 | 16 31.7 | 16 35.4 |
| 16 | 23 | 16.3 | 115 | 21 | 34.9 | 13 | 46 35.4 | 16 35.8 |
| 18 | 52 | 17.4 | 115 | 21 | 37.4 | 11 | 76 39.2 | 16 36.1 |
| 20 | 81 | 18.4 | 115 | 21 | 39.6 | 9 | 106 42.9 | 16 36.4 |
| 22 | 110 | 19.3 | 114 | 21 | 41.4 | 7 | 136 46.7 | 16 36.8 |
| Δ | 1 | 8 | | | | | 19 | 2 |
| | | | | | | | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t' | |
| h | min | s | / | h | min | min | / | |
| 00 | 1 49.5 | .4 | 15.9 | T _{m̄} | 14 24 | 2.0 | 54.0 | 14.7 |
| 12 | 1 54.7 | T _{m̄} | 11 h 58.1 min | Starost | 2.7 d | Faza | ● | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| h | min | / | ° | Vel. | h | min | / | ° |
| ♀ | 14 48 | .1 | 285 | -5.5 | 4 | 12 54 | .0 | 314 |
| ♂ | 20 15 | .1 | 203 | -5.5 | h | 23 25 | .0 | 155 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 | 29.9 | 13 | 15.1 | 213 | 24.3 | 138 | 8.6 |
| 2 | 210 | 30.2 | 13 | 16.7 | 243 | 29.3 | 168 | 10.1 |
| 4 | 240 | 30.4 | 13 | 18.4 | 273 | 34.2 | 198 | 11.6 |
| 6 | 270 | 30.6 | 13 | 20.0 | 303 | 39.1 | 228 | 13.1 |
| 8 | 300 | 30.8 | 13 | 21.6 | 333 | 44.0 | 258 | 14.6 |
| 10 | 330 | 31.0 | 13 | 23.2 | 349.0 | 288 | 16.1 | 27 27.5 |
| 12 | 0 | 31.2 | 13 | 24.9 | 33 | 53.9 | 318 | 17.6 |
| 14 | 30 | 31.4 | 13 | 26.5 | 63 | 58.8 | 348 | 19.2 |
| 16 | 60 | 31.6 | 13 | 28.1 | 94 | 3.8 | 18 20.7 | 27 28.7 |
| 18 | 90 | 31.8 | 13 | 29.7 | 124 | 8.7 | 48 22.3 | 27 29.1 |
| 20 | 120 | 32.0 | 13 | 31.3 | 154 | 13.6 | 78 23.8 | 27 29.5 |
| 22 | 150 | 32.2 | 13 | 32.9 | 184 | 18.5 | 108 25.4 | 27 29.8 |
| Δ | 1 | 8 | | | | | 8 | 2 |
| | | | | | | | 22 | -2 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t' | |
| h | min | s | / | h | min | min | / | |
| 00 | 1 59.9 | .4 | 15.9 | T _{m̄} | 15 13 | 2.0 | 54.2 | 14.8 |
| 12 | 2 4.9 | T _{m̄} | 11 h 57.9 min | Starost | 3.7 d | Faza | ● | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| h | min | / | ° | Vel. | h | min | / | ° |
| ♀ | 14 47 | .1 | 285 | -5.6 | 4 | 12 51 | .0 | 313 |
| ♂ | 20 12 | .1 | 203 | -5.6 | h | 23 21 | .0 | 155 |

| UT | MJESEC | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / |
| 0 | 139 | 20.2 | 114 | 21 | 42.7 | 5 |
| 2 | 168 | 21.0 | 114 | 21 | 43.7 | 3 |
| 4 | 197 | 21.7 | 114 | 21 | 44.2 | 1 |
| 6 | 226 | 22.4 | 113 | 21 | 44.4 | -1 |
| 8 | 255 | 23.1 | 113 | 21 | 44.1 | -3 |
| 10 | 284 | 23.7 | 113 | 21 | 43.4 | -6 |
| 12 | 313 | 24.3 | 113 | 21 | 42.3 | -8 |
| 14 | 342 | 24.9 | 113 | 21 | 40.7 | -10 |
| 16 | 11 | 25.4 | 113 | 21 | 38.8 | -12 |
| 18 | 40 | 25.9 | 112 | 21 | 36.4 | -14 |
| 20 | 69 | 26.4 | 112 | 21 | 33.6 | -16 |
| 22 | 98 | 26.8 | 112 | 21 | 30.4 | -18 |
| Δ | 1 | 8 | | | | |
| | | | | | 19 | 2 |
| | | | | | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t' | |
| h | min | s | / | h | min | min | / | |
| 00 | 1 59.9 | .4 | 15.9 | T _{m̄} | 15 13 | 2.0 | 54.2 | 14.8 |
| 12 | 2 4.9 | T _{m̄} | 11 h 57.9 min | Starost | 3.7 d | Faza | ● | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| h | min | / | ° | Vel. | h | min | /</ | |

26. APRIL

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 32.4 | 13 34.5 | 214 23.5 | 138 27.0 | 27 30.2 | 57 11.1 | 11 58.1 |
| 2 | 210 32.6 | 13 36.1 | 244 28.4 | 168 28.5 | 27 30.6 | 87 15.5 | 11 57.7 |
| 4 | 240 32.8 | 13 37.7 | 274 33.3 | 198 30.1 | 27 30.9 | 117 19.9 | 11 57.2 |
| 6 | 270 33.0 | 13 39.3 | 304 38.3 | 228 31.7 | 27 31.3 | 147 24.2 | 11 56.8 |
| 8 | 300 33.2 | 13 40.9 | 334 43.2 | 258 33.4 | 27 31.6 | 177 28.5 | 11 56.4 |
| 10 | 330 33.4 | 13 42.5 | 4 48.1 | 288 35.0 | 27 32.0 | 207 32.9 | 11 55.9 |
| 12 | 0 33.6 | 13 44.1 | 34 53.0 | 318 36.6 | 27 32.3 | 237 37.2 | 11 55.5 |
| 14 | 30 33.8 | 13 45.7 | 64 58.0 | 348 38.3 | 27 32.7 | 267 41.6 | 11 55.0 |
| 16 | 60 34.0 | 13 47.3 | 95 2.9 | 18 39.9 | 27 33.0 | 297 45.9 | 11 54.6 |
| 18 | 90 34.2 | 13 48.9 | 125 7.8 | 48 41.6 | 27 33.4 | 327 50.2 | 11 54.2 |
| 20 | 120 34.4 | 13 50.5 | 155 12.8 | 78 43.3 | 27 33.7 | 357 54.5 | 11 53.7 |
| 22 | 150 34.6 | 13 52.1 | 185 17.7 | 108 44.9 | 27 34.0 | 27 58.8 | 11 53.3 |
| Δ | 1 | 8 | | 8 | 2 | 22 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 11 | 19 46 | 0 51 | : | : | 6 56 | 2.8 | 0 21 | 1.5 |
| 55 | 4 30 | 19 26 | 0 42 | 2 52 | 7 32 | 2.6 | ... | 0 | ... |
| 50 | 4 45 | 19 12 | 0 36 | 2 15 | 7 57 | 2.5 | ... | 0 | ... |
| 45 | 4 57 | 18 60 | 0 32 | 1 55 | 8 16 | 2.4 | 23 43 | 1.6 | |
| 40 | 5 6 | 18 50 | 0 29 | 1 42 | 8 32 | 2.3 | 23 28 | 1.7 | |
| 35 | 5 14 | 18 42 | 0 27 | 1 33 | 8 45 | 2.3 | 23 16 | 1.7 | |
| 30 | 5 22 | 18 34 | 0 25 | 1 26 | 8 57 | 2.2 | 23 5 | 1.8 | |
| 20 | 5 34 | 18 22 | 0 23 | 1 17 | 9 17 | 2.2 | 22 46 | 1.9 | |
| 10 | 5 44 | 18 11 | 0 22 | 1 13 | 9 34 | 2.1 | 22 29 | 2.0 | |
| 0 | 5 54 | 18 1 | 0 21 | 1 11 | 9 50 | 2.0 | 22 14 | 2.0 | |
| 10 | 6 4 | 17 51 | 0 22 | 1 11 | 10 6 | 2.0 | 21 58 | 2.1 | |
| 20 | 6 14 | 17 41 | 0 23 | 1 15 | 10 23 | 1.9 | 21 42 | 2.2 | |
| 30 | 6 26 | 17 29 | 0 25 | 1 21 | 10 43 | 1.8 | 21 23 | 2.3 | |
| 35 | 6 33 | 17 22 | 0 26 | 1 25 | 10 55 | 1.8 | 21 11 | 2.4 | |
| 40 | 6 40 | 17 15 | 0 28 | 1 31 | 11 8 | 1.7 | 20 59 | 2.4 | |
| 45 | 6 49 | 17 6 | 0 30 | 1 39 | 11 24 | 1.7 | 20 43 | 2.5 | |
| 50 | 6 60 | 16 55 | 0 34 | 1 49 | 11 43 | 1.6 | 20 24 | 2.6 | |
| 55 | 7 13 | 16 42 | 0 38 | 2 3 | 12 8 | 1.5 | 20 0 | 2.7 | |
| 60 | 7 30 | 16 25 | 0 45 | 2 22 | 12 42 | 1.3 | 19 26 | 3.0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-----|---------------|-----|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 127 27.3 | 112 | 21 26.8 | -20 | 167 35.5 | 16 41.0 | 9 50.5 | -7 14.8 |
| 2 | 156 27.7 | 112 | 21 22.8 | -22 | 197 39.2 | 16 41.4 | 39 55.8 | -7 14.7 |
| 4 | 185 28.2 | 112 | 21 18.3 | -24 | 227 43.0 | 16 41.7 | 70 1.1 | -7 14.5 |
| 6 | 214 28.6 | 112 | 21 13.5 | -26 | 257 46.7 | 16 42.0 | 100 6.4 | -7 14.4 |
| 8 | 243 29.1 | 112 | 21 8.2 | -28 | 287 50.5 | 16 42.3 | 130 11.7 | -7 14.3 |
| 10 | 272 29.5 | 112 | 21 2.5 | -30 | 317 54.2 | 16 42.7 | 160 16.9 | -7 14.1 |
| 12 | 301 30.0 | 112 | 20 56.4 | -33 | 347 58.0 | 16 43.0 | 190 22.2 | -7 14.0 |
| 14 | 330 30.5 | 112 | 20 49.9 | -35 | 18 1.7 | 16 43.3 | 220 27.5 | -7 13.9 |
| 16 | 359 30.9 | 113 | 20 43.0 | -37 | 48 5.5 | 16 43.6 | 250 32.8 | -7 13.7 |
| 18 | 28 31.5 | 113 | 20 35.6 | -39 | 78 9.2 | 16 44.0 | 280 38.1 | -7 13.6 |
| 20 | 57 32.0 | 113 | 20 27.9 | -41 | 108 13.0 | 16 44.3 | 310 43.3 | -7 13.5 |
| 22 | 86 32.5 | 113 | 20 19.7 | -43 | 138 16.7 | 16 44.6 | 340 48.6 | -7 13.4 |
| Δ | 1 | 8 | | | 19 | 2 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|--------|-----------------|--------------------|-----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _z | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 2 9.9 | .4 | 15.9 | T _{m̄} | 16 | 2 | 2.0 | 54.6 14.9 |
| 12 | 2 14.6 | T _{m̄} | 11 h 57.8 min | Starost | 4.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-z} | Vel. | Pl. | T _{m̄} | π _{360-z} | Vel. |
| h min / | o | / | h min | / | h min | / | o | / |
| 0 | 14 45 | .1 | 284 | -5.6 | 4 | 12 48 | .0 | 313 -1.6 |
| ○ | 20 8 | .1 | 203 | -4 | h | 23 17 | .0 | 155 -.5 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-----|---------------|-----|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 115 33.1 | 113 | 20 11.2 | -45 | 168 20.5 | 16 44.9 | 10 53.9 | -7 13.2 |
| 2 | 144 33.7 | 113 | 20 2.2 | -47 | 198 24.2 | 16 45.3 | 40 59.2 | -7 13.1 |
| 4 | 173 34.4 | 113 | 19 52.9 | -49 | 228 28.0 | 16 45.6 | 71 4.5 | -7 13.0 |
| 6 | 202 35.0 | 114 | 19 43.1 | -51 | 258 31.7 | 16 45.9 | 101 9.7 | -7 12.8 |
| 8 | 231 35.7 | 114 | 19 33.0 | -53 | 288 35.5 | 16 46.3 | 131 15.0 | -7 12.7 |
| 10 | 260 36.5 | 114 | 19 22.4 | -55 | 318 39.2 | 16 46.6 | 161 20.3 | -7 12.6 |
| 12 | 289 37.3 | 114 | 19 11.5 | -57 | 348 43.0 | 16 46.9 | 191 25.6 | -7 12.4 |
| 14 | 318 38.1 | 114 | 19 .2 | -59 | 18 46.7 | 16 47.2 | 221 30.8 | -7 12.3 |
| 16 | 347 38.9 | 114 | 18 48.4 | -60 | 48 50.5 | 16 47.6 | 251 36.1 | -7 12.2 |
| 18 | 16 39.8 | 115 | 18 36.3 | -62 | 78 54.2 | 16 47.9 | 281 41.4 | -7 12.1 |
| 20 | 45 40.8 | 115 | 18 23.9 | -64 | 108 57.9 | 16 48.2 | 311 46.7 | -7 11.9 |
| 22 | 74 41.8 | 115 | 18 11.0 | -66 | 139 1.7 | 16 48.5 | 341 52.0 | -7 11.8 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|--------|-----------------|--------------------|-----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _z | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 2 19.3 | .4 | 15.9 | T _{m̄} | 16 | 51 | 2.0 | 55.0 15.0 |
| 12 | 2 23.8 | T _{m̄} | 11 h 57.6 min | Starost | 5.7 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-z} | Vel. | Pl. | T _{m̄} | π _{360-z} | Vel. |
| h min / | o | / | h min | / | h min | / | o | / |
| 0 | 14 44 | .1 | 283 | -5.6 | 4 | 12 45 | .0 | 313 -1.6 |
| ○ | 20 5 | .1 | 203 | -4 | h | 23 12 | .0 | 156 -.5 |

28. APRIL

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 37.0 | 14 12.7 | 216 21.7 | 139 7.7 | 27 38.0 | 58 54.6 | 11 47.4 |
| 2 | 210 37.2 | 14 14.2 | 246 26.7 | 169 9.6 | 27 38.3 | 88 58.8 | 11 46.9 |
| 4 | 240 37.4 | 14 15.8 | 276 31.6 | 199 11.4 | 27 38.5 | 119 3.1 | 11 46.4 |
| 6 | 270 37.6 | 14 17.4 | 306 36.5 | 229 13.2 | 27 38.8 | 149 7.3 | 11 46.0 |
| 8 | 300 37.7 | 14 18.9 | 336 41.5 | 259 15.1 | 27 39.1 | 179 11.6 | 11 45.5 |
| 10 | 330 37.9 | 14 20.5 | 6 46.4 | 289 17.0 | 27 39.3 | 209 15.8 | 11 45.0 |
| 12 | 0 38.1 | 14 22.0 | 36 51.3 | 319 18.8 | 27 39.6 | 239 20.1 | 11 44.6 |
| 14 | 30 38.3 | 14 23.6 | 66 56.2 | 349 20.7 | 27 39.9 | 269 24.3 | 11 44.1 |
| 16 | 60 38.5 | 14 25.2 | 97 1.2 | 19 22.6 | 27 40.1 | 299 28.5 | 11 43.6 |
| 18 | 90 38.6 | 14 26.7 | 127 6.1 | 49 24.5 | 27 40.4 | 329 32.8 | 11 43.1 |
| 20 | 120 38.8 | 14 28.3 | 157 11.0 | 79 26.5 | 27 40.6 | 359 37.0 | 11 42.7 |
| 22 | 150 39.0 | 14 29.8 | 187 16.0 | 109 28.4 | 27 40.9 | 29 41.2 | 11 42.2 |
| Δ | 1 | 8 | | 9 | 1 | 21 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 5 | 19 51 | 0 52 | : :: | 9 18 | 3.3 | 1 22 | .8 | |
| 55 | 4 26 | 19 30 | 0 42 | 2 58 | 9 43 | 3.1 | 0 56 | 1.1 | |
| 50 | 4 41 | 19 15 | 0 36 | 2 17 | 10 1 | 2.9 | 0 36 | 1.3 | |
| 45 | 4 53 | 19 2 | 0 32 | 1 56 | 10 16 | 2.7 | 0 21 | 1.4 | |
| 40 | 5 4 | 18 52 | 0 29 | 1 43 | 10 28 | 2.6 | 0 8 | 1.5 | |
| 35 | 5 12 | 18 43 | 0 27 | 1 33 | 10 38 | 2.5 | ... . | 0 | |
| 30 | 5 20 | 18 36 | 0 25 | 1 26 | 10 47 | 2.4 | ... . | 0 | |
| 20 | 5 33 | 18 23 | 0 23 | 1 18 | 11 2 | 2.3 | ... . | 0 | |
| 10 | 5 44 | 18 11 | 0 22 | 1 13 | 11 16 | 2.1 | ... . | 0 | |
| 0 | 5 54 | 18 1 | 0 21 | 1 11 | 11 28 | 2.0 | 23 51 | 2.0 | |
| 10 | 6 4 | 17 51 | 0 22 | 1 12 | 11 41 | 1.9 | 23 40 | 2.1 | |
| 20 | 6 15 | 17 40 | 0 23 | 1 15 | 11 54 | 1.8 | 23 28 | 2.3 | |
| 30 | 6 27 | 17 27 | 0 25 | 1 21 | 12 9 | 1.6 | 23 15 | 2.4 | |
| 35 | 6 34 | 17 20 | 0 26 | 1 26 | 12 18 | 1.5 | 23 7 | 2.5 | |
| 40 | 6 42 | 17 12 | 0 28 | 1 32 | 12 28 | 1.4 | 22 57 | 2.6 | |
| 45 | 6 52 | 17 3 | 0 31 | 1 39 | 12 39 | 1.3 | 22 47 | 2.8 | |
| 50 | 7 3 | 16 52 | 0 34 | 1 49 | 12 53 | 1.2 | 22 34 | 2.9 | |
| 55 | 7 17 | 16 38 | 0 38 | 2 3 | 13 11 | 1.0 | 22 17 | 3.1 | |
| 60 | 7 35 | 16 19 | 0 45 | 2 22 | 13 35 | .7 | 21 55 | 3.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | SATURN | | |
|----------|-----------|----------|---------------|-------------|-----------------|----------|--------------|---------|
| | S ζ | Δ | $\delta\zeta$ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 103 42.8 | 115 | 17 57.8 | -68 | 169 5.4 | 16 48.9 | 11 57.2 | -7 11.7 |
| 2 | 132 43.9 | 116 | 17 44.1 | -70 | 199 9.2 | 16 49.2 | 42 2.5 | -7 11.5 |
| 4 | 161 45.0 | 116 | 17 30.2 | -72 | 229 12.9 | 16 49.5 | 72 7.8 | -7 11.4 |
| 6 | 190 46.1 | 116 | 17 15.8 | -74 | 259 16.7 | 16 49.8 | 102 13.1 | -7 11.3 |
| 8 | 219 47.3 | 116 | 17 1.1 | -75 | 289 20.4 | 16 50.2 | 132 18.3 | -7 11.2 |
| 10 | 248 48.5 | 116 | 16 46.0 | -77 | 319 24.2 | 16 50.5 | 162 23.6 | -7 11.0 |
| 12 | 277 49.8 | 117 | 16 30.6 | -79 | 349 27.9 | 16 50.8 | 192 28.9 | -7 10.9 |
| 14 | 306 51.1 | 117 | 16 14.8 | -81 | 19 31.7 | 16 51.1 | 222 34.2 | -7 10.8 |
| 16 | 335 52.5 | 117 | 15 58.7 | -82 | 49 35.4 | 16 51.5 | 252 39.4 | -7 10.7 |
| 18 | 4 53.9 | 117 | 15 42.2 | -84 | 79 39.2 | 16 51.8 | 282 44.7 | -7 10.5 |
| 20 | 33 55.3 | 117 | 15 25.4 | -86 | 109 42.9 | 16 52.1 | 312 50.0 | -7 10.4 |
| 22 | 62 56.7 | 117 | 15 8.2 | -87 | 139 46.6 | 16 52.4 | 342 55.3 | -7 10.3 |
| Δ | 1 | 8 | | | 10 | 1 | 26 | 1 |

| UT | SUNCE | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|---------------|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' |
| h min s | s | / | h min | min | / | / | / |
| 00 | 2 28.3 | .4 | 15.9 | T _{m̄} | 17 40 | 2.0 | 55.6 15.1 |
| 12 | 2 32.5 | T _{m̄} | 11 h 57.5 min | Starost | 6.7 d | Faza | 0 |

| PLANETE | | | | | | | | | |
|---------|-----------------|-------|-------------|-------|-----|-----------------|-------|-------------|-------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | h min |
| Q | 14 43 | .1 | 283 | -5.7 | 4 | 12 42 | .0 | 313 | -1.6 |
| O | 19 58 | .1 | 202 | -4 | h | 23 8 | .0 | 156 | .5 |

| UT | MJESEC | | | JUPITER | | SATURN | | |
|----------|-----------|----------|---------------|-------------|-----------------|----------|--------------|---------|
| | S ζ | Δ | $\delta\zeta$ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 91 58.2 | 118 | 14 50.7 | -89 | 169 50.4 | 16 52.7 | 13 5.5 | -7 10.1 |
| 2 | 120 59.7 | 118 | 14 32.9 | -91 | 199 54.1 | 16 53.1 | 43 5.8 | -7 10.0 |
| 4 | 150 1.2 | 118 | 14 14.7 | -92 | 229 57.9 | 16 53.4 | 73 11.1 | -7 9.9 |
| 6 | 179 2.8 | 118 | 13 56.2 | -94 | 260 1.6 | 16 53.7 | 103 16.4 | -7 9.8 |
| 8 | 208 4.4 | 118 | 13 37.4 | -96 | 290 5.4 | 16 54.0 | 133 21.6 | -7 9.6 |
| 10 | 237 6.0 | 118 | 13 18.3 | -97 | 320 9.1 | 16 54.4 | 163 26.9 | -7 9.5 |
| 12 | 266 7.6 | 118 | 12 58.9 | -99 | 350 12.9 | 16 54.7 | 193 32.2 | -7 9.4 |
| 14 | 295 9.2 | 118 | 12 39.2 | -100 | 20 16.6 | 16 55.0 | 223 37.5 | -7 9.3 |
| 16 | 324 10.8 | 118 | 12 19.2 | -102 | 50 20.3 | 16 55.3 | 253 42.7 | -7 9.1 |
| 18 | 353 12.4 | 118 | 11 58.9 | -103 | 80 24.1 | 16 55.7 | 283 48.0 | -7 9.0 |
| 20 | 22 14.1 | 118 | 11 38.3 | -104 | 110 27.8 | 16 56.0 | 313 53.3 | -7 8.9 |
| 22 | 51 15.7 | 118 | 11 17.4 | -106 | 140 31.6 | 16 56.3 | 343 58.5 | -7 8.8 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|---------------|-----------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' |
| h min s | s | / | h min | min | / | / | / |
| 00 | 2 36.8 | .3 | 15.9 | T _{m̄} | 18 28 | 2.0 | 56.3 15.3 |
| 12 | 2 40.7 | T _{m̄} | 11 h 57.3 min | Starost | 7.7 d | Faza | 0 |

| PLANETE | | | | | | | | | |
|---------|-----------------|-------|-------------|-------|-----|-----------------|-------|-------------|-------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | h min |
| Q | 14 41 | .1 | 282 | -5.7 | 4 | 12 39 | .0 | 312 | -1.6 |
| O | 19 58 | .1 | 202 | -4 | h | 23 4 | .0 | 156 | .5 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 41.1 | 14 49.8 | 218 20.0 | 139 54.5 | 27 43.8 | 60 35.7 | 11 35.8 |
| 2 | 210 41.3 | 14 51.4 | 248 25.0 | 169 56.6 | 27 43.9 | 90 39.9 | 11 35.3 |
| 4 | 240 41.5 | 14 52.9 | 278 29.9 | 199 58.7 | 27 44.1 | 120 44.0 | 11 34.8 |
| 6 | 270 41.6 | 14 54.4 | 308 34.8 | 230 .8 | 27 44.3 | 150 48.2 | 11 34.3 |
| 8 | 300 41.8 | 14 55.9 | 338 39.7 | 260 2.9 | 27 44.5 | 180 52.3 | 11 33.8 |
| 10 | 330 41.9 | 14 57.5 | 8 44.7 | 290 5.1 | 27 44.7 | 210 56.5 | 11 33.3 |
| 12 | 0 42.1 | 14 59.0 | 38 49.6 | 320 7.2 | 27 44.9 | 241 .6 | 11 32.8 |
| 14 | 30 42.2 | 15 .5 | 68 54.5 | 350 9.4 | 27 45.1 | 271 4.8 | 11 32.3 |
| 16 | 60 42.4 | 15 2.0 | 98 59.4 | 20 11.5 | 27 45.2 | 301 8.9 | 11 31.8 |
| 18 | 90 42.6 | 15 3.5 | 129 4.4 | 50 13.7 | 27 45.4 | 331 13.0 | 11 31.3 |
| 20 | 120 42.7 | 15 5.0 | 159 9.3 | 80 15.9 | 27 45.6 | 1 17.2 | 11 30.8 |
| 22 | 150 42.8 | 15 6.6 | 189 14.2 | 110 18.1 | 27 45.7 | 31 21.3 | 11 30.3 |
| Δ | 1 | 8 | | 11 | 1 | 21 | -3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 60 | 19 56 | 0 53 | : : | 12 2 | 3.6 | 1 57 | .6 | |
| 55 | 4 21 | 19 34 | 0 43 | 3 6 | 12 13 | 3.3 | 1 44 | .8 | |
| 50 | 4 38 | 19 18 | 0 37 | 2 20 | 12 22 | 3.1 | 1 33 | 1.0 | |
| 45 | 4 50 | 19 5 | 0 32 | 1 57 | 12 29 | 2.9 | 1 24 | 1.2 | |
| 40 | 5 1 | 18 54 | 0 29 | 1 44 | 12 35 | 2.8 | 1 17 | 1.3 | |
| 35 | 5 10 | 18 45 | 0 27 | 1 34 | 12 40 | 2.7 | 1 11 | 1.4 | |
| 30 | 5 18 | 18 37 | 0 25 | 1 27 | 12 44 | 2.5 | 1 6 | 1.5 | |
| 20 | 5 31 | 18 23 | 0 23 | 1 18 | 12 52 | 2.4 | 0 56 | 1.7 | |
| 10 | 5 43 | 18 12 | 0 22 | 1 13 | 12 59 | 2.2 | 0 48 | 1.9 | |
| 0 | 5 54 | 18 1 | 0 21 | 1 11 | 13 5 | 2.0 | 0 40 | 2.0 | |
| 10 | 6 4 | 17 50 | 0 22 | 1 12 | 13 11 | 1.9 | 0 32 | 2.2 | |
| 20 | 6 16 | 17 38 | 0 23 | 1 15 | 13 18 | 1.7 | 0 23 | 2.3 | |
| 30 | 6 29 | 17 25 | 0 25 | 1 21 | 13 25 | 1.5 | 0 13 | 2.5 | |
| 35 | 6 36 | 17 18 | 0 26 | 1 26 | 13 30 | 1.4 | 0 7 | 2.6 | |
| 40 | 6 44 | 17 10 | 0 28 | 1 32 | 13 35 | 1.3 | 0 1 | 2.7 | |
| 45 | 6 54 | 16 60 | 0 31 | 1 40 | 13 40 | 1.2 | ... .. | 0 | |
| 50 | 7 6 | 16 48 | 0 34 | 1 50 | 13 47 | 1.0 | ... .. | 0 | |
| 55 | 7 20 | 16 33 | 0 39 | 2 4 | 13 55 | .8 | ... .. | 0 | |
| 60 | 7 40 | 16 14 | 0 45 | 2 23 | 14 6 | .5 | ... .. | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 80 17.3 | 118 | 10 56.2 | -107 | 170 35.3 | 16 56.6 | 14 3.8 | -7 8.6 |
| 2 | 109 18.9 | 118 | 10 34.8 | -109 | 200 39.1 | 16 56.9 | 44 9.1 | -7 8.5 |
| 4 | 138 20.4 | 118 | 10 13.1 | -110 | 230 42.8 | 16 57.3 | 74 14.4 | -7 8.4 |
| 6 | 167 22.0 | 118 | 9 51.1 | -111 | 260 46.6 | 16 57.6 | 104 19.6 | -7 8.3 |
| 8 | 196 23.5 | 117 | 9 28.9 | -112 | 290 50.3 | 16 57.9 | 134 24.9 | -7 8.1 |
| 10 | 225 25.0 | 117 | 9 6.4 | -114 | 320 54.0 | 16 58.2 | 164 30.2 | -7 8.0 |
| 12 | 254 26.4 | 117 | 8 43.7 | -115 | 350 57.8 | 16 58.6 | 194 35.4 | -7 7.9 |
| 14 | 283 27.8 | 117 | 8 20.8 | -116 | 21 1.5 | 16 58.9 | 224 40.7 | -7 7.8 |
| 16 | 312 29.2 | 116 | 7 57.6 | -117 | 51 5.3 | 16 59.2 | 254 46.0 | -7 7.6 |
| 18 | 341 30.5 | 116 | 7 34.2 | -118 | 81 9.0 | 16 59.5 | 284 51.3 | -7 7.5 |
| 20 | 10 31.7 | 116 | 7 10.5 | -119 | 111 12.7 | 16 59.8 | 314 56.5 | -7 7.4 |
| 22 | 39 32.9 | 115 | 6 46.7 | -120 | 141 16.5 | 17 .2 | 345 1.8 | -7 7.3 |
| Δ | 1 | 7 | | | 19 | 2 | 26 | 1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-------------------------|---------------|-----------------|-------------|-----------------|-----------------|-------|-------------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | T _{m̄} | t' | | | |
| 00 | 2 44.7 | .3 | 15.9 | 19 16 | 2.1 | 57.2 | 15.6 | | | |
| 12 | 2 48.5 | T _{m̄} | 11 h 57.2 min | Starost | 8.7 d | Faza | 0 | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | | | | | h min / | o | | | |
| 0 | 5 54 | 18 1 | 0 21 | 1 11 | 13 54 | 2.1 | 1 28 | 2.1 | | |
| 10 | 6 5 | 17 49 | 0 22 | 1 12 | 13 56 | 1.9 | 1 24 | 2.2 | | |
| 20 | 6 16 | 17 38 | 0 23 | 1 15 | 13 59 | 1.8 | 1 19 | 2.4 | | |
| 30 | 6 29 | 17 25 | 0 25 | 1 21 | 14 2 | 1.6 | 1 13 | 2.6 | | |
| 35 | 6 37 | 17 17 | 0 26 | 1 26 | 14 4 | 1.4 | 1 10 | 2.7 | | |
| 40 | 6 45 | 17 8 | 0 28 | 1 32 | 14 6 | 1.3 | 1 7 | 2.8 | | |
| 45 | 6 55 | 16 58 | 0 31 | 1 40 | 14 8 | 1.2 | 1 2 | 3.0 | | |
| 50 | 7 7 | 16 46 | 0 34 | 1 50 | 14 11 | 1.0 | 0 57 | 3.2 | | |
| 55 | 7 22 | 16 31 | 0 39 | 2 4 | 14 14 | .8 | 0 51 | 3.4 | | |
| 60 | 7 42 | 16 11 | 0 46 | 2 24 | 14 19 | .5 | 0 43 | 3.7 | | |
| SUNCE | UT | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | T _{m̄} | t' | | | |
| 00 | 2 52.2 | .3 | 15.9 | 20 6 | 2.1 | 58.1 | 15.8 | | | |
| 12 | 2 55.7 | T _{m̄} | 11 h 57.1 min | Starost | 9.7 d | Faza | 0 | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | | | | | h min / | o | | | |
| 0 | 14 38 | .1 | 281 | -5.8 | 4 | 12 33 | .0 | 312 | -1.5 | |
| 0 | 19 52 | .1 | 202 | -.3 | h | 22 56 | .0 | 156 | -.5 | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 44.7 | 15 26.0 | 220 18.3 | 140 47.9 | 27 47.5 | 62 14.6 | 11 23.5 |
| 2 | 210 44.9 | 15 27.5 | 250 23.2 | 170 50.2 | 27 47.6 | 92 18.7 | 11 23.0 |
| 4 | 240 45.0 | 15 29.0 | 280 28.2 | 200 52.6 | 27 47.7 | 122 22.8 | 11 22.5 |
| 6 | 270 45.1 | 15 30.5 | 310 33.1 | 230 55.0 | 27 47.9 | 152 26.8 | 11 21.9 |
| 8 | 300 45.3 | 15 32.0 | 340 38.0 | 260 57.4 | 27 48.0 | 182 30.9 | 11 21.4 |
| 10 | 330 45.4 | 15 33.4 | 10 42.9 | 290 59.9 | 27 48.1 | 212 35.0 | 11 20.9 |
| 12 | 0 45.6 | 15 34.9 | 40 47.9 | 321 2.3 | 27 48.2 | 242 39.0 | 11 20.3 |
| 14 | 30 45.7 | 15 36.4 | 70 52.8 | 351 4.7 | 27 48.2 | 272 43.1 | 11 19.8 |
| 16 | 60 45.8 | 15 37.9 | 100 57.7 | 21 7.2 | 27 48.3 | 302 47.1 | 11 19.3 |
| 18 | 90 46.0 | 15 39.3 | 131 2.7 | 51 9.7 | 27 48.4 | 332 51.2 | 11 18.7 |
| 20 | 120 46.1 | 15 40.8 | 161 7.6 | 81 12.2 | 27 48.5 | 252 55.2 | 11 18.2 |
| 22 | 150 46.2 | 15 42.3 | 191 12.5 | 111 14.7 | 27 48.6 | 32 59.2 | 11 17.6 |
| Δ | 1 | 7 | | 12 | 0 | 20 | -3 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| h | o / | o / | o / | o / | o / | o / | o / | N | h min | h min | h min | h min | h min | min | h min | min |
| 0 | 60 3 54 | 20 1 | 0 55 | | | | | 60 | 3 54 | 20 1 | 0 55 | : | 14 58 | 3.9 | 2 23 | .5 |
| 2 | 55 4 17 | 19 38 | 0 44 | | | | | 55 | 4 17 | 19 38 | 0 44 | 3 15 | 14 56 | 3.6 | 2 22 | .8 |
| 4 | 50 4 34 | 19 21 | 0 37 | | | | | 50 | 4 34 | 19 21 | 0 37 | 2 22 | 14 54 | 3.3 | 2 21 | 1.0 |
| 6 | 45 4 48 | 19 7 | 0 33 | | | | | 45 | 4 48 | 19 7 | 0 33 | 1 59 | 14 52 | 3.2 | 2 21 | 1.2 |
| 8 | 40 4 59 | 18 56 | 0 30 | | | | | 40 | 4 59 | 18 56 | 0 30 | 1 44 | 14 51 | 3.0 | 2 20 | 1.3 |
| 10 | 35 5 8 | 18 47 | 0 27 | | | | | 35 | 5 8 | 18 47 | 0 27 | 1 35 | 14 50 | 2.9 | 2 20 | 1.5 |
| 12 | 30 5 16 | 18 38 | 0 25 | | | | | 30 | 5 16 | 18 38 | 0 25 | 1 27 | 14 49 | 2.7 | 2 19 | 1.6 |
| 14 | 20 5 30 | 18 24 | 0 23 | | | | | 20 | 5 30 | 18 24 | 0 23 | 1 18 | 14 47 | 2.5 | 2 19 | 1.8 |
| 16 | 10 5 42 | 18 12 | 0 22 | | | | | 10 | 5 42 | 18 12 | 0 22 | 1 13 | 14 45 | 2.4 | 2 18 | 2.0 |
| 18 | 0 5 54 | 18 0 | 0 21 | | | | | 0 | 5 54 | 18 0 | 0 21 | 1 11 | 14 44 | 2.2 | 2 17 | 2.1 |
| 20 | 10 6 5 | 17 49 | 0 22 | | | | | 10 | 6 5 | 17 49 | 0 22 | 1 12 | 14 43 | 2.0 | 2 17 | 2.3 |
| 22 | 20 6 16 | 17 37 | 0 23 | | | | | 20 | 6 16 | 17 37 | 0 23 | 1 15 | 14 41 | 1.8 | 2 16 | 2.5 |
| Δ | 60 6 30 | 17 24 | 0 25 | | | | | 30 | 6 30 | 17 24 | 0 25 | 1 21 | 14 40 | 1.6 | 2 15 | 2.7 |
| | S | | | | | | | 35 | 6 38 | 17 16 | 0 26 | 1 26 | 14 39 | 1.5 | 2 15 | 2.8 |
| | 40 6 46 | 17 7 | 0 28 | | | | | 40 | 6 46 | 17 7 | 0 28 | 1 32 | 14 38 | 1.4 | 2 14 | 2.9 |
| | 45 6 56 | 16 57 | 0 31 | | | | | 45 | 6 56 | 16 57 | 0 31 | 1 40 | 14 36 | 1.2 | 2 14 | 3.1 |
| | 50 7 9 | 16 45 | 0 34 | | | | | 50 | 7 9 | 16 45 | 0 34 | 1 50 | 14 35 | 1.1 | 2 13 | 3.3 |
| | 55 7 24 | 16 29 | 0 39 | | | | | 55 | 7 24 | 16 29 | 0 39 | 2 4 | 14 33 | .8 | 2 12 | 3.5 |
| | 60 7 44 | 16 9 | 0 46 | | | | | 60 | 7 44 | 16 9 | 0 46 | 2 24 | 14 31 | .6 | 2 11 | 3.8 |

| UT | MJESEC | | | PROLJ. TAČKA S γ | JUPITER | | | SATURN | | | SUNCE | | | MJESEC | | | |
|----|-----------|-----------------|---------------|-------------------------------|-------------|-----------------|-----------------|----------|--------------|-----------|-------|-------------------------|-------------|--------|--------|-------------|---------------|
| | S ζ | Δ | $\delta\zeta$ | | S φ | $\delta\varphi$ | S ϑ | S η | $\delta\eta$ | φ | UT | e = T _p - UT | $\Delta/24$ | t | Prolaž | $\Delta/24$ | π_{ζ} | t' |
| h | o / | o / | o / | o / | o / | o / | o / | h min | s | s / | h min | s | / | h min | min | / | / |
| 00 | 2 59.1 | . | . | 3 | 15.9 | . | T _{m̄} | 20 56 | 2.2 | 59.0 | 16.1 | | | | | | |
| 12 | 3 2.3 | T _{m̄} | 11 h 57.0 min | | | | | | | | | | | | | | |

| UT | PLANETE | | | PI. | T _{m̄} | | | PI. | | | T _{m̄} | | | PI. | | | T _{m̄} | | |
|-------------|---------|-----|-----|------|-----------------|-------|---|-----|-----|------|-----------------|-----|---|-----|-----|---|-----------------|--|--|
| | h | min | / | | h | min | / | h | min | / | h | min | / | h | min | / | | | |
| 0 | 14 36 | . | 280 | -5.8 | 4 | 12 30 | . | 1 | 312 | -1.5 | | | | | | | | | |
| ϑ | 19 48 | . | 202 | -3 | h | 22 51 | . | 0 | 156 | -. | | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|--|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ | |
| h | o / | o / | o / | o / | o / | o / | o / | N | h min | h min | h min | h min | h min | min | h min | min | |
| 0 | 180 46.3 | 15 43.8 | 221 17.4 | 141 17.2 | 27 48.7 | 63 3.3 | 11 17.1 | 60 | 3 52 | 20 4 | 0 55 | : | 16 32 | 4.0 | 2 36 | .6 | |
| 2 | 210 46.5 | 15 45.2 | 251 22.4 | 171 19.7 | 27 48.7 | 93 7.3 | 11 16.6 | 55 | 4 15 | 19 40 | 0 44 | 3 21 | 16 22 | 3.7 | 2 41 | .9 | |
| 4 | 240 46.6 | 15 46.7 | 281 27.3 | 201 22.2 | 27 48.8 | 123 11.3 | 11 16.0 | 50 | 4 32 | 19 22 | 0 37 | 2 24 | 16 14 | 3.5 | 2 46 | 1.1 | |
| 6 | 270 46.7 | 15 48.1 | 311 32.2 | 231 24.8 | 27 48.9 | 153 15.4 | 11 15.9 | 45 | 4 46 | 19 8 | 0 33 | 1 60 | 16 8 | 3.3 | 2 49 | 1.3 | |
| 8 | 300 46.8 | 15 49.6 | 341 37.2 | 261 27.4 | 27 48.9 | 183 19.4 | 11 14.9 | 40 | 4 57 | 18 57 | 0 30 | 1 45 | 16 3 | 3.1 | 2 53 | 1.5 | |
| 10 | 330 47.0 | 15 51.1 | 11 42.1 | 291 29.9 | 27 49.0 | 213 23.4 | 11 14.4 | 35 | 5 7 | 18 47 | 0 27 | 1 35 | 15 58 | 3.0 | 2 55 | 1.6 | |
| 12 | 0 47.1 | 15 52.5 | 41 47.0 | 321 32.5 | 27 49.0 | 243 27.4 | 11 13.8 | 30 | 5 15 | 18 39 | 0 26 | 1 28 | 15 54 | 2.8 | 2 57 | 1.7 | |
| 14 | 30 47.2 | 15 54.0 | 71 51.9 | 351 35.1 | 27 49.1 | 273 31.4 | 11 13.3 | 20 | 5 30 | 18 24 | 0 23 | 1 18 | 15 48 | 2.6 | 3 2 | 1.9 | |
| 16 | 60 47.3 | 15 55.4 | 101 56.9 | 21 37.7 | 27 49.1 | 303 35.4 | 11 12.7 | 10 | 5 42 | 18 12 | 0 22 | 1 13 | 15 42 | 2.5 | 3 5 | 2.1 | |
| 18 | 90 47.5 | 15 56.9 | 132 1.8 | 51 40.4 | 27 49.2 | 333 39.4 | 11 12.2 | 0 | 5 53 | 18 0 | 0 21 | 1 12 | 15 36 | 2.3 | 3 9 | 2.2 | |
| 20 | 120 47.6 | 15 58.3 | 162 6.7 | 81 43.0 | 27 49.2 | 3 43.4 | 11 11.6 | 6 | 6 5 | 17 49 | 0 22 | 1 12 | 15 31 | 2.1 | 3 12 | 2.4 | |
| 22 | 150 47.7 | 15 59.8 | 192 11.7 | 111 45.7 | 27 49.3 | 33 47.4 | 11 11.0 | 20 | 6 17 | 17 37 | 0 23 | 1 15 | 15 25 | 2.0 | 3 16 | 2.6 | |
| Δ | 1 | 7 | | 13 | 0 | 20 | -3 | 30 | 6 30 | 17 23 | 0 25 | 1 21 | 15 19 | 1.8 | 3 20 | 2.8 | |

| UT | SUNCE | | | PROLJ. TAČKA S γ | JUPITER | | | SATURN | | | SUNCE | | | MJESEC | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S ζ | Δ | $\delta\zeta$ | S φ | $\delta\varphi$ | S ϑ | S η | $\delta\eta$ |

4. MAJ

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 47.8 | 16 1.2 | 222 16.6 | 141 48.3 | 27 49.3 | 63 51.4 | 11 10.5 | |
| 2 | 210 47.9 | 16 2.7 | 252 21.5 | 171 51.0 | 27 49.3 | 93 55.4 | 11 9.9 | |
| 4 | 240 48.0 | 16 4.1 | 282 26.4 | 201 53.7 | 27 49.4 | 123 59.4 | 11 9.4 | |
| 6 | 270 48.2 | 16 5.5 | 312 31.4 | 231 56.4 | 27 49.4 | 154 3.4 | 11 8.8 | |
| 8 | 300 48.3 | 16 7.0 | 342 36.3 | 261 59.2 | 27 49.4 | 184 7.4 | 11 8.2 | |
| 10 | 330 48.4 | 16 8.4 | 12 41.2 | 292 1.9 | 27 49.4 | 214 11.4 | 11 7.7 | |
| 12 | 0 48.5 | 16 9.8 | 42 46.1 | 322 4.7 | 27 49.4 | 244 15.3 | 11 7.1 | |
| 14 | 30 48.6 | 16 11.3 | 72 51.1 | 352 7.4 | 27 49.4 | 274 19.3 | 11 6.5 | |
| 16 | 60 48.7 | 16 12.7 | 102 56.0 | 22 10.2 | 27 49.4 | 304 23.3 | 11 6.0 | |
| 18 | 90 48.8 | 16 14.1 | 133 .9 | 52 13.0 | 27 49.4 | 334 27.2 | 11 5.4 | |
| 20 | 120 48.9 | 16 15.6 | 163 5.9 | 82 15.8 | 27 49.4 | 4 31.2 | 11 4.8 | |
| 22 | 150 49.0 | 16 17.0 | 193 10.8 | 112 18.6 | 27 49.4 | 34 35.1 | 11 4.3 | |
| Δ | 1 | 7 | | 14 | 0 | 20 | -3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 49 | 20 6 | 0 56 | : : | 18 9 | 4 1 | 2 50 | .8 | |
| 55 | 4 13 | 19 42 | 0 44 | 3 28 | 17 51 | 3 7 | 3 3 | 1 1 | |
| 50 | 4 31 | 19 24 | 0 37 | 2 25 | 17 37 | 3 5 | 3 13 | 1 3 | |
| 45 | 4 45 | 19 10 | 0 33 | 2 0 | 17 26 | 3 3 | 3 21 | 1 5 | |
| 40 | 4 56 | 18 58 | 0 30 | 1 43 | 17 17 | 3 2 | 3 27 | 1 6 | |
| 35 | 5 6 | 18 48 | 0 27 | 1 35 | 17 9 | 3 0 | 3 33 | 1 8 | |
| 30 | 5 14 | 18 40 | 0 26 | 1 28 | 17 3 | 2 9 | 3 38 | 1 9 | |
| 20 | 5 29 | 18 25 | 0 23 | 1 19 | 16 51 | 2 8 | 3 47 | 2 1 | |
| 10 | 5 42 | 18 12 | 0 22 | 1 14 | 16 41 | 2 6 | 3 55 | 2 2 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 12 | 16 32 | 2 5 | 4 2 | 2 4 | |
| 10 | 6 5 | 17 49 | 0 22 | 1 12 | 16 23 | 2 3 | 4 10 | 2 5 | |
| 20 | 6 17 | 17 36 | 0 23 | 1 15 | 16 13 | 2 2 | 4 18 | 2 7 | |
| 30 | 6 31 | 17 22 | 0 25 | 1 22 | 16 2 | 2 0 | 4 27 | 2 9 | |
| 35 | 6 39 | 17 14 | 0 26 | 1 26 | 15 55 | 1 9 | 4 32 | 3 0 | |
| 40 | 6 48 | 17 5 | 0 28 | 1 32 | 15 48 | 1 8 | 4 38 | 3 1 | |
| 45 | 6 59 | 16 54 | 0 31 | 1 40 | 15 40 | 1 6 | 4 45 | 3 3 | |
| 50 | 7 12 | 16 41 | 0 35 | 1 51 | 15 30 | 1 4 | 4 53 | 3 5 | |
| 55 | 7 28 | 16 25 | 0 39 | 2 5 | 15 17 | 1 2 | 5 54 | 3 7 | |
| 60 | 7 49 | 16 4 | 0 46 | 2 25 | 15 1 | .9 | 5 17 | 4 1 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 31 29.4 | 79 - 9 | 7.4 - 126 | 173 34.8 | 17 12.0 | 18 16.6 | - 7 | 2.7 |
| 2 | 60 23.2 | 77 - 9 | 32.5 - 125 | 203 38.6 | 17 12.3 | 48 21.9 | - 7 | 2.6 |
| 4 | 89 16.7 | 76 - 9 | 57.5 - 124 | 233 42.3 | 17 12.6 | 78 27.1 | - 7 | 2.5 |
| 6 | 118 9.9 | 74 - 10 | 22.2 - 123 | 263 46.0 | 17 12.9 | 108 32.4 | - 7 | 2.4 |
| 8 | 147 2.8 | 73 - 10 | 46.7 - 121 | 293 49.8 | 17 13.2 | 138 37.7 | - 7 | 2.3 |
| 10 | 175 55.3 | 71 - 11 | 11.0 - 120 | 323 53.5 | 17 13.6 | 168 42.9 | - 7 | 2.1 |
| 12 | 204 47.6 | 70 - 11 | 35.0 - 119 | 353 57.2 | 17 13.9 | 198 48.2 | - 7 | 2.0 |
| 14 | 233 39.5 | 68 - 11 | 58.8 - 117 | 24 1.0 | 17 14.2 | 228 53.4 | - 7 | 1.9 |
| 16 | 262 31.1 | 66 - 12 | 22.3 - 116 | 54 4.7 | 17 14.5 | 258 58.7 | - 7 | 1.8 |
| 18 | 291 22.3 | 65 - 12 | 45.5 - 114 | 84 8.4 | 17 14.8 | 289 3.9 | - 7 | 1.7 |
| 20 | 320 13.3 | 63 - 13 | 8.3 - 113 | 114 12.2 | 17 15.1 | 319 9.2 | - 7 | 1.5 |
| 22 | 349 3.9 | 62 - 13 | 30.9 - 111 | 144 15.9 | 17 15.5 | 349 14.5 | - 7 | 1.4 |
| Δ | 0 | 7 | | 15 | 0 | 20 | -3 | |

| UT | SUNCE | | | | MJESEC | | | | |
|----|-------|------|----------------|---------------|----------------|--------|------|------|------|
| | h | min | s | / | h | min | min | / | |
| 00 | 3 | 11.4 | .2 | 15.9 | T _⊖ | 22 45 | 2.5 | 60.7 | 16.5 |
| 12 | 3 | 14.1 | T _⊕ | 11 h 56.8 min | Starost | 12.7 d | Faza | ○ | |

| UT | PLANETE | | | | Vel. | |
|----|---------|----------------|-----|---------|------|--|
| | Pl. | T _⊕ | π | 360 - π | | |
| 0 | h min | / | o | / | Vel. | |
| φ | 14 31 | .1 | 280 | -5.9 | η | |
| δ | 19 42 | .1 | 202 | -3 | h | |
| 0 | 22 43 | .0 | 311 | -1.5 | | |
| 5 | 22 | 43 | .0 | 156 | -5 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 17 54.2 | 60 - 13 | 53.1 - 109 | 174 19.6 | 17 15.8 | 19 19.7 | - 7 | 1.3 |
| 2 | 46 44.2 | 58 - 14 | 14.9 - 107 | 204 23.4 | 17 16.1 | 49 25.0 | - 7 | 1.2 |
| 4 | 75 33.9 | 57 - 14 | 36.4 - 105 | 234 27.1 | 17 16.4 | 79 30.2 | - 7 | 1.1 |
| 6 | 104 23.2 | 55 - 14 | 57.5 - 103 | 264 30.8 | 17 16.7 | 109 35.5 | - 7 | 1.0 |
| 8 | 133 12.3 | 54 - 15 | 18.2 - 101 | 294 34.6 | 17 17.0 | 139 40.7 | - 7 | .8 |
| 10 | 162 1.0 | 52 - 15 | 38.4 - 99 | 324 38.3 | 17 17.4 | 169 46.0 | - 7 | .7 |
| 12 | 190 49.4 | 51 - 15 | 58.3 - 97 | 354 42.0 | 17 17.7 | 199 51.3 | - 7 | .6 |
| 14 | 219 37.5 | 49 - 16 | 17.7 - 95 | 24 45.8 | 17 18.0 | 229 56.5 | - 7 | .5 |
| 16 | 248 25.4 | 48 - 16 | 36.7 - 92 | 54 49.5 | 17 18.3 | 260 1.8 | - 7 | .4 |
| 18 | 277 12.9 | 46 - 16 | 55.2 - 90 | 84 53.2 | 17 18.6 | 290 7.0 | - 7 | .3 |
| 20 | 306 .2 | 45 - 17 | 13.2 - 88 | 114 57.0 | 17 18.9 | 320 12.3 | - 7 | .1 |
| 22 | 334 47.2 | 44 - 17 | 30.7 - 85 | 145 .7 | 17 19.2 | 350 17.5 | - 7 | .0 |
| Δ | 19 | 2 | | 26 | 1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----|-------|------|----------------|---------------|----------------|--------|------|------|------|
| | h | min | s | / | h | min | min | / | |
| 00 | 3 | 16.8 | .2 | 15.9 | T _⊖ | 23 45 | 2.6 | 61.2 | 16.7 |
| 12 | 3 | 19.2 | T _⊕ | 11 h 56.7 min | Starost | 13.7 d | Faza | ○ | |

| UT | PLANETE | | | | Vel. | |
|----|---------|----------------|-----|---------|------|--|
| | Pl. | T _⊕ | π | 360 - π | | |
| φ | h min | / | o | / | Vel. | |
| δ | 19 39 | .1 | 201 | -3 | h | |
| 0 | 22 39 | .0 | 311 | -1.5 | | |
| 5 | 22 | 39 | .0 | 156 | -5 | |

6. MAJ

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 50.3 | 16 35.3 | 224 14.9 | 142 56.5 | 27 49.1 | 65 26.3 | 10 56.7 | |
| 2 | 210 50.4 | 16 36.7 | 254 19.8 | 172 59.6 | 27 49.0 | 95 30.2 | 10 56.1 | |
| 4 | 240 50.5 | 16 38.1 | 284 24.7 | 203 26 | 27 49.0 | 125 34.1 | 10 55.5 | |
| 6 | 270 50.6 | 16 39.5 | 314 29.6 | 233 5.6 | 27 48.9 | 155 38.0 | 10 54.9 | |
| 8 | 300 50.7 | 16 40.9 | 344 34.6 | 263 8.7 | 27 48.8 | 185 41.9 | 10 54.3 | |
| 10 | 330 50.8 | 16 42.3 | 374 39.5 | 293 11.8 | 27 48.8 | 215 45.8 | 10 53.8 | |
| 12 | 0 50.9 | 16 43.7 | 44 44.4 | 323 14.9 | 27 48.7 | 245 49.7 | 10 53.2 | |
| 14 | 30 51.0 | 16 45.1 | 74 49.4 | 353 18.0 | 27 48.6 | 275 53.5 | 10 52.6 | |
| 16 | 60 51.1 | 16 46.4 | 104 54.3 | 23 21.1 | 27 48.5 | 305 57.4 | 10 52.0 | |
| 18 | 90 51.1 | 16 47.8 | 134 59.2 | 53 24.2 | 27 48.5 | 336 1.3 | 10 51.4 | |
| 20 | 120 51.2 | 16 49.2 | 165 4.1 | 83 27.4 | 27 48.4 | 6 5.2 | 10 50.8 | |
| 22 | 150 51.3 | 16 50.6 | 195 9.1 | 113 30.5 | 27 48.3 | 36 9.1 | 10 50.2 | |
| Δ | 0 | 7 | | 15 | 0 | 19 | -3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 44 | 20 11 | 0 57 | : | : : | 21 19 | 3.3 | 3 33 | 1.5 |
| 55 | 4 9 | 19 46 | 0 45 | 3 50 | 20 46 | 3.1 | 4 1 | 1.8 | |
| 4 | 4 27 | 19 27 | 0 38 | 2 28 | 20 21 | 3.0 | 4 22 | 2.0 | |
| 45 | 4 42 | 19 12 | 0 33 | 2 2 | 20 31 | 3.0 | 4 38 | 2.1 | |
| 40 | 4 54 | 19 0 | 0 30 | 1 46 | 19 47 | 2.9 | 4 52 | 2.2 | |
| 35 | 5 4 | 18 50 | 0 27 | 1 36 | 19 35 | 2.9 | 5 3 | 2.3 | |
| 30 | 5 13 | 18 41 | 0 26 | 1 28 | 19 23 | 2.8 | 5 13 | 2.3 | |
| 20 | 5 28 | 18 26 | 0 23 | 1 19 | 19 4 | 2.8 | 5 30 | 2.4 | |
| 10 | 5 41 | 18 12 | 0 22 | 1 14 | 18 48 | 2.7 | 5 46 | 2.5 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 12 | 18 33 | 2.6 | 5 60 | 2.6 | |
| 10 | 6 5 | 17 48 | 0 22 | 1 12 | 18 17 | 2.6 | 6 14 | 2.7 | |
| 20 | 6 18 | 17 35 | 0 23 | 1 16 | 18 1 | 2.5 | 6 29 | 2.8 | |
| 30 | 6 32 | 17 21 | 0 25 | 1 22 | 17 42 | 2.4 | 6 47 | 2.9 | |
| 35 | 6 41 | 17 12 | 0 27 | 1 27 | 17 31 | 2.4 | 6 57 | 3.0 | |
| 40 | 6 50 | 17 3 | 0 29 | 1 33 | 17 19 | 2.3 | 7 8 | 3.0 | |
| 45 | 7 1 | 16 52 | 0 31 | 1 41 | 17 5 | 2.3 | 7 22 | 3.1 | |
| 50 | 7 15 | 16 38 | 0 35 | 1 51 | 16 47 | 2.2 | 7 39 | 3.2 | |
| 55 | 7 31 | 16 21 | 0 40 | 2 6 | 16 24 | 2.1 | 8 1 | 3.4 | |
| 60 | 7 54 | 15 59 | 0 47 | 2 26 | 15 53 | 1.9 | 8 30 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 3 33.9 | 42 -17 | 47.7 | -83 | 175 4.4 | 17 19.6 | 20 22.8 | - 6 59.9 |
| 2 | 32 20.4 | 41 -18 | 4.2 | -80 | 205 8.2 | 17 19.9 | 50 28.0 | - 6 59.8 |
| 4 | 61 6.6 | 40 -18 | 20.2 | -77 | 235 11.9 | 17 20.2 | 80 33.3 | - 6 59.7 |
| 6 | 89 52.6 | 39 -18 | 35.6 | -74 | 265 15.6 | 17 20.5 | 110 38.5 | - 6 59.6 |
| 8 | 118 38.3 | 38 -18 | 50.5 | -72 | 295 19.4 | 17 20.8 | 140 43.8 | - 6 59.4 |
| 10 | 147 23.9 | 37 -19 | 4.8 | -69 | 325 23.1 | 17 21.1 | 170 49.0 | - 6 59.3 |
| 12 | 176 9.2 | 36 -19 | 18.5 | -66 | 355 26.8 | 17 21.4 | 200 54.3 | - 6 59.2 |
| 14 | 204 54.3 | 35 -19 | 31.7 | -63 | 25 30.6 | 17 21.8 | 230 59.6 | - 6 59.1 |
| 16 | 233 39.3 | 34 -19 | 44.3 | -60 | 55 34.3 | 17 22.1 | 261 4.8 | - 6 59.0 |
| 18 | 262 24.1 | 33 -19 | 56.2 | -57 | 85 38.0 | 17 22.4 | 291 10.1 | - 6 58.9 |
| 20 | 291 8.8 | 33 -20 | 7.6 | -54 | 115 41.8 | 17 22.7 | 321 15.3 | - 6 58.8 |
| 22 | 319 53.3 | 32 -20 | 18.4 | -51 | 145 45.5 | 17 23.0 | 351 20.6 | - 6 58.6 |
| Δ | 0 | 7 | | | 16 | -1 | 19 | -3 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-------------------------------|----------------|-----------------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 3 21.5 | .2 | 15.9 | T _{m̄} . . . | 1.0 | 61.4 | 16.7 | | |
| 12 | 3 23.7 | T _{m̄} 11 h 56.6 min | Starost 14.7 d | Faza ○ | | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ | 14 27 | .1 | 279 | -5.9 | 4 | 12 18 | .0 | 311 | -1.5 |
| ♂ | 19 36 | .1 | 201 | -2.3 | h | 22 35 | .0 | 156 | -5 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 348 37.7 | 31 -20 | 28.5 | -48 | 175 49.2 | 17 23.3 | 21 25.8 | - 6 58.5 |
| 2 | 17 22.0 | 31 -20 | 38.0 | -44 | 205 53.0 | 17 23.6 | 51 31.1 | - 6 58.4 |
| 4 | 46 6.2 | 31 -20 | 46.8 | -41 | 235 56.7 | 17 23.9 | 81 36.3 | - 6 58.3 |
| 6 | 74 50.3 | 30 -20 | 55.1 | -38 | 266 4.4 | 17 24.3 | 111 41.6 | - 6 58.2 |
| 8 | 103 34.4 | 30 -21 | 2.7 | -35 | 296 4.1 | 17 24.6 | 141 46.8 | - 6 58.1 |
| 10 | 132 18.4 | 30 -21 | 9.6 | -31 | 326 7.9 | 17 24.9 | 171 52.1 | - 6 58.0 |
| 12 | 161 2.4 | 30 -21 | 15.9 | -28 | 356 11.6 | 17 25.2 | 201 57.3 | - 6 57.8 |
| 14 | 189 46.5 | 30 -21 | 21.5 | -25 | 26 15.3 | 17 25.8 | 232 2.5 | - 6 57.7 |
| 16 | 218 30.5 | 30 -21 | 26.5 | -22 | 56 19.1 | 17 25.8 | 262 7.8 | - 6 57.6 |
| 18 | 247 14.5 | 30 -21 | 30.8 | -18 | 86 22.8 | 17 26.1 | 292 13.0 | - 6 57.5 |
| 20 | 275 58.6 | 31 -21 | 34.5 | -15 | 116 26.5 | 17 26.4 | 322 18.3 | - 6 57.4 |
| 22 | 304 42.8 | 31 -21 | 37.5 | -12 | 146 30.3 | 17 26.8 | 352 23.5 | - 6 57.3 |
| Δ | 19 | 2 | | | 26 | 1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-------------------------------|----------------|----------------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 3 25.8 | .2 | 15.9 | T _{m̄} 0 47 | 2.7 | 61.3 | 16.7 | | |
| 12 | 3 27.6 | T _{m̄} 11 h 56.5 min | Starost 15.7 d | Faza ○ | | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ | 14 24 | .1 | 278 | -6.0 | 4 | 12 15 | .0 | 311 | -1.5 |
| ♂ | 19 33 | .1 | 201 | -2.2 | h | 22 30 | .0 | 156 | -5 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | | | | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----|-------|-------|---------------------|--------|--------|------|-------|-------|------|------|-------|-----|------|-----|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _♀ | δ _♀ | S _♂ | δ _♂ | | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | | | | |
| h | o | / | o | / | o | / | o | / | | h min | h min | h min | h min | h min | min | h min | min | | | | | | |
| 0 | 180 | 52.3 | 17 | 8.3 | 226 | 13.1 | 144 | 13.0 | 27 | 46.8 | 66 | 59.2 | 10 | 42.2 | 60 | 3 39 | 20 16 | 0 59 | : :: | 23 37 | 1.6 | 5 2 | 2.9 |
| 2 | 210 | 52.4 | 17 | 9.7 | 256 | 18.1 | 174 | 16.4 | 27 | 46.7 | 97 | 3.0 | 10 | 41.6 | 55 | 4 5 | 19 49 | 0 46 | : :: | 23 1 | 1.9 | 5 40 | 2.8 |
| 4 | 240 | 52.4 | 17 | 11.0 | 286 | 23.0 | 204 | 19.8 | 27 | 46.5 | 127 | 6.8 | 10 | 41.0 | 50 | 4 24 | 19 30 | 0 38 | 2 32 | 22 35 | 2.0 | 6 7 | 2.8 |
| 6 | 270 | 52.5 | 17 | 12.4 | 316 | 27.9 | 234 | 23.2 | 27 | 46.4 | 157 | 10.6 | 10 | 40.4 | 45 | 4 39 | 19 15 | 0 33 | 2 4 | 22 15 | 2.1 | 6 27 | 2.8 |
| 8 | 300 | 52.6 | 17 | 13.7 | 346 | 32.8 | 264 | 26.6 | 27 | 46.2 | 187 | 14.5 | 10 | 39.8 | 40 | 4 52 | 19 2 | 0 30 | 1 47 | 21 59 | 2.2 | 6 44 | 2.7 |
| 10 | 330 | 52.6 | 17 | 15.1 | 376 | 37.8 | 294 | 30.0 | 27 | 46.1 | 217 | 18.3 | 10 | 39.1 | 35 | 5 2 | 18 51 | 0 28 | 1 37 | 21 45 | 2.2 | 6 58 | 2.7 |
| 12 | 0 | 52.7 | 17 | 16.4 | 46 | 42.7 | 324 | 33.5 | 27 | 45.9 | 247 | 22.1 | 10 | 38.5 | 30 | 5 11 | 18 42 | 0 26 | 1 29 | 21 33 | 2.3 | 7 10 | 2.7 |
| 14 | 30 | 52.8 | 17 | 17.7 | 76 | 47.6 | 354 | 36.9 | 27 | 45.8 | 277 | 25.9 | 10 | 37.9 | 20 | 5 27 | 18 26 | 0 23 | 1 19 | 21 13 | 2.4 | 7 31 | 2.6 |
| 16 | 60 | 52.8 | 17 | 19.1 | 106 | 52.6 | 24 | 40.4 | 27 | 45.6 | 307 | 29.7 | 10 | 37.3 | 10 | 5 40 | 18 13 | 0 22 | 1 14 | 20 55 | 2.4 | 7 49 | 2.6 |
| 18 | 90 | 52.9 | 17 | 20.4 | 136 | 57.5 | 54 | 43.9 | 27 | 45.4 | 337 | 33.5 | 10 | 36.6 | 0 | 5 53 | 17 60 | 0 22 | 1 12 | 20 38 | 2.5 | 8 6 | 2.6 |
| 20 | 120 | 53.0 | 17 | 21.7 | 167 | 2.4 | 84 | 47.4 | 27 | 45.3 | 57 | 37.3 | 10 | 36.0 | 10 | 6 5 | 17 47 | 0 22 | 1 13 | 20 22 | 2.6 | 8 23 | 2.5 |
| 22 | 150 | 53.0 | 17 | 23.1 | 197 | 7.3 | 114 | 51.0 | 27 | 45.1 | 37 | 41.1 | 10 | 35.4 | 60 | 6 19 | 17 34 | 0 23 | 1 16 | 20 | 4 | 8 41 | 2.5 |
| Δ | 0 | 53.0 | 17 | 23.1 | 197 | 7.3 | | | | | 17 | -1 | 19 | -3 | S | 5 34 | 17 19 | 0 25 | 1 22 | 19 44 | 2.7 | 9 1 | 2.4 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | | | | | | | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|----------------|-------|--------|--------|----------------|----------------|---------------|----------------|--------|--------|-------|------|------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _♀ | δ _♀ | S _♂ | δ _♂ | S _⊖ | Δ | δ _⊖ | Δ | Prolaz | Δ/24 | π _⊖ | Δ | | | | | | | |
| h | o | / | o | / | o | / | o | / | o | / | o | / | o | | h min | s | h min | / | | | | | | | |
| 0 | 333 | 27.0 | 32 | -21 | 39.9 | -9 | 176 | 34.0 | 17 | 27.1 | 22 | 28.8 | - | 6 | 57.2 | 00 | 3 29.4 | .1 | 15.9 | T _⊖ | 1 51 | 2.6 | 60.9 | 16.6 | |
| 2 | 211 | 4.1 | 32 | -21 | 41.6 | -5 | 206 | 37.7 | 17 | 27.4 | 52 | 34.0 | - | 6 | 57.0 | 12 | 3 30.9 | T _⊖ | 11 h 56.5 min | Starost | 16.7 d | Faza ○ | | | |
| 4 | 30 | 55.8 | 33 | -21 | 42.7 | -2 | 236 | 41.5 | 17 | 27.7 | 82 | 39.3 | - | 6 | 56.9 | S | 4 50 | 18 49 | 0 31 | 1 41 | 19 | 2.8 | 9 43 | 2.3 | |
| 6 | 59 | 40.4 | 34 | -21 | 43.1 | 1 | 266 | 45.2 | 17 | 28.0 | 112 | 44.5 | - | 6 | 56.8 | 40 | 6 52 | 17 0 | 0 29 | 1 33 | 19 18 | 2.8 | 9 27 | 2.4 | |
| 8 | 88 | 25.2 | 35 | -21 | 42.8 | 4 | 296 | 48.9 | 17 | 28.3 | 142 | 49.8 | - | 6 | 56.7 | 45 | 7 4 | 16 49 | 0 31 | 1 41 | 19 | 2.8 | 9 43 | 2.3 | |
| 10 | 117 | 10.1 | 35 | -21 | 42.0 | 8 | 326 | 52.6 | 17 | 28.6 | 172 | 55.0 | - | 6 | 56.6 | 50 | 7 17 | 16 35 | 0 35 | 1 52 | 18 42 | 2.9 | 10 3 | 2.3 | |
| 12 | 145 | 55.2 | 36 | -21 | 40.4 | 11 | 356 | 56.4 | 17 | 28.9 | 203 | 5.3 | - | 6 | 56.5 | 55 | 7 35 | 16 17 | 0 40 | 2 6 | 18 16 | 3.0 | 10 29 | 2.2 | |
| 14 | 174 | 40.5 | 38 | -21 | 38.3 | 14 | 27 | 1.1 | 17 | 29.2 | 233 | 5.5 | - | 6 | 56.4 | 60 | 7 58 | 15 54 | 0 48 | 2 27 | 17 40 | 3.2 | 11 6 | 2.0 | |
| 16 | 203 | 26.0 | 39 | -21 | 35.5 | 17 | 57 | 3.8 | 17 | 29.6 | 263 | 10.7 | - | 6 | 56.3 | | | | | | | | | | |
| 18 | 232 | 11.7 | 40 | -21 | 32.2 | 20 | 87 | 7.6 | 17 | 29.9 | 293 | 16.0 | - | 6 | 56.2 | 19 | 2 | 26 | 1 | | | | | | |
| 20 | 260 | 57.7 | 41 | -21 | 28.2 | 23 | 117 | 11.3 | 17 | 30.2 | 323 | 21.2 | - | 6 | 56.0 | 20 | 6 19 | 17 34 | 0 23 | 1 16 | 21 | 7.5 | 9 40 | 2.2 | |
| 22 | 289 | 43.9 | 42 | -21 | 23.5 | 26 | 147 | 15.0 | 17 | 30.5 | 353 | 26.5 | - | 6 | 55.9 | 30 | 6 34 | 17 18 | 0 25 | 1 22 | 20 | 48.7 | 2.7 | 9 60 | 2.1 |
| Δ | 0 | 5 | 7 | | | | 18 | -1 | | | 19 | 2 | | | | | 14 21 | .1 | 278 | -6.0 | 4 | 12 12 | .0 | 310 | -1.5 |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | | | | | | | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|----------------|-------|--------|--------|----------------|----------------|---------------|----------------|--------|--------|-------|------|------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _♀ | δ _♀ | S _♂ | δ _♂ | S _⊖ | Δ | δ _⊖ | Δ | Prolaz | Δ/24 | π _⊖ | Δ | | | | | | | |
| h | o | / | o | / | o | / | o | / | o | / | o | / | o | | h min | s | h min | / | | | | | | | |
| 0 | 318 | 30.4 | 44 | -21 | 18.3 | 29 | 177 | 18.7 | 17 | 30.8 | 23 | 31.7 | - | 6 | 55.8 | 00 | 3 32.5 | .1 | 15.9 | T _⊖ | 2 53 | 2.5 | 60.2 | 16.4 | |
| 2 | 347 | 17.2 | 45 | -21 | 12.5 | 32 | 207 | 22.5 | 17 | 31.1 | 53 | 37.0 | - | 6 | 55.7 | 12 | 3 33.7 | T _⊖ | 11 h 56.4 min | Starost | 17.7 d | Faza ○ | | | |
| 4 | 16 | 4.2 | 47 | -21 | 6.2 | 35 | 237 | 26.2 | 17 | 31.4 | 83 | 42.2 | - | 6 | 55.6 | S | 4 19 | 27.8 | -6.0 | 4 | 12 9 | .0 | 310 | -1.6 | |
| 6 | 44 | 51.6 | 48 | -20 | 59.2 | 38 | 267 | 29.9 | 17 | 31.7 | 113 | 47.4 | - | 6 | 55.5 | 40 | 6 53 | 16 59 | 0 29 | 1 33 | 20 25 | 2.8 | 10 24 | 2.0 | |
| 8 | 73 | 39.3 | 50 | -20 | 51.7 | 40 | 297 | 33.7 | 17 | 32.0 | 143 | 52.7 | - | 6 | 55.4 | 45 | 7 5 | 16 48 | 0 31 | 1 41 | 20 10 | 2.9 | 10 39 | 1.9 | |
| 10 | 102 | 27.3 | 52 | -20 | 43.6 | 43 | 327 | 37.4 | 17 | 32.3 | 173 | 57.9 | - | 6 | 55.3 | 50 | 7 19 | 16 33 | 0 35 | 1 52 | 19 52 | 3.1 | 10 58 | 1.8 | |
| 12 | 131 | 15.7 | 54 | -20 | 35.0 | 46 | 357 | 41.1 | 17 | 32.7 | 204 | 3.2 | - | 6 | 55.2 | 55 | 7 37 | 16 16 | 0 40 | 2 7 | 19 29 | 3.2 | 11 22 | 1.6 | |
| 14 | 160 | 4.4 | 55 | -20 | 25.8 | 48 | 27 | 44.8 | 17 | 33.0 | 234 | 8.4 | - | 6 | 55.1 | 60 | 8 1 | 15 52 | 0 48 | 2 28 | 18 57 | 3.5 | 11 55 | 1.4 | |
| 16 | 188 | 53.4 | 57 | -20 | 16.1 | 51 | 57 | 48.6 | 17 | 33.3 | 264 | 13.6 | - | 6 | 54.9 | | | | | | | | | | |
| 18 | 217 | 42.9 | 59 | -20 | 5.9 | 54 | 87 | 52.3 | 17 | 33.6 | 294 | 18.9 | - | 6 | 54.8 | 20 | 6 19 | .1 | 278 | -6.0 | 4 | 12 9 | .0 | 310 | -1.6 |
| 20 | 246 | 32.6 | 61 | -19 | 55.2 | 56 | 117 | 56.0 | 17 | 33.9 | 324 | 24.1 | - | 6 | 54.7 | 22 | 7 27 | .1 | 201 | -2.2 | h | 22 22 | .0 | 156 | -1.6 |
| 22 | 275 | 22.8 | 63 | -19 | 44.0 | 58 | 147 | 59.8 | 17 | 34.2 | 354 | 29.4 | - | 6 | 54.6 | 27 | 19 | 2 | 26 | 1 | | | | | |
| Δ | 0 | 5 | 7 | | | | 19 | 2 | | | 26 | 1 | | | | | 14 19 | .1 | 201 | -2.2 | h | 22 22 | .0 | 156 | -1.6 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 53.7 | 17 40.2 | 228 11.4 | 145 38.3 | 27 42.5 | 68 30.2 | 10 27.1 | |
| 2 | 210 53.7 | 17 41.5 | 258 16.3 | 175 42.0 | 27 42.3 | 98 34.0 | 10 26.5 | |
| 4 | 240 53.8 | 17 42.8 | 288 21.3 | 205 45.8 | 27 42.0 | 128 37.7 | 10 25.8 | |
| 6 | 270 53.8 | 17 44.1 | 318 26.2 | 235 49.6 | 27 41.8 | 158 41.5 | 10 25.2 | |
| 8 | 300 53.9 | 17 45.4 | 348 31.1 | 265 53.4 | 27 41.6 | 188 45.2 | 10 24.5 | |
| 10 | 330 53.9 | 17 46.7 | 18 36.1 | 298 57.2 | 27 41.3 | 218 49.0 | 10 23.9 | |
| 12 | 0 53.9 | 17 48.0 | 48 41.0 | 326 1.0 | 27 41.1 | 248 52.7 | 10 23.2 | |
| 14 | 30 54.0 | 17 49.3 | 78 45.9 | 356 4.9 | 27 40.8 | 278 56.4 | 10 22.6 | |
| 16 | 60 54.0 | 17 50.6 | 108 50.8 | 26 8.7 | 27 40.6 | 309 12.2 | 10 21.9 | |
| 18 | 90 54.1 | 17 51.8 | 138 55.8 | 56 12.6 | 27 40.3 | 339 3.9 | 10 21.3 | |
| 20 | 120 54.1 | 17 53.1 | 169 7.7 | 86 16.5 | 27 40.1 | 9 7.6 | 10 20.6 | |
| 22 | 150 54.1 | 17 54.4 | 199 5.6 | 116 20.4 | 27 39.8 | 39 11.4 | 10 20.0 | |
| Δ | 0 | 6 | | 19 | -1 | 19 | -3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 34 | 20 21 | 1 0 | : | : 0 17 | 1.1 | 7 35 | 3.6 | |
| 55 | 4 1 | 19 53 | 0 46 | : | : .. . | .0 | 8 5 | 3.3 | |
| 50 | 4 21 | 19 33 | 0 39 | 2 35 | .. . | .0 | 8 27 | 3.1 | |
| 45 | 4 37 | 19 17 | 0 34 | 2 5 | 23 47 | 1.4 | 8 43 | 2.9 | |
| 40 | 4 49 | 19 4 | 0 30 | 1 48 | 23 35 | 1.5 | 8 57 | 2.8 | |
| 35 | 5 0 | 18 53 | 0 28 | 1 37 | 23 25 | 1.6 | 9 9 | 2.7 | |
| 30 | 5 10 | 18 43 | 0 26 | 1 30 | 23 16 | 1.7 | 9 19 | 2.6 | |
| 20 | 5 26 | 18 27 | 0 23 | 1 20 | 23 01 | 1.9 | 9 36 | 2.5 | |
| 10 | 5 40 | 18 13 | 0 22 | 1 14 | 22 47 | 2.0 | 9 51 | 2.4 | |
| 0 | 5 53 | 17 60 | 0 22 | 1 12 | 22 34 | 2.2 | 10 5 | 2.2 | |
| 10 | 6 6 | 17 47 | 0 22 | 1 13 | 22 21 | 2.3 | 10 19 | 2.1 | |
| 20 | 6 19 | 17 33 | 0 23 | 1 16 | 22 8 | 2.4 | 10 34 | 2.0 | |
| 30 | 6 35 | 17 18 | 0 25 | 1 22 | 21 52 | 2.6 | 10 51 | 1.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 304 13.3 | 65 -19 32.4 | 61 | 178 3.5 | 17 34.5 | 24 34.6 | - 6 54.5 | |
| 2 | 333 4.3 | 67 -19 20.2 | 63 | 208 7.2 | 17 34.8 | 54 39.8 | - 6 54.4 | |
| 4 | 1 55.6 | 69 -19 7.6 | 65 | 238 10.9 | 17 35.1 | 84 45.1 | - 6 54.3 | |
| 6 | 30 47.3 | 70 -18 54.5 | 68 | 268 14.7 | 17 35.4 | 114 50.3 | - 6 54.2 | |
| 8 | 59 39.4 | 72 -18 41.0 | 70 | 298 18.4 | 17 35.7 | 144 55.6 | - 6 54.1 | |
| 10 | 88 31.9 | 74 -18 27.1 | 72 | 328 22.1 | 17 36.0 | 175 .8 | - 6 54.0 | |
| 12 | 117 24.8 | 76 -18 12.7 | 74 | 358 25.8 | 17 36.3 | 205 6.0 | - 6 53.9 | |
| 14 | 146 18.1 | 79 -17 58.0 | 76 | 28 29.6 | 17 36.7 | 235 11.3 | - 6 53.7 | |
| 16 | 175 11.8 | 81 -17 42.8 | 78 | 58 33.3 | 17 37.0 | 265 16.5 | - 6 53.6 | |
| 18 | 204 5.9 | 83 -17 27.3 | 79 | 88 37.0 | 17 37.3 | 295 21.7 | - 6 53.5 | |
| 20 | 233 .4 | 85 -17 11.4 | 81 | 118 40.8 | 17 37.6 | 325 27.0 | - 6 53.4 | |
| 22 | 261 55.3 | 87 -16 55.1 | 83 | 148 44.5 | 17 37.9 | 355 32.2 | - 6 53.3 | |
| Δ | 0 | 6 | | 19 | 2 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|---------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 3 34.9 | .1 | 15.9 | T _{m̄} | 3 52 | 2.3 | 59.3 | 16.2 | |
| 12 | 3 35.9 | T _{m̄} | 11 h 56.4 min | Starost | 18.7 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | h min |
| 0 | 14 16 | .1 | 277 | -6.1 | 4 | 12 6 | .0 | 310 | -1.5 |
| 0 | 19 24 | .1 | 200 | -2.2 | h | 22 18 | .0 | 156 | -.6 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|--------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 290 50.6 | 89 -16 38.5 | 85 | 178 48.2 | 17 38.2 | 25 37.4 | - 6 53.2 | |
| 2 | 319 46.3 | 91 -16 21.6 | 86 | 208 51.9 | 17 38.5 | 55 42.7 | - 6 53.1 | |
| 4 | 348 42.4 | 93 -16 4.3 | 88 | 238 55.7 | 17 38.8 | 85 47.9 | - 6 53.0 | |
| 6 | 17 38.9 | 94 -15 46.7 | 89 | 268 59.4 | 17 39.1 | 115 53.1 | - 6 52.9 | |
| 8 | 46 35.8 | 96 -15 28.8 | 91 | 299 3.1 | 17 39.4 | 148 58.4 | - 6 52.8 | |
| 10 | 75 33.1 | 98 -15 10.6 | 92 | 329 6.8 | 17 39.7 | 176 3.6 | - 6 52.7 | |
| 12 | 104 30.8 | 100 -14 52.2 | 94 | 359 10.6 | 17 40.0 | 206 8.8 | - 6 52.6 | |
| 14 | 133 28.8 | 102 -14 33.4 | 95 | 29 14.3 | 17 40.3 | 236 14.1 | - 6 52.5 | |
| 16 | 162 27.2 | 102 -14 14.4 | 96 | 59 18.0 | 17 40.6 | 266 19.3 | - 6 52.4 | |
| 18 | 191 26.0 | 106 -13 55.1 | 97 | 89 21.7 | 17 40.9 | 296 24.5 | - 6 52.3 | |
| 20 | 220 25.2 | 108 -13 35.6 | 99 | 119 25.5 | 17 41.3 | 326 29.8 | - 6 52.2 | |
| 22 | 249 24.7 | 109 -13 15.9 | 100 | 149 29.2 | 17 41.6 | 356 35.0 | - 6 52.0 | |
| Δ | 0 | 6 | | 19 | 2 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|---------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 3 36.8 | .1 | 15.9 | T _{m̄} | 4 47 | 2.1 | 58.4 | 15.9 | |
| 12 | 3 37.5 | T _{m̄} | 11 h 56.4 min | Starost | 19.7 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | h min |
| 0 | 14 12 | .1 | 277 | -6.1 | 4 | 12 3 | .0 | 310 | -1.5 |
| 0 | 19 21 | .1 | 200 | -2.2 | h | 22 14 | .0 | 156 | -.6 |

12. MAJ

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 54.5 | 18 10.9 | 230 9.7 | 147 12.8 | 27 36.1 | 69 59.5 | 10 11.3 | |
| 2 | 210 54.5 | 18 12.1 | 260 14.6 | 177 17.0 | 27 35.7 | 100 3.2 | 10 10.7 | |
| 4 | 240 54.5 | 18 13.4 | 290 19.5 | 207 21.2 | 27 35.4 | 130 6.9 | 10 10.0 | |
| 6 | 270 54.5 | 18 14.6 | 320 24.5 | 237 25.4 | 27 35.1 | 160 10.6 | 10 9.3 | |
| 8 | 300 54.6 | 18 15.9 | 350 29.4 | 267 29.6 | 27 34.8 | 190 14.3 | 10 8.6 | |
| 10 | 330 54.6 | 18 17.1 | 20 34.3 | 297 33.8 | 27 34.4 | 220 17.9 | 10 8.0 | |
| 12 | 0 54.6 | 18 18.4 | 50 39.3 | 327 38.0 | 27 34.1 | 250 21.6 | 10 7.3 | |
| 14 | 30 54.6 | 18 19.6 | 80 44.2 | 357 42.3 | 27 33.8 | 280 25.3 | 10 6.6 | |
| 16 | 60 54.6 | 18 20.8 | 110 49.1 | 27 46.5 | 27 33.4 | 310 28.9 | 10 5.9 | |
| 18 | 90 54.6 | 18 22.1 | 140 54.0 | 57 50.8 | 27 33.1 | 340 32.6 | 10 5.2 | |
| 20 | 120 54.6 | 18 23.3 | 170 59.0 | 87 55.1 | 27 32.7 | 10 36.3 | 10 4.6 | |
| 22 | 150 54.7 | 18 24.5 | 201 3.9 | 117 59.4 | 27 32.4 | 40 39.9 | 10 3.9 | |
| Δ | 0 | 6 | | 21 | -2 | 18 | -3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 29 | 20 26 | 1 2 | : | 1 2 | .6 | 10 26 | 3.4 | |
| 55 | 3 57 | 19 57 | 0 47 | : | 0 45 | .9 | 10 41 | 3.1 | |
| 50 | 4 18 | 19 36 | 0 39 | 2 39 | 0 31 | 1.0 | 10 53 | 2.9 | |
| 45 | 4 34 | 19 19 | 0 34 | 2 7 | 0 21 | 1.2 | 11 2 | 2.8 | |
| 40 | 4 47 | 19 6 | 0 30 | 1 50 | 0 12 | 1.3 | 11 10 | 2.6 | |
| 35 | 4 59 | 18 55 | 0 28 | 1 38 | 0 4 | 1.4 | 11 17 | 2.5 | |
| 30 | 5 8 | 18 45 | 0 26 | 1 30 | ... . | 0 | 11 22 | 2.4 | |
| 20 | 5 25 | 18 28 | 0 24 | 1 20 | ... . | 0 | 11 32 | 2.2 | |
| 10 | 5 39 | 18 13 | 0 22 | 1 15 | ... . | 0 | 11 41 | 2.1 | |
| 0 | 5 53 | 17 60 | 0 22 | 1 13 | ... . | 0 | 11 49 | 1.9 | |
| 10 | 6 6 | 17 47 | 0 22 | 1 13 | ... . | 0 | 11 57 | 1.8 | |
| 20 | 6 20 | 17 32 | 0 23 | 1 16 | ... . | 0 | 12 6 | 1.6 | |
| 30 | 6 36 | 17 16 | 0 25 | 1 23 | 23 53 | 2.4 | 12 15 | 1.5 | |
| 35 | 6 45 | 17 7 | 0 27 | 1 27 | 23 48 | 2.5 | 12 21 | 1.4 | |
| 40 | 6 56 | 16 56 | 0 29 | 1 34 | 23 43 | 2.6 | 12 27 | 1.3 | |
| 45 | 7 8 | 16 44 | 0 32 | 1 42 | 23 37 | 2.7 | 12 34 | 1.1 | |
| 50 | 7 23 | 16 29 | 0 35 | 1 53 | 23 30 | 2.9 | 12 43 | 1.0 | |
| 55 | 7 42 | 16 10 | 0 41 | 2 8 | 23 21 | 3.1 | 12 53 | .8 | |
| 60 | 8 7 | 15 45 | 0 49 | 2 29 | 23 9 | 3.3 | 13 7 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 278 24.6 | 111 | -12 56.0 | 101 | 179 32.9 | 17 41.9 | 26 40.2 | -6 51.9 |
| 2 | 307 24.8 | 113 | -12 35.8 | 102 | 209 36.6 | 17 42.2 | 56 45.5 | -6 51.8 |
| 4 | 336 25.3 | 115 | -12 15.4 | 103 | 239 40.4 | 17 42.5 | 86 50.7 | -6 51.7 |
| 6 | 5 26.2 | 116 | -11 54.9 | 104 | 269 44.1 | 17 42.8 | 116 55.9 | -6 51.6 |
| 8 | 34 27.5 | 118 | -11 34.1 | 105 | 299 47.8 | 17 43.1 | 147 1.1 | -6 51.5 |
| 10 | 63 29.0 | 119 | -11 13.2 | 105 | 329 51.6 | 17 43.4 | 177 6.4 | -6 51.4 |
| 12 | 93 30.9 | 121 | -10 52.1 | 106 | 355 55.3 | 17 43.7 | 207 11.6 | -6 51.3 |
| 14 | 121 33.1 | 122 | -10 30.8 | 107 | 29 59.0 | 17 44.0 | 237 16.8 | -6 51.2 |
| 16 | 150 35.6 | 124 | -10 9.4 | 108 | 60 2.7 | 17 44.3 | 267 22.0 | -6 51.1 |
| 18 | 179 38.4 | 125 | -9 47.9 | 108 | 90 6.5 | 17 44.6 | 297 27.3 | -6 51.0 |
| 20 | 208 41.4 | 127 | -9 26.2 | 109 | 220 10.2 | 17 44.9 | 327 32.5 | -6 50.9 |
| 22 | 237 44.8 | 128 | -9 4.4 | 110 | 150 13.9 | 17 45.2 | 357 37.7 | -6 50.8 |
| Δ | 0 | 6 | | | 22 | -2 | 18 | -3 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | / | h min | / | |
| 00 | 3 38.1 | .0 | 15.9 | T _{m̄} | 5 38 | 2.0 | 57.4 | 15.6 | |
| 12 | 3 38.5 | T _{m̄} | 11 h 56.4 min | Starost | 20.7 d | Faza 1 | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| 0 | 14 9 | .1 | 277 | -6.2 | 4 | 12 0 | .0 | 309 | -1.5 |
| 0' | 19 18 | .1 | 200 | -2.2 | h | 22 5 | .0 | 157 | .6 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|----------------|---------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 266 48.4 | 129 | -8 42.5 | 110 | 180 17.6 | 17 45.5 | 27 43.0 | -6 50.7 | |
| 2 | 295 52.3 | 131 | -8 20.4 | 111 | 210 21.4 | 17 45.8 | 57 48.2 | -6 50.6 | |
| 4 | 324 56.5 | 132 | -7 58.3 | 111 | 240 25.1 | 17 46.1 | 87 53.4 | -6 50.5 | |
| 6 | 354 | .9 | 133 | -7 36.1 | 112 | 270 28.8 | 17 46.4 | 117 58.6 | -6 50.4 |
| 8 | 23 | 5.5 | 134 | -7 13.8 | 112 | 300 32.5 | 17 46.7 | 148 3.9 | -6 50.3 |
| 10 | 53 | 10.4 | 136 | -6 51.4 | 112 | 330 36.3 | 17 47.0 | 178 9.1 | -6 50.2 |
| 12 | 81 | 15.5 | 137 | -6 28.9 | 113 | 0 40.0 | 17 47.3 | 208 14.3 | -6 50.1 |
| 14 | 110 | 20.9 | 138 | -6 6.4 | 113 | 30 43.7 | 17 47.6 | 238 19.5 | -6 50.0 |
| 16 | 139 | 26.4 | 139 | -5 43.8 | 113 | 60 47.4 | 17 47.9 | 268 24.7 | -6 49.9 |
| 18 | 168 | 32.2 | 140 | -5 21.1 | 113 | 90 51.2 | 17 48.2 | 298 30.0 | -6 49.8 |
| 20 | 197 | 38.1 | 141 | -4 58.4 | 114 | 120 54.9 | 17 48.5 | 328 35.2 | -6 49.7 |
| 22 | 226 | 44.3 | 142 | -4 35.7 | 114 | 150 58.6 | 17 48.8 | 358 40.4 | -6 49.6 |
| Δ | 0 | 6 | | | 19 | 2 | 26 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | / | h min | / | |
| 00 | 3 38.8 | .0 | 15.9 | T _{m̄} | 6 25 | 1.8 | 56.5 | 15.4 | |
| 12 | 3 38.9 | T _{m̄} | 11 h 56.4 min | Starost | 21.7 d | Faza 1 | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| 0 | 14 6 | .1 | 277 | -6.2 | 4 | 11 57 | .0 | 309 | -1.5 |
| 0' | 19 15 | .1 | 200 | -2.2 | h | 22 5 | .0 | 157 | .6 |

14. MAJ

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 54.7 | 18 40.3 | 232 8.0 | 148 57.2 | 27 27.4 | 71 27.2 | 9 54.9 |
| 2 | 210 54.7 | 18 41.5 | 262 12.9 | 179 1.8 | 27 27.0 | 101 30.8 | 9 54.2 |
| 4 | 240 54.7 | 18 42.7 | 292 17.8 | 209 6.4 | 27 26.6 | 131 34.4 | 9 53.5 |
| 6 | 270 54.7 | 18 43.9 | 322 22.8 | 239 11.0 | 27 26.2 | 161 38.0 | 9 52.8 |
| 8 | 300 54.7 | 18 45.1 | 352 27.7 | 269 15.6 | 27 25.8 | 191 41.6 | 9 52.1 |
| 10 | 330 54.7 | 18 46.3 | 382 32.6 | 299 20.2 | 27 25.4 | 221 45.2 | 9 51.4 |
| 12 | 0 54.7 | 18 47.5 | 52 37.5 | 329 24.9 | 27 24.9 | 251 48.8 | 9 50.7 |
| 14 | 30 54.6 | 18 48.7 | 82 42.5 | 359 29.5 | 27 24.5 | 281 52.4 | 9 50.0 |
| 16 | 60 54.6 | 18 49.9 | 112 47.4 | 29 34.2 | 27 24.1 | 311 56.0 | 9 49.3 |
| 18 | 90 54.6 | 18 51.1 | 142 52.3 | 59 38.9 | 27 23.6 | 341 59.6 | 9 48.6 |
| 20 | 120 54.6 | 18 52.3 | 172 57.2 | 89 43.7 | 27 23.2 | 12 3.2 | 9 47.9 |
| 22 | 150 54.6 | 18 53.4 | 203 2.2 | 119 48.4 | 27 22.7 | 42 6.8 | 9 47.2 |
| Δ | 0 | 6 | | 23 | -2 | 18 | -4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 24 | 20 30 | 1 4 | : | 1 28 | .4 | 13 7 | 3.2 | |
| 55 | 3 54 | 20 0 | 0 48 | : | 1 23 | .7 | 13 9 | 3.0 | |
| 50 | 4 15 | 19 39 | 0 39 | 2 43 | 1 19 | .9 | 13 11 | 2.8 | |
| 45 | 4 32 | 19 22 | 0 34 | 2 9 | 1 16 | 1.0 | 13 13 | 2.6 | |
| 40 | 4 45 | 19 8 | 0 31 | 1 51 | 1 13 | 1.1 | 13 14 | 2.5 | |
| 35 | 4 57 | 18 56 | 0 28 | 1 39 | 1 11 | 1.2 | 13 15 | 2.4 | |
| 30 | 5 7 | 18 46 | 0 26 | 1 31 | 1 8 | 1.3 | 13 16 | 2.3 | |
| 20 | 5 24 | 18 29 | 0 24 | 1 20 | 1 5 | 1.5 | 13 17 | 2.1 | |
| 10 | 5 39 | 18 14 | 0 22 | 1 15 | 1 2 | 1.7 | 13 19 | 1.9 | |
| 0 | 5 53 | 17 60 | 0 22 | 1 13 | 0 59 | 1.8 | 13 20 | 1.8 | |
| 10 | 6 6 | 17 46 | 0 22 | 1 13 | 0 56 | 1.9 | 13 21 | 1.6 | |
| 20 | 6 21 | 17 32 | 0 23 | 1 16 | 0 53 | 2.1 | 13 22 | 1.5 | |
| 30 | 6 37 | 17 15 | 0 25 | 1 23 | 0 49 | 2.3 | 13 24 | 1.3 | |
| 35 | 6 47 | 17 5 | 0 27 | 1 28 | 0 47 | 2.4 | 13 24 | 1.2 | |
| 40 | 6 58 | 16 55 | 0 29 | 1 34 | 0 45 | 2.5 | 13 25 | 1.1 | |
| 45 | 7 10 | 16 42 | 0 32 | 1 42 | 0 42 | 2.6 | 13 26 | 1.0 | |
| 50 | 7 26 | 16 26 | 0 36 | 1 53 | 0 39 | 2.8 | 13 28 | .8 | |
| 55 | 7 45 | 16 7 | 0 41 | 2 8 | 0 35 | 3.0 | 13 29 | .7 | |
| 60 | 8 12 | 15 40 | 0 49 | 2 30 | 0 30 | 3.2 | 13 31 | .4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|--------------|---------------|----------|-------------|-------------------|---------------|-------------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 255 50.6 | 143 - 4 12.9 | 114 | 181 2.3 | 17 49.1 | 28 45.6 - 6 49.5 | | |
| 2 | 284 57.1 | 143 - 3 50.1 | 114 | 211 6.1 | 17 49.4 | 58 50.9 - 6 49.4 | | |
| 4 | 314 3.8 | 144 - 3 27.3 | 114 | 241 9.8 | 17 49.7 | 88 56.1 - 6 49.3 | | |
| 6 | 343 10.4 | 145 - 3 4.5 | 114 | 271 13.5 | 17 50.0 | 119 1.3 - 6 49.2 | | |
| 8 | 372 17.6 | 146 - 2 41.6 | 114 | 301 17.2 | 17 50.3 | 149 6.5 - 6 49.1 | | |
| 10 | 41 24.7 | 146 - 2 18.8 | 114 | 331 21.0 | 17 50.6 | 179 11.7 - 6 49.0 | | |
| 12 | 70 32.0 | 147 - 1 55.9 | 114 | 1 24.7 | 17 50.9 | 209 17.0 - 6 48.9 | | |
| 14 | 99 39.4 | 148 - 1 33.1 | 114 | 31 28.4 | 17 51.2 | 239 22.2 - 6 48.8 | | |
| 16 | 128 46.9 | 148 - 1 10.3 | 114 | 61 32.1 | 17 51.5 | 269 27.4 - 6 48.7 | | |
| 18 | 157 54.5 | 149 - 0 47.5 | 114 | 91 35.8 | 17 51.8 | 299 32.6 - 6 48.6 | | |
| 20 | 187 2.2 | 149 - 0 24.7 | 114 | 121 39.6 | 17 52.1 | 329 37.8 - 6 48.5 | | |
| 22 | 216 10.1 | 150 - 0 2.0 | 114 | 151 43.3 | 17 52.4 | 359 43.0 - 6 48.4 | | |
| Δ | 0 | 6 | | 24 | -2 | 18 | -4 | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min min / | T _{m̄} | 7 9 | 1.8 | 55.8 | 15.2 | |
| 00 | 3 39.0 | .0 | 15.9 | | | | | | |
| 12 | 3 38.7 | T _{m̄} | 11 h 56.4 min | Starost 22.7 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | | | h min / | h min / | o | | | |
| 0 | 14 2 | .1 | 277 | -6.2 | 4 | 11 54 | .0 | 309 | -1.5 |
| δ | 19 12 | .1 | 199 | -1 | h | 22 1 | .0 | 157 | .6 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|-------------------|-------------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 245 18.0 | 150 | 0 20.7 | 113 | 181 47.0 | 17 52.8 | 29 48.3 - 6 48.3 | |
| 2 | 274 26.0 | 150 | 0 43.4 | 113 | 211 50.7 | 17 53.1 | 59 53.5 - 6 48.2 | |
| 4 | 303 34.1 | 151 | 1 6.0 | 113 | 241 54.5 | 17 53.4 | 89 58.7 - 6 48.1 | |
| 6 | 332 42.2 | 151 | 1 28.6 | 113 | 271 58.2 | 17 53.6 | 120 3.9 - 6 48.0 | |
| 8 | 1 50.5 | 151 | 1 51.1 | 112 | 302 1.9 | 17 53.9 | 150 9.1 - 6 47.9 | |
| 10 | 30 58.7 | 152 | 2 13.6 | 112 | 332 5.6 | 17 54.2 | 180 14.3 - 6 47.8 | |
| 12 | 60 7.0 | 152 | 2 35.9 | 112 | 2 9.4 | 17 54.5 | 210 19.5 - 6 47.7 | |
| 14 | 89 15.4 | 152 | 2 58.2 | 111 | 32 13.1 | 17 54.8 | 240 24.8 - 6 47.6 | |
| 16 | 118 23.8 | 152 | 3 20.5 | 111 | 62 16.8 | 17 55.1 | 270 30.0 - 6 47.5 | |
| 18 | 147 32.2 | 152 | 3 42.6 | 110 | 92 20.5 | 17 55.4 | 300 35.2 - 6 47.4 | |
| 20 | 176 40.7 | 152 | 4 4.7 | 110 | 122 24.3 | 17 55.7 | 330 40.4 - 6 47.3 | |
| 22 | 205 49.2 | 152 | 4 26.7 | 109 | 152 28.0 | 17 56.0 | 0 45.6 - 6 47.2 | |
| Δ | 0 | 6 | | 19 | 1 | 26 | 0 | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min min / | T _{m̄} | 7 52 | 1.8 | 55.2 | 15.0 | |
| 00 | 3 38.5 | .0 | 15.8 | | | | | | |
| 12 | 3 38.0 | T _{m̄} | 11 h 56.4 min | Starost 23.7 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | | | h min / | h min / | o | | | |
| 0 | 13 58 | .1 | 277 | -6.3 | 4 | 11 51 | .0 | 309 | -1.5 |
| δ | 19 9 | .1 | 199 | -1 | h | 21 57 | .0 | 157 | .6 |

16. MAJ

2012.

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 54.3 | 19 8.6 | 234 6.2 | 150 51.7 | 27 16.6 | 72 53.2 | 9 37.9 | |
| 2 | 210 54.3 | 19 9.7 | 264 11.2 | 180 56.7 | 27 16.0 | 102 56.7 | 9 37.2 | |
| 4 | 240 54.3 | 19 10.8 | 294 16.1 | 211 1.8 | 27 15.5 | 133 .3 | 9 36.4 | |
| 6 | 270 54.2 | 19 12.0 | 324 21.0 | 241 6.8 | 27 15.0 | 163 3.8 | 9 35.7 | |
| 8 | 300 54.2 | 19 13.1 | 354 26.0 | 271 11.8 | 27 14.5 | 193 7.4 | 9 35.0 | |
| 10 | 330 54.2 | 19 14.3 | 384 30.9 | 301 16.9 | 27 14.0 | 223 10.9 | 9 34.3 | |
| 12 | 0 54.1 | 19 15.4 | 54 35.8 | 331 22.0 | 27 13.5 | 253 14.4 | 9 33.5 | |
| 14 | 30 54.1 | 19 16.5 | 44 40.7 | 1 27.1 | 27 12.9 | 283 18.0 | 9 32.8 | |
| 16 | 60 54.1 | 19 17.7 | 114 45.7 | 31 32.2 | 27 12.4 | 313 21.5 | 9 32.1 | |
| 18 | 90 54.0 | 19 18.8 | 144 50.6 | 61 37.4 | 27 11.9 | 343 25.0 | 9 31.3 | |
| 20 | 120 54.0 | 19 19.9 | 174 55.5 | 91 42.5 | 27 11.3 | 13 28.6 | 9 30.6 | |
| 22 | 150 53.9 | 19 21.0 | 205 .5 | 121 47.7 | 27 10.8 | 43 32.1 | 9 29.9 | |
| Δ | 0 | 6 | | 25 | -3 | 18 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 19 | 20 35 | 1 6 | : :: | 1 49 | .5 | 15 40 | 3.1 | |
| 55 | 3 50 | 20 4 | 0 48 | : :: | 1 55 | .7 | 15 30 | 2.9 | |
| 50 | 4 12 | 19 41 | 0 40 | 2 48 | 1 60 | .9 | 15 22 | 2.7 | |
| 45 | 4 30 | 19 24 | 0 35 | 2 11 | 2 4 | 1.0 | 15 16 | 2.5 | |
| 40 | 4 44 | 19 10 | 0 31 | 1 52 | 2 7 | 1.1 | 15 11 | 2.4 | |
| 35 | 4 56 | 18 58 | 0 28 | 1 40 | 2 10 | 1.2 | 15 7 | 2.3 | |
| 30 | 5 6 | 18 47 | 0 26 | 1 31 | 2 12 | 1.3 | 15 3 | 2.2 | |
| 20 | 5 23 | 18 30 | 0 24 | 1 21 | 2 17 | 1.5 | 14 56 | 2.1 | |
| 10 | 5 39 | 18 14 | 0 22 | 1 15 | 2 21 | 1.6 | 14 51 | 1.9 | |
| 0 | 5 53 | 17 60 | 0 22 | 1 13 | 2 25 | 1.8 | 14 45 | 1.8 | |
| 10 | 6 7 | 17 46 | 0 22 | 1 13 | 2 29 | 1.9 | 14 40 | 1.7 | |
| 20 | 6 22 | 17 31 | 0 23 | 1 17 | 2 33 | 2.0 | 14 34 | 1.5 | |
| 30 | 6 39 | 17 14 | 0 25 | 1 23 | 2 37 | 2.2 | 14 27 | 1.4 | |
| 35 | 6 48 | 17 4 | 0 27 | 1 28 | 2 40 | 2.3 | 14 24 | 1.3 | |
| 40 | 6 60 | 16 53 | 0 29 | 1 34 | 2 43 | 2.4 | 14 19 | 1.2 | |
| 45 | 7 13 | 16 40 | 0 32 | 1 43 | 2 47 | 2.5 | 14 14 | 1.1 | |
| 50 | 7 29 | 16 24 | 0 36 | 1 54 | 2 51 | 2.7 | 14 9 | .9 | |
| 55 | 7 49 | 16 3 | 0 41 | 2 9 | 2 57 | 2.9 | 14 1 | .7 | |
| 60 | 8 16 | 15 36 | 0 50 | 2 31 | 3 4 | 3.1 | 13 52 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 234 57.6 | 152 | 4 48.5 | 109 | 182 31.7 | 17 56.3 | 30 50.8 | - 6 47.1 |
| 2 | 264 6.1 | 152 | 5 10.3 | 108 | 212 35.4 | 17 56.6 | 60 56.0 | - 6 47.0 |
| 4 | 293 14.6 | 152 | 5 32.0 | 108 | 242 39.1 | 17 56.9 | 91 1.2 | - 6 46.9 |
| 6 | 322 23.1 | 152 | 5 53.5 | 107 | 272 42.9 | 17 57.2 | 121 6.5 | - 6 46.8 |
| 8 | 351 31.5 | 152 | 6 15.0 | 107 | 302 46.6 | 17 57.5 | 151 11.7 | - 6 46.7 |
| 10 | 20 40.0 | 152 | 6 36.3 | 106 | 332 50.3 | 17 57.8 | 181 16.9 | - 6 46.6 |
| 12 | 49 48.4 | 152 | 6 57.5 | 105 | 2 54.0 | 17 58.1 | 211 22.1 | - 6 46.5 |
| 14 | 78 56.7 | 152 | 7 18.5 | 105 | 32 57.8 | 17 58.4 | 241 27.3 | - 6 46.5 |
| 16 | 108 5.1 | 151 | 7 39.4 | 104 | 63 1.5 | 17 58.7 | 271 32.5 | - 6 46.4 |
| 18 | 137 13.4 | 151 | 8 .2 | 103 | 93 5.2 | 17 59.0 | 301 37.7 | - 6 46.3 |
| 20 | 166 21.6 | 151 | 8 20.8 | 102 | 123 8.9 | 17 59.3 | 331 42.9 | - 6 46.2 |
| 22 | 195 29.8 | 151 | 8 41.3 | 102 | 153 12.6 | 17 59.6 | 1 48.1 | - 6 46.1 |
| Δ | 0 | 6 | | | 27 | -3 | 18 | -4 |
| | | | | | 1 | | 26 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | 3 37.4 | -.1 | 15.8 | T _{m̄} | 8 35 | 1.8 | 54.7 | 14.9 |
| 12 | 3 36.6 | T _{m̄} | 11 h 56.4 min | Starost 24.7 d | Faza 0 | | | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | / | o / | |
| 0 | 13 54 | .1 | 277 | -6.3 | 4 |
| 12 | 19 6 | .1 | 199 | -.1 | h |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | 3 35.8 | -.1 | 15.8 | T _{m̄} | 9 18 | 1.8 | 54.3 | 14.8 |
| 12 | 3 34.7 | T _{m̄} | 11 h 56.4 min | Starost 25.7 d | Faza 0 | | | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | / | o / | |
| 0 | 13 50 | .1 | 277 | -6.3 | 4 |
| 12 | 19 3 | .1 | 198 | -.1 | h |

18. MAJ

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 53.4 | 19 35.5 | 236 4.5 | 152 56.7 | 27 3.3 | 74 17.6 | 9 20.2 | |
| 2 | 210 53.3 | 19 36.6 | 266 9.5 | 183 2.2 | 27 2.7 | 104 21.1 | 9 19.5 | |
| 4 | 240 53.3 | 19 37.6 | 296 14.4 | 213 7.6 | 27 2.1 | 134 24.6 | 9 18.8 | |
| 6 | 270 53.2 | 19 38.7 | 326 19.3 | 243 13.1 | 27 1.5 | 164 28.1 | 9 18.0 | |
| 8 | 300 53.1 | 19 39.8 | 356 24.2 | 273 18.6 | 27 .8 | 194 31.6 | 9 17.3 | |
| 10 | 330 53.1 | 19 40.9 | 26 29.2 | 303 24.1 | 27 .2 | 224 35.0 | 9 16.5 | |
| 12 | 0 53.0 | 19 42.0 | 56 34.1 | 333 29.6 | 26 59.6 | 254 38.5 | 9 15.8 | |
| 14 | 30 53.0 | 19 43.1 | 86 39.0 | 3 35.2 | 26 59.0 | 284 42.0 | 9 15.0 | |
| 16 | 60 52.9 | 19 44.1 | 116 43.9 | 33 40.8 | 26 58.3 | 314 45.5 | 9 14.2 | |
| 18 | 90 52.9 | 19 45.2 | 146 48.9 | 63 46.3 | 26 57.7 | 344 48.9 | 9 13.5 | |
| 20 | 120 52.8 | 19 46.3 | 176 53.8 | 93 51.9 | 26 57.0 | 14 52.4 | 9 12.7 | |
| 22 | 150 52.7 | 19 47.3 | 206 58.7 | 123 57.6 | 26 56.4 | 44 55.8 | 9 12.0 | |
| Δ | 0 | 5 | | 28 | -3 | 17 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 15 | 20 40 | 1 8 | : :: | 2 13 | .7 | 18 9 | 3 0 | |
| 55 | 3 47 | 20 7 | 0 49 | : :: | 2 30 | .9 | 17 47 | 2 8 | |
| 50 | 4 10 | 19 44 | 0 40 | 2 53 | 2 44 | 1.1 | 17 30 | 2 6 | |
| 45 | 4 27 | 19 26 | 0 35 | 2 12 | 2 54 | 1.2 | 17 17 | 2 5 | |
| 40 | 4 42 | 19 12 | 0 31 | 1 53 | 3 4 | 1.3 | 17 6 | 2 4 | |
| 35 | 4 54 | 18 59 | 0 28 | 1 40 | 3 11 | 1.4 | 16 57 | 2 3 | |
| 30 | 5 5 | 18 49 | 0 26 | 1 32 | 3 18 | 1.5 | 16 49 | 2 2 | |
| 20 | 5 23 | 18 30 | 0 24 | 1 21 | 3 30 | 1.6 | 16 35 | 2 1 | |
| 10 | 5 38 | 18 15 | 0 22 | 1 15 | 3 41 | 1.8 | 16 23 | 2 0 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 13 | 3 51 | 1.9 | 16 12 | 1 9 | |
| 10 | 6 7 | 17 46 | 0 22 | 1 14 | 4 1 | 2.0 | 16 1 | 1 8 | |
| 20 | 6 23 | 17 30 | 0 23 | 1 17 | 4 11 | 2.1 | 15 49 | 1 7 | |
| 30 | 6 40 | 17 13 | 0 26 | 1 23 | 4 24 | 2.2 | 15 35 | 1 6 | |
| 35 | 6 50 | 17 3 | 0 27 | 1 28 | 4 31 | 2.3 | 15 27 | 1 5 | |
| 40 | 7 1 | 16 51 | 0 29 | 1 35 | 4 39 | 2.4 | 15 18 | 1 4 | |
| 45 | 7 15 | 16 38 | 0 32 | 1 43 | 4 48 | 2.5 | 15 8 | 1 3 | |
| 50 | 7 31 | 16 21 | 0 36 | 1 54 | 4 60 | 2.6 | 14 55 | 1 2 | |
| 55 | 7 52 | 16 0 | 0 42 | 2 10 | 5 15 | 2.8 | 14 39 | 1 0 | |
| 60 | 8 21 | 15 32 | 0 51 | 2 33 | 5 34 | 3.1 | 14 18 | .8 | |
| S | | | | | | | | | |

19. MAJ

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 52.7 | 19 48.4 | 237 3.7 | 154 3.2 | 26 55.7 | 74 59.3 | 9 11.2 | |
| 2 | 210 52.6 | 19 49.5 | 267 8.6 | 184 8.9 | 26 55.1 | 105 2.8 | 9 10.5 | |
| 4 | 240 52.5 | 19 50.5 | 297 13.5 | 214 14.5 | 26 54.4 | 135 6.2 | 9 9.7 | |
| 6 | 270 52.5 | 19 51.6 | 327 18.4 | 244 20.2 | 26 53.7 | 165 9.7 | 9 8.9 | |
| 8 | 300 52.4 | 19 52.7 | 357 23.4 | 274 26.0 | 26 53.1 | 195 13.1 | 9 8.2 | |
| 10 | 330 52.3 | 19 53.7 | 27 28.3 | 304 31.7 | 26 52.4 | 225 16.6 | 9 7.4 | |
| 12 | 0 52.3 | 19 54.8 | 57 33.2 | 334 37.4 | 26 51.7 | 255 20.0 | 9 6.6 | |
| 14 | 30 52.2 | 19 55.8 | 87 38.2 | 4 43.2 | 26 51.0 | 285 23.4 | 9 5.9 | |
| 16 | 60 52.1 | 19 56.9 | 117 43.1 | 34 49.0 | 26 50.3 | 315 26.9 | 9 5.1 | |
| 18 | 90 52.1 | 19 57.9 | 147 48.0 | 64 54.8 | 26 49.6 | 345 30.3 | 9 4.3 | |
| 20 | 120 52.0 | 19 59.0 | 177 52.9 | 95 .6 | 26 48.9 | 15 33.7 | 9 3.6 | |
| 22 | 150 51.9 | 20 .0 | 207 57.9 | 125 6.5 | 26 48.2 | 45 37.2 | 9 2.8 | |
| Δ | 0 | 5 | | 29 | -3 | 17 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 13 | 20 42 | 1 9 | : :: | 2 29 | .9 | 19 21 | 2 8 | |
| 55 | 3 45 | 20 9 | 0 50 | : :: | 2 52 | 1.1 | 18 53 | 2 6 | |
| 50 | 4 8 | 19 45 | 0 40 | 2 55 | 3 10 | 1.3 | 18 33 | 2 5 | |
| 45 | 4 26 | 19 27 | 0 35 | 2 13 | 3 24 | 1.4 | 18 17 | 2 4 | |
| 40 | 4 41 | 19 12 | 0 31 | 1 53 | 3 36 | 1.5 | 18 3 | 2 3 | |
| 35 | 4 53 | 18 60 | 0 28 | 1 41 | 3 45 | 1.6 | 17 52 | 2 3 | |
| 30 | 5 4 | 18 49 | 0 26 | 1 32 | 3 54 | 1.6 | 17 42 | 2 2 | |
| 20 | 5 22 | 18 31 | 0 24 | 1 21 | 4 9 | 1.7 | 17 26 | 2 1 | |
| 10 | 5 38 | 18 15 | 0 22 | 1 16 | 4 23 | 1.8 | 17 11 | 2 0 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 13 | 4 35 | 1.9 | 16 57 | 2 0 | |
| 10 | 6 8 | 17 45 | 0 22 | 1 14 | 4 48 | 2.0 | 16 44 | 1 9 | |
| 20 | 6 23 | 17 30 | 0 23 | 1 17 | 5 1 | 2.1 | 16 29 | 1 8 | |
| 30 | 6 40 | 17 12 | 0 26 | 1 23 | 5 17 | 2.2 | 16 12 | 1 7 | |
| 35 | 6 51 | 17 2 | 0 27 | 1 28 | 5 26 | 2.3 | 16 3 | 1 6 | |
| 40 | 7 2 | 16 50 | 0 29 | 1 35 | 5 36 | 2.3 | 15 52 | 1 6 | |
| 45 | 7 16 | 16 37 | 0 32 | 1 43 | 5 48 | 2.4 | 15 39 | 1 5 | |
| 50 | 7 33 | 16 20 | 0 36 | 1 54 | 6 3 | 2.6 | 15 23 | 1 4 | |
| 55 | 7 54 | 15 59 | 0 42 | 2 10 | 6 22 | 2.7 | 15 3 | 1 3 | |
| 60 | 8 23 | 15 30 | 0 51 | 2 33 | 6 48 | 2.9 | 14 37 | 1 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | | |
|----|----------------|-------------|----------------|----------------|----------------|----------------|----------|
| | S _⊕ | Δ | S _γ | Δ _γ | S _φ | Δ _φ | |
| h | o / | o / | o / | o / | o / | o / | |
| 0 | 203 23.5 | 137 16 10.1 | 74 | 184 45.7 | 18 7.0 | 33 58.1 | - 6 43.8 |
| 2 | 232 28.8 | 136 16 25.0 | 73 | 214 49.4 | 18 7.3 | 64 3.3 | - 6 43.7 |
| 4 | 261 34.0 | 135 16 39.5 | 71 | 244 53.1 | 18 7.6 | 94 8.5 | - 6 43.6 |
| 6 | 290 39.0 | 134 16 53.8 | 70 | 274 56.9 | 18 7.9 | 124 13.7 | - 6 43.5 |
| 8 | 319 43.9 | 134 17 7.8 | 68 | 305 .6 | 18 8.1 | 154 18.9 | - 6 43.4 |
| 10 | 348 48.6 | 133 17 21.5 | 67 | 335 4.3 | 18 8.4 | 184 24.1 | - 6 43.3 |
| 12 | 17 53.2 | 132 17 34.9 | 65 | 5 8.0 | 18 8.7 | 214 29.3 | - 6 43.3 |
| 14 | 46 57.6 | 131 17 48.0 | 64 | 35 11.8 | 18 9.0 | 244 34.5 | - 6 43.2 |
| 16 | 76 1.9 | 131 18 .8 | 62 | 65 15.5 | 18 9.3 | 274 39.7 | - 6 43.1 |
| 18 | 105 6.0 | 130 18 13.2 | 61 | 95 19.2 | 18 9.6 | 304 44.9 | - 6 43.0 |
| 20 | 134 9.9 | 129 18 25.4 | 59 | 125 22.9 | 18 9.9 | 334 50.1 | - 6 42.9 |
| 22 | 163 13.8 | 128 18 37.2 | 57 | 155 26.6 | 18 10.2 | 4 55.3 | - 6 42.8 |
| Δ | 0 | 5 | | 19 | 1 | 26 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 13 | 20 42 | 1 9 | : :: | 2 29 | .9 | 19 21 | 2 8 | |
| 55 | 3 45 | 20 9 | 0 50 | : :: | 2 52 | 1.1 | 18 53 | 2 6 | |
| 50 | 4 8 | 19 45 | 0 40 | 2 55 | 3 10 | 1.3 | 18 33 | 2 5 | |
| 45 | 4 26 | 19 27 | 0 35 | 2 13 | 3 24 | 1.4 | 18 17 | 2 4 | |
| 40 | 4 41 | 19 12 | 0 31 | 1 53 | 3 36 | 1.5 | 18 3 | 2 3 | |
| 35 | | | | | | | | | |

20. MAJ

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | | | | | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----|------|-----|------|---|------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ | | | | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | | | | | | |
| 0 | 180 | 51.8 | 20 | 1.0 | 238 | 2.8 | 155 | 12.3 | 26 | 47.5 | 75 | 40.6 | 9 | 2.0 |
| 2 | 210 | 51.8 | 20 | 2.1 | 268 | 7.7 | 185 | 18.2 | 26 | 46.8 | 105 | 44.0 | 9 | 1.3 |
| 4 | 240 | 51.7 | 20 | 3.1 | 298 | 12.7 | 215 | 24.1 | 26 | 46.1 | 135 | 47.5 | 9 | -5 |
| 6 | 270 | 51.6 | 20 | 4.1 | 328 | 17.6 | 245 | 30.0 | 26 | 45.4 | 165 | 50.9 | 8 | 59.7 |
| 8 | 300 | 51.5 | 20 | 5.2 | 358 | 22.5 | 275 | 36.0 | 26 | 44.7 | 195 | 54.3 | 8 | 58.9 |
| 10 | 330 | 51.5 | 20 | 6.2 | 388 | 27.4 | 305 | 41.9 | 26 | 43.9 | 225 | 57.7 | 8 | 58.2 |
| 12 | 0 | 51.4 | 20 | 7.2 | 58 | 32.4 | 335 | 47.9 | 26 | 43.2 | 256 | 1.1 | 8 | 57.4 |
| 14 | 30 | 51.3 | 20 | 8.2 | 88 | 37.3 | 5 | 53.9 | 26 | 42.5 | 286 | 4.5 | 8 | 56.6 |
| 16 | 60 | 51.2 | 20 | 9.3 | 118 | 42.2 | 35 | 59.9 | 26 | 41.7 | 316 | 7.9 | 8 | 55.8 |
| 18 | 90 | 51.1 | 20 | 10.3 | 148 | 47.2 | 66 | 5.9 | 26 | 41.0 | 346 | 11.3 | 8 | 55.1 |
| 20 | 120 | 51.0 | 20 | 11.3 | 178 | 52.1 | 96 | 12.0 | 26 | 40.2 | 106 | 14.7 | 8 | 54.3 |
| 22 | 150 | 51.0 | 20 | 12.3 | 208 | 57.0 | 126 | 18.0 | 26 | 39.5 | 46 | 18.1 | 8 | 53.5 |
| Δ | 0 | 5 | | | | | 30 | -4 | | | 17 | -4 | | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 10 | 20 44 | 1 10 | : | : | 2 50 | 1.2 | 20 30 | 2.5 |
| 55 | 3 44 | 20 11 | 0 50 | : | : | 3 19 | 1.4 | 19 56 | 2.4 |
| 50 | 4 7 | 19 47 | 0 41 | 2 58 | 3 41 | 1.5 | 19 32 | 2.3 | |
| 45 | 4 25 | 19 28 | 0 35 | 2 14 | 3 57 | 1.6 | 19 14 | 2.3 | |
| 40 | 4 40 | 19 13 | 0 31 | 1 54 | 4 11 | 1.7 | 18 59 | 2.2 | |
| 35 | 4 53 | 19 1 | 0 29 | 1 41 | 4 23 | 1.7 | 18 46 | 2.2 | |
| 30 | 5 4 | 18 50 | 0 27 | 1 32 | 4 33 | 1.8 | 18 35 | 2.1 | |
| 20 | 5 22 | 18 31 | 0 24 | 1 21 | 4 51 | 1.9 | 18 16 | 2.1 | |
| 10 | 5 38 | 18 15 | 0 23 | 1 16 | 5 7 | 1.9 | 17 60 | 2.1 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 13 | 5 21 | 2.0 | 17 44 | 2.0 | |
| 10 | 6 8 | 17 45 | 0 22 | 1 14 | 5 36 | 2.0 | 17 29 | 2.0 | |
| 20 | 6 23 | 17 30 | 0 23 | 1 17 | 5 52 | 2.1 | 17 12 | 1.9 | |
| 30 | 6 41 | 17 12 | 0 26 | 1 23 | 6 10 | 2.2 | 16 53 | 1.9 | |
| 35 | 6 51 | 17 1 | 0 27 | 1 28 | 6 20 | 2.2 | 16 42 | 1.8 | |
| 40 | 7 3 | 16 50 | 0 29 | 1 35 | 6 32 | 2.3 | 16 30 | 1.8 | |
| 45 | 7 17 | 16 36 | 0 32 | 1 43 | 6 47 | 2.3 | 16 15 | 1.7 | |
| 50 | 7 34 | 16 19 | 0 36 | 1 55 | 7 4 | 2.4 | 15 57 | 1.7 | |
| 55 | 7 55 | 15 57 | 0 42 | 2 11 | 7 27 | 2.5 | 15 34 | 1.6 | |
| 60 | 8 25 | 15 28 | 0 51 | 2 34 | 7 58 | 2.7 | 15 1 | 1.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | | | | | | |
|----|----------------|------|----------------|----------------|----------------|----------------|----------------|------|-----|------|-----|------|----|------|
| | S _Ω | Δ | δ _Ω | S _φ | δ _φ | S _η | δ _η | | | | | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | | | | | |
| 0 | 192 | 17.4 | 128 | 18 | 48.7 | 56 | 185 | 30.4 | 18 | 10.5 | 35 | 5.5 | -6 | 42.7 |
| 2 | 221 | 20.0 | 127 | 18 | 59.9 | 54 | 215 | 34.1 | 18 | 10.8 | 65 | 5.7 | -6 | 42.7 |
| 4 | 250 | 24.3 | 126 | 19 | 10.7 | 52 | 245 | 37.8 | 18 | 11.1 | 95 | 10.8 | -6 | 42.6 |
| 6 | 279 | 27.6 | 125 | 19 | 21.2 | 51 | 275 | 41.5 | 18 | 11.4 | 125 | 16.0 | -6 | 42.5 |
| 8 | 308 | 30.7 | 125 | 19 | 31.3 | 49 | 305 | 45.3 | 18 | 11.6 | 155 | 21.2 | -6 | 42.4 |
| 10 | 337 | 33.6 | 124 | 19 | 41.1 | 47 | 335 | 49.0 | 18 | 11.9 | 185 | 26.4 | -6 | 42.3 |
| 12 | 6 | 36.4 | 123 | 19 | 50.5 | 45 | 5 | 52.7 | 18 | 12.2 | 215 | 31.6 | -6 | 42.2 |
| 14 | 35 | 39.1 | 123 | 19 | 59.6 | 44 | 35 | 56.4 | 18 | 12.5 | 245 | 36.8 | -6 | 42.1 |
| 16 | 64 | 41.6 | 122 | 20 | 8.3 | 42 | 66 | .1 | 18 | 12.8 | 275 | 42.0 | -6 | 42.1 |
| 18 | 93 | 44.0 | 121 | 20 | 16.7 | 40 | 96 | 3.9 | 18 | 13.1 | 305 | 47.2 | -6 | 42.0 |
| 20 | 122 | 46.3 | 121 | 20 | 24.7 | 38 | 126 | 7.6 | 18 | 13.4 | 335 | 52.3 | -6 | 41.9 |
| 22 | 151 | 48.4 | 120 | 20 | 32.3 | 36 | 156 | 11.3 | 18 | 13.7 | 5 | 57.5 | -6 | 41.8 |
| Δ | 0 | 5 | | | | | 31 | -4 | | | 17 | -4 | | |
| | | | | | | | 26 | 0 | | | | | | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 8 | 20 46 | 1 11 | : | : | 3 19 | 1.6 | 21 30 | 2.1 |
| 55 | 3 42 | 20 12 | 0 50 | : | : | 3 53 | 1.8 | 20 54 | 2.1 |
| 50 | 4 6 | 19 48 | 0 41 | 3 1 | 4 17 | 1.8 | 20 28 | 2.1 | |
| 45 | 4 25 | 19 29 | 0 35 | 2 15 | 4 36 | 1.9 | 20 8 | 2.1 | |
| 40 | 4 40 | 19 14 | 0 31 | 1 54 | 4 52 | 1.9 | 19 52 | 2.1 | |
| 35 | 4 52 | 19 1 | 0 29 | 1 41 | 5 5 | 1.9 | 19 39 | 2.1 | |
| 30 | 5 3 | 18 50 | 0 27 | 1 32 | 5 16 | 1.9 | 19 27 | 2.1 | |
| 20 | 5 22 | 18 32 | 0 24 | 1 21 | 5 36 | 2.0 | 19 6 | 2.1 | |
| 10 | 5 38 | 18 15 | 0 23 | 1 16 | 5 53 | 2.0 | 18 49 | 2.1 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 13 | 6 9 | 2.0 | 18 32 | 2.0 | |
| 10 | 6 8 | 17 45 | 0 22 | 1 14 | 6 25 | 2.1 | 18 16 | 2.0 | |
| 20 | 6 24 | 17 29 | 0 23 | 1 17 | 6 42 | 2.1 | 17 58 | 2.0 | |
| 30 | 6 42 | 17 11 | 0 26 | 1 24 | 7 2 | 2.1 | 17 38 | 2.0 | |
| 35 | 6 52 | 17 1 | 0 27 | 1 29 | 7 14 | 2.1 | 17 26 | 2.0 | |
| 40 | 7 4 | 16 49 | 0 30 | 1 35 | 7 27 | 2.1 | 17 13 | 2.0 | |
| 45 | 7 18 | 16 35 | 0 32 | 1 44 | 7 43 | 2.2 | 16 57 | 2.0 | |
| 50 | 7 35 | 16 18 | 0 36 | 1 55 | 8 2 | 2.2 | 16 37 | 2.0 | |
| 55 | 7 57 | 15 56 | 0 42 | 2 11 | 8 28 | 2.2 | 16 11 | 1.9 | |
| 60 | 8 27 | 15 26 | 0 51 | 2 34 | 9 3 | 2.3 | 15 35 | 1.9 | |
| S | | | | | | | | | |

| UT | SUNCE | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-----------|-----------------|-------|----------------|------|--------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | |
| h min s | s | / | h min min | h min | min | / | / | |
| 00 | 3 23.7 | .2 | 15.8 | T _{m̄} | 12 21 | 2.0 | 54.0 | 14.7 |
| 12 | 3 21.5 | T _{m̄} | 11 | 56.6 | min | Starost | .0 d | Faza ● |
| | | | | | | | | |

| UT | PLANETE | | | | | | | | |
|---------|---------|-----------------|--------------------|-----------|-------|-----------------|--------------------|------|------|
| | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | |
| h min s | / | o | / | h min min | / | o | / | o | / |
| 0 | 13 32 | .1 | 277 | -6.4 | 4 11 | 34 | .0 | 307 | -1.5 |
| 22 | 14 52 | .1 | 197 | .0 | 21 32 | .0 | 157 | .6 | |
| Δ | 19 | 1 | | 26 | 0 | | | | |

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 | 49.8 | 20 | 25.2 | 240 | 1.1 | 157 | 38.5 |
| 2 | 210 | 49.7 | 20 | 26.2 | 270 | 6.0 | 187 | 44.8 |
| 4 | 240 | 49.6 | 20 | 27.2 | 300 | 10.9 | 217 | 51.2 |
| 6 | 270 | 49.5 | 20 | 28.2 | 330 | 15.9 | 247 | 57.5 |
| 8 | 300 | 49.4 | 20 | 29.1 | o | 20.8 | 278 | 3.9 |
| 10 | 330 | 49.3 | 20 | 30.1 | 30 | 25.7 | 308 | 10.3 |
| 12 | 0 | 49.2 | 20 | 31.1 | 60 | 30.6 | 338 | 16.7 |
| 14 | 30 | 49.1 | 20 | 32.0 | 90 | 35.6 | 8 | 23.1 |
| 16 | 60 | 49.0 | 20 | 33.0 | 120 | 40.5 | 38 | 29.5 |
| 18 | 90 | 48.9 | 20 | 34.0 | 150 | 45.4 | 68 | 36.0 |
| 20 | 120 | 48.8 | 20 | 34.9 | 180 | 50.4 | 98 | 42.5 |
| 22 | 150 | 48.7 | 20 | 35.9 | 210 | 55.3 | 128 | 49.0 |
| Δ | -1 | 5 | | | | | 32 | -4 |
| | | | | | | | 17 | -4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 6 | 20 49 | 1 12 | : :: | 3 59 | 2.2 | 22 20 | 1.6 |
| 55 | 3 41 | 20 14 | 0 51 | :: : | 4 35 | 2.1 | 21 44 | 1.7 |
| 50 | 4 5 | 19 49 | 0 41 | 3 4 | 5 1 | 2.1 | 21 18 | 1.8 |
| 45 | 4 24 | 19 30 | 0 35 | 2 16 | 5 21 | 2.1 | 20 58 | 1.9 |
| 40 | 4 39 | 19 15 | 0 31 | 1 55 | 5 37 | 2.1 | 20 42 | 1.9 |
| 35 | 4 52 | 19 2 | 0 29 | 1 42 | 5 51 | 2.1 | 20 28 | 1.9 |
| 30 | 5 3 | 18 51 | 0 27 | 1 33 | 6 3 | 2.1 | 20 16 | 1.9 |
| 20 | 5 22 | 18 32 | 0 24 | 1 22 | 6 23 | 2.1 | 19 56 | 2.0 |
| 10 | 5 38 | 18 16 | 0 23 | 1 16 | 6 41 | 2.1 | 19 38 | 2.0 |
| 0 | 5 53 | 18 0 | 0 22 | 1 14 | 6 58 | 2.1 | 19 22 | 2.1 |
| 10 | 6 8 | 17 45 | 0 22 | 1 14 | 7 14 | 2.0 | 19 5 | 2.1 |
| 20 | 6 24 | 17 29 | 0 24 | 1 17 | 7 32 | 2.0 | 18 47 | 2.1 |
| 30 | 6 42 | 17 11 | 0 26 | 1 24 | 7 53 | 2.0 | 18 27 | 2.2 |
| 35 | 6 53 | 17 0 | 0 27 | 1 29 | 8 5 | 2.0 | 18 15 | 2.2 |
| 40 | 7 19 | 16 48 | 0 30 | 1 35 | 8 19 | 2.0 | 18 1 | 2.2 |
| 45 | 7 19 | 16 34 | 0 33 | 1 44 | 8 35 | 2.0 | 17 44 | 2.2 |
| 50 | 7 36 | 16 17 | 0 37 | 1 55 | 8 55 | 1.9 | 17 24 | 2.3 |
| 55 | 7 58 | 15 55 | 0 42 | 2 11 | 9 21 | 1.9 | 16 58 | 2.3 |
| 60 | 8 29 | 15 24 | 0 52 | 2 35 | 9 59 | 1.8 | 16 21 | 2.4 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 169 | 6.4 | 114 | 21 | 36.1 | 11 | 186 | 59.7 |
| 2 | 198 | 7.2 | 114 | 21 | 38.2 | 9 | 217 | 3.4 |
| 4 | 227 | 7.9 | 113 | 21 | 39.9 | 6 | 247 | 7.1 |
| 6 | 256 | 8.5 | 113 | 21 | 41.2 | 4 | 277 | 10.9 |
| 8 | 285 | 9.1 | 113 | 21 | 42.0 | 2 | 307 | 14.6 |
| 10 | 314 | 9.7 | 112 | 21 | 42.5 | 0 | 337 | 18.3 |
| 12 | 343 | 10.2 | 112 | 21 | 42.6 | -2 | 7 | 22.0 |
| 14 | 12 | 10.6 | 112 | 21 | 42.2 | -4 | 37 | 25.7 |
| 16 | 41 | 11.0 | 112 | 21 | 41.4 | -6 | 67 | 29.5 |
| 18 | 70 | 11.4 | 112 | 21 | 40.2 | -8 | 97 | 33.2 |
| 20 | 99 | 11.8 | 112 | 21 | 38.6 | -10 | 127 | 36.9 |
| 22 | 128 | 12.1 | 112 | 21 | 36.5 | -12 | 157 | 40.6 |
| Δ | -1 | 5 | | | | | 19 | 1 |
| | | | | | | | 26 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|---------------|----------------|--------|----------------|------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 3 19.3 | - .2 | 15.8 | T _⊖ | 13 10 | 2.0 | 54.2 | 14.8 |
| 12 | 3 16.8 | T _⊖ | 11 h 56.7 min | Starost | 1.0 d | Faza | ● | |
| PLANETE | | | | | | | | |
| Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊖ | π | 360-π |
| h min | / | ° | / | Vel. | h min | / | ° | / |
| 0 | 13 27 | .1 | 278 | -6.5 | 4 | 11 31 | .0 | 307 |
| 0' | 18 50 | .1 | 197 | .0 | h | 21 28 | .0 | 157 |
| | | | | | | | | |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 | 48.5 | 20 | 36.8 | 241 | .2 | 158 | 55.5 |
| 2 | 210 | 48.4 | 20 | 37.8 | 271 | 5.1 | 189 | 2.0 |
| 4 | 240 | 48.3 | 20 | 38.7 | 301 | 10.1 | 219 | 8.6 |
| 6 | 270 | 48.2 | 20 | 39.7 | 331 | 15.0 | 249 | 15.1 |
| 8 | 300 | 48.1 | 20 | 40.6 | 361 | 19.9 | 279 | 21.7 |
| 10 | 330 | 48.0 | 20 | 41.5 | 391 | 24.9 | 309 | 28.3 |
| 12 | 0 | 47.9 | 20 | 42.5 | 421 | 29.8 | 339 | 34.9 |
| 14 | 30 | 47.8 | 20 | 43.4 | 91 | 34.7 | 9 | 41.6 |
| 16 | 60 | 47.7 | 20 | 44.3 | 121 | 39.6 | 39 | 48.2 |
| 18 | 90 | 47.5 | 20 | 45.3 | 151 | 44.6 | 69 | 54.9 |
| 20 | 120 | 47.4 | 20 | 46.2 | 181 | 49.5 | 100 | 1.6 |
| 22 | 150 | 47.3 | 20 | 47.1 | 211 | 54.4 | 130 | 8.3 |
| Δ | -1 | 5 | | | | | 33 | -5 |
| | | | | | | | 17 | -4 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|---------------|----------------|--------|----------------|------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 3 14.4 | - .2 | 15.8 | T _⊖ | 13 59 | 2.0 | 54.4 | 14.8 |
| 12 | 3 11.7 | T _⊖ | 11 h 56.8 min | Starost | 2.0 d | Faza | ● | |
| PLANETE | | | | | | | | |
| Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊖ | π | 360-π |
| h min | / | ° | / | Vel. | h min | / | ° | / |
| 0 | 13 21 | .1 | 278 | -6.5 | 4 | 11 28 | .0 | 307 |
| 0' | 18 47 | .1 | 197 | .0 | h | 21 24 | .0 | 157 |
| | | | | | | | | |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 157 | 12.4 | 21 | 34.1 | -14 | 187 | 44.3 | 18 20.9 |
| 2 | 186 | 12.7 | 21 | 31.2 | -16 | 217 | 48.1 | 18 21.1 |
| 4 | 215 | 13.0 | 21 | 27.9 | -19 | 247 | 51.8 | 18 21.4 |
| 6 | 244 | 13.3 | 21 | 24.2 | -21 | 277 | 55.5 | 18 21.7 |
| 8 | 273 | 13.6 | 21 | 20.1 | -23 | 307 | 59.2 | 18 22.0 |
| 10 | 302 | 14.0 | 21 | 15.6 | -25 | 338 | 3.0 | 18 22.3 |
| 12 | 331 | 14.3 | 21 | 10.6 | -27 | 8 | 6.7 | 18 22.6 |
| 14 | 0 | 14.7 | 21 | 5.2 | -29 | 38 | 10.4 | 18 22.8 |
| 16 | 29 | 15.0 | 21 | 20.9 | -31 | 68 | 14.1 | 18 23.1 |
| 18 | 58 | 15.4 | 21 | 20.3 | -33 | 98 | 17.8 | 18 23.4 |
| 20 | 87 | 15.9 | 21 | 20.6 | -35 | 128 | 21.6 | 18 23.7 |
| 22 | 116 | 16.3 | 21 | 20.7 | -37 | 158 | 25.3 | 18 24.0 |
| Δ | -1 | 5 | | | | 19 | 1 | 26 |
| | | | | | | 26 | 0 | |

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2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 47.2 | 20 48.1 | 241 59.4 | 160 15.0 | 26 8.2 | 78 22.3 | 8 23.9 | |
| 2 | 210 47.1 | 20 49.0 | 272 4.3 | 190 21.7 | 26 7.2 | 108 25.6 | 8 23.1 | |
| 4 | 240 47.0 | 20 49.9 | 302 9.2 | 220 28.5 | 26 6.3 | 138 28.9 | 8 22.3 | |
| 6 | 270 46.8 | 20 50.8 | 332 14.1 | 250 35.2 | 26 5.4 | 168 32.2 | 8 21.5 | |
| 8 | 300 46.7 | 20 51.7 | 2 19.1 | 280 42.0 | 26 4.4 | 198 35.5 | 8 20.7 | |
| 10 | 330 46.6 | 20 52.6 | 32 24.0 | 310 48.8 | 26 3.5 | 228 38.8 | 8 19.9 | |
| 12 | 0 46.5 | 20 53.5 | 62 28.9 | 340 55.7 | 26 2.5 | 258 42.1 | 8 19.0 | |
| 14 | 30 46.3 | 20 54.4 | 92 33.9 | 11 2.5 | 26 1.5 | 288 45.4 | 8 18.2 | |
| 16 | 60 46.2 | 20 55.3 | 122 38.8 | 41 9.3 | 26 .6 | 318 48.7 | 8 17.4 | |
| 18 | 90 46.1 | 20 56.2 | 152 43.7 | 71 16.2 | 25 59.6 | 348 52.0 | 8 16.6 | |
| 20 | 120 46.0 | 20 57.1 | 182 48.6 | 101 23.1 | 25 58.6 | 18 55.3 | 8 15.7 | |
| 22 | 150 45.8 | 20 58.0 | 212 53.6 | 131 30.0 | 25 57.6 | 48 58.6 | 8 14.9 | |
| Δ | -1 | 5 | | 34 | -5 | 16 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 2 | 20 53 | 1 14 | : :: | 5 54 | 3 0 | 23 27 | .9 | |
| 55 | 3 38 | 20 17 | 0 52 | : :: | 6 27 | 2 8 | 22 59 | 1.1 | |
| 50 | 4 3 | 19 52 | 0 41 | 3 11 | 6 50 | 2.6 | 22 38 | 1.3 | |
| 45 | 4 22 | 19 32 | 0 36 | 2 18 | 7 8 | 2.5 | 22 21 | 1.4 | |
| 40 | 4 37 | 19 17 | 0 32 | 1 56 | 7 23 | 2.4 | 22 8 | 1.5 | |
| 35 | 4 51 | 19 4 | 0 29 | 1 42 | 7 35 | 2.4 | 21 57 | 1.6 | |
| 30 | 5 2 | 18 52 | 0 27 | 1 33 | 7 46 | 2.3 | 21 47 | 1.7 | |
| 20 | 5 21 | 18 33 | 0 24 | 1 22 | 8 5 | 2.2 | 21 29 | 1.8 | |
| 10 | 5 38 | 18 16 | 0 23 | 1 16 | 8 21 | 2.1 | 21 14 | 1.9 | |
| 0 | 5 53 | 18 0 | 0 22 | 1 14 | 8 36 | 2.0 | 20 60 | 2.0 | |
| 10 | 6 9 | 17 45 | 0 22 | 1 14 | 8 51 | 1.9 | 20 46 | 2.1 | |
| 20 | 6 25 | 17 29 | 0 24 | 1 17 | 9 8 | 1.9 | 20 30 | 2.2 | |
| 30 | 6 43 | 17 10 | 0 26 | 1 24 | 9 26 | 1.8 | 20 13 | 2.3 | |
| 35 | 6 54 | 16 59 | 0 27 | 1 29 | 9 37 | 1.7 | 20 2 | 2.4 | |
| 40 | 7 7 | 16 47 | 0 30 | 1 35 | 9 49 | 1.6 | 19 50 | 2.5 | |
| 45 | 7 21 | 16 32 | 0 33 | 1 44 | 10 4 | 1.5 | 19 36 | 2.6 | |
| 50 | 7 39 | 16 15 | 0 37 | 1 56 | 10 22 | 1.4 | 19 19 | 2.7 | |
| 55 | 8 1 | 15 52 | 0 43 | 2 12 | 10 44 | 1.3 | 18 57 | 2.9 | |
| 60 | 8 33 | 15 20 | 0 52 | 2 36 | 11 16 | 1.0 | 18 27 | 3.1 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 145 16.8 | 113 20 32.3 | -39 | 188 29.0 | 18 24.3 | 39 9.0 | -6 38.8 | |
| 2 | 174 17.4 | 113 20 24.5 | -41 | 218 32.7 | 18 24.5 | 69 14.2 | -6 38.8 | |
| 4 | 203 18.0 | 113 20 16.2 | -43 | 248 36.5 | 18 24.8 | 99 19.4 | -6 38.7 | |
| 6 | 232 18.6 | 113 20 7.6 | -45 | 278 40.2 | 18 25.1 | 129 24.5 | -6 38.6 | |
| 8 | 261 19.3 | 114 19 58.6 | -47 | 308 43.9 | 18 25.4 | 159 29.7 | -6 38.5 | |
| 10 | 290 20.1 | 114 19 49.2 | -49 | 338 47.6 | 18 25.7 | 189 34.9 | -6 38.5 | |
| 12 | 318 20.9 | 114 19 39.4 | -51 | 8 51.3 | 18 26.0 | 219 40.0 | -6 38.4 | |
| 14 | 348 21.7 | 115 19 29.2 | -53 | 38 55.1 | 18 26.2 | 249 45.2 | -6 38.3 | |
| 16 | 17 22.7 | 115 19 18.6 | -55 | 68 58.8 | 18 26.5 | 279 50.4 | -6 38.2 | |
| 18 | 46 23.7 | 115 19 7.7 | -57 | 99 2.5 | 18 26.8 | 309 55.5 | -6 38.2 | |
| 20 | 75 24.7 | 116 18 56.3 | -59 | 129 6.2 | 18 27.1 | 340 .7 | -6 38.1 | |
| 22 | 104 25.8 | 116 18 44.6 | -60 | 159 10.0 | 18 27.4 | 10 5.8 | -6 38.0 | |
| Δ | -1 | 4 | | 35 | -5 | 16 | -4 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | 3 9.0 | -2 | 15.8 | T _{m̄} | 14 48 | 2.0 | 54.8 | 14.9 |
| 12 | 3 6.0 | T _{m̄} | 11 h 56.9 min | Starost | 3.0 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | | | | |
| 0 | 13 16 | .1 | 278 | -6.5 | 4 |
| 12 | 18 44 | .1 | 196 | .0 | h |
| | 21 20 | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 133 27.0 | 116 18 32.5 | -62 | 189 13.7 | 18 27.6 | 40 11.0 | -6 37.9 | |
| 2 | 162 28.3 | 117 18 20.0 | -64 | 219 17.4 | 18 27.9 | 70 16.2 | -6 37.9 | |
| 4 | 191 29.7 | 117 18 7.2 | -66 | 249 21.1 | 18 28.2 | 100 21.3 | -6 37.8 | |
| 6 | 220 31.1 | 117 17 54.0 | -68 | 279 24.9 | 18 28.5 | 130 26.5 | -6 37.7 | |
| 8 | 249 32.6 | 118 17 40.4 | -70 | 309 28.6 | 18 28.8 | 160 31.6 | -6 37.6 | |
| 10 | 278 34.1 | 118 17 26.5 | -71 | 339 32.3 | 18 29.1 | 190 36.8 | -6 37.6 | |
| 12 | 307 35.8 | 119 17 12.3 | -73 | 9 36.0 | 18 29.3 | 220 42.0 | -6 37.5 | |
| 14 | 336 37.5 | 119 16 57.6 | -75 | 39 39.7 | 18 29.6 | 250 47.1 | -6 37.4 | |
| 16 | 5 39.3 | 119 16 42.7 | -77 | 69 43.5 | 18 29.9 | 280 52.3 | -6 37.4 | |
| 18 | 34 41.2 | 120 16 27.4 | -78 | 99 47.2 | 18 30.2 | 310 57.4 | -6 37.3 | |
| 20 | 63 43.1 | 120 16 11.7 | -80 | 129 50.9 | 18 30.5 | 341 2.6 | -6 37.2 | |
| 22 | 92 45.1 | 120 15 55.7 | -82 | 159 54.6 | 18 30.7 | 11 7.7 | -6 37.1 | |
| Δ | -1 | 4 | | 19 | 1 | 26 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | 3 3.0 | -3 | 15.8 | T _{m̄} | 15 37 | 2.0 | 55.2 | 15.0 |
| 12 | 2 59.8 | T _{m̄} | 11 h 57.0 min | Starost | 4.0 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | | | | |
| 0 | 13 10 | .1 | 279 | -6.5 | 4 |
| 12 | 18 42 | .1 | 196 | .0 | h |
| | 21 16 | | | | |

26. MAJ

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 44.1 | 21 9.4 | 243 57.6 | 163 1.2 | 25 44.4 | 79 41.1 | 8 4.1 | |
| 2 | 210 44.0 | 21 10.3 | 274 2.6 | 193 8.3 | 25 43.4 | 109 44.4 | 8 3.3 | |
| 4 | 240 43.8 | 21 11.1 | 304 7.5 | 223 15.5 | 25 42.3 | 139 47.7 | 8 2.4 | |
| 6 | 270 43.7 | 21 12.0 | 334 12.4 | 253 22.6 | 25 41.3 | 169 50.9 | 8 1.6 | |
| 8 | 300 43.6 | 21 12.8 | 364 17.3 | 283 29.8 | 25 40.2 | 199 54.2 | 8 .7 | |
| 10 | 330 43.4 | 21 13.7 | 394 22.3 | 313 37.0 | 25 39.1 | 229 57.4 | 7 59.9 | |
| 12 | 0 43.3 | 21 14.5 | 64 27.2 | 343 44.2 | 25 38.1 | 260 .7 | 7 59.1 | |
| 14 | 30 43.1 | 21 15.4 | 94 32.1 | 13 51.4 | 25 37.0 | 290 3.9 | 7 58.2 | |
| 16 | 60 43.0 | 21 16.2 | 124 37.1 | 43 58.7 | 25 35.9 | 320 7.1 | 7 57.4 | |
| 18 | 90 42.8 | 21 17.1 | 154 42.0 | 74 5.9 | 25 34.8 | 350 10.4 | 7 56.5 | |
| 20 | 120 42.7 | 21 17.9 | 184 46.9 | 104 13.2 | 25 33.7 | 20 13.6 | 7 55.7 | |
| 22 | 150 42.6 | 21 18.7 | 214 51.8 | 134 20.5 | 25 32.6 | 50 16.9 | 7 54.8 | |
| Δ | -1 | 4 | | 36 | -5 | 16 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 59 | 20 57 | 1 17 | : :: | 8 24 | 3.4 | .. .. | .0 | |
| 55 | 3 35 | 20 20 | 0 52 | : :: | 8 44 | 3.1 | 23 48 | .8 | |
| 4 | 4 1 | 19 54 | 0 42 | 3 18 | 8 60 | 2.9 | 23 36 | 1.0 | |
| 45 | 4 20 | 19 34 | 0 36 | 2 20 | 9 12 | 2.7 | 23 27 | 1.2 | |
| 40 | 4 36 | 19 18 | 0 32 | 1 57 | 9 22 | 2.6 | 23 18 | 1.3 | |
| 35 | 4 50 | 19 5 | 0 29 | 1 43 | 9 31 | 2.5 | 23 11 | 1.4 | |
| 30 | 5 1 | 18 53 | 0 27 | 1 34 | 9 38 | 2.4 | 23 5 | 1.5 | |
| 20 | 5 21 | 18 34 | 0 24 | 1 22 | 9 51 | 2.2 | 22 54 | 1.7 | |
| 10 | 5 38 | 18 17 | 0 23 | 1 16 | 10 10 | 2.1 | 22 45 | 1.8 | |
| 0 | 5 54 | 18 1 | 0 22 | 1 14 | 10 13 | 2.0 | 22 36 | 2.0 | |
| 10 | 6 9 | 17 45 | 0 22 | 1 14 | 10 23 | 1.8 | 22 27 | 2.1 | |
| 6 | 6 26 | 17 28 | 0 24 | 1 18 | 10 35 | 1.7 | 22 17 | 2.3 | |
| 30 | 6 45 | 17 9 | 0 26 | 1 24 | 10 47 | 1.5 | 22 6 | 2.4 | |
| 35 | 6 56 | 16 58 | 0 28 | 1 29 | 10 55 | 1.5 | 21 59 | 2.5 | |
| 40 | 7 8 | 16 46 | 0 30 | 1 36 | 11 31 | 1.3 | 21 52 | 2.6 | |
| 45 | 7 23 | 16 31 | 0 33 | 1 44 | 11 13 | 1.2 | 21 43 | 2.8 | |
| 50 | 7 41 | 16 13 | 0 37 | 1 56 | 11 25 | 1.1 | 21 33 | 2.9 | |
| 55 | 8 4 | 15 49 | 0 43 | 2 13 | 11 39 | .9 | 21 19 | 3.1 | |
| 60 | 8 37 | 15 17 | 0 53 | 2 37 | 11 59 | .6 | 21 2 | 3.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 121 47.2 | 121 15 39.4 | -83 | 189 58.4 | 18 31.0 | | 41 12.9 | - 6 37.1 |
| 2 | 150 49.4 | 121 15 22.8 | -85 | 220 2.1 | 18 31.3 | | 71 18.0 | - 6 37.0 |
| 4 | 179 51.6 | 121 15 5.9 | -86 | 250 5.8 | 18 31.6 | | 101 23.2 | - 6 36.9 |
| 6 | 208 53.9 | 122 14 48.6 | -88 | 280 9.5 | 18 31.8 | | 131 28.4 | - 6 36.9 |
| 8 | 237 56.2 | 122 14 31.0 | -89 | 310 13.3 | 18 32.1 | | 161 33.5 | - 6 36.8 |
| 10 | 266 58.6 | 122 14 13.1 | -91 | 340 17.0 | 18 32.4 | | 191 38.7 | - 6 36.7 |
| 12 | 296 1.1 | 123 13 55.0 | -92 | 10 20.7 | 18 32.7 | | 221 43.8 | - 6 36.6 |
| 14 | 325 3.6 | 123 13 36.5 | -94 | 40 24.4 | 18 33.0 | | 251 49.0 | - 6 36.6 |
| 16 | 354 6.2 | 123 13 17.7 | -95 | 70 28.2 | 18 33.2 | | 281 54.1 | - 6 36.5 |
| 18 | 23 8.9 | 123 12 58.7 | -97 | 100 31.9 | 18 33.5 | | 311 59.3 | - 6 36.4 |
| 20 | 52 11.5 | 124 12 39.3 | -98 | 130 35.6 | 18 33.8 | | 342 4.4 | - 6 36.4 |
| 22 | 81 14.3 | 124 12 19.7 | -99 | 160 39.3 | 18 34.1 | | 12 9.6 | - 6 36.3 |
| Δ | -1 | 4 | | 19 | 1 | | 26 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|---------------|----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 2 56.7 | - .3 | 15.8 | T _⊖ | 16 24 | 2.0 | 55.7 | 15.2 |
| 12 | 2 53.2 | T _⊖ | 11 h 57.1 min | Starost | 5.0 d | Faza | ● | |

| PLANETE | | | | | | | | | |
|---------|----------------|----|-------|------|-------|----------------|----|-------|------|
| Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊕ | π | 360-π | Vel. |
| h min | / | o | / | | h min | / | o | / | |
| ♀ | 13 5 | .1 | 279 | -6.6 | ♀ | 11 19 | .0 | 306 | -1.5 |
| ♂ | 18 39 | .1 | 196 | .0 | ♂ | 21 12 | .0 | 157 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 110 17.0 | 124 11 59.8 | -101 | 190 43.0 | 18 34.4 | | 42 14.7 | - 6 36.2 |
| 2 | 139 19.8 | 124 11 39.7 | -102 | 220 46.8 | 18 34.6 | | 72 19.9 | - 6 36.2 |
| 4 | 168 22.7 | 124 11 19.3 | -103 | 250 50.5 | 18 34.9 | | 102 25.0 | - 6 36.1 |
| 6 | 197 25.6 | 124 10 58.6 | -105 | 280 54.2 | 18 35.2 | | 132 30.2 | - 6 36.0 |
| 8 | 226 28.4 | 125 10 37.7 | -106 | 310 57.9 | 18 35.5 | | 162 35.3 | - 6 36.0 |
| 10 | 255 31.4 | 125 10 16.5 | -107 | 341 1.7 | 18 35.7 | | 192 40.4 | - 6 35.9 |
| 12 | 284 34.3 | 125 9 55.1 | -108 | 11 5.4 | 18 36.0 | | 222 45.6 | - 6 35.8 |
| 14 | 313 37.2 | 125 9 33.5 | -109 | 41 9.1 | 18 36.3 | | 252 50.7 | - 6 35.8 |
| 16 | 342 40.2 | 125 9 11.6 | -110 | 71 12.8 | 18 36.6 | | 282 55.9 | - 6 35.7 |
| 18 | 11 43.1 | 125 8 49.5 | -111 | 101 16.6 | 18 36.8 | | 313 1.0 | - 6 35.6 |
| 20 | 40 46.0 | 125 8 27.2 | -113 | 131 20.3 | 18 37.1 | | 343 6.2 | - 6 35.6 |
| 22 | 69 49.0 | 125 8 4.7 | -114 | 161 24.0 | 18 37.4 | | 13 11.3 | - 6 35.5 |
| Δ | - | 19 | 1 | 26 | 0 | | | |

| SUNCE | | | | | | | | | MJESEC | | | | |
|---------|-------------------------|----------------|---------------|----------------|-------|----------------|------|------|--------|---|---|---|--|
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | h min | / | o | / | |
| h min s | s | / | | h min | min | / | | | h min | / | o | / | |
| 00 | 2 49.8 | - .3 | 15.8 | T _⊖ | 17 12 | 2.0 | 56.3 | 15.4 | | | | | |
| 12 | 2 46.1 | T _⊖ | 11 h 57.2 min | Starost | 6.0 d | Faza | ● | | | | | | |

| PLANETE | | | | | | | | | |
|---------|----------------|----|-------|------|-------|----------------|----|-------|------|
| Pl. | T _⊖ | π | 360-π | Vel. | Pl. | T _⊕ | π | 360-π | Vel. |
| h min | / | o | / | | h min | / | o | / | |
| ♀ | 12 59 | .1 | 280 | -6.6 | ♀ | 11 16 | .0 | 306 | -1.5 |
| ♂ | 18 37 | .1 | 195 | .1 | ♂ | 21 7 | .0 | 157 | .7 |

28. MAJ

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 40.6 | 21 29.3 | 245 55.9 | 165 56.4 | 25 18.0 | 80 58.7 | 7 43.7 | |
| 2 | 210 40.4 | 21 30.1 | 276 56.8 | 196 3.9 | 25 16.8 | 111 2.0 | 7 42.9 | |
| 4 | 240 40.3 | 21 30.9 | 306 5.8 | 226 11.3 | 25 15.6 | 141 5.2 | 7 42.0 | |
| 6 | 270 40.1 | 21 31.7 | 336 10.7 | 256 18.8 | 25 14.5 | 171 8.4 | 7 41.2 | |
| 8 | 300 39.9 | 21 32.5 | 6 15.6 | 286 26.4 | 25 13.3 | 201 11.6 | 7 40.3 | |
| 10 | 330 39.8 | 21 33.3 | 36 20.6 | 316 33.9 | 25 12.1 | 231 14.8 | 7 39.4 | |
| 12 | 0 39.6 | 21 34.1 | 66 25.5 | 346 41.4 | 25 10.9 | 261 18.0 | 7 38.6 | |
| 14 | 30 39.5 | 21 34.9 | 96 30.4 | 16 49.0 | 25 9.8 | 191 21.2 | 7 37.7 | |
| 16 | 60 39.3 | 21 35.6 | 126 35.3 | 46 56.6 | 25 8.6 | 321 24.3 | 7 36.8 | |
| 18 | 90 39.1 | 21 36.4 | 156 40.3 | 77 4.1 | 25 7.4 | 351 27.5 | 7 36.0 | |
| 20 | 120 39.0 | 21 37.2 | 186 45.2 | 107 11.7 | 25 6.2 | 21 30.7 | 7 35.1 | |
| 22 | 150 38.8 | 21 38.0 | 216 50.1 | 137 19.3 | 25 5.0 | 51 33.9 | 7 34.2 | |
| Δ | -1 | 4 | | 38 | -6 | 16 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 55 | 21 1 | 1 20 | : | 11 8 | 3.6 | 0 18 | .5 |
| 55 | 3 33 | 20 23 | 0 53 | : | 11 15 | 3.3 | 0 9 | .8 |
| 50 | 3 59 | 19 57 | 0 42 | 3 29 | 11 21 | 3.1 | 0 1 | 1.0 |
| 45 | 4 19 | 19 36 | 0 36 | 2 21 | 11 25 | 2.9 | ... | 0 |
| 40 | 4 35 | 19 20 | 0 32 | 1 58 | 11 29 | 2.7 | ... | 0 |
| 35 | 4 49 | 19 6 | 0 29 | 1 43 | 11 32 | 2.6 | ... | 0 |
| 30 | 5 0 | 18 55 | 0 27 | 1 34 | 11 35 | 2.5 | ... | 0 |
| 20 | 5 20 | 18 34 | 0 24 | 1 22 | 11 39 | 2.3 | ... | 0 |
| 10 | 5 38 | 18 17 | 0 23 | 1 17 | 11 44 | 2.2 | ... | 0 |
| 0 | 5 54 | 18 1 | 0 22 | 1 14 | 11 48 | 2.0 | ... | 0 |
| 10 | 6 10 | 17 45 | 0 23 | 1 14 | 11 51 | 1.8 | ... | 0 |
| 20 | 6 27 | 17 28 | 0 24 | 1 18 | 11 56 | 1.7 | ... | 0 |
| 30 | 6 46 | 17 9 | 0 26 | 1 24 | 12 0 | 1.5 | ... | 0 |
| 35 | 6 57 | 16 58 | 0 28 | 1 29 | 12 3 | 1.4 | ... | 0 |
| 40 | 7 10 | 16 45 | 0 30 | 1 36 | 12 6 | 1.3 | 23 60 | 2.8 |
| 45 | 7 25 | 16 30 | 0 33 | 1 45 | 12 10 | 1.1 | 23 58 | 2.9 |
| 50 | 7 43 | 16 11 | 0 37 | 1 57 | 12 14 | 1.0 | 23 55 | 3.1 |
| 55 | 8 7 | 15 47 | 0 43 | 2 13 | 12 19 | .8 | 23 52 | 3.3 |
| 60 | 8 40 | 15 14 | 0 54 | 2 39 | 12 26 | .5 | 23 48 | 3.6 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|----------|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 98 51.9 | 124 | 7 42.0 | -115 | 191 27.7 | 18 37.7 | 43 16.5 | -6 35.4 |
| 2 | 127 54.7 | 124 | 7 19.1 | -116 | 221 31.5 | 18 37.9 | 73 21.6 | -6 35.4 |
| 4 | 156 57.6 | 124 | 6 56.0 | -116 | 251 35.2 | 18 38.2 | 103 26.7 | -6 35.3 |
| 6 | 186 | .4 124 | 6 32.7 | -117 | 281 38.9 | 18 38.5 | 133 31.9 | -6 35.2 |
| 8 | 215 | 3.2 124 | 6 9.2 | -118 | 311 42.6 | 18 38.8 | 163 37.0 | -6 35.2 |
| 10 | 244 | 5.9 123 | 5 45.6 | -119 | 341 46.4 | 18 39.0 | 193 42.2 | -6 35.1 |
| 12 | 273 | 8.6 123 | 5 21.8 | -120 | 11 50.1 | 18 39.3 | 223 47.3 | -6 35.0 |
| 14 | 302 | 11.2 123 | 4 57.8 | -121 | 41 53.8 | 18 39.6 | 253 52.4 | -6 35.0 |
| 16 | 331 | 13.7 122 | 4 33.7 | -121 | 71 57.5 | 18 39.9 | 283 57.6 | -6 34.9 |
| 18 | 0 16.2 122 | 4 9.4 | -122 | | 102 1.3 | 18 40.1 | 314 2.7 | -6 34.9 |
| 20 | 29 18.6 122 | 3 45.0 | -123 | | 132 5.0 | 18 40.4 | 344 7.9 | -6 34.8 |
| 22 | 58 20.9 121 | 3 20.5 | -123 | | 162 8.7 | 18 40.7 | 14 13.0 | -6 34.7 |
| Δ | -1 | 4 | | | 38 | -6 | 16 | -4 |
| | | | | | 1 | | 26 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 2 42.5 | .3 | 15.8 | T _{m̄} | 17 59 | 2.0 | 57.1 | 15.5 |
| 12 | 2 38.6 | T _{m̄} | 11 h 57.4 min | Starost | 7.0 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| | h min | / | o | | h min | / | o | |
| Q | 12 53 | .1 | 280 | -6.6 | 4 | 11 13 | .0 | 306 |
| Q' | 18 34 | .1 | 195 | .1 | h | 21 3 | .0 | 157 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 87 23.1 | 121 | 2 55.8 | -124 | 192 12.4 | 18 41.0 | 44 18.1 | -6 34.7 |
| 2 | 116 25.2 | 120 | 2 31.1 | -124 | 222 16.2 | 18 41.2 | 74 23.3 | -6 34.6 |
| 4 | 145 27.2 | 119 | 2 6.2 | -125 | 252 19.9 | 18 41.5 | 104 28.4 | -6 34.5 |
| 6 | 174 29.1 | 119 | 1 41.2 | -125 | 282 23.6 | 18 41.8 | 134 33.5 | -6 34.5 |
| 8 | 203 30.8 | 118 | 1 16.1 | -126 | 312 27.4 | 18 42.0 | 164 38.7 | -6 34.4 |
| 10 | 232 32.4 | 117 | 0 50.9 | -126 | 342 31.1 | 18 42.3 | 194 43.8 | -6 34.4 |
| 12 | 261 33.9 | 117 | 0 25.7 | -127 | 12 34.8 | 18 42.6 | 224 48.9 | -6 34.3 |
| 14 | 290 35.3 | 116 | 0 .4 | -127 | 42 38.5 | 18 42.9 | 254 54.1 | -6 34.2 |
| 16 | 319 36.4 | 115 | -0 25.0 | -127 | 72 42.3 | 18 43.1 | 284 59.2 | -6 34.2 |
| 18 | 348 37.4 | 114 | -0 50.5 | -127 | 102 46.0 | 18 43.4 | 315 4.3 | -6 34.1 |
| 20 | 17 38.3 | 113 | -1 15.9 | -128 | 132 49.7 | 18 43.7 | 345 9.5 | -6 34.1 |
| 22 | 46 39.0 | 112 | -1 41.5 | -128 | 162 53.4 | 18 43.9 | 15 14.6 | -6 34.0 |
| Δ | | | | | 19 | 1 | 26 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 2 34.8 | .3 | 15.8 | T _{m̄} | 18 47 | 2.1 | 57.9 | 15.8 |
| 12 | 2 30.7 | T _{m̄} | 11 h 57.5 min | Starost | 8.0 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| | h min | / | o | | h min | / | o | |
| Q | 12 47 | .1 | 281 | -6.6 | 4 | 11 10 | .0 | 305 |
| Q' | 18 32 | .1 | 195 | .1 | h | 20 59 | .0 | 157 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 36.6 | 21 47.8 | 247 54.2 | 168 59.3 | 24 48.9 | 82 15.2 | 7 22.9 | |
| 2 | 210 36.4 | 21 48.5 | 277 59.1 | 199 7.1 | 24 47.6 | 112 18.3 | 7 22.0 | |
| 4 | 240 36.3 | 21 49.2 | 308 4.0 | 229 12.8 | 24 46.3 | 142 21.5 | 7 21.1 | |
| 6 | 270 36.1 | 21 50.0 | 338 9.0 | 259 22.6 | 24 45.1 | 172 24.6 | 7 20.3 | |
| 8 | 300 35.9 | 21 50.7 | 38 13.9 | 289 30.4 | 24 43.8 | 202 27.8 | 7 19.4 | |
| 10 | 330 35.7 | 21 51.4 | 38 18.8 | 319 38.2 | 24 42.5 | 232 30.9 | 7 18.5 | |
| 12 | 0 35.6 | 21 52.1 | 68 23.8 | 349 46.1 | 24 41.2 | 262 34.1 | 7 17.6 | |
| 14 | 30 35.4 | 21 52.9 | 98 28.7 | 19 53.9 | 24 39.9 | 292 37.2 | 7 16.7 | |
| 16 | 60 35.2 | 21 53.6 | 128 33.6 | 50 1.7 | 24 38.6 | 322 40.4 | 7 15.8 | |
| 18 | 90 35.0 | 21 54.3 | 158 38.5 | 80 9.6 | 24 37.3 | 352 43.5 | 7 15.0 | |
| 20 | 120 34.8 | 21 55.0 | 188 43.5 | 110 17.4 | 24 36.0 | 224 46.7 | 7 14.1 | |
| 22 | 150 34.7 | 21 55.7 | 218 48.4 | 140 25.3 | 24 34.7 | 52 49.8 | 7 13.2 | |
| Δ | -1 | 4 | | 39 | -6 | 16 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 52 | 21 5 | 1 22 | : | : :: | 14 2 | 3.8 | 0 42 | .5 |
| 55 | 3 30 | 20 26 | 0 54 | : | : :: | 13 56 | 3.5 | 0 45 | .8 |
| 50 | 3 57 | 19 59 | 0 43 | 3 46 | 13 50 | 3.3 | 0 47 | 1.0 | |
| 45 | 4 18 | 19 38 | 0 36 | 2 23 | 13 46 | 3.1 | 0 49 | 1.2 | |
| 40 | 4 34 | 19 22 | 0 32 | 1 58 | 13 43 | 2.9 | 0 51 | 1.3 | |
| 35 | 4 48 | 19 8 | 0 29 | 1 44 | 13 40 | 2.8 | 0 52 | 1.5 | |
| 30 | 4 60 | 18 56 | 0 27 | 1 34 | 13 37 | 2.7 | 0 53 | 1.6 | |
| 20 | 5 20 | 18 35 | 0 24 | 1 23 | 13 33 | 2.5 | 0 55 | 1.8 | |
| 10 | 5 38 | 18 18 | 0 23 | 1 17 | 13 29 | 2.3 | 0 57 | 1.9 | |
| 0 | 5 54 | 18 1 | 0 22 | 1 14 | 13 25 | 2.2 | 0 59 | 2.1 | |
| 10 | 6 10 | 17 45 | 0 23 | 1 15 | 13 21 | 2.0 | 1 0 | 2.3 | |
| 20 | 6 27 | 17 28 | 0 24 | 1 18 | 13 17 | 1.8 | 1 2 | 2.4 | |
| 30 | 6 47 | 17 8 | 0 26 | 1 24 | 13 13 | 1.6 | 1 4 | 2.6 | |
| 35 | 6 58 | 16 57 | 0 28 | 1 30 | 13 11 | 1.5 | 1 5 | 2.8 | |
| 40 | 7 11 | 16 44 | 0 30 | 1 36 | 13 8 | 1.4 | 1 7 | 2.9 | |
| 45 | 7 27 | 16 28 | 0 33 | 1 45 | 13 5 | 1.3 | 1 8 | 3.0 | |
| 50 | 7 45 | 16 10 | 0 37 | 1 57 | 13 1 | 1.1 | 1 10 | 3.2 | |
| 55 | 8 10 | 15 45 | 0 44 | 2 14 | 12 56 | .9 | 1 13 | 3.5 | |
| 60 | 8 44 | 15 11 | 0 54 | 2 40 | 12 51 | .6 | 1 16 | 3.8 | |
| S | | | | | | | | | |

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|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 75 39.4 | 111 - 2 | 7.0 - 128 | 192 57.2 | 18 44.2 | 45 19.7 | - 6 33.9 | |
| 2 | 104 39.7 | 110 - 2 | 32.6 - 128 | 223 .9 | 18 44.5 | 75 24.8 | - 6 33.9 | |
| 4 | 133 39.8 | 109 - 2 | 58.1 - 128 | 253 4.6 | 18 44.8 | 105 30.0 | - 6 33.8 | |
| 6 | 162 39.7 | 108 - 3 | 23.7 - 128 | 283 8.3 | 18 45.0 | 135 35.1 | - 6 33.8 | |
| 8 | 191 39.3 | 107 - 3 | 43.9 - 128 | 313 12.1 | 18 45.3 | 165 40.2 | - 6 33.7 | |
| 10 | 220 38.8 | 106 - 4 | 14.8 - 128 | 343 15.8 | 18 45.6 | 195 45.4 | - 6 33.6 | |
| 12 | 249 38.0 | 105 - 4 | 40.3 - 127 | 13 19.5 | 18 45.8 | 225 50.5 | - 6 33.6 | |
| 14 | 278 36.9 | 104 - 5 | 5.8 - 127 | 43 23.3 | 18 46.1 | 255 55.6 | - 6 33.5 | |
| 16 | 307 35.7 | 102 - 5 | 31.2 - 127 | 73 27.0 | 18 46.4 | 286 .7 | - 6 33.5 | |
| 18 | 336 34.1 | 101 - 5 | 55.6 - 126 | 103 30.7 | 18 46.6 | 316 5.9 | - 6 33.4 | |
| 20 | 5 32.3 | 100 - 6 | 21.8 - 126 | 133 34.4 | 18 46.9 | 346 11.0 | - 6 33.4 | |
| 22 | 34 30.3 | 98 - 6 | 47.0 - 126 | 163 38.2 | 18 47.2 | 16 16.1 | - 6 33.3 | |
| Δ | -1 | 3 | | 40 | -7 | 16 | -4 | |

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|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 2 26.6 | .4 | 15.8 | T _{m̄} | 19 37 | 2.2 | 58.7 | 16.0 | |
| 12 | 2 22.3 | T _{m̄} | 11 h 57.6 min | Starost | 9.0 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ | 12 41 | .1 | 281 | -6.6 | 4 | 11 7 | .0 | 305 | -1.5 |
| ♂ | 18 29 | .1 | 194 | .1 | h | 20 55 | .0 | 157 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 63 28.0 | 97 - 7 | 12.1 - 125 | 193 41.9 | 18 47.5 | 46 21.2 | - 6 33.2 | |
| 2 | 92 25.3 | 96 - 7 | 37.1 - 124 | 223 45.6 | 18 47.7 | 76 26.3 | - 6 33.2 | |
| 4 | 121 22.4 | 94 - 8 | 2.0 - 124 | 253 49.4 | 18 48.0 | 106 31.5 | - 6 33.1 | |
| 6 | 150 19.2 | 93 - 8 | 26.7 - 123 | 283 53.1 | 18 48.3 | 136 36.6 | - 6 33.1 | |
| 8 | 179 15.8 | 91 - 8 | 51.3 - 122 | 313 56.8 | 18 48.5 | 166 41.7 | - 6 33.0 | |
| 10 | 208 12.0 | 89 - 9 | 15.8 - 122 | 344 .5 | 18 48.8 | 196 46.8 | - 6 33.0 | |
| 12 | 237 7.8 | 88 - 9 | 40.1 - 121 | 14 4.3 | 18 49.1 | 226 51.9 | - 6 32.9 | |
| 14 | 266 3.4 | 86 - 10 | 4.2 - 120 | 44 8.0 | 18 49.3 | 256 57.1 | - 6 32.8 | |
| 16 | 294 58.7 | 85 - 10 | 28.1 - 119 | 74 11.7 | 18 49.6 | 287 2.2 | - 6 32.8 | |
| 18 | 323 53.6 | 83 - 10 | 51.8 - 118 | 104 15.5 | 18 49.9 | 317 7.3 | - 6 32.7 | |
| 20 | 352 48.2 | 81 - 11 | 15.3 - 116 | 134 19.2 | 18 50.1 | 347 12.4 | - 6 32.7 | |
| 22 | 21 42.5 | 80 - 11 | 38.6 - 115 | 164 22.9 | 18 50.4 | 17 17.5 | - 6 32.6 | |
| Δ | - | 1 | | 19 | 1 | 26 | 0 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 2 18.1 | .4 | 15.8 | T _{m̄} | 20 30 | 2.3 | 59.5 | 16.2 | |
| 12 | 2 13.6 | T _{m̄} | 11 h 57.8 min | Starost | 10.0 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| ♀ | 12 34 | .1 | 282 | -6.6 | 4 | 11 4 | .0 | 305 | -1.5 |
| ♂ | 18 27 | .1 | 194 | .1 | h | 20 51 | .0 | 157 | .7 |

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2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 32.2 | 22 4.7 | 249 52.5 | 172 8.4 | 24 17.4 | 83 30.4 | 7 1.6 | |
| 2 | 210 32.0 | 22 5.3 | 279 57.4 | 202 16.4 | 24 16.0 | 113 33.6 | 7 1.2 | |
| 4 | 240 31.9 | 22 6.0 | 310 2.3 | 232 24.4 | 24 14.7 | 143 36.7 | 6 59.8 | |
| 6 | 270 31.7 | 22 6.7 | 340 7.3 | 262 32.4 | 24 13.3 | 173 39.8 | 6 58.9 | |
| 8 | 300 31.5 | 22 7.3 | 10 12.2 | 292 40.5 | 24 11.9 | 203 42.9 | 6 58.0 | |
| 10 | 330 31.3 | 22 8.0 | 40 17.1 | 322 48.5 | 24 10.8 | 233 46.0 | 6 57.1 | |
| 12 | 0 31.1 | 22 8.7 | 70 22.0 | 352 56.5 | 24 9.2 | 263 49.1 | 6 56.2 | |
| 14 | 30 30.9 | 22 9.3 | 100 27.0 | 23 4.5 | 24 7.8 | 293 52.2 | 6 55.3 | |
| 16 | 60 30.7 | 22 10.0 | 130 31.9 | 53 12.6 | 24 6.4 | 323 55.3 | 6 54.4 | |
| 18 | 90 30.5 | 22 10.6 | 160 36.8 | 83 20.6 | 24 5.0 | 353 58.4 | 6 53.5 | |
| 20 | 120 30.3 | 22 11.3 | 190 41.7 | 113 28.7 | 24 3.6 | 24 1.5 | 6 52.6 | |
| 22 | 150 30.1 | 22 11.9 | 220 46.7 | 143 36.7 | 24 2.2 | 54 4.6 | 6 51.7 | |
| Δ | -1 | 3 | | 40 | -7 | 16 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 49 | 21 8 | 1 25 | : | 17 9 | 3 9 | 1 11 | .9 | |
| 55 | 3 28 | 20 28 | 0 55 | : | 16 47 | 3 6 | 1 27 | 1.2 | |
| 50 | 3 56 | 20 1 | 0 43 | : | 16 30 | 3 4 | 1 40 | 1.4 | |
| 45 | 4 16 | 19 40 | 0 36 | 2 25 | 16 17 | 3 2 | 1 50 | 1.6 | |
| 40 | 4 33 | 19 23 | 0 32 | 1 59 | 16 7 | 3 1 | 1 59 | 1.7 | |
| 35 | 4 47 | 19 9 | 0 29 | 1 45 | 15 57 | 3 0 | 2 6 | 1.8 | |
| 30 | 4 59 | 18 57 | 0 27 | 1 35 | 15 49 | 2 9 | 2 12 | 1.9 | |
| 20 | 5 20 | 18 36 | 0 24 | 1 23 | 15 36 | 2 7 | 2 24 | 2.1 | |
| 10 | 5 38 | 18 18 | 0 23 | 1 17 | 15 24 | 2 6 | 2 34 | 2.2 | |
| 0 | 5 54 | 18 2 | 0 22 | 1 14 | 15 13 | 2.5 | 2 43 | 2.4 | |
| 10 | 6 11 | 17 45 | 0 23 | 1 15 | 15 1 | 2.3 | 2 52 | 2.5 | |
| 20 | 6 28 | 17 28 | 0 24 | 1 18 | 14 50 | 2.2 | 3 2 | 2.7 | |
| 30 | 6 48 | 17 8 | 0 26 | 1 25 | 14 36 | 2.0 | 3 14 | 2.9 | |
| 35 | 6 59 | 16 56 | 0 28 | 1 30 | 14 29 | 2.0 | 3 20 | 3.0 | |
| 40 | 7 13 | 16 43 | 0 30 | 1 36 | 14 20 | 1.8 | 3 28 | 3.1 | |
| 45 | 7 28 | 16 27 | 0 33 | 1 45 | 14 10 | 1.7 | 3 37 | 3.2 | |
| 50 | 7 47 | 16 8 | 0 38 | 1 57 | 13 58 | 1.6 | 3 48 | 3.4 | |
| 55 | 8 12 | 15 43 | 0 44 | 2 15 | 13 43 | 1.3 | 4 1 | 3.6 | |
| 60 | 8 47 | 15 8 | 0 55 | 2 41 | 13 23 | 1.0 | 4 19 | 3.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 50 36.4 | 78 -12 | 1.6 -114 | 194 26.6 | 18 50.7 | 47 22.7 | -6 32.6 | |
| 2 | 79 30.0 | 76 -12 | 24.4 -113 | 224 30.4 | 18 50.9 | 77 27.8 | -6 32.5 | |
| 4 | 108 23.2 | 74 -12 | 46.9 -111 | 254 34.1 | 18 51.2 | 107 32.9 | -6 32.5 | |
| 6 | 137 16.1 | 73 -13 | 9.1 -110 | 284 37.8 | 18 51.5 | 137 38.0 | -6 32.4 | |
| 8 | 166 8.7 | 71 -13 | 31.0 -108 | 314 41.6 | 18 51.7 | 167 43.1 | -6 32.4 | |
| 10 | 195 .8 | 69 -13 | 52.6 -106 | 344 45.3 | 18 52.0 | 197 48.2 | -6 32.3 | |
| 12 | 223 52.7 | 67 -14 | 13.9 -105 | 14 49.0 | 18 52.3 | 227 53.3 | -6 32.3 | |
| 14 | 252 44.2 | 66 -14 | 34.9 -103 | 44 52.7 | 18 52.5 | 257 58.4 | -6 32.2 | |
| 16 | 281 35.3 | 64 -14 | 55.5 -101 | 74 56.5 | 18 52.8 | 288 3.6 | -6 32.1 | |
| 18 | 310 26.1 | 62 -15 | 15.7 -99 | 105 .2 | 18 53.1 | 318 8.7 | -6 32.1 | |
| 20 | 339 16.5 | 60 -15 | 35.6 -97 | 135 3.9 | 18 53.3 | 348 13.8 | -6 32.0 | |
| 22 | 8 6.6 | 59 -15 | 55.1 -95 | 165 7.7 | 18 53.6 | 18 18.9 | -6 32.0 | |
| Δ | -1 | 3 | | 41 | -7 | 15 | -5 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 2 9.1 | -.4 | 15.8 | T _{m̄} | 21 26 | 2.5 | 60.2 | 16.4 |
| 12 | 2 4.5 | T _{m̄} | 11 h 57.9 min | Starost | 11.0 d | Faza | ○ | |

| PLANETE | | | | | | | | | |
|---------|-----------------|----|---------|------|-------|-----------------|-----|---------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| φ | h min | / | o | h | h min | / | o | h | h |
| ο | 12 28 | .1 | 283 | -6.6 | 11 1 | .0 | 305 | -1.5 | 157 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _ζ | Δ | δ _ζ | Δ | S _η | δ _η | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 36 56.4 | 57 -16 | 14.2 -93 | 195 11.4 | 18 53.9 | 48 24.0 | -6 31.9 | |
| 2 | 65 45.8 | 55 -16 | 32.8 -91 | 225 15.1 | 18 54.1 | 78 29.1 | -6 31.9 | |
| 4 | 94 34.8 | 54 -16 | 51.0 -89 | 255 18.9 | 18 54.4 | 108 34.2 | -6 31.8 | |
| 6 | 123 23.5 | 52 -17 | 8.8 -87 | 285 22.6 | 18 54.6 | 138 39.3 | -6 31.8 | |
| 8 | 152 11.9 | 50 -17 | 26.1 -84 | 315 26.3 | 18 54.9 | 168 44.4 | -6 31.7 | |
| 10 | 181 .0 | 49 -17 | 43.0 -82 | 345 30.1 | 18 55.2 | 198 49.5 | -6 31.7 | |
| 12 | 209 47.8 | 47 -17 | 59.4 -79 | 15 33.8 | 18 55.4 | 228 54.6 | -6 31.6 | |
| 14 | 238 35.2 | 46 -18 | 15.2 -77 | 45 37.5 | 18 55.7 | 258 59.7 | -6 31.6 | |
| 16 | 267 22.3 | 44 -18 | 30.6 -77 | 75 41.2 | 18 56.0 | 289 4.9 | -6 31.5 | |
| 18 | 296 9.2 | 43 -18 | 45.5 -72 | 105 45.0 | 18 56.2 | 319 10.0 | -6 31.5 | |
| 20 | 324 55.7 | 41 -18 | 59.8 -69 | 135 48.7 | 18 56.5 | 349 15.1 | -6 31.4 | |
| 22 | 353 42.0 | 40 -19 | 13.6 -66 | 165 52.4 | 18 56.8 | 19 20.2 | -6 31.4 | |
| Δ | -1 | 3 | | 19 | 1 | 26 | 0 | |

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|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ζ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 1 59.8 | -.4 | 15.8 | T _{m̄} | 22 26 | 2.6 | 60.8 | 16.6 |
| 12 | 1 55.0 | T _{m̄} | 11 h 58.1 min | Starost | 12.0 d | Faza | ○ | |

| PLANETE | | | | | | | | | |
|---------|-----------------|----|---------|------|-------|-----------------|-----|---------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| φ | h min | / | o | h | h min | / | o | h | h |
| ο | 12 22 | .1 | 283 | -6.7 | 10 58 | .0 | 304 | -1.6 | 158 |

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 27.5 | 22 20.0 | 251 50.7 | 175 22.1 | 23 43.8 | 84 44.6 | 6 39.8 | |
| 2 | 210 27.3 | 22 20.6 | 281 55.7 | 205 30.2 | 23 42.4 | 114 47.7 | 6 38.9 | |
| 4 | 240 27.1 | 22 21.2 | 312 .6 | 235 38.3 | 23 40.9 | 144 50.8 | 6 38.0 | |
| 6 | 270 26.9 | 22 21.8 | 342 5.5 | 265 46.5 | 23 39.5 | 174 53.8 | 6 37.1 | |
| 8 | 300 26.7 | 22 22.4 | 12 10.5 | 295 54.6 | 23 38.0 | 204 56.9 | 6 36.1 | |
| 10 | 330 26.5 | 22 23.0 | 42 15.4 | 326 2.8 | 23 36.6 | 234 60.0 | 6 35.2 | |
| 12 | 0 26.2 | 22 23.6 | 72 20.3 | 356 10.9 | 23 35.1 | 265 3.0 | 6 34.3 | |
| 14 | 30 26.0 | 22 24.2 | 102 25.2 | 26 19.1 | 23 33.7 | 295 6.1 | 6 33.4 | |
| 16 | 60 25.8 | 22 24.8 | 132 30.2 | 56 27.3 | 23 32.2 | 325 9.1 | 6 32.5 | |
| 18 | 90 25.6 | 22 25.4 | 162 35.1 | 86 35.4 | 23 30.8 | 355 12.2 | 6 31.5 | |
| 20 | 120 25.4 | 22 26.0 | 192 40.0 | 116 43.6 | 23 29.3 | 25 15.3 | 6 30.6 | |
| 22 | 150 25.2 | 22 26.6 | 222 45.0 | 146 51.8 | 23 27.8 | 55 18.3 | 6 29.7 | |
| Δ | -1 | 3 | | 41 | -7 | 15 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 46 | 21 12 | 1 28 | : | : : | 20 11 | 2.9 | 2 0 | 1.8 |
| 55 | 3 26 | 20 31 | 0 55 | : | : : | 19 34 | 2.9 | 2 32 | 2.0 |
| 50 | 3 54 | 20 3 | 0 43 | : | : : | 19 9 | 2.8 | 2 55 | 2.2 |
| 45 | 4 15 | 19 41 | 0 37 | 2 26 | 18 49 | 2.8 | 3 13 | 2.3 | |
| 40 | 4 32 | 19 24 | 0 32 | 2 0 | 18 33 | 2.8 | 3 27 | 2.3 | |
| 35 | 4 47 | 19 10 | 0 29 | 1 45 | 18 19 | 2.8 | 3 40 | 2.4 | |
| 30 | 4 59 | 18 58 | 0 27 | 1 35 | 18 8 | 2.7 | 3 51 | 2.4 | |
| 20 | 5 20 | 18 37 | 0 24 | 1 23 | 17 48 | 2.7 | 4 9 | 2.5 | |
| 10 | 5 38 | 18 19 | 0 23 | 1 17 | 17 30 | 2.7 | 4 26 | 2.6 | |
| 0 | 5 55 | 18 2 | 0 22 | 1 15 | 17 14 | 2.7 | 4 41 | 2.6 | |
| 10 | 6 11 | 17 45 | 0 23 | 1 15 | 16 58 | 2.6 | 4 56 | 2.7 | |
| 20 | 6 29 | 17 28 | 0 24 | 1 18 | 16 41 | 2.6 | 5 13 | 2.8 | |
| 30 | 6 49 | 17 7 | 0 26 | 1 25 | 16 21 | 2.6 | 5 32 | 2.8 | |
| 35 | 7 1 | 16 56 | 0 28 | 1 30 | 16 10 | 2.5 | 5 43 | 2.9 | |
| 40 | 7 14 | 16 42 | 0 30 | 1 37 | 15 56 | 2.5 | 5 55 | 2.9 | |
| 45 | 7 30 | 16 26 | 0 33 | 1 46 | 15 41 | 2.5 | 6 10 | 3.0 | |
| 50 | 7 49 | 16 7 | 0 38 | 1 58 | 15 22 | 2.4 | 6 28 | 3.0 | |
| 55 | 8 15 | 15 42 | 0 44 | 2 15 | 14 58 | 2.3 | 6 62 | 3.1 | |
| 60 | 8 50 | 15 6 | 0 55 | 2 42 | 14 24 | 2.2 | 7 25 | 3.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 22 28.0 | 39 -19 26.8 | -63 | 195 56.2 | 18 57.0 | 49 25.3 | -6 31.3 | |
| 2 | 51 13.8 | 38 -19 39.4 | -60 | 225 59.9 | 18 57.3 | 79 30.4 | -6 31.3 | |
| 4 | 79 59.3 | 36 -19 51.5 | -58 | 256 3.6 | 18 57.5 | 109 35.5 | -6 31.2 | |
| 6 | 108 44.6 | 35 -20 3.0 | -55 | 286 7.4 | 18 57.8 | 139 40.6 | -6 31.2 | |
| 8 | 137 29.7 | 34 -20 14.0 | -52 | 316 11.1 | 18 58.1 | 169 45.7 | -6 31.2 | |
| 10 | 166 14.5 | 33 -20 24.3 | -49 | 346 14.8 | 18 58.3 | 199 50.8 | -6 31.1 | |
| 12 | 194 59.2 | 33 -20 34.0 | -45 | 16 18.6 | 18 58.6 | 229 55.9 | -6 31.1 | |
| 14 | 223 43.7 | 32 -20 43.1 | -42 | 46 22.3 | 18 58.8 | 260 1.0 | -6 31.0 | |
| 16 | 252 28.1 | 31 -20 51.5 | -39 | 76 26.0 | 18 59.1 | 290 6.1 | -6 31.0 | |
| 18 | 281 12.3 | 30 -20 59.4 | -36 | 106 29.8 | 18 59.4 | 320 11.2 | -6 30.9 | |
| 20 | 309 56.4 | 30 -21 6.6 | -33 | 136 33.5 | 18 59.6 | 350 16.3 | -6 30.9 | |
| 22 | 338 40.4 | 29 -21 13.1 | -30 | 166 37.2 | 18 59.9 | 20 21.4 | -6 30.8 | |
| Δ | -1 | 3 | | 41 | -7 | 15 | -5 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------------|----------------|-----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 1 50.1 | - .4 | 15.8 | T _{m̄} | 23 29 | 2.7 | 61.1 | 16.7 | |
| 12 | 1 45.1 | | | T _{m̄} | 11 h 58.3 min | Starost 13.0 d | Faza ○ | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min | / | o | h min | / | o | h min | / | o | |
| ♀ | 12 15 | .1 | 284 | -6.7 | 4 | 10 55 | .0 | 304 | -1.6 |
| ♂ | 18 19 | .1 | 193 | .2 | h | 20 39 | .0 | 158 | .7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 7 24.2 | 29 -21 19.0 | -26 | 196 41.0 | 19 .1 | 50 26.4 | -6 30.8 | |
| 2 | 36 8.0 | 29 -21 24.3 | -23 | 226 44.7 | 19 .4 | 80 31.5 | -6 30.7 | |
| 4 | 66 51.8 | 29 -21 28.9 | -20 | 256 48.4 | 19 .7 | 110 36.6 | -6 30.7 | |
| 6 | 93 35.5 | 28 -21 32.9 | -17 | 286 52.2 | 19 .9 | 140 41.7 | -6 30.6 | |
| 8 | 122 19.2 | 28 -21 36.2 | -13 | 316 55.9 | 19 1.2 | 170 46.8 | -6 30.6 | |
| 10 | 151 2.9 | 29 -21 38.8 | -10 | 346 59.6 | 19 1.4 | 200 51.9 | -6 30.6 | |
| 12 | 179 46.6 | 29 -21 40.8 | -7 | 17 3.4 | 19 1.7 | 230 57.0 | -6 30.5 | |
| 14 | 208 30.4 | 29 -21 42.1 | -3 | 47 7.1 | 19 2.0 | 261 2.1 | -6 30.5 | |
| 16 | 237 14.2 | 29 -21 42.8 | 0 | 77 10.8 | 19 2.2 | 291 7.2 | -6 30.4 | |
| 18 | 265 58.0 | 30 -21 42.8 | 3 | 107 14.6 | 19 2.5 | 321 12.3 | -6 30.4 | |
| 20 | 294 42.0 | 30 -21 42.1 | 6 | 137 18.3 | 19 2.7 | 351 17.4 | -6 30.3 | |
| 22 | 323 26.1 | 31 -21 40.8 | 10 | 167 22.0 | 19 3.0 | 21 22.5 | -6 30.3 | |
| Δ | - | | | 19 | 1 | 25 | 0 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------------|----------------|-----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 1 40.1 | - .4 | 15.8 | T _{m̄} | ... | 1.0 | 61.1 | 16.7 | |
| 12 | 1 34.9 | | | T _{m̄} | 11 h 58.4 min | Starost 14.0 d | Faza ○ | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | |
| h min | / | o | h min | / | o | h min | / | o | |
| ♀ | 12 9 | .1 | 284 | -6.7 | 4 | 10 52 | .0 | 304 | -1.6 |
| ♂ | 18 17 | .1 | 193 | .2 | h | 20 35 | .0 | 158 | .7 |

5. JUN

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 | 22.4 | 22 | 33.8 | 253 | 49.0 | 178 | 38.1 |
| 2 | 210 | 22.2 | 22 | 34.4 | 283 | 54.0 | 208 | 46.3 |
| 4 | 240 | 21.9 | 22 | 34.9 | 313 | 58.9 | 238 | 54.5 |
| 6 | 270 | 21.7 | 22 | 35.5 | 344 | 3.8 | 269 | 2.7 |
| 8 | 300 | 21.5 | 22 | 36.0 | 14 | 8.7 | 299 | 10.9 |
| 10 | 330 | 21.3 | 22 | 36.5 | 44 | 13.7 | 328 | 19.1 |
| 12 | 0 | 21.1 | 22 | 37.0 | 74 | 18.6 | 359 | 27.3 |
| 14 | 30 | 20.8 | 22 | 37.6 | 104 | 23.5 | 29 | 35.5 |
| 16 | 60 | 20.6 | 22 | 38.1 | 134 | 28.4 | 59 | 43.7 |
| 18 | 90 | 20.4 | 22 | 38.6 | 164 | 33.4 | 89 | 51.9 |
| 20 | 120 | 20.2 | 22 | 39.1 | 194 | 38.3 | 120 | 1.1 |
| 22 | 150 | 19.9 | 22 | 39.6 | 224 | 43.2 | 150 | 8.3 |
| Δ | -1 | 3 | | | | | 41 | -8 |
| | | | | | | | 15 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 44 | 21 15 | 1 31 | : | : | 22 11 | 1.4 | 3 46 | 3.3 |
| 55 | 3 25 | 20 33 | 0 56 | : | : | 21 37 | 1.7 | 4 24 | 3.1 |
| 50 | 3 53 | 20 4 | 0 44 | : | : | 21 12 | 1.8 | 4 50 | 3.0 |
| 45 | 4 15 | 19 43 | 0 37 | 2 28 | 20 53 | 2.0 | 5 10 | 2.9 | |
| 40 | 4 32 | 19 26 | 0 32 | 2 1 | 20 38 | 2.0 | 5 27 | 2.9 | |
| 35 | 4 46 | 19 11 | 0 29 | 1 45 | 20 24 | 2.1 | 5 41 | 2.8 | |
| 30 | 4 59 | 18 59 | 0 27 | 1 35 | 20 13 | 2.2 | 5 53 | 2.8 | |
| 20 | 5 20 | 18 37 | 0 24 | 1 23 | 19 53 | 2.3 | 6 13 | 2.7 | |
| 10 | 5 38 | 18 19 | 0 23 | 1 17 | 19 36 | 2.4 | 6 31 | 2.6 | |
| 0 | 5 55 | 18 2 | 0 22 | 1 15 | 19 20 | 2.5 | 6 48 | 2.6 | |
| 10 | 6 12 | 17 45 | 0 23 | 1 15 | 19 4 | 2.6 | 7 4 | 2.5 | |
| 20 | 6 30 | 17 28 | 0 24 | 1 18 | 18 47 | 2.7 | 7 22 | 2.4 | |
| 30 | 6 50 | 17 7 | 0 26 | 1 25 | 18 27 | 2.8 | 7 42 | 2.3 | |
| 35 | 7 2 | 16 55 | 0 28 | 1 30 | 18 16 | 2.8 | 7 54 | 2.3 | |
| 40 | 7 15 | 16 42 | 0 30 | 1 37 | 18 3 | 2.9 | 8 8 | 2.2 | |
| 45 | 7 31 | 16 26 | 0 33 | 1 46 | 17 47 | 3.0 | 8 24 | 2.2 | |
| 50 | 7 51 | 16 6 | 0 38 | 1 58 | 17 28 | 3.1 | 8 43 | 2.1 | |
| 55 | 8 17 | 15 40 | 0 45 | 2 16 | 17 3 | 3.2 | 9 9 | 1.9 | |
| 60 | 8 53 | 15 4 | 0 56 | 2 43 | 16 28 | 3.5 | 9 44 | 1.7 | |
| S | | | | | | | | | |

6. JUN

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 352 | 10.3 | 32 | -21 38.9 | 13 | 197 | 25.8 | 19 |
| 2 | 20 | 54.6 | 32 | -21 36.3 | 16 | 227 | 29.5 | 19 |
| 4 | 49 | 39.1 | 33 | -21 33.0 | 19 | 257 | 33.2 | 19 |
| 6 | 78 | 23.8 | 34 | -21 29.2 | 23 | 287 | 37.0 | 19 |
| 8 | 107 | 8.6 | 35 | -21 24.7 | 26 | 317 | 40.7 | 19 |
| 10 | 135 | 53.7 | 37 | -21 19.5 | 29 | 347 | 44.4 | 19 |
| 12 | 164 | 39.0 | 38 | -21 13.8 | 32 | 17 | 48.2 | 19 |
| 14 | 193 | 24.6 | 39 | -21 7.4 | 35 | 47 | 51.9 | 19 |
| 16 | 222 | 10.4 | 40 | -21 .5 | 38 | 77 | 55.6 | 19 |
| 18 | 250 | 56.4 | 42 | -20 52.9 | 41 | 107 | 59.4 | 19 |
| 20 | 279 | 42.8 | 43 | -20 44.8 | 44 | 138 | 3.1 | 19 |
| 22 | 308 | 29.4 | 45 | -20 36.0 | 46 | 168 | 6.8 | 19 |
| Δ | -1 | 2 | | | | 41 | -8 | |
| | | | | | | 15 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 42 | 21 16 | 1 33 | : | : | 22 44 | .9 | 5 5 | 3.7 |
| 55 | 3 24 | 20 34 | 0 56 | : | : | 22 16 | 1.2 | 5 38 | 3.4 |
| 50 | 3 53 | 20 5 | 0 44 | : | : | 21 56 | 1.4 | 6 2 | 3.2 |
| 45 | 4 14 | 19 44 | 0 37 | 2 28 | 21 40 | 1.6 | 6 20 | 3.0 | |
| 40 | 4 32 | 19 26 | 0 33 | 2 1 | 21 27 | 1.7 | 6 35 | 2.9 | |
| 35 | 4 46 | 19 12 | 0 29 | 1 46 | 21 16 | 1.8 | 6 48 | 2.8 | |
| 30 | 4 59 | 18 59 | 0 27 | 1 36 | 21 6 | 1.9 | 6 59 | 2.7 | |
| 20 | 5 20 | 18 38 | 0 24 | 1 23 | 20 49 | 2.1 | 7 18 | 2.6 | |
| 10 | 5 38 | 18 19 | 0 23 | 1 17 | 20 34 | 2.2 | 7 34 | 2.5 | |
| 0 | 5 55 | 18 2 | 0 22 | 1 15 | 20 20 | 2.3 | 7 49 | 2.4 | |
| 10 | 6 12 | 17 46 | 0 23 | 1 15 | 20 6 | 2.4 | 8 4 | 2.3 | |
| 20 | 6 30 | 17 28 | 0 24 | 1 18 | 19 51 | 2.6 | 8 20 | 2.2 | |
| 30 | 6 50 | 17 7 | 0 26 | 1 25 | 19 34 | 2.7 | 8 39 | 2.1 | |
| 35 | 7 2 | 16 55 | 0 28 | 1 30 | 19 24 | 2.8 | 8 49 | 2.0 | |
| 40 | 7 16 | 16 41 | 0 30 | 1 37 | 19 12 | 2.9 | 9 1 | 1.9 | |
| 45 | 7 32 | 16 25 | 0 34 | 1 46 | 18 59 | 3.0 | 9 16 | 1.8 | |
| 50 | 7 52 | 16 5 | 0 38 | 1 58 | 18 42 | 3.2 | 9 33 | 1.6 | |
| 55 | 8 18 | 15 40 | 0 45 | 2 16 | 18 21 | 3.4 | 9 55 | 1.4 | |
| 60 | 8 54 | 15 3 | 0 56 | 2 43 | 17 52 | 3.7 | 10 25 | 1.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | | | |
|----|----------------|------|----------------|----------|----------------|----------------|------|----|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | | |
| h | o / | o / | o / | o / | o / | o / | | |
| 0 | 337 | 16.4 | 46 | -20 26.8 | 49 | 198 | 10.6 | 19 |
| 2 | 6 | 3.7 | 48 | -20 16.9 | 52 | 228 | 14.3 | 19 |
| 4 | 34 | 51.3 | 50 | -20 6.5 | 55 | 258 | 18.1 | 19 |
| 6 | 63 | 39.2 | 51 | -19 55.6 | 57 | 288 | 21.8 | 19 |
| 8 | 92 | 27.5 | 53 | -19 44.2 | 60 | 318 | 25.5 | 19 |
| 10 | 121 | 16.2 | 55 | -19 32.2 | 62 | 348 | 29.3 | 19 |
| 12 | 150 | 5.2 | 57 | -19 19.7 | 65 | 18 | 33.0 | 19 |
| 14 | 178 | 54.6 | 59 | -19 6.8 | 67 | 48 | 36.7 | 19 |
| 16 | 207 | 44.3 | 61 | -18 53.3 | 69 | 78 | 40.5 | 19 |
| 18 | 236 | 34.5 | 63 | -18 39.4 | 72 | 108 | 44.2 | 19 |
| 20 | 265 | 25.0 | 65 | -18 25.1 | 74 | 138 | 48.0 | 19 |
| 22 | 294 | 15.9 | 67 | -18 10.3 | 76 | 168 | 51.7 | 19 |
| Δ | - | 1 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | MJESEC | | | | | |
|---------|-------------------------|------|-----------------|--------|------|-----------------|---------|--------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h | min | s | / | h min | min | / | / | |
| 00 | 1 | 19.0 | . | -5 | 15.8 | T _{m̄} | 1 35 | 2.4 |
| 12 | 1 | 13.5 | T _{m̄} | 11 | 58.8 | min | Starost | 16.0 d |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-24 | Vel. | Pl. | T _{m̄} | π | 360-24 |
| | h min | / | o | | | h min | / | o |
| Q | 11 56 | . | 1 | 285 | -6.7 | 4 | 10 46 | . |
| Q | 18 12 | . | 1 | 192 | .2 | h | 20 27 | . |

7. JUN

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 16.9 | 22 46.1 | 255 47.3 | 181 54.6 | 22 32.4 | 87 10.0 | 5 55.0 |
| 2 | 210 16.7 | 22 46.5 | 285 52.2 | 212 2.7 | 22 30.9 | 117 13.0 | 5 54.0 |
| 4 | 240 16.5 | 22 47.0 | 315 57.2 | 242 10.9 | 22 29.4 | 147 16.0 | 5 53.1 |
| 6 | 270 16.2 | 22 47.5 | 346 2.1 | 272 19.1 | 22 27.8 | 177 18.9 | 5 52.1 |
| 8 | 300 16.0 | 22 47.9 | 16 7.0 | 302 27.2 | 22 26.3 | 207 21.9 | 5 51.2 |
| 10 | 330 15.8 | 22 48.4 | 46 11.9 | 332 35.4 | 22 24.8 | 237 24.9 | 5 50.2 |
| 12 | 0 15.5 | 22 48.9 | 76 16.9 | 2 43.5 | 22 23.3 | 267 27.9 | 5 49.2 |
| 14 | 30 15.3 | 22 49.3 | 106 21.8 | 32 51.6 | 22 21.7 | 297 30.9 | 5 48.3 |
| 16 | 60 15.1 | 22 49.8 | 136 26.7 | 62 59.8 | 22 20.2 | 327 33.6 | 5 47.3 |
| 18 | 90 14.8 | 22 50.2 | 166 31.7 | 93 7.9 | 22 18.7 | 357 36.8 | 5 46.4 |
| 20 | 120 14.6 | 22 50.7 | 196 36.6 | 123 16.0 | 22 17.2 | 27 39.8 | 5 45.4 |
| 22 | 150 14.4 | 22 51.1 | 226 41.5 | 153 24.2 | 22 15.6 | 57 42.8 | 5 44.5 |
| Δ | -1 | 2 | | 41 | -8 | 15 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 41 | 21 17 | 1 34 | : | : 23 | .6 | .7 | 6 33 |
| 55 | 3 23 | 20 35 | 0 56 | : | : 22 | 46 | 1.0 | 6 59 |
| 50 | 3 52 | 20 6 | 0 44 | : | : 22 | 31 | 1.2 | 7 18 |
| 45 | 4 14 | 19 44 | 0 37 | 2 29 | 22 18 | 1.3 | 7 33 | 3.0 |
| 40 | 4 31 | 19 27 | 0 33 | 2 1 | 22 8 | 1.5 | 7 45 | 2.9 |
| 35 | 4 46 | 19 12 | 0 29 | 1 46 | 21 59 | 1.6 | 7 56 | 2.8 |
| 30 | 4 58 | 18 60 | 0 27 | 1 36 | 21 51 | 1.7 | 8 5 | 2.7 |
| 20 | 5 20 | 18 38 | 0 24 | 1 24 | 21 38 | 1.8 | 8 20 | 2.5 |
| 10 | 5 38 | 18 20 | 0 23 | 1 17 | 21 26 | 2.0 | 8 34 | 2.4 |
| 0 | 5 55 | 18 3 | 0 22 | 1 15 | 21 15 | 2.1 | 8 47 | 2.2 |
| 10 | 6 12 | 17 46 | 0 23 | 1 15 | 21 4 | 2.3 | 8 59 | 2.1 |
| 20 | 6 30 | 17 28 | 0 24 | 1 18 | 20 52 | 2.4 | 9 13 | 2.0 |
| 30 | 6 51 | 17 7 | 0 26 | 1 25 | 20 38 | 2.6 | 9 28 | 1.8 |
| 35 | 7 3 | 16 55 | 0 28 | 1 30 | 20 31 | 2.7 | 9 37 | 1.7 |
| 40 | 7 17 | 16 41 | 0 30 | 1 37 | 20 22 | 2.8 | 9 47 | 1.6 |
| 45 | 7 33 | 16 25 | 0 34 | 1 46 | 20 11 | 2.9 | 9 58 | 1.5 |
| 50 | 7 53 | 16 5 | 0 38 | 1 59 | 19 58 | 3.1 | 10 12 | 1.3 |
| 55 | 8 19 | 15 39 | 0 45 | 2 16 | 19 42 | 3.3 | 10 30 | 1.1 |
| 60 | 8 56 | 15 2 | 0 56 | 2 43 | 19 20 | 3.6 | 10 53 | .8 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-------------|---------------|----------|-------------|-----------------|---------------|-------------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 323 7.3 | 69 -17 55.0 | 78 | 198 55.4 | 19 9.4 | 53 29.5 | - 6 29.3 | |
| 2 | 351 59.0 | 71 -17 39.4 | 80 | 228 59.2 | 19 9.6 | 83 34.6 | - 6 29.3 | |
| 4 | 20 51.1 | 73 -17 23.3 | 82 | 259 2.9 | 19 9.9 | 113 39.6 | - 6 29.2 | |
| 6 | 49 43.7 | 75 -17 6.9 | 84 | 289 6.6 | 19 10.2 | 143 44.7 | - 6 29.2 | |
| 8 | 78 36.6 | 77 -16 50.0 | 86 | 319 10.4 | 19 10.4 | 173 49.8 | - 6 29.2 | |
| 10 | 107 30.0 | 79 -16 32.8 | 88 | 349 14.1 | 19 10.7 | 203 54.9 | - 6 29.1 | |
| 12 | 136 23.7 | 81 -16 15.3 | 90 | 19 17.9 | 19 10.9 | 233 59.9 | - 6 29.1 | |
| 14 | 165 17.9 | 83 -15 57.4 | 91 | 49 21.6 | 19 11.2 | 264 5.0 | - 6 29.1 | |
| 16 | 194 12.5 | 85 -15 39.1 | 93 | 79 25.3 | 19 11.4 | 294 10.1 | - 6 29.0 | |
| 18 | 223 7.4 | 87 -15 20.6 | 94 | 109 29.1 | 19 11.7 | 324 15.1 | - 6 29.0 | |
| 20 | 252 2.8 | 89 -15 1.7 | 96 | 139 32.8 | 19 11.9 | 354 20.2 | - 6 29.0 | |
| 22 | 280 58.6 | 91 -14 42.5 | 97 | 169 36.6 | 19 12.2 | 24 25.3 | - 6 28.9 | |
| Δ | -1 | 2 | | 40 | -8 | 15 | -5 | |
| | | | | 25 | 0 | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 40 | 21 19 | 1 36 | : | : 23 | 22 | .5 | 8 1 |
| 55 | 3 23 | 20 36 | 0 57 | : | : 23 | 9 | .8 | 8 20 |
| 50 | 3 52 | 20 7 | 0 44 | : | : 22 | 59 | 1.0 | 8 34 |
| 45 | 4 14 | 19 45 | 0 37 | 2 30 | 22 50 | 1.2 | 8 45 | 2.9 |
| 40 | 4 31 | 19 27 | 0 33 | 2 2 | 22 43 | 1.3 | 8 54 | 2.8 |
| 35 | 4 46 | 19 13 | 0 30 | 1 46 | 22 37 | 1.4 | 9 2 | 2.6 |
| 30 | 4 58 | 19 0 | 0 27 | 1 36 | 22 32 | 1.5 | 9 9 | 2.5 |
| 20 | 5 20 | 18 39 | 0 24 | 1 24 | 22 22 | 1.7 | 9 20 | 2.4 |
| 10 | 5 38 | 18 20 | 0 23 | 1 17 | 22 14 | 1.8 | 9 30 | 2.2 |
| 0 | 5 55 | 18 3 | 0 22 | 1 15 | 22 6 | 2.0 | 9 40 | 2.1 |
| 10 | 6 12 | 17 46 | 0 23 | 1 15 | 21 58 | 2.1 | 9 49 | 1.9 |
| 20 | 6 31 | 17 28 | 0 24 | 1 18 | 21 50 | 2.3 | 9 59 | 1.8 |
| 30 | 6 51 | 17 7 | 0 26 | 1 25 | 21 41 | 2.5 | 10 11 | 1.6 |
| 35 | 7 3 | 16 55 | 0 28 | 1 30 | 21 35 | 2.6 | 10 17 | 1.5 |
| 40 | 7 17 | 16 41 | 0 30 | 1 37 | 21 29 | 2.7 | 10 25 | 1.4 |
| 45 | 7 33 | 16 25 | 0 34 | 1 46 | 21 21 | 2.8 | 10 33 | 1.2 |
| 50 | 7 53 | 16 5 | 0 38 | 1 59 | 21 13 | 3.0 | 10 43 | 1.1 |
| 55 | 8 20 | 15 38 | 0 45 | 2 16 | 21 2 | 3.2 | 10 56 | .9 |
| 60 | 8 57 | 15 1 | 0 56 | 2 44 | 20 47 | 3.5 | 11 13 | .6 |
| S | | | | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|---------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _z | r | / |
| h | min | s | / | h min | min | / | / | |
| 00 | 0 56.7 | .5 | 15.8 | T _{m̄} | 3 28 | 2.1 | 58.6 | 16.0 |
| 12 | 0 50.9 | T _{m̄} | 11 h 59.2 min | Starost | 18.0 d | Faza | ○ | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π |
| | h min | / | o | | h min | / | o | |
| Q | 11 43 | .1 | 287 | -6.7 | 4 | 10 40 | .0 | 303 |
| ○ | 18 7 | .1 | 191 | .2 | h | 20 19 | .0 | 158 |
| | | | | | | | | |

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2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 11.2 | 22 56.7 | 257 45.6 | 185 9.3 | 21 55.8 | 88 21.2 | 5 31.9 | |
| 2 | 210 11.0 | 22 57.1 | 287 50.5 | 215 17.3 | 21 54.3 | 118 24.2 | 5 31.0 | |
| 4 | 240 10.7 | 22 57.5 | 317 55.4 | 245 25.4 | 21 52.8 | 148 27.1 | 5 30.0 | |
| 6 | 270 10.5 | 22 57.9 | 348 .4 | 275 33.4 | 21 51.3 | 178 30.1 | 5 29.0 | |
| 8 | 300 10.2 | 22 58.3 | 18 5.3 | 305 41.4 | 21 49.7 | 208 33.0 | 5 28.0 | |
| 10 | 330 10.0 | 22 58.7 | 48 10.2 | 335 49.4 | 21 48.2 | 238 36.0 | 5 27.1 | |
| 12 | 0 9.8 | 22 59.1 | 78 15.1 | 5 57.5 | 21 46.7 | 268 38.9 | 5 26.1 | |
| 14 | 30 9.5 | 22 59.5 | 108 20.1 | 36 5.5 | 21 45.2 | 298 41.8 | 5 25.1 | |
| 16 | 60 9.3 | 22 59.9 | 138 25.0 | 66 13.5 | 21 43.7 | 328 44.8 | 5 24.2 | |
| 18 | 90 9.0 | 23 .3 | 168 29.9 | 96 21.5 | 21 42.2 | 358 47.7 | 5 23.2 | |
| 20 | 120 8.8 | 23 6 | 198 34.9 | 126 29.4 | 21 40.6 | 28 50.6 | 5 22.2 | |
| 22 | 150 8.5 | 23 1.0 | 228 39.8 | 156 37.4 | 21 39.1 | 58 53.6 | 5 21.2 | |
| Δ | -1 | 2 | | 40 | -8 | 15 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 40 | 21 20 | 1 37 | : :: | 23 35 | .5 | 9 27 | 3.4 | |
| 55 | 3 22 | 20 37 | 0 57 | : :: | 23 28 | .7 | 9 39 | 3.2 | |
| 50 | 3 51 | 20 8 | 0 44 | : :: | 23 23 | .9 | 9 47 | 2.9 | |
| 45 | 4 13 | 19 46 | 0 37 | 2 30 | 23 18 | 1.1 | 9 54 | 2.8 | |
| 40 | 4 31 | 19 28 | 0 33 | 2 2 | 23 14 | 1.2 | 10 0 | 2.6 | |
| 35 | 4 46 | 19 13 | 0 30 | 1 46 | 23 11 | 1.3 | 10 5 | 2.5 | |
| 30 | 4 58 | 19 0 | 0 27 | 1 36 | 23 8 | 1.4 | 10 9 | 2.4 | |
| 20 | 5 20 | 18 39 | 0 24 | 1 24 | 23 3 | 1.6 | 10 17 | 2.2 | |
| 10 | 5 38 | 18 20 | 0 23 | 1 17 | 22 58 | 1.7 | 10 23 | 2.1 | |
| 0 | 5 56 | 18 3 | 0 22 | 1 15 | 22 54 | 1.9 | 10 29 | 1.9 | |
| 10 | 6 13 | 17 46 | 0 23 | 1 15 | 22 50 | 2.0 | 10 35 | 1.8 | |
| 20 | 6 31 | 17 28 | 0 24 | 1 18 | 22 45 | 2.2 | 10 42 | 1.6 | |
| 30 | 6 52 | 17 7 | 0 26 | 1 25 | 22 40 | 2.4 | 10 49 | 1.5 | |
| 35 | 7 4 | 16 55 | 0 28 | 1 30 | 22 37 | 2.5 | 10 53 | 1.3 | |
| 40 | 7 18 | 16 41 | 0 30 | 1 37 | 22 33 | 2.6 | 10 58 | 1.2 | |
| 45 | 7 34 | 16 25 | 0 34 | 1 46 | 22 29 | 2.7 | 11 3 | 1.1 | |
| 50 | 7 54 | 16 4 | 0 38 | 1 59 | 22 25 | 2.9 | 11 9 | .9 | |
| 55 | 8 21 | 15 38 | 0 45 | 2 17 | 22 19 | 3.1 | 11 17 | .8 | |
| 60 | 8 58 | 15 1 | 0 57 | 2 44 | 22 11 | 3.4 | 11 27 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | |
|----|----------------|--------------|----------------|----------------|---------|----------------|----------------|----------|----------------|
| | S _⊖ | Δ | δ _⊖ | S _⊕ | Δ | δ _⊕ | S _⊖ | Δ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 297 38.4 | 115 -10 11.6 | 111 | 200 25.2 | 19 15.4 | | 55 31.1 | - 6 28.5 | |
| 2 | 326 39.4 | 116 - 9 49.4 | 111 | 230 28.9 | 19 15.7 | | 85 36.2 | - 6 28.5 | |
| 4 | 355 40.6 | 118 - 9 27.1 | 112 | 260 32.7 | 19 15.9 | | 115 41.2 | - 6 28.5 | |
| 6 | 24 42.2 | 119 - 9 4.7 | 113 | 290 36.4 | 19 16.2 | | 145 46.3 | - 6 28.4 | |
| 8 | 53 44.1 | 121 - 8 42.2 | 113 | 320 40.2 | 19 16.4 | | 175 51.3 | - 6 28.4 | |
| 10 | 82 46.3 | 122 - 8 19.6 | 114 | 350 43.9 | 19 16.7 | | 205 56.4 | - 6 28.4 | |
| 12 | 111 48.8 | 124 - 7 56.8 | 114 | 20 47.6 | 19 16.9 | | 236 1.5 | - 6 28.3 | |
| 14 | 140 51.5 | 125 - 7 34.0 | 115 | 50 51.4 | 19 17.2 | | 266 6.5 | - 6 28.3 | |
| 16 | 169 54.6 | 127 - 7 11.1 | 115 | 80 55.1 | 19 17.4 | | 296 11.6 | - 6 28.3 | |
| 18 | 198 57.9 | 128 - 6 48.1 | 115 | 110 58.9 | 19 17.7 | | 326 16.6 | - 6 28.3 | |
| 20 | 228 1.5 | 129 - 6 25.0 | 116 | 141 2.6 | 19 17.9 | | 356 21.7 | - 6 28.2 | |
| 22 | 257 5.3 | 130 - 6 1.9 | 116 | 171 6.4 | 19 18.2 | | 26 26.7 | - 6 28.2 | |
| Δ | -1 | 2 | | 40 | -8 | 15 | -5 | 25 | 0 |

| UT | SUNCE | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------|------|
| | e = T _p - UT | Δ/24 | t | Prolaž | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | h min | min / | / | / | |
| 00 | 0 45.1 | -.5 | 15.8 | T _{m̄} | 4 18 | 2.0 | 57.6 15.7 | |
| 12 | 0 39.2 | T _{m̄} | 11 h 59.3 min | Starost | 19.0 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o | | | h min / | o | | h min / | o |
| ♀ 11 36 | .1 | 287 | -6.6 | ♀ 10 37 | .0 | 303 | -1.6 | |
| ♂ 18 5 | .1 | 191 | .2 | ♂ 20 15 | .0 | 158 | .8 | |

| UT | MJESEC | | | JUPITER | | | SATURN | | |
|----|----------------|--------------|----------------|----------------|---------|----------------|----------------|----------|----------------|
| | S _⊖ | Δ | δ _⊖ | S _⊕ | Δ | δ _⊕ | S _⊖ | Δ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 286 9.4 | 132 - 5 38.8 | 116 | 201 10.1 | 19 18.4 | | 56 31.8 | - 6 28.2 | |
| 2 | 315 13.8 | 133 - 5 15.6 | 116 | 231 13.8 | 19 18.6 | | 86 36.8 | - 6 28.1 | |
| 4 | 344 18.3 | 134 - 4 52.3 | 116 | 261 17.6 | 19 18.9 | | 116 41.9 | - 6 28.1 | |
| 6 | 13 23.1 | 135 - 4 29.1 | 116 | 291 21.3 | 19 19.1 | | 146 46.9 | - 6 28.1 | |
| 8 | 42 28.1 | 136 - 4 5.8 | 117 | 321 25.1 | 19 19.4 | | 176 52.0 | - 6 28.1 | |
| 10 | 73 33.4 | 137 - 3 42.5 | 117 | 351 28.8 | 19 19.6 | | 206 57.0 | - 6 28.0 | |
| 12 | 100 38.8 | 138 - 3 19.1 | 117 | 21 32.6 | 19 19.9 | | 237 2.1 | - 6 28.0 | |
| 14 | 129 44.4 | 139 - 2 55.8 | 117 | 51 36.3 | 19 20.1 | | 267 7.1 | - 6 28.0 | |
| 16 | 155 50.2 | 140 - 2 32.5 | 117 | 81 40.1 | 19 20.4 | | 297 12.2 | - 6 28.0 | |
| 18 | 187 56.2 | 141 - 2 9.2 | 116 | 111 43.8 | 19 20.6 | | 327 17.2 | - 6 27.9 | |
| 20 | 217 2.3 | 142 - 1 45.9 | 116 | 141 47.5 | 19 20.9 | | 357 22.3 | - 6 27.9 | |
| 22 | 246 8.6 | 142 - 1 22.7 | 116 | 171 51.3 | 19 21.1 | | 27 27.3 | - 6 27.9 | |
| Δ | -1 | 2 | | 19 | 1 | 25 | 0 | | |

| UT | SUNCE | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------|------|
| | e = T _p - UT | Δ/24 | t | Prolaž | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | h min | min / | / | / | |
| 00 | 0 33.2 | -.5 | 15.8 | T _{m̄} | 5 | 1.8 | 56.7 15.4 | |
| 12 | 0 27.2 | T _{m̄} | 11 h 59.5 min | Starost | 20.0 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o | | | h min / | o | | h min / | o |
| ♀ 11 30 | .1 | 288 | -6.6 | ♀ 10 34 | .0 | 302 | -1.6 | |
| ♂ 18 2 | .1 | 190 | .2 | ♂ 20 10 | .0 | 158 | .8 | |

11. JUN

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 5.2 | 23 | 5.7 | 259 | 43.9 | 188 | 20.3 |
| 2 | 210 | 5.0 | 23 | 6.0 | 289 | 48.8 | 218 | 28.2 |
| 4 | 240 | 4.7 | 23 | 6.4 | 319 | 53.7 | 248 | 36.0 |
| 6 | 270 | 4.5 | 23 | 6.7 | 349 | 58.6 | 278 | 43.8 |
| 8 | 300 | 4.2 | 23 | 7.0 | 300 | 51.7 | 209 | 43.2 |
| 10 | 330 | 4.0 | 23 | 7.4 | 50 | 8.5 | 338 | 59.5 |
| 12 | 0 | 3.7 | 23 | 7.7 | 80 | 13.4 | 9 | 7.3 |
| 14 | 30 | 3.5 | 23 | 8.0 | 110 | 18.4 | 39 | 15.1 |
| 16 | 60 | 3.2 | 23 | 8.3 | 140 | 23.3 | 69 | 22.8 |
| 18 | 90 | 2.9 | 23 | 8.7 | 170 | 28.2 | 99 | 30.6 |
| 20 | 120 | 2.7 | 23 | 9.0 | 200 | 33.1 | 129 | 38.4 |
| 22 | 150 | 2.4 | 23 | 9.3 | 230 | 38.1 | 159 | 46.1 |
| Δ | -1 | 2 | | | | | 39 | -7 |
| | | | | | | | 15 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 38 | 21 22 | 1 40 | : | 23 57 | .5 | 12 9 | 3.2 | |
| 55 | 3 21 | 20 38 | 0 57 | ..: | .. | .0 | 12 7 | 3.0 | |
| 50 | 3 51 | 20 9 | 0 44 | ..: | .. | .0 | 12 6 | 2.8 | |
| 45 | 4 13 | 19 47 | 0 37 | 2 31 | .. | .0 | 12 5 | 2.6 | |
| 40 | 4 31 | 19 29 | 0 33 | 2 2 | .. | .0 | 12 4 | 2.5 | |
| 35 | 4 46 | 19 14 | 0 30 | 1 47 | .. | .0 | 12 4 | 2.4 | |
| 30 | 4 58 | 19 1 | 0 27 | 1 36 | .. | .0 | 12 3 | 2.3 | |
| 20 | 5 20 | 18 40 | 0 25 | 1 24 | .. | .0 | 12 2 | 2.1 | |
| 10 | 5 39 | 18 21 | 0 23 | 1 18 | .. | .0 | 12 1 | 1.9 | |
| 0 | 5 56 | 18 3 | 0 22 | 1 15 | .. | .0 | 11 60 | 1.8 | |
| 10 | 6 13 | 17 46 | 0 23 | 1 15 | .. | .0 | 11 59 | 1.7 | |
| 20 | 6 32 | 17 28 | 0 24 | 1 19 | .. | .0 | 11 58 | 1.5 | |
| 30 | 6 52 | 17 7 | 0 26 | 1 25 | .. | .0 | 11 57 | 1.3 | |
| 35 | 7 5 | 16 55 | 0 28 | 1 31 | .. | .0 | 11 56 | 1.2 | |
| 40 | 7 19 | 16 41 | 0 30 | 1 37 | .. | .0 | 11 55 | 1.1 | |
| 45 | 7 35 | 16 24 | 0 34 | 1 47 | .. | .0 | 11 54 | 1.0 | |
| 50 | 7 56 | 16 4 | 0 38 | 1 59 | .. | .0 | 11 53 | .9 | |
| 55 | 8 22 | 15 37 | 0 45 | 2 17 | .. | .0 | 11 52 | .7 | |
| 60 | 8 60 | 14 59 | 0 57 | 2 45 | .. | .0 | 11 50 | .4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _♃ | δ _♃ |
| h | o | / | o | / | o | / | o | / |
| 0 | 275 | 15.1 | 143 | - 0 59.4 | 116 | 201 | 55.0 | 19 21.4 |
| 2 | 304 | 21.7 | 144 | - 0 36.2 | 116 | 231 | 58.8 | 19 21.6 |
| 4 | 333 | 28.4 | 144 | - 0 13.1 | 116 | 262 | 2.5 | 19 21.8 |
| 6 | 3 | 35.3 | 145 | 0 10.0 | 115 | 292 | 6.3 | 19 22.1 |
| 8 | 31 | 42.3 | 146 | 0 33.1 | 115 | 322 | 10.0 | 19 22.3 |
| 10 | 60 | 49.4 | 146 | 0 56.1 | 115 | 352 | 13.8 | 19 22.6 |
| 12 | 88 | 56.6 | 147 | 1 19.0 | 114 | 22 | 17.5 | 19 22.8 |
| 14 | 119 | 4.0 | 147 | 1 41.9 | 114 | 52 | 21.3 | 19 23.1 |
| 16 | 148 | 11.4 | 147 | 2 4.7 | 114 | 82 | 25.0 | 19 23.3 |
| 18 | 177 | 18.9 | 148 | 2 27.4 | 113 | 112 | 28.8 | 19 23.5 |
| 20 | 206 | 26.4 | 148 | 2 50.0 | 113 | 142 | 32.5 | 19 23.8 |
| 22 | 235 | 34.1 | 149 | 3 12.6 | 112 | 172 | 36.2 | 19 24.0 |
| Δ | -1 | 1 | | | | 19 | 1 | 25 |
| | | | | | | 38 | -7 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------|---------------|----------------|---------|----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 0 21.2 | - .5 | 15.8 | T _⊖ | 5 49 | 1.8 | 55.9 | 15.2 | |
| 12 | 0 15.0 | T _⊕ | 11 h 59.8 min | Starost | 21.0 d | Faza | 1 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _⊕ | π | 360-π | Vel. | Pl. | T _⊕ | π | 360-π | Vel. |
| h min / | o | | | | h min / | o | | | |
| Q | 11 24 | .1 | 289 | -6.6 | 4 | 10 31 | .0 | 302 | -1.6 |
| Q' | 18 0 | .1 | 190 | .3 | h | 20 6 | .0 | 158 | .8 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|--------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _♃ | δ _♃ |
| h | o | / | o | / | o | / | o | / |
| 0 | 264 | 41.8 | 149 | 3 35.0 | 112 | 202 | 40.0 | 19 24.3 |
| 2 | 293 | 49.6 | 149 | 3 57.4 | 111 | 232 | 43.7 | 19 24.5 |
| 4 | 322 | 57.4 | 149 | 4 19.6 | 111 | 262 | 47.5 | 19 24.8 |
| 6 | 352 | 5.2 | 149 | 4 41.7 | 110 | 292 | 51.2 | 19 25.0 |
| 8 | 21 | 13.1 | 150 | 5 3.7 | 110 | 322 | 55.0 | 19 25.2 |
| 10 | 50 | 21.0 | 150 | 5 25.6 | 109 | 352 | 58.7 | 19 25.5 |
| 12 | 79 | 28.9 | 150 | 5 47.4 | 108 | 23 | 2.5 | 19 25.7 |
| 14 | 108 | 36.9 | 150 | 6 9.1 | 108 | 53 | 6.2 | 19 26.0 |
| 16 | 137 | 44.8 | 150 | 6 30.6 | 107 | 83 | 10.0 | 19 26.2 |
| 18 | 166 | 52.8 | 150 | 6 52.0 | 106 | 113 | 13.7 | 19 26.4 |
| 20 | 196 | .8 | 150 | 7 13.2 | 105 | 143 | 17.5 | 19 26.7 |
| 22 | 225 | 8.7 | 150 | 7 34.3 | 105 | 173 | 21.2 | 19 26.9 |
| Δ | -1 | 1 | | | | 19 | 1 | 25 |
| | | | | | | 38 | -7 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------|---------------|----------------|---------|----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 0 8.9 | - .5 | 15.8 | T _⊖ | 6 33 | 1.8 | 55.2 | 15.0 | |
| 12 | 0 2.6 | T _⊕ | 11 h 60.0 min | Starost | 22.0 d | Faza | 1 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _⊕ | π | 360-π | Vel. | Pl. | T _⊕ | π | 360-π | Vel. |
| h min / | o | | | | h min / | o | | | |
| Q | 11 18 | .1 | 289 | -6.6 | 4 | 10 28 | .0 | 302 | -1.6 |
| Q' | 17 58 | .1 | 189 | .3 | h | 20 2 | .0 | 158 | .8 |

13. JUN

2012.

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 59.0 | 23 13.1 | 261 42.1 | 191 25.9 | 20 44.5 | 90 41.0 | 4 44.6 | |
| 2 | 209 58.8 | 23 13.4 | 291 47.1 | 221 33.5 | 20 43.0 | 120 43.8 | 4 43.6 | |
| 4 | 239 58.5 | 23 13.6 | 321 52.0 | 251 41.1 | 20 41.6 | 150 46.7 | 4 42.6 | |
| 6 | 269 58.3 | 23 13.9 | 351 56.9 | 281 48.6 | 20 40.2 | 180 49.6 | 4 41.6 | |
| 8 | 299 58.0 | 23 14.2 | 22 1.8 | 311 56.2 | 20 38.7 | 210 58.4 | 4 40.6 | |
| 10 | 329 57.7 | 23 14.4 | 52 6.8 | 342 3.7 | 20 37.3 | 240 55.3 | 4 39.6 | |
| 12 | 359 57.5 | 23 14.7 | 82 11.7 | 12 11.3 | 20 35.9 | 270 58.2 | 4 38.6 | |
| 14 | 29 57.2 | 23 14.9 | 112 16.6 | 42 18.8 | 20 34.5 | 301 1.0 | 4 37.6 | |
| 16 | 59 56.9 | 23 15.2 | 142 21.6 | 72 26.3 | 20 33.1 | 331 3.9 | 4 36.6 | |
| 18 | 89 56.7 | 23 15.4 | 172 26.5 | 102 33.8 | 20 31.7 | 1 6.8 | 4 35.6 | |
| 20 | 119 56.4 | 23 15.7 | 202 31.4 | 132 41.3 | 20 30.3 | 31 9.6 | 4 34.6 | |
| 22 | 149 56.1 | 23 15.9 | 232 36.3 | 162 48.7 | 20 28.9 | 61 12.5 | 4 33.6 | |
| Δ | -1 | 1 | | 38 | -7 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 37 | 21 24 | 1 42 | : | : | 0 8 | .5 | 14 42 | 3.1 |
| 55 | 3 21 | 20 40 | 0 58 | : | : | 0 18 | .7 | 14 28 | 2.9 |
| 50 | 3 50 | 20 10 | 0 44 | : | : | 0 26 | .9 | 14 17 | 2.7 |
| 45 | 4 13 | 19 48 | 0 37 | 2 32 | 0 32 | 1.1 | 14 9 | 2.5 | |
| 40 | 4 31 | 19 30 | 0 33 | 2 3 | 0 37 | 1.2 | 14 2 | 2.4 | |
| 35 | 4 45 | 19 15 | 0 30 | 1 47 | 0 42 | 1.3 | 13 56 | 2.3 | |
| 30 | 4 58 | 19 2 | 0 27 | 1 36 | 0 46 | 1.4 | 13 51 | 2.2 | |
| 20 | 5 20 | 18 40 | 0 25 | 1 24 | 0 53 | 1.5 | 13 41 | 2.1 | |
| 10 | 5 39 | 18 21 | 0 23 | 1 18 | 0 59 | 1.7 | 13 33 | 1.9 | |
| 0 | 5 56 | 18 4 | 0 23 | 1 15 | 1 5 | 1.8 | 13 26 | 1.8 | |
| 10 | 6 14 | 17 47 | 0 23 | 1 15 | 1 11 | 1.9 | 13 18 | 1.7 | |
| 20 | 6 32 | 17 28 | 0 24 | 1 19 | 1 18 | 2.1 | 13 10 | 1.6 | |
| 30 | 6 53 | 17 7 | 0 26 | 1 25 | 1 25 | 2.2 | 13 1 | 1.4 | |
| 35 | 7 5 | 16 55 | 0 28 | 1 31 | 1 29 | 2.3 | 12 56 | 1.3 | |
| 40 | 7 20 | 16 41 | 0 31 | 1 37 | 1 34 | 2.4 | 12 50 | 1.2 | |
| 45 | 7 36 | 16 24 | 0 34 | 1 47 | 1 40 | 2.5 | 12 44 | 1.1 | |
| 50 | 7 57 | 16 4 | 0 38 | 1 59 | 1 46 | 2.7 | 12 35 | 1.0 | |
| 55 | 8 24 | 15 37 | 0 45 | 2 17 | 1 55 | 2.9 | 12 25 | .8 | |
| 60 | 9 2 | 14 58 | 0 57 | 2 45 | 2 6 | 3.1 | 12 12 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 254 16.6 | 149 | 7 55.2 | 104 | 203 25.0 | 19 27.2 | 59 33.3 | - 6 27.4 |
| 2 | 283 24.5 | 149 | 8 16.0 | 103 | 233 28.7 | 19 27.4 | 89 38.3 | - 6 27.3 |
| 4 | 312 32.4 | 149 | 8 36.6 | 102 | 263 32.5 | 19 27.6 | 119 43.3 | - 6 27.3 |
| 6 | 341 40.2 | 149 | 8 57.1 | 101 | 293 36.2 | 19 27.9 | 149 48.0 | - 6 27.3 |
| 8 | 10 48.0 | 149 | 9 17.4 | 101 | 323 40.0 | 19 28.1 | 179 53.4 | - 6 27.3 |
| 10 | 39 55.7 | 148 | 9 37.5 | 100 | 353 43.7 | 19 28.4 | 209 58.4 | - 6 27.3 |
| 12 | 68 3.4 | 148 | 9 57.5 | 99 | 23 47.5 | 19 28.6 | 240 3.5 | - 6 27.2 |
| 14 | 98 11.0 | 148 | 10 17.2 | 98 | 53 51.2 | 19 28.8 | 270 8.5 | - 6 27.2 |
| 16 | 127 18.6 | 147 | 10 36.8 | 97 | 83 55.0 | 19 29.1 | 300 13.5 | - 6 27.2 |
| 18 | 156 26.1 | 147 | 10 56.2 | 96 | 113 58.8 | 19 29.3 | 330 18.5 | - 6 27.2 |
| 20 | 185 33.5 | 147 | 11 15.4 | 95 | 144 2.5 | 19 29.5 | 0 23.6 | - 6 27.2 |
| 22 | 214 40.9 | 146 | 11 34.4 | 94 | 174 6.3 | 19 29.8 | 30 28.6 | - 6 27.2 |
| Δ | -1 | 1 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | | |
| h min s | s | / | | h min | min / | | | | |
| 00 | - 0 3.6 | -.5 | 15.8 | T _{m̄} | 7 16 | 1.8 | 54.7 | 14.9 | |
| 12 | - 0 10.0 | T _{m̄} | 12 h .2 min | Starost | 23.0 | d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | / | | | h min / | o | / | | |
| ♀ | 11 11 | .1 | 290 | -6.6 | 4 | 10 25 | .0 | 302 | -1.6 |
| ♂ | 17 56 | .1 | 189 | .3 | h | 19 58 | .0 | 158 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 243 48.1 | 146 | 11 53.1 | 93 | 204 10.0 | 19 30.0 | 60 33.6 | - 6 27.2 |
| 2 | 272 55.3 | 145 | 12 11.7 | 92 | 234 13.8 | 19 30.3 | 90 38.6 | - 6 27.1 |
| 4 | 302 2.4 | 145 | 12 30.1 | 91 | 264 17.5 | 19 30.5 | 120 43.7 | - 6 27.1 |
| 6 | 331 9.3 | 144 | 12 48.2 | 90 | 294 21.3 | 19 30.7 | 150 48.7 | - 6 27.1 |
| 8 | 0 16.2 | 144 | 13 6.1 | 88 | 324 25.0 | 19 31.0 | 180 53.7 | - 6 27.1 |
| 10 | 29 23.0 | 143 | 13 23.8 | 87 | 354 28.8 | 19 31.2 | 210 58.7 | - 6 27.1 |
| 12 | 58 29.6 | 143 | 13 41.3 | 86 | 24 32.5 | 19 31.4 | 241 3.7 | - 6 27.1 |
| 14 | 87 36.2 | 142 | 13 58.5 | 85 | 54 36.3 | 19 31.7 | 271 8.8 | - 6 27.1 |
| 16 | 116 42.6 | 142 | 14 15.5 | 84 | 84 40.0 | 19 31.9 | 301 13.8 | - 6 27.0 |
| 18 | 145 48.9 | 141 | 14 32.2 | 82 | 114 43.8 | 19 32.2 | 331 18.8 | - 6 27.0 |
| 20 | 174 55.1 | 140 | 14 48.7 | 81 | 144 47.5 | 19 32.4 | 1 23.8 | - 6 27.0 |
| 22 | 204 1.1 | 140 | 15 5.0 | 80 | 174 51.3 | 19 32.6 | 31 28.8 | - 6 27.0 |
| Δ | -1 | 1 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | | |
| h min s | s | / | | | h min | min / | | | |
| 00 | - 0 16.3 | -.5 | 15.8 | T _{m̄} | 7 59 | 1.8 | 54.3 | 14.8 | |
| 12 | - 0 22.7 | T _{m̄} | 12 h .4 min | Starost | 24.0 | d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | / | | | h min / | o | / | | |
| ♀ | 11 6 | .1 | 290 | -6.6 | 4 | 10 22 | .0 | 301 | -1.6 |
| ♂ | 17 53 | .1 | 189 | .3 | h | 19 54 | .0 | 158 | .8 |

15. JUN

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 52.7 | 23 18.8 | 263 40.4 | 194 24.6 | 20 11.0 | 91 49.5 | 4 20.4 | |
| 2 | 209 52.4 | 23 19.0 | 293 45.3 | 224 31.9 | 20 9.7 | 121 52.4 | 4 19.4 | |
| 4 | 239 52.1 | 23 19.2 | 323 50.3 | 254 39.2 | 20 8.4 | 151 55.2 | 4 18.4 | |
| 6 | 269 51.9 | 23 19.4 | 353 55.2 | 284 46.4 | 20 7.0 | 181 58.0 | 4 17.4 | |
| 8 | 299 51.6 | 23 19.6 | 34 29.1 | 314 53.7 | 20 5.7 | 212 51.9 | 4 16.4 | |
| 10 | 329 51.3 | 23 19.8 | 54 5.1 | 345 .9 | 20 4.4 | 242 3.7 | 4 15.3 | |
| 12 | 359 51.1 | 23 20.0 | 84 10.0 | 15 8.1 | 20 3.0 | 272 6.5 | 4 14.3 | |
| 14 | 29 50.8 | 23 20.2 | 114 14.9 | 45 15.3 | 20 1.7 | 302 9.3 | 4 13.3 | |
| 16 | 59 50.5 | 23 20.4 | 144 19.8 | 75 22.5 | 20 .4 | 332 12.2 | 4 12.3 | |
| 18 | 89 50.3 | 23 20.6 | 174 24.8 | 105 29.6 | 19 59.1 | 2 15.0 | 4 11.3 | |
| 20 | 119 50.0 | 23 20.7 | 204 29.7 | 135 36.8 | 19 57.8 | 32 17.8 | 4 10.2 | |
| 22 | 149 49.7 | 23 20.9 | 234 34.6 | 165 43.9 | 19 56.5 | 62 20.6 | 4 9.2 | |
| Δ | -1 | 1 | | 36 | -7 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 25 | 1 44 | : :: | 0 35 | .8 | 17 10 | 2.9 | |
| 55 | 3 20 | 20 41 | 0 58 | : :: | 0 57 | 1.0 | 16 44 | 2.7 | |
| 50 | 3 50 | 20 11 | 0 45 | : :: | 1 13 | 1.2 | 16 24 | 2.5 | |
| 45 | 4 13 | 19 49 | 0 37 | 2 33 | 1 26 | 1.3 | 16 9 | 2.4 | |
| 40 | 4 31 | 19 31 | 0 33 | 2 3 | 1 37 | 1.4 | 15 57 | 2.3 | |
| 35 | 4 46 | 19 16 | 0 30 | 1 47 | 1 46 | 1.5 | 15 46 | 2.3 | |
| 30 | 4 59 | 19 3 | 0 27 | 1 36 | 1 54 | 1.6 | 15 37 | 2.2 | |
| 20 | 5 21 | 18 41 | 0 25 | 1 24 | 2 8 | 1.7 | 15 21 | 2.1 | |
| 10 | 5 39 | 18 22 | 0 23 | 1 18 | 2 21 | 1.8 | 15 7 | 2.0 | |
| 0 | 5 57 | 18 4 | 0 23 | 1 15 | 2 32 | 1.9 | 14 54 | 1.9 | |
| 10 | 6 14 | 17 47 | 0 23 | 1 15 | 2 44 | 2.0 | 14 41 | 1.8 | |
| 20 | 6 33 | 17 28 | 0 24 | 1 19 | 2 57 | 2.1 | 14 28 | 1.8 | |
| 30 | 6 54 | 17 7 | 0 26 | 1 25 | 3 11 | 2.2 | 14 12 | 1.7 | |
| 35 | 7 6 | 16 55 | 0 28 | 1 31 | 3 20 | 2.3 | 14 3 | 1.6 | |
| 40 | 7 20 | 16 41 | 0 31 | 1 38 | 3 29 | 2.4 | 13 53 | 1.5 | |
| 45 | 7 37 | 16 24 | 0 34 | 1 47 | 3 41 | 2.5 | 13 40 | 1.4 | |
| 50 | 7 58 | 16 3 | 0 38 | 1 59 | 3 54 | 2.6 | 13 26 | 1.3 | |
| 55 | 8 25 | 15 36 | 0 45 | 2 17 | 4 12 | 2.8 | 13 7 | 1.2 | |
| 60 | 9 3 | 14 58 | 0 58 | 2 46 | 4 35 | 3.0 | 12 42 | .9 | |
| S | | | | | | | | | |

SUNCE MJESEC

UT e = T_p - UT Δ/24 t Prolaz Δ/24 π_{ll} t'

h min s s / h min min / /

00 - 0 29.1 -.5 15.8 T_{m̄} 8 43 1.9 54.1 14.712 - 0 35.6 T_{m̄} 12 h .6 min Starost 25.0 d Faza ●

PLANETE

Pl. T_{m̄} π 360-π Vel. Pl. T_{m̄} π 360-π Vel.

h min / ° h min / °

0 10 60 .1 291 -6.6 ♀ 10 19 .0 301 -1.6

0° 17 51 .1 188 .3 ♂ 19 50 .0 158 -.8

16. JUN

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 52.7 | 23 21.1 | 264 39.5 | 195 51.0 | 19 55.2 | 92 23.5 | 4 8.2 | |
| 2 | 209 49.2 | 23 21.3 | 294 44.5 | 225 58.1 | 19 53.9 | 122 26.3 | 4 7.2 | |
| 4 | 239 48.9 | 23 21.4 | 324 49.4 | 256 5.2 | 19 52.6 | 152 29.1 | 4 6.1 | |
| 6 | 269 48.6 | 23 21.6 | 354 54.3 | 286 12.3 | 19 51.3 | 182 31.9 | 4 5.1 | |
| 8 | 299 48.4 | 23 21.7 | 24 59.3 | 316 19.4 | 19 50.0 | 212 34.7 | 4 4.1 | |
| 10 | 329 48.1 | 23 21.9 | 55 4.2 | 346 26.4 | 19 48.7 | 242 37.6 | 4 3.1 | |
| 12 | 359 47.8 | 23 22.1 | 85 9.1 | 16 33.5 | 19 47.5 | 272 40.4 | 4 2.0 | |
| 14 | 29 47.5 | 23 22.2 | 115 14.0 | 46 40.5 | 19 46.2 | 302 43.2 | 4 1.0 | |
| 16 | 59 47.3 | 23 22.4 | 145 19.0 | 76 47.5 | 19 44.9 | 332 46.0 | 3 60.0 | |
| 18 | 89 47.0 | 23 22.5 | 175 23.9 | 106 54.5 | 19 43.7 | 2 48.8 | 3 58.9 | |
| 20 | 119 46.7 | 23 22.7 | 205 28.8 | 137 1.4 | 19 42.4 | 32 51.6 | 3 57.9 | |
| 22 | 149 46.5 | 23 22.8 | 235 33.8 | 167 8.4 | 19 41.2 | 62 54.4 | 3 56.9 | |
| Δ | -1 | 1 | | 35 | -6 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 26 | 1 45 | : :: | 0 55 | 1.1 | 18 20 | 2.7 | |
| 55 | 3 20 | 20 42 | 0 58 | : :: | 1 22 | 1.3 | 17 48 | 2.5 | |
| 50 | 3 50 | 20 12 | 0 45 | : :: | 1 42 | 1.4 | 17 25 | 2.4 | |
| 45 | 4 13 | 19 49 | 0 37 | 2 33 | 1 58 | 1.5 | 17 7 | 2.3 | |
| 40 | 4 31 | 19 31 | 0 33 | 2 3 | 2 11 | 1.6 | 16 53 | 2.3 | |
| 35 | 4 46 | 19 16 | 0 30 | 1 47 | 2 22 | 1.7 | 16 41 | 2.2 | |
| 30 | 4 59 | 19 3 | 0 27 | 1 37 | 2 32 | 1.7 | 16 30 | 2.2 | |
| 20 | 5 21 | 18 41 | 0 25 | 1 24 | 2 49 | 1.8 | 16 12 | 2.1 | |
| 10 | 5 40 | 18 22 | 0 23 | 1 18 | 3 4 | 1.9 | 15 56 | 2.0 | |
| 0 | 5 57 | 18 4 | 0 23 | 1 15 | 3 18 | 2.0 | 15 41 | 2.0 | |
| 10 | 6 15 | 17 47 | 0 23 | 1 15 | 3 32 | 2.0 | 15 26 | 1.9 | |
| 20 | 6 33 | 17 29 | 0 24 | 1 19 | 3 47 | 2.1 | 15 10 | 1.9 | |
| 30 | 6 54 | 17 7 | 0 26 | 1 25 | 4 4 | 2.2 | 14 52 | 1.8 | |
| 35 | 7 7 | 16 55 | 0 28 | 1 31 | 4 14 | 2.2 | 14 41 | 1.8 | |
| 40 | 7 21 | 16 41 | 0 31 | 1 38 | 4 26 | 2.3 | 14 29 | 1.7 | |
| 45 | 7 37 | 16 24 | 0 34 | 1 47 | 4 40 | 2.4 | 14 15 | 1.7 | |
| 50 | 7 58 | 16 3 | 0 38 | 1 59 | 4 56 | 2.5 | 13 57 | 1.6 | |
| 55 | 8 25 | 15 36 | 0 46 | 2 18 | 5 18 | 2.6 | 13 35 | 1.5 | |
| 60 | 9 4 | 14 58 | 0 58 | 2 46 | 5 47 | 2.8 | 13 5 | 1.3 | |
| S | | | | | | | | | |

SUNCE MJESEC

UT e = T_p - UT Δ/24 t Prolaz Δ/24 π_{ll} t'

h min s s / h min min / /

00 - 0 42.1 -.5 15.8 T_{m̄} 9 29 2.0 54.0 14.712 - 0 48.6 T_{m̄} 12 h .8 min Starost 26.0 d Faza ●

PLANETE

Pl. T_{m̄} π 360-π Vel. Pl. T_{m̄} π 360-π Vel.

h min / ° h min / °

0 10 54 .1 291 -6.5 ♀ 10 16 .0 301 -1.6

0° 17 49 .1 188 .3 ♂ 19 46 .0 158 -.8

17. JUN

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 46.2 | 23 22.9 | 265 38.7 | 197 15.3 | 19 39.9 | 92 57.2 | 3 55.8 | |
| 2 | 209 45.9 | 23 23.1 | 295 43.6 | 227 22.3 | 19 38.7 | 123 .0 | 3 54.8 | |
| 4 | 239 45.6 | 23 23.2 | 325 48.5 | 257 29.1 | 19 37.5 | 153 2.8 | 3 53.8 | |
| 6 | 269 45.4 | 23 23.3 | 355 53.5 | 287 36.1 | 19 36.2 | 183 5.6 | 3 52.7 | |
| 8 | 299 45.1 | 23 23.5 | 25 58.4 | 317 43.0 | 19 35.0 | 213 8.4 | 3 51.7 | |
| 10 | 329 44.8 | 23 23.6 | 56 3.3 | 347 49.8 | 19 33.8 | 243 11.2 | 3 50.7 | |
| 12 | 359 44.5 | 23 23.7 | 86 8.3 | 17 56.7 | 19 32.6 | 273 14.0 | 3 49.6 | |
| 14 | 29 44.3 | 23 23.8 | 116 13.2 | 48 3.5 | 19 31.4 | 303 16.8 | 3 48.6 | |
| 16 | 59 44.0 | 23 23.9 | 146 18.1 | 78 10.3 | 19 30.2 | 333 19.6 | 3 47.6 | |
| 18 | 89 43.7 | 23 24.0 | 176 23.0 | 108 17.1 | 19 29.0 | 3 22.4 | 3 46.5 | |
| 20 | 119 43.4 | 23 24.1 | 206 28.0 | 138 23.9 | 19 27.8 | 33 25.2 | 3 45.5 | |
| 22 | 149 43.2 | 23 24.3 | 236 32.9 | 168 30.7 | 19 26.6 | 63 28.0 | 3 44.5 | |
| Δ | -1 | 1 | | 34 | -6 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 27 | 1 46 | : :: | 1 21 | 1.5 | 19 23 | 2.2 | |
| 55 | 3 20 | 20 42 | 0 58 | : :: | 1 53 | 1.6 | 18 48 | 2.2 | |
| 50 | 3 50 | 20 12 | 0 45 | : :: | 2 17 | 1.7 | 18 22 | 2.2 | |
| 45 | 4 13 | 19 49 | 0 37 | 2 33 | 2 35 | 1.8 | 18 3 | 2.2 | |
| 40 | 4 31 | 19 31 | 0 33 | 2 3 | 2 50 | 1.8 | 17 47 | 2.1 | |
| 35 | 4 46 | 19 16 | 0 30 | 1 47 | 3 31 | 1.9 | 17 34 | 2.1 | |
| 30 | 4 59 | 19 3 | 0 27 | 1 37 | 3 14 | 1.9 | 17 22 | 2.1 | |
| 20 | 5 21 | 18 41 | 0 25 | 1 24 | 3 33 | 1.9 | 17 2 | 2.1 | |
| 10 | 5 40 | 18 22 | 0 23 | 1 18 | 3 50 | 2.0 | 16 45 | 2.1 | |
| 0 | 5 57 | 18 5 | 0 23 | 1 15 | 4 5 | 2.0 | 16 29 | 2.0 | |
| 10 | 6 15 | 17 47 | 0 23 | 1 15 | 4 21 | 2.1 | 16 12 | 2.0 | |
| 20 | 6 33 | 17 29 | 0 24 | 1 19 | 4 38 | 2.1 | 15 55 | 2.0 | |
| 30 | 6 55 | 17 8 | 0 26 | 1 26 | 4 57 | 2.1 | 15 35 | 2.0 | |
| 35 | 7 7 | 16 55 | 0 28 | 1 31 | 5 8 | 2.2 | 15 24 | 2.0 | |
| 40 | 7 21 | 16 41 | 0 31 | 1 38 | 5 21 | 2.2 | 15 10 | 1.9 | |
| 45 | 7 38 | 16 24 | 0 34 | 1 47 | 5 37 | 2.2 | 14 54 | 1.9 | |
| 50 | 7 59 | 16 3 | 0 38 | 1 60 | 5 56 | 2.3 | 14 35 | 1.9 | |
| 55 | 8 26 | 15 36 | 0 46 | 2 18 | 6 20 | 2.4 | 14 10 | 1.8 | |
| 60 | 9 4 | 14 58 | 0 58 | 2 46 | 6 55 | 2.5 | 13 35 | 1.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 210 45.4 | 121 | 20 15.3 | 40 | 206 25.3 | 19 38.4 | 63 34.0 | - 6 26.8 |
| 2 | 239 47.7 | 121 | 20 23.4 | 39 | 236 29.0 | 19 38.7 | 93 39.0 | - 6 26.8 |
| 4 | 268 49.8 | 120 | 20 31.1 | 37 | 266 32.8 | 19 38.9 | 123 44.0 | - 6 26.8 |
| 6 | 297 51.7 | 119 | 20 38.4 | 35 | 296 36.5 | 19 39.1 | 153 49.0 | - 6 26.8 |
| 8 | 326 53.6 | 119 | 20 45.4 | 33 | 326 40.3 | 19 39.4 | 183 54.0 | - 6 26.8 |
| 10 | 355 55.3 | 118 | 20 51.9 | 31 | 356 44.1 | 19 39.6 | 213 59.0 | - 6 26.8 |
| 12 | 24 56.9 | 117 | 20 58.1 | 29 | 26 47.8 | 19 39.8 | 244 4.0 | - 6 26.7 |
| 14 | 53 58.3 | 117 | 21 4.0 | 27 | 56 51.6 | 19 40.1 | 274 9.0 | - 6 26.7 |
| 16 | 82 59.6 | 116 | 21 9.4 | 25 | 86 55.3 | 19 40.3 | 304 14.0 | - 6 26.7 |
| 18 | 112 .9 | 116 | 21 14.4 | 23 | 116 59.1 | 19 40.5 | 334 19.0 | - 6 26.7 |
| 20 | 141 2.0 | 115 | 21 19.0 | 21 | 147 2.9 | 19 40.7 | 4 24.0 | - 6 26.7 |
| 22 | 170 3.0 | 114 | 21 23.3 | 19 | 177 6.6 | 19 41.0 | 34 29.0 | - 6 26.7 |
| Δ | -1 | 0 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|--------|----------------|-----------------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 10 17 | 2.0 | 54.1 | 14.7 |
| 00 - 0 55.1 | - .5 | 15.8 | | | | | | |
| 12 - 1 1.7 | T _{m̄} | 12 h | 1.0 min | Starost | 27.0 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / |
| 0 10 49 .1 | 292 | -6.5 | 4 | 10 13 .0 | 301 | -1.6 | | |
| 0 17 47 .1 | 187 | .3 | h | 19 42 .0 | 158 | -.8 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 199 3.8 | 114 | 21 27.1 | 17 | 207 10.4 | 19 41.2 | 64 34.0 | - 6 26.7 |
| 2 | 228 4.6 | 113 | 21 30.5 | 15 | 237 14.2 | 19 41.4 | 94 39.0 | - 6 26.7 |
| 4 | 257 5.3 | 113 | 21 33.6 | 13 | 267 17.9 | 19 41.7 | 124 44.0 | - 6 26.7 |
| 6 | 286 5.9 | 113 | 21 36.2 | 11 | 297 21.7 | 19 41.9 | 154 49.0 | - 6 26.7 |
| 8 | 315 6.5 | 112 | 21 38.4 | 9 | 327 25.5 | 19 42.1 | 184 54.0 | - 6 26.7 |
| 10 | 344 6.9 | 112 | 21 40.2 | 7 | 357 29.2 | 19 42.3 | 214 59.0 | - 6 26.7 |
| 12 | 13 7.3 | 111 | 21 41.6 | 5 | 27 33.0 | 19 42.6 | 245 3.9 | - 6 26.7 |
| 14 | 42 7.5 | 111 | 21 42.5 | 3 | 57 36.8 | 19 42.8 | 275 8.9 | - 6 26.7 |
| 16 | 71 7.8 | 111 | 21 43.1 | 1 | 87 40.5 | 19 43.0 | 305 13.9 | - 6 26.7 |
| 18 | 100 7.9 | 111 | 21 43.2 | -1 | 117 44.3 | 19 43.2 | 335 18.9 | - 6 26.7 |
| 20 | 129 8.0 | 110 | 21 42.9 | -4 | 147 48.1 | 19 43.5 | 5 23.9 | - 6 26.7 |
| 22 | 158 8.1 | 110 | 21 42.2 | -6 | 177 51.8 | 19 43.7 | 35 28.9 | - 6 26.7 |
| Δ | -19 | 1 | | | 25 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|--------|----------------|-----------------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 11 | 6 | 2.0 | 54.2 |
| 00 - 1 8.2 | - .5 | 15.8 | | | | | | |
| 12 - 1 14.8 | T _{m̄} | 12 h | 1.2 min | Starost | 28.0 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | h min / |
| 0 10 43 .1 | 292 | -6.5 | 4 | 10 10 .0 | 301 | -1.6 | | |
| 0 17 44 .1 | 187 | .3 | h | 19 38 .0 | 158 | -.8 | | |

19. JUN

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 39.6 | 23 25.4 | 267 37.0 | 199 57.3 | 19 11.6 | 94 4.1 | 3 30.9 | |
| 2 | 209 39.3 | 23 25.4 | 297 41.9 | 230 3.8 | 19 7.2 | 124 6.9 | 3 29.9 | |
| 4 | 239 39.1 | 23 25.5 | 327 46.8 | 260 10.3 | 19 9.4 | 154 9.6 | 3 28.8 | |
| 6 | 269 38.8 | 23 25.6 | 357 51.8 | 290 16.9 | 19 8.3 | 184 12.4 | 3 27.8 | |
| 8 | 299 38.5 | 23 25.6 | 27 56.7 | 320 23.3 | 19 7.2 | 214 15.2 | 3 26.7 | |
| 10 | 329 38.2 | 23 25.7 | 58 1.6 | 350 29.8 | 19 6.1 | 244 17.9 | 3 25.7 | |
| 12 | 359 38.0 | 23 25.7 | 88 6.5 | 20 36.3 | 19 5.0 | 274 20.7 | 3 24.6 | |
| 14 | 29 37.7 | 23 25.8 | 118 11.5 | 50 42.7 | 19 3.9 | 304 23.5 | 3 23.6 | |
| 16 | 59 37.4 | 23 25.8 | 148 16.4 | 80 49.2 | 19 2.9 | 334 26.2 | 3 22.5 | |
| 18 | 89 37.1 | 23 25.9 | 178 21.3 | 110 55.6 | 19 1.8 | 4 29.0 | 3 21.5 | |
| 20 | 119 36.9 | 23 25.9 | 208 26.2 | 141 2.0 | 19 7 | 34 31.7 | 3 20.4 | |
| 22 | 149 36.6 | 23 25.9 | 238 31.2 | 171 8.4 | 19 59.7 | 64 34.5 | 3 19.4 | |
| Δ | -1 | 0 | | 32 | -5 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 27 | 1 47 | : | : | 2 44 | 2.5 | 20 60 | 1.3 |
| 55 | 3 20 | 20 43 | 0 58 | : | : | 3 21 | 2.4 | 20 25 | 1.5 |
| 50 | 3 50 | 20 13 | 0 45 | : | : | 3 47 | 2.3 | 20 20 | 1.6 |
| 45 | 4 13 | 19 50 | 0 37 | 2 33 | 4 7 | 2.3 | 19 41 | 1.7 | |
| 40 | 4 31 | 19 32 | 0 33 | 2 3 | 4 23 | 2.3 | 19 26 | 1.8 | |
| 35 | 4 46 | 19 17 | 0 30 | 1 47 | 4 37 | 2.2 | 19 12 | 1.8 | |
| 30 | 4 59 | 19 4 | 0 27 | 1 37 | 4 49 | 2.2 | 19 1 | 1.9 | |
| 20 | 5 21 | 18 42 | 0 25 | 1 24 | 5 9 | 2.1 | 18 41 | 2.0 | |
| 10 | 5 40 | 18 23 | 0 23 | 1 18 | 5 27 | 2.1 | 18 24 | 2.0 | |
| 0 | 5 58 | 18 5 | 0 23 | 1 15 | 5 43 | 2.1 | 18 7 | 2.1 | |
| 10 | 6 15 | 17 48 | 0 23 | 1 15 | 5 60 | 2.0 | 17 51 | 2.1 | |
| 20 | 6 34 | 17 29 | 0 24 | 1 19 | 6 18 | 2.0 | 17 34 | 2.2 | |
| 30 | 6 55 | 17 8 | 0 26 | 1 26 | 6 38 | 1.9 | 17 14 | 2.2 | |
| 35 | 7 7 | 16 55 | 0 28 | 1 31 | 6 50 | 1.9 | 17 2 | 2.3 | |
| 40 | 7 22 | 16 41 | 0 31 | 1 38 | 7 4 | 1.9 | 16 48 | 2.3 | |
| 45 | 7 38 | 16 24 | 0 34 | 1 47 | 7 20 | 1.8 | 16 32 | 2.4 | |
| 50 | 7 59 | 16 4 | 0 39 | 1 60 | 7 40 | 1.8 | 16 13 | 2.5 | |
| 55 | 8 26 | 15 37 | 0 46 | 2 18 | 8 6 | 1.7 | 15 47 | 2.6 | |
| 60 | 9 5 | 14 58 | 0 58 | 2 46 | 8 42 | 1.5 | 15 11 | 2.7 | |
| S | | | | | | | | | |

20. JUN

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 187 8.1 | 110 21 41.1 | -8 | 207 55.6 | 19 43.9 | 65 33.9 | -6 26.7 | |
| 2 | 216 8.1 | 110 21 39.6 | -10 | 237 59.4 | 19 44.1 | 95 38.9 | -6 26.7 | |
| 4 | 245 8.0 | 110 21 37.6 | -12 | 268 3.1 | 19 44.4 | 125 43.8 | -6 26.7 | |
| 6 | 274 7.9 | 109 21 35.2 | -14 | 298 6.9 | 19 44.6 | 155 48.8 | -6 26.7 | |
| 8 | 303 7.8 | 109 21 32.4 | -16 | 328 10.7 | 19 44.8 | 185 53.8 | -6 26.7 | |
| 10 | 332 7.7 | 109 21 29.1 | -18 | 358 14.4 | 19 45.0 | 215 58.8 | -6 26.7 | |
| 12 | 1 7.5 | 109 21 25.5 | -20 | 28 18.2 | 19 45.3 | 246 3.8 | -6 26.7 | |
| 14 | 30 7.4 | 109 21 21.4 | -23 | 58 22.0 | 19 45.5 | 276 8.7 | -6 26.7 | |
| 16 | 59 7.2 | 109 21 16.9 | -25 | 88 25.7 | 19 45.7 | 306 13.7 | -6 26.7 | |
| 18 | 88 7.1 | 109 21 12.0 | -27 | 118 29.5 | 19 45.9 | 336 18.7 | -6 26.7 | |
| 20 | 117 6.9 | 109 21 6.6 | -29 | 148 33.3 | 19 46.2 | 6 23.7 | -6 26.7 | |
| 22 | 146 6.8 | 109 21 .9 | -31 | 178 37.0 | 19 46.4 | 36 28.7 | -6 26.7 | |
| Δ | -1 | 0 | | 31 | -5 | 14 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 28 | 1 47 | : | : | 3 45 | 2.9 | 21 31 | 1.0 |
| 55 | 3 20 | 20 43 | 0 58 | : | : | 4 19 | 2.7 | 21 2 | 1.2 |
| 50 | 3 51 | 20 13 | 0 45 | : | : | 4 43 | 2.6 | 20 40 | 1.4 |
| 45 | 4 13 | 19 50 | 0 37 | 2 33 | 5 2 | 2.5 | 20 22 | 1.5 | |
| 40 | 4 31 | 19 32 | 0 33 | 2 3 | 5 17 | 2.4 | 19 8 | 1.6 | |
| 35 | 4 46 | 19 17 | 0 30 | 1 47 | 5 30 | 2.4 | 19 56 | 1.7 | |
| 30 | 4 59 | 19 4 | 0 27 | 1 37 | 5 41 | 2.3 | 19 46 | 1.7 | |
| 20 | 5 21 | 18 42 | 0 25 | 1 24 | 6 1 | 2.2 | 19 28 | 1.9 | |
| 10 | 5 40 | 18 23 | 0 23 | 1 18 | 6 17 | 2.1 | 19 12 | 2.0 | |
| 0 | 5 58 | 18 5 | 0 23 | 1 15 | 6 33 | 2.1 | 18 57 | 2.0 | |
| 10 | 6 15 | 17 48 | 0 23 | 1 15 | 6 49 | 2.0 | 18 42 | 2.1 | |
| 20 | 6 34 | 17 29 | 0 24 | 1 19 | 7 5 | 1.9 | 18 26 | 2.2 | |
| 30 | 6 55 | 17 8 | 0 26 | 1 26 | 7 25 | 1.8 | 18 8 | 2.3 | |
| 35 | 7 8 | 16 56 | 0 28 | 1 31 | 7 36 | 1.8 | 17 57 | 2.4 | |
| 40 | 7 22 | 16 41 | 0 31 | 1 38 | 7 49 | 1.7 | 17 44 | 2.5 | |
| 45 | 7 39 | 16 25 | 0 34 | 1 47 | 8 1 | 1.6 | 17 30 | 2.6 | |
| 50 | 7 60 | 16 4 | 0 39 | 1 60 | 8 22 | 1.5 | 17 12 | 2.7 | |
| 55 | 8 27 | 15 37 | 0 46 | 2 18 | 8 46 | 1.4 | 16 49 | 2.8 | |
| 60 | 9 6 | 14 58 | 0 58 | 2 46 | 9 19 | 1.1 | 16 16 | 3.1 | |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | | |
|----|----------------|-------------|----------------|----------|----------------|----------------|---------|
| | S _Ω | Δ | S _γ | Δ | S _φ | δ _φ | |
| h | o / | o / | o / | o / | o / | o / | |
| 0 | 175 6.7 | 110 20 54.7 | -33 | 208 40.8 | 19 46.6 | 66 33.6 | -6 26.7 |
| 2 | 204 6.6 | 110 20 48.1 | -35 | 238 44.6 | 19 46.8 | 96 38.6 | -6 26.7 |
| 4 | 233 6.5 | 110 20 41.1 | -37 | 268 48.3 | 19 47.1 | 126 43.6 | -6 26.8 |
| 6 | 262 6.5 | 110 20 33.6 | -39 | 298 52.1 | 19 47.3 | 156 48.6 | -6 26.8 |
| 8 | 291 6.5 | 110 20 25.8 | -41 | 328 55.9 | 19 47.5 | 186 53.5 | -6 26.8 |
| 10 | 320 6.6 | 111 20 17.6 | -43 | 358 59.7 | 19 47.7 | 216 58.5 | -6 26.8 |
| 12 | 349 6.7 | 111 20 8.9 | -45 | 29 3.4 | 19 48.0 | 247 3.5 | -6 26.8 |
| 14 | 18 6.8 | 111 19 59.8 | -47 | 59 7.2 | 19 48.2 | 277 8.5 | -6 26.8 |
| 16 | 47 7.0 | 111 19 50.4 | -49 | 89 11.0 | 19 48.4 | 307 13.4 | -6 26.8 |
| 18 | 76 7.3 | 112 19 40.5 | -51 | 119 14.7 | 19 48.6 | 337 18.4 | -6 26.8 |
| 20 | 105 7.6 | 112 19 30.3 | -53 | 149 18.5 | 19 48.8 | 7 23.4 | -6 26.8 |
| 22 | 134 8.0 | 112 19 19.6 | -55 | 179 22.3 | 19 49.1 | 37 28.4 | -6 26.8 |
| Δ | - | 0 | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | MJESEC | | | | | | |
|-------------|-------------------------|------|-----------------|---------|-------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | / | |
| h min s | s | / | h min min | h min | min | / | / | | |
| 00 - 1 34.6 | - .5 | 15.8 | T _{m̄} | 12 45 | 2.0 | 54.8 | 14.9 | | |
| 12 - 1 41.1 | T _{m̄} | 12 h | 1.7 min | Starost | .4 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| 9 6 | .1 | 293 | -6.4 | 4 | 10 4 | .0 | 300 | -1.6 | 8 |
| 17 40 | .1 | 186 | .4 | h | 19 31 | .0 | 158 | .8 | |
| S | | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 33.0 | 23 26.2 | 269 35.2 | 202 29.8 | 18 46.4 | 95 10.2 | 3 5.6 |
| 2 | 209 32.7 | 23 26.2 | 299 40.2 | 232 36.0 | 18 45.5 | 125 12.9 | 3 4.6 |
| 4 | 239 32.5 | 23 26.2 | 329 45.1 | 262 42.1 | 18 44.8 | 155 15.7 | 3 3.5 |
| 6 | 269 32.2 | 23 26.2 | 359 50.0 | 292 48.2 | 18 43.5 | 185 18.4 | 3 2.4 |
| 8 | 299 31.9 | 23 26.1 | 29 55.0 | 322 54.3 | 18 42.6 | 215 11.1 | 3 1.4 |
| 10 | 329 31.7 | 23 26.1 | 59 59.9 | 353 .4 | 18 41.6 | 245 23.9 | 3 .3 |
| 12 | 359 31.4 | 23 26.1 | 90 4.8 | 23 6.5 | 18 40.7 | 275 26.6 | 2 59.3 |
| 14 | 29 31.1 | 23 26.1 | 120 9.7 | 53 12.5 | 18 39.7 | 305 29.3 | 2 58.2 |
| 16 | 59 30.8 | 23 26.1 | 150 14.7 | 83 18.6 | 18 38.8 | 335 32.0 | 2 57.1 |
| 18 | 89 30.6 | 23 26.0 | 180 19.6 | 113 24.6 | 18 37.8 | 5 34.8 | 2 56.1 |
| 20 | 119 30.3 | 23 26.0 | 210 24.5 | 143 30.6 | 18 36.9 | 35 37.5 | 2 55.0 |
| 22 | 149 30.0 | 23 26.0 | 240 29.5 | 173 36.6 | 18 36.0 | 65 40.2 | 2 53.9 |
| Δ | -1 | 0 | | 30 | -5 | 14 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 28 | 1 47 | : :: | 4 55 | 3.2 | 21 55 | .7 | |
| 55 | 3 21 | 20 43 | 0 58 | : :: | 5 24 | 2.9 | 21 31 | 1.0 | |
| 50 | 3 51 | 20 13 | 0 45 | : :: | 5 45 | 2.8 | 21 13 | 1.2 | |
| 45 | 4 13 | 19 50 | 0 37 | 2 33 | 6 22 | 2.6 | 20 59 | 1.3 | |
| 40 | 4 31 | 19 32 | 0 33 | 2 3 | 6 15 | 2.5 | 20 47 | 1.4 | |
| 35 | 4 46 | 19 17 | 0 30 | 1 47 | 6 27 | 2.4 | 20 37 | 1.5 | |
| 30 | 4 60 | 19 4 | 0 27 | 1 37 | 6 37 | 2.4 | 20 28 | 1.6 | |
| 20 | 5 22 | 18 42 | 0 25 | 1 24 | 6 54 | 2.2 | 20 12 | 1.8 | |
| 10 | 5 41 | 18 23 | 0 23 | 1 18 | 7 9 | 2.1 | 19 59 | 1.9 | |
| 0 | 5 58 | 18 6 | 0 23 | 1 15 | 7 22 | 2.0 | 19 46 | 2.0 | |
| 10 | 6 16 | 17 48 | 0 23 | 1 15 | 7 36 | 1.9 | 19 33 | 2.1 | |
| 20 | 6 34 | 17 30 | 0 24 | 1 19 | 7 51 | 1.8 | 19 19 | 2.2 | |
| 30 | 6 56 | 17 8 | 0 26 | 1 26 | 8 8 | 1.7 | 19 4 | 2.4 | |
| 35 | 7 8 | 16 56 | 0 28 | 1 31 | 8 18 | 1.6 | 18 54 | 2.5 | |
| 40 | 7 22 | 16 42 | 0 31 | 1 38 | 8 29 | 1.5 | 18 44 | 2.6 | |
| 45 | 7 39 | 16 25 | 0 34 | 1 47 | 8 42 | 1.4 | 18 31 | 2.7 | |
| 50 | 7 60 | 16 4 | 0 39 | 1 60 | 8 58 | 1.3 | 18 16 | 2.8 | |
| 55 | 8 27 | 15 37 | 0 46 | 2 18 | 9 19 | 1.1 | 17 57 | 3.0 | |
| 60 | 9 6 | 14 58 | 0 58 | 2 46 | 9 46 | .8 | 17 31 | 3.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 163 8.5 | 113 19 8.6 | -57 | 209 26.1 | 19 49.3 | 67 33.3 | - 6 26.8 | |
| 2 | 192 9.0 | 113 18 57.2 | -59 | 239 29.8 | 19 49.5 | 97 38.3 | - 6 26.8 | |
| 4 | 221 9.6 | 113 18 45.4 | -61 | 269 33.6 | 19 49.7 | 127 43.3 | - 6 26.8 | |
| 6 | 250 10.3 | 114 18 33.2 | -63 | 299 37.4 | 19 49.9 | 157 48.2 | - 6 26.8 | |
| 8 | 279 11.0 | 114 18 20.6 | -65 | 329 41.2 | 19 50.2 | 187 53.2 | - 6 26.8 | |
| 10 | 308 11.9 | 115 18 7.7 | -66 | 359 44.9 | 19 50.4 | 217 58.2 | - 6 26.8 | |
| 12 | 337 12.8 | 115 17 54.4 | -68 | 29 48.7 | 19 50.6 | 248 3.1 | - 6 26.9 | |
| 14 | 6 13.8 | 115 17 40.7 | -70 | 59 52.5 | 19 50.8 | 278 8.1 | - 6 26.9 | |
| 16 | 35 14.9 | 116 17 26.7 | -72 | 89 56.3 | 19 51.0 | 308 13.1 | - 6 26.9 | |
| 18 | 64 16.1 | 116 17 12.3 | -74 | 120 .0 | 19 51.3 | 338 18.0 | - 6 26.9 | |
| 20 | 93 17.3 | 117 16 57.6 | -75 | 150 3.8 | 19 51.5 | 8 23.0 | - 6 26.9 | |
| 22 | 122 18.7 | 117 16 42.5 | -77 | 180 7.6 | 19 51.7 | 38 28.0 | - 6 26.9 | |
| Δ | -1 | 0 | | 29 | -4 | 14 | -5 | |
| | | | | 1 | | 25 | 0 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 36 | 21 28 | 1 46 | : :: | 6 12 | 3.3 | 22 13 | .6 | |
| 55 | 3 21 | 20 43 | 0 58 | : :: | 6 35 | 3.1 | 21 55 | .9 | |
| 50 | 3 51 | 20 13 | 0 45 | : :: | 6 51 | 2.9 | 21 41 | 1.0 | |
| 45 | 4 14 | 19 51 | 0 37 | 2 33 | 7 5 | 2.7 | 21 30 | 1.2 | |
| 40 | 4 32 | 19 33 | 0 33 | 2 3 | 7 16 | 2.6 | 21 21 | 1.3 | |
| 35 | 4 47 | 19 18 | 0 30 | 1 47 | 7 25 | 2.5 | 21 14 | 1.4 | |
| 30 | 4 60 | 19 4 | 0 27 | 1 37 | 7 33 | 2.4 | 21 7 | 1.5 | |
| 20 | 5 22 | 18 42 | 0 25 | 1 24 | 7 47 | 2.2 | 20 55 | 1.7 | |
| 10 | 5 41 | 18 23 | 0 23 | 1 18 | 7 60 | 2.1 | 20 44 | 1.8 | |
| 0 | 5 58 | 18 6 | 0 23 | 1 15 | 8 11 | 2.0 | 20 34 | 2.0 | |
| 10 | 6 16 | 17 48 | 0 23 | 1 15 | 8 22 | 1.9 | 20 24 | 2.1 | |
| 20 | 6 34 | 17 30 | 0 24 | 1 19 | 8 35 | 1.7 | 20 13 | 2.2 | |
| 30 | 6 56 | 17 9 | 0 26 | 1 26 | 8 49 | 1.6 | 20 1 | 2.4 | |
| 35 | 7 8 | 16 56 | 0 28 | 1 31 | 8 57 | 1.5 | 19 54 | 2.5 | |
| 40 | 7 22 | 16 42 | 0 31 | 1 38 | 9 6 | 1.4 | 19 45 | 2.6 | |
| 45 | 7 39 | 16 25 | 0 34 | 1 47 | 9 16 | 1.3 | 19 36 | 2.7 | |
| 50 | 7 60 | 16 4 | 0 39 | 1 60 | 9 29 | 1.1 | 19 24 | 2.9 | |
| 55 | 8 27 | 15 37 | 0 46 | 2 18 | 9 45 | .9 | 19 9 | 3.1 | |
| 60 | 9 6 | 14 58 | 0 58 | 2 46 | 10 7 | .7 | 18 49 | 3.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 151 20.2 | 118 16 27.1 | -79 | 210 11.4 | 19 51.9 | 68 32.9 | - 6 26.9 | |
| 2 | 180 21.7 | 118 16 11.4 | -80 | 240 15.1 | 19 52.1 | 98 37.9 | - 6 26.9 | |
| 4 | 209 23.3 | 119 15 55.3 | -82 | 270 18.9 | 19 52.4 | 128 42.8 | - 6 26.9 | |
| 6 | 238 25.0 | 119 15 38.9 | -84 | 300 22.7 | 19 52.6 | 158 47.8 | - 6 26.9 | |
| 8 | 267 26.8 | 119 15 22.1 | -85 | 330 26.5 | 19 52.8 | 188 52.8 | - 6 26.9 | |
| 10 | 296 28.7 | 120 15 5.1 | -87 | 0 30.3 | 19 53.0 | 218 57.7 | - 6 27.0 | |
| 12 | 325 30.7 | 120 14 47.7 | -88 | 30 34.0 | 19 53.2 | 249 2.7 | - 6 27.0 | |
| 14 | 354 32.8 | 121 14 30.1 | -90 | 60 37.8 | 19 53.4 | 279 7.6 | - 6 27.0 | |
| 16 | 23 34.9 | 121 14 12.1 | -91 | 90 41.6 | 19 53.7 | 309 12.6 | - 6 27.0 | |
| 18 | 52 37.1 | 122 13 53.8 | -93 | 120 45.4 | 19 53.9 | 339 17.6 | - 6 27.0 | |
| 20 | 81 39.5 | 122 13 35.3 | -94 | 150 49.2 | 19 54.1 | 9 22.5 | - 6 27.0 | |
| 22 | 110 41.8 | 122 13 16.4 | -96 | 180 52.9 | 19 54.3 | 39 27.5 | - 6 27.0 | |
| Δ | -1 | 0 | | 19 | 1 | 25 | 0 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | |
|------------|-------------------------|------|---------------------|---------|--------|---------------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π_{ζ} | r |
| h min s | s | / | h min min | h min | min | / | / |
| 00 - 2 .8 | - .5 | 15.8 | T _{m̄} | 14 23 | 2.0 | 55.6 | 15.2 |
| 12 - 2 7.4 | T _{m̄} | 12 h | 2.1 min | Starost | 2.4 d | Faza | ● |
| | | | | | | | |

PLANETE

| Pl. | T_{m̄} | π | 360- π | Vel. | Pl. | T_{m̄} | π | 360- π | Vel. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| h min | / | o | h min | / | o |

<tbl_r cells="10" ix="1"

23. JUN

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 26.5 | 23 25.3 | 271 33.5 | 204 52.8 | 18 24.6 | 96 15.5 | 2 40.0 | |
| 2 | 209 26.2 | 23 25.2 | 301 38.4 | 234 58.6 | 18 23.8 | 126 18.2 | 2 39.0 | |
| 4 | 239 25.9 | 23 25.2 | 331 43.4 | 265 4.3 | 18 22.9 | 158 20.9 | 2 37.9 | |
| 6 | 269 25.7 | 23 25.1 | 1 48.3 | 295 10.0 | 18 22.1 | 186 23.6 | 2 36.8 | |
| 8 | 299 25.4 | 23 25.0 | 31 53.2 | 325 15.7 | 18 21.3 | 216 26.3 | 2 35.7 | |
| 10 | 329 25.1 | 23 24.9 | 61 58.2 | 355 21.4 | 18 20.5 | 246 29.0 | 2 34.7 | |
| 12 | 359 24.9 | 23 24.8 | 92 3.1 | 25 27.1 | 18 19.7 | 276 31.7 | 2 33.6 | |
| 14 | 29 24.6 | 23 24.8 | 122 8.0 | 55 32.7 | 18 18.9 | 306 34.4 | 2 32.5 | |
| 16 | 59 24.3 | 23 24.7 | 152 12.9 | 85 38.4 | 18 18.1 | 336 37.1 | 2 31.4 | |
| 18 | 89 24.0 | 23 24.6 | 182 17.9 | 115 44.0 | 18 17.3 | 6 39.8 | 2 30.3 | |
| 20 | 119 23.8 | 23 24.5 | 212 22.8 | 145 49.6 | 18 16.5 | 36 42.5 | 2 29.3 | |
| 22 | 149 23.5 | 23 24.4 | 242 27.7 | 175 55.2 | 18 15.7 | 66 45.2 | 2 28.2 | |
| Δ | -1 | 0 | | 28 | -4 | 13 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 37 | 21 28 | 1 46 | : | 7 32 | 3.4 | 22 27 | .5 | |
| 55 | 3 21 | 20 43 | 0 58 | : | 7 48 | 3.1 | 22 15 | .8 | |
| 50 | 3 51 | 20 13 | 0 45 | : | 8 0 | 2.9 | 22 7 | 1.0 | |
| 45 | 4 14 | 19 51 | 0 37 | 2 33 | 8 10 | 2.8 | 21 59 | 1.1 | |
| 40 | 4 32 | 19 33 | 0 33 | 2 3 | 8 18 | 2.6 | 21 53 | 1.3 | |
| 35 | 4 47 | 19 18 | 0 30 | 1 47 | 8 25 | 2.5 | 21 48 | 1.4 | |
| 30 | 5 0 | 19 5 | 0 27 | 1 37 | 8 31 | 2.4 | 21 43 | 1.5 | |
| 20 | 5 22 | 18 43 | 0 25 | 1 24 | 8 41 | 2.3 | 21 35 | 1.7 | |
| 10 | 5 41 | 18 24 | 0 23 | 1 18 | 8 50 | 2.1 | 21 28 | 1.8 | |
| 0 | 5 59 | 18 6 | 0 23 | 1 15 | 8 59 | 2.0 | 21 21 | 2.0 | |
| 10 | 6 16 | 17 49 | 0 23 | 1 15 | 9 7 | 1.8 | 21 14 | 2.1 | |
| 20 | 6 35 | 17 30 | 0 24 | 1 19 | 9 16 | 1.7 | 21 7 | 2.3 | |
| 30 | 6 56 | 17 9 | 0 26 | 1 26 | 9 26 | 1.5 | 20 59 | 2.4 | |
| 35 | 7 8 | 16 56 | 0 28 | 1 31 | 9 32 | 1.4 | 20 56 | 2.5 | |
| 40 | 7 22 | 16 42 | 0 31 | 1 38 | 9 39 | 1.3 | 20 48 | 2.7 | |
| 45 | 7 39 | 16 25 | 0 34 | 1 47 | 9 47 | 1.2 | 20 42 | 2.8 | |
| 50 | 8 0 | 16 5 | 0 39 | 1 60 | 9 56 | 1.0 | 20 34 | 3.0 | |
| 55 | 8 27 | 15 38 | 0 46 | 2 18 | 10 7 | .8 | 20 24 | 3.2 | |
| 60 | 9 6 | 14 59 | 0 58 | 2 46 | 10 22 | .5 | 20 11 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 139 44.3 | 123 | 12 57.3 | -97 | 210 56.7 | 19 54.5 | 69 32.4 | -6 27.0 |
| 2 | 168 46.9 | 123 | 12 37.9 | -98 | 241 .5 | 19 54.7 | 99 37.4 | -6 27.1 |
| 4 | 197 49.5 | 123 | 12 18.2 | -100 | 271 4.3 | 19 55.0 | 129 42.3 | -6 27.1 |
| 6 | 226 52.2 | 124 | 11 58.3 | -101 | 301 8.1 | 19 55.2 | 159 47.3 | -6 27.1 |
| 8 | 255 54.9 | 124 | 11 38.1 | -102 | 331 11.8 | 19 55.4 | 189 52.2 | -6 27.1 |
| 10 | 284 57.7 | 124 | 11 17.7 | -103 | 1 15.6 | 19 55.6 | 219 57.2 | -6 27.1 |
| 12 | 314 .6 | 125 | 10 57.0 | -105 | 319 19.4 | 19 55.8 | 250 2.1 | -6 27.1 |
| 14 | 343 3.5 | 125 | 10 36.1 | -106 | 61 23.2 | 19 56.0 | 280 7.1 | -6 27.1 |
| 16 | 12 6.5 | 125 | 10 15.0 | -107 | 91 27.0 | 19 56.2 | 310 12.0 | -6 27.2 |
| 18 | 41 9.6 | 125 | 9 53.6 | -108 | 121 30.8 | 19 56.5 | 340 17.0 | -6 27.2 |
| 20 | 70 12.6 | 126 | 9 32.0 | -109 | 151 34.5 | 19 56.7 | 10 21.9 | -6 27.2 |
| 22 | 99 15.7 | 126 | 9 10.2 | -110 | 181 38.3 | 19 56.9 | 40 26.9 | -6 27.2 |
| Δ | -1 | -1 | | | 27 | -4 | 13 | -5 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------|-------|----------------|---------|----------------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 2 13.9 | -.5 | 15.8 | T _⊖ | 15 10 | 2.0 | 56.1 | 15.3 | |
| 12 | - 2 20.4 | T _⊕ | 12 h | 2.3 min | Starost | 3.4 d | Faza | ● | |
| PLANETE | Pl. | T _⊕ | π | 360-2 | Vel. | Pl. | T _⊕ | π | |
| h min / | o | h min | / | h min | o | h min | / | o | |
| 0 | 10 19 | .1 | 293 | -6.3 | 4 | 9 55 | .0 | 299 | -1.6 |
| ○ | 17 33 | .1 | 184 | .4 | h | 19 19 | .0 | 158 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 128 18.9 | 126 | 8 48.2 | -111 | 211 42.1 | 19 57.1 | 70 31.8 | -6 27.2 |
| 2 | 157 22.1 | 126 | 8 26.0 | -112 | 241 45.9 | 19 57.3 | 100 36.8 | -6 27.2 |
| 4 | 186 25.3 | 126 | 8 3.6 | -113 | 271 49.7 | 19 57.5 | 130 41.7 | -6 27.3 |
| 6 | 215 28.5 | 126 | 7 41.0 | -114 | 301 53.5 | 19 57.7 | 160 46.7 | -6 27.3 |
| 8 | 244 31.7 | 126 | 7 18.2 | -115 | 331 57.3 | 19 58.0 | 190 51.6 | -6 27.3 |
| 10 | 273 35.0 | 126 | 6 55.3 | -116 | 2 1.0 | 19 58.2 | 220 56.5 | -6 27.3 |
| 12 | 302 38.2 | 126 | 6 32.1 | -116 | 32 4.8 | 19 58.4 | 251 1.5 | -6 27.3 |
| 14 | 331 41.5 | 126 | 6 8.9 | -117 | 62 8.6 | 19 58.6 | 281 6.4 | -6 27.3 |
| 16 | 0 44.7 | 126 | 5 45.4 | -118 | 92 12.4 | 19 58.8 | 311 11.4 | -6 27.4 |
| 18 | 29 48.0 | 126 | 5 21.9 | -119 | 122 16.2 | 19 59.0 | 341 16.3 | -6 27.4 |
| 20 | 58 51.2 | 126 | 4 58.1 | -119 | 152 20.0 | 19 59.2 | 11 21.3 | -6 27.4 |
| 22 | 87 54.4 | 126 | 4 34.3 | -120 | 182 23.8 | 19 59.4 | 41 26.2 | -6 27.4 |
| Δ | -1 | -1 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|----------------|-------|----------------|---------|----------------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 2 26.9 | -.5 | 15.8 | T _⊖ | 15 57 | 2.0 | 56.7 | 15.4 | |
| 12 | - 2 33.3 | T _⊕ | 12 h | 2.6 min | Starost | 4.4 d | Faza | ● | |
| PLANETE | Pl. | T _⊕ | π | 360-2 | Vel. | Pl. | T _⊕ | π | |
| h min / | o | h min | / | h min | o | h min | / | o | |
| 0 | 10 14 | .1 | 293 | -6.3 | 4 | 9 52 | .0 | 299 | -1.6 |
| ○ | 17 31 | .1 | 184 | .4 | h | 19 15 | .0 | 158 | .8 |

25. JUN

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | | | | | | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----|-------|-------|---------------------|--------|--------|------|-------|-------|------|------|-------|------|-------|------|---|-----|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ | | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | | | | | | |
| h | o | / | o | / | o | / | o | / | | h min | h min | h min | h min | h min | min | h min | min | | | | | | | | |
| 0 | 179 | 20.0 | 23 | 22.8 | 273 | 31.8 | 207 | 6.2 | 18 | 6.2 | 97 | 20.1 | 2 | 14.1 | 60 | 2 38 | 21 28 | 1 44 | : :: | 10 18 | 3.6 | 22 51 | .5 | | |
| 2 | 209 | 19.8 | 23 | 22.7 | 303 | 36.7 | 237 | 11.5 | 18 | 5.5 | 127 | 22.7 | 2 | 13.0 | 55 | 3 22 | 20 43 | 0 58 | : :: | 10 21 | 3.3 | 22 52 | .8 | | |
| 4 | 239 | 19.5 | 23 | 22.5 | 333 | 41.7 | 267 | 16.9 | 18 | 4.8 | 157 | 25.4 | 2 | 11.9 | 50 | 3 52 | 20 13 | 0 45 | : :: | 10 23 | 3.1 | 22 52 | 1.0 | | |
| 6 | 269 | 19.2 | 23 | 22.4 | 346 | 6.6 | 297 | 22.2 | 18 | 4.1 | 187 | 28.1 | 2 | 10.9 | 45 | 4 15 | 19 51 | 0 37 | 2 33 | 10 24 | 2.9 | 22 53 | 1.1 | | |
| 8 | 299 | 19.0 | 23 | 22.2 | 33 | 51.5 | 327 | 27.5 | 18 | 3.5 | 217 | 30.8 | 2 | 9.8 | 40 | 4 33 | 19 33 | 0 33 | 2 3 | 10 26 | 2.7 | 22 53 | 1.3 | | |
| 10 | 329 | 18.7 | 23 | 22.1 | 63 | 56.4 | 357 | 32.8 | 18 | 2.8 | 247 | 33.4 | 2 | 8.7 | 35 | 4 48 | 19 18 | 0 30 | 1 47 | 10 27 | 2.6 | 22 54 | 1.4 | | |
| 12 | 359 | 18.4 | 23 | 21.9 | 94 | 1.4 | 27 | 38.0 | 18 | 2.1 | 277 | 36.1 | 2 | 7.6 | 30 | 5 1 | 19 5 | 0 27 | 1 36 | 10 28 | 2.5 | 22 54 | 1.5 | | |
| 14 | 29 | 18.2 | 23 | 21.8 | 124 | 6.3 | 57 | 43.3 | 18 | 1.5 | 307 | 38.8 | 2 | 6.5 | 20 | 5 23 | 18 43 | 0 25 | 1 24 | 10 30 | 2.3 | 22 55 | 1.7 | | |
| 16 | 59 | 17.9 | 23 | 21.6 | 154 | 11.2 | 87 | 48.5 | 18 | .8 | 337 | 41.4 | 2 | 5.4 | 10 | 5 42 | 18 24 | 0 23 | 1 18 | 10 31 | 2.1 | 22 55 | 1.9 | | |
| 18 | 89 | 17.6 | 23 | 21.4 | 184 | 16.2 | 117 | 53.7 | 18 | .2 | 217 | 44.1 | 2 | 4.3 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | | | |
| 20 | 119 | 17.4 | 23 | 21.3 | 214 | 21.1 | 147 | 58.9 | 17 | 59.5 | 37 | 46.8 | 2 | 3.2 | 22 | 149 | 17.1 | 23 | 21.1 | 244 | 26.0 | 67 | 49.4 | 2 | 2.1 |
| 22 | - | - | - | - | - | - | 178 | 4.1 | 17 | 58.9 | - | - | - | - | 26 | -3 | 13 | -5 | - | - | - | - | - | - | |
| Δ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | | | | | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|--------|-------|-------|--------|------|-------|-------|--------|-------|-------|-------|-------|-----|---|---|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | IZLAZ | ZALAZ | GRAB. | AS TR. | | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | | | | |
| h | o | / | o | / | o | / | o | / | o | / | o | / | | h min | h min | h min | min | h min | min | h min | min | | |
| 0 | 116 | 57.5 | 126 | 4 | 10.3 | -120 | 212 | 27.5 | 19 | 59.6 | 71 | 31.1 | - | 6 | 27.4 | 23 3 | 3.6 | 22 57 | .6 | | | | |
| 2 | 146 | 6 | 125 | 3 | 46.2 | -121 | 242 | 31.3 | 19 | 59.9 | 101 | 36.1 | - | 6 | 27.5 | 23 10 | 3.4 | 22 57 | .9 | | | | |
| 4 | 175 | 3.7 | 125 | 3 | 22.0 | -122 | 272 | 35.1 | 20 | .1 | 131 | 41.0 | - | 6 | 27.5 | 23 16 | 3.2 | 22 57 | 1.1 | | | | |
| 6 | 204 | 6.7 | 125 | 2 | 57.7 | -122 | 302 | 38.9 | 20 | .3 | 161 | 46.0 | - | 6 | 27.5 | 23 20 | 3.0 | 22 57 | 1.2 | | | | |
| 8 | 233 | 9.7 | 124 | 2 | 33.3 | -123 | 332 | 42.7 | 20 | .5 | 191 | 50.9 | - | 6 | 27.5 | 23 27 | 2.8 | 22 57 | 1.4 | | | | |
| 10 | 262 | 12.6 | 124 | 2 | 8.8 | -123 | 246.5 | 20 | .7 | 221 | 55.8 | - | 6 | 27.5 | 23 30 | 2.6 | 22 57 | 1.6 | | | | | |
| 12 | 291 | 15.4 | 124 | 1 | 44.2 | -123 | 32 | 50.3 | 20 | .9 | 252 | .8 | - | 6 | 27.6 | 23 35 | 2.4 | 22 57 | 1.8 | | | | |
| 14 | 320 | 18.2 | 123 | 1 | 19.5 | -124 | 62 | 54.1 | 20 | 1.1 | 282 | 5.7 | - | 6 | 27.6 | 23 40 | 2.2 | 22 57 | 2.0 | | | | |
| 16 | 349 | 20.8 | 123 | 0 | 54.8 | -124 | 92 | 57.9 | 20 | 1.3 | 312 | 10.6 | - | 6 | 27.6 | 23 44 | 2.1 | 22 57 | 2.1 | | | | |
| 18 | 18 | 23.4 | 122 | 0 | 30.0 | -124 | 123 | 1.7 | 20 | 1.5 | 342 | 15.6 | - | 6 | 27.6 | 23 48 | 2.3 | 22 57 | 2.3 | | | | |
| 20 | 47 | 25.8 | 122 | 0 | 5.1 | -124 | 153 | 5.5 | 20 | 1.7 | 12 | 20.5 | - | 6 | 27.6 | 23 52 | 2.4 | 22 57 | 2.4 | | | | |
| 22 | 76 | 28.2 | 121 | - | 0 | 19.7 | -125 | 183 | 9.2 | 20 | 2.0 | 42 | 25.4 | - | 6 | 27.7 | 23 57 | 2.6 | 22 57 | 2.6 | | | |
| Δ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | | φ | SUNCE | | MJESEC | | | | | | | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|--------|-------|-------|--------|------|-------|-------|--------|-------|-----|-------|-----|---|---|---|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | IZLAZ | ZALAZ | GRAB. | AS TR. | | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | | | | |
| h | o | / | o | / | o | / | o | / | o | / | o | / | | h min | h min | h min | min | | | | | | |
| 0 | 105 | 30.5 | 121 | - | 0 | 44.7 | -125 | 213 | 13.0 | 20 | 2.2 | 72 | 30.4 | - | 6 | 27.7 | 23 3 | 3.6 | 22 57 | .6 | | | |
| 2 | 134 | 32.6 | 120 | - | 1 | 9.6 | -125 | 243 | 16.8 | 20 | 2.4 | 102 | 35.3 | - | 6 | 27.7 | 23 10 | 3.4 | 22 57 | .9 | | | |
| 4 | 163 | 34.6 | 119 | - | 1 | 34.6 | -125 | 273 | 20.6 | 20 | 2.6 | 132 | 40.2 | - | 6 | 27.7 | 23 16 | 3.2 | 22 57 | 1.1 | | | |
| 6 | 192 | 36.4 | 119 | - | 1 | 59.6 | -125 | 303 | 24.4 | 20 | 2.8 | 162 | 45.1 | - | 6 | 27.8 | 23 20 | 3.0 | 22 57 | 1.2 | | | |
| 8 | 221 | 38.2 | 118 | - | 2 | 24.6 | -125 | 333 | 28.2 | 20 | 3.0 | 192 | 50.1 | - | 6 | 27.8 | 23 27 | 2.1 | 22 57 | 1.8 | | | |
| 10 | 250 | 39.7 | 117 | - | 2 | 49.6 | -125 | 332 | 30.0 | 20 | 3.2 | 222 | 55.0 | - | 6 | 27.8 | 23 32 | 2.1 | 22 57 | 1.8 | | | |
| 12 | 279 | 41.1 | 116 | - | 3 | 14.5 | -125 | 33 | 35.8 | 20 | 3.4 | 252 | 59.9 | - | 6 | 27.8 | 23 35 | 2.4 | 22 57 | 1.8 | | | |
| 14 | 308 | 42.4 | 115 | - | 3 | 39.5 | -125 | 63 | 39.6 | 20 | 3.6 | 283 | 4.9 | - | 6 | 27.8 | 23 40 | 2.2 | 22 57 | 2.0 | | | |
| 16 | 337 | 43.4 | 114 | - | 4 | 4.4 | -124 | 93 | 43.4 | 20 | 3.8 | 313 | 9.8 | - | 6 | 27.9 | 23 44 | 2.1 | 22 57 | 2.1 | | | |
| 18 | 6 | 44.3 | 113 | - | 4 | 29.3 | -124 | 123 | 47.2 | 20 | 4.0 | 343 | 14.7 | - | 6 | 27.9 | 23 48 | 2.3 | 22 57 | 2.3 | | | |
| 20 | 35 | 45.0 | 113 | - | 4 | 54.1 | -124 | 153 | 51.0 | 20 | 4.2 | 13 | 19.6 | - | 6 | 27.9 | 23 52 | 2.4 | 22 57 | 2.4 | | | |
| 22 | 64 | 45.5 | 111 | - | 5 | 18.9 | -124 | 183 | 54.8 | 20 | 4.5 | 43 | 24.6 | - | 6 | 27.9 | 23 57 | 2.6 | 22 57 | 2.6 | | | |
| Δ | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

27. JUN

2012.

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 13.7 | 23 18.7 | 275 30.1 | 209 10.0 | 17 51.2 | 98 23.9 | 1 47.9 | |
| 2 | 209 13.5 | 23 18.4 | 305 35.0 | 239 15.0 | 17 50.7 | 128 26.6 | 1 46.8 | |
| 4 | 239 13.2 | 23 18.2 | 335 39.9 | 269 19.0 | 17 50.1 | 158 29.2 | 1 45.7 | |
| 6 | 269 12.9 | 23 18.0 | 5 44.9 | 299 24.8 | 17 49.6 | 188 31.9 | 1 44.6 | |
| 8 | 299 12.7 | 23 17.8 | 35 49.8 | 329 29.7 | 17 49.1 | 218 34.5 | 1 43.5 | |
| 10 | 329 12.4 | 23 17.6 | 65 54.7 | 355 34.6 | 17 48.5 | 248 37.1 | 1 42.4 | |
| 12 | 359 12.2 | 23 17.4 | 95 59.6 | 29 39.5 | 17 48.0 | 278 39.8 | 1 41.3 | |
| 14 | 29 11.9 | 23 17.1 | 126 4.6 | 59 44.4 | 17 47.5 | 308 42.4 | 1 40.2 | |
| 16 | 59 11.7 | 23 16.9 | 156 9.5 | 89 49.2 | 17 47.0 | 338 45.1 | 1 39.1 | |
| 18 | 89 11.4 | 23 16.7 | 186 14.4 | 119 54.0 | 17 46.5 | 8 47.7 | 1 38.0 | |
| 20 | 119 11.2 | 23 16.4 | 216 19.4 | 149 58.8 | 17 46.0 | 38 50.3 | 1 36.9 | |
| 22 | 149 10.9 | 23 16.2 | 246 24.3 | 180 3.6 | 17 45.5 | 68 53.0 | 1 35.8 | |
| Δ | -1 | -1 | | 24 | -3 | 13 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 39 | 21 27 | 1 42 | : | 13 12 | 3.8 | 23 17 | .7 | |
| 55 | 3 23 | 20 43 | 0 58 | : | 13 1 | 3.5 | 23 31 | 1.0 | |
| 50 | 3 53 | 20 13 | 0 44 | : | 12 52 | 3.2 | 23 41 | 1.2 | |
| 45 | 4 15 | 19 51 | 0 37 | 2 32 | 12 45 | 3.1 | 23 50 | 1.4 | |
| 40 | 4 33 | 19 33 | 0 33 | 2 3 | 12 39 | 2.9 | 23 57 | 1.5 | |
| 35 | 4 48 | 19 18 | 0 30 | 1 47 | 12 34 | 2.8 | ... | 0 | |
| 30 | 5 1 | 19 5 | 0 27 | 1 36 | 12 30 | 2.7 | ... | 0 | |
| 20 | 5 23 | 18 43 | 0 25 | 1 24 | 12 23 | 2.5 | ... | 0 | |
| 10 | 5 42 | 18 24 | 0 23 | 1 18 | 12 16 | 2.3 | ... | 0 | |
| 0 | 6 60 | 18 7 | 0 23 | 1 15 | 12 10 | 2.2 | ... | 0 | |
| 10 | 6 17 | 17 50 | 0 23 | 1 15 | 12 4 | 2.0 | ... | 0 | |
| 20 | 6 35 | 17 31 | 0 24 | 1 19 | 11 58 | 1.9 | ... | 0 | |
| 30 | 6 56 | 17 10 | 0 26 | 1 25 | 11 51 | 1.7 | ... | 0 | |
| S | | | | | | | | | |
| | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 93 45.8 | 110 - 5 43.6 | -123 | 213 58.6 | 20 4.7 | 73 29.5 | - 6 28.0 | |
| 2 | 122 45.9 | 109 - 6 8.2 | -123 | 244 2.4 | 20 4.9 | 103 34.4 | - 6 28.0 | |
| 4 | 151 45.8 | 108 - 6 32.8 | -122 | 274 6.2 | 20 5.1 | 133 39.3 | - 6 28.0 | |
| 6 | 180 45.4 | 107 - 6 57.2 | -122 | 304 10.0 | 20 5.3 | 163 44.3 | - 6 28.1 | |
| 8 | 209 44.8 | 106 - 7 21.6 | -121 | 334 13.8 | 20 5.5 | 193 49.2 | - 6 28.1 | |
| 10 | 238 44.0 | 105 - 7 45.8 | -121 | 4 17.6 | 20 5.7 | 223 54.1 | - 6 28.1 | |
| 12 | 267 42.9 | 103 - 8 9.9 | -120 | 36 21.4 | 20 5.9 | 253 59.0 | - 6 28.1 | |
| 14 | 296 41.6 | 102 - 8 33.9 | -119 | 64 25.2 | 20 6.1 | 284 3.9 | - 6 28.2 | |
| 16 | 325 40.0 | 101 - 8 57.7 | -118 | 94 29.0 | 20 6.3 | 314 8.9 | - 6 28.2 | |
| 18 | 354 38.2 | 99 - 9 21.3 | -117 | 124 32.8 | 20 6.5 | 344 13.8 | - 6 28.2 | |
| 20 | 23 36.1 | 98 - 9 44.8 | -117 | 154 36.6 | 20 6.7 | 14 18.7 | - 6 28.2 | |
| 22 | 52 33.7 | 97 - 10 8.2 | -116 | 184 40.4 | 20 6.9 | 44 23.6 | - 6 28.3 | |
| Δ | -1 | -1 | | 19 | 1 | 25 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|---------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | |
| h min s | s | / | h min min / | T _{m̄} | 18 22 | 2.2 | 58.5 | 15.9 |
| 00 - 3 4.9 | -.5 | 15.8 | | | | | | |
| 12 - 3 11.1 | T _{m̄} | 12 h | 3.2 min | Starost | 7.4 d | Faza | ● | |
| | | | | | | | | |
| | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | | | h min / | h min / | o | | |
| ♀ 10 2 | .1 | 294 | -6.2 | 4 | 9 43 | .0 | 298 | -1.6 |
| ♂ 17 25 | .1 | 183 | .4 | h | 19 3 | .0 | 158 | .9 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 10.6 | 23 16.0 | 276 29.2 | 210 8.4 | 17 45.0 | 98 55.6 | 1 34.7 | |
| 2 | 209 10.4 | 23 15.7 | 306 34.1 | 240 13.2 | 17 44.5 | 128 58.2 | 1 33.6 | |
| 4 | 239 10.1 | 23 15.5 | 336 39.1 | 270 17.9 | 17 44.1 | 159 .8 | 1 32.5 | |
| 6 | 269 9.9 | 23 15.2 | 6 44.0 | 300 22.6 | 17 43.6 | 189 3.5 | 1 31.4 | |
| 8 | 299 9.6 | 23 15.0 | 36 48.9 | 330 27.4 | 17 43.1 | 219 6.1 | 1 30.3 | |
| 10 | 329 9.4 | 23 14.7 | 66 53.9 | 0 32.1 | 17 42.7 | 249 8.7 | 1 29.2 | |
| 12 | 359 9.1 | 23 14.5 | 96 58.8 | 30 36.7 | 17 42.2 | 279 11.3 | 1 28.1 | |
| 14 | 29 8.9 | 23 14.2 | 127 3.7 | 60 41.4 | 17 41.8 | 309 14.0 | 1 27.0 | |
| 16 | 59 8.6 | 23 13.9 | 157 8.6 | 90 46.1 | 17 41.3 | 339 16.6 | 1 25.8 | |
| 18 | 89 8.4 | 23 13.7 | 187 13.6 | 120 55.7 | 17 40.9 | 9 19.2 | 1 24.7 | |
| 20 | 119 8.1 | 23 13.4 | 217 18.5 | 150 55.3 | 17 40.5 | 39 21.8 | 1 23.6 | |
| 22 | 149 7.9 | 23 13.1 | 247 23.4 | 180 59.9 | 17 40.1 | 69 24.5 | 1 22.5 | |
| Δ | -1 | -1 | | 23 | -2 | 13 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|---------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | |
| h min s | s | / | h min min / | T _{m̄} | 19 15 | 2.4 | 59.1 | 16.1 |
| 00 - 3 17.3 | -.5 | 15.8 | | | | | | |
| 12 - 3 23.3 | T _{m̄} | 12 h | 3.4 min | Starost | 8.4 d | Faza | ● | |
| | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | | | h min / | h min / | o | | |
| ♀ 9 58 | .1 | 294 | -6.2 | 4 | 9 40 | .0 | 298 | -1.6 |
| ♂ 17 23 | .1 | 182 | .4 | h | 18 59 | .0 | 158 | .9 |

29. JUN

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 7.6 | 23 12.9 | 277 28.4 | 211 4.5 | 17 39.6 | 99 27.1 | 1 21.4 | |
| 2 | 209 7.4 | 23 12.6 | 307 33.3 | 241 9.1 | 17 39.2 | 129 29.7 | 1 20.3 | |
| 4 | 239 7.1 | 23 12.3 | 337 38.2 | 271 13.7 | 17 38.8 | 159 32.3 | 1 19.2 | |
| 6 | 269 6.9 | 23 12.0 | 7 43.1 | 301 18.2 | 17 38.4 | 189 34.9 | 1 18.1 | |
| 8 | 299 6.6 | 23 11.7 | 37 48.1 | 331 22.7 | 17 38.0 | 219 37.5 | 1 17.0 | |
| 10 | 329 6.4 | 23 11.5 | 67 53.0 | 1 27.2 | 17 37.6 | 249 40.1 | 1 15.9 | |
| 12 | 359 6.1 | 23 11.2 | 97 57.9 | 31 31.7 | 17 37.3 | 279 42.8 | 1 14.7 | |
| 14 | 29 5.9 | 23 10.9 | 128 2.9 | 61 36.2 | 17 36.9 | 309 45.4 | 1 13.6 | |
| 16 | 59 5.6 | 23 10.6 | 158 7.8 | 91 40.7 | 17 36.5 | 339 48.0 | 1 12.5 | |
| 18 | 89 5.4 | 23 10.3 | 188 12.7 | 121 45.1 | 17 36.1 | 9 50.6 | 1 11.4 | |
| 20 | 119 5.1 | 23 10.0 | 218 17.6 | 151 49.6 | 17 35.8 | 39 53.2 | 1 10.3 | |
| 22 | 149 4.9 | 23 9.7 | 248 22.6 | 181 54.0 | 17 35.4 | 69 55.8 | 1 9.2 | |
| Δ | -1 | -1 | | 22 | -2 | 13 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 41 | 21 26 | 1 40 | : | : | 16 15 | 3.7 | 23 58 | 1.5 |
| 55 | 3 24 | 20 42 | 0 57 | : | : | 15 48 | 3.4 | .. | 0 |
| 50 | 3 54 | 20 13 | 0 44 | : | : | 15 28 | 3.2 | 0 11 | 1.5 |
| 45 | 4 16 | 19 51 | 0 37 | 2 31 | 15 13 | 3.1 | 0 24 | 1.7 | |
| 40 | 4 34 | 19 33 | 0 33 | 2 2 | 15 01 | 3.0 | 0 34 | 1.8 | |
| 35 | 4 49 | 19 18 | 0 30 | 1 47 | 14 50 | 2.9 | 0 43 | 1.9 | |
| 30 | 5 2 | 19 5 | 0 27 | 1 36 | 14 40 | 2.8 | 0 51 | 2.0 | |
| 20 | 5 24 | 18 43 | 0 25 | 1 24 | 14 25 | 2.7 | 1 5 | 2.1 | |
| 10 | 5 43 | 18 25 | 0 23 | 1 18 | 14 11 | 2.6 | 1 17 | 2.3 | |
| 0 | 6 60 | 18 7 | 0 22 | 1 15 | 13 58 | 2.5 | 1 28 | 2.4 | |
| 10 | 6 17 | 17 50 | 0 23 | 1 15 | 13 45 | 2.4 | 1 40 | 2.5 | |
| 20 | 6 36 | 17 32 | 0 24 | 1 19 | 13 31 | 2.2 | 1 52 | 2.6 | |
| 30 | 6 57 | 17 11 | 0 26 | 1 25 | 13 16 | 2.1 | 2 6 | 2.8 | |
| 35 | 7 9 | 16 58 | 0 28 | 1 31 | 13 7 | 2.0 | 2 14 | 2.9 | |
| 40 | 7 23 | 16 44 | 0 30 | 1 37 | 12 57 | 1.9 | 2 23 | 3.0 | |
| 45 | 7 39 | 16 28 | 0 34 | 1 47 | 12 45 | 1.8 | 2 34 | 3.1 | |
| 50 | 7 60 | 16 7 | 0 38 | 1 59 | 12 31 | 1.7 | 2 47 | 3.2 | |
| 55 | 8 27 | 15 41 | 0 45 | 2 17 | 12 13 | 1.5 | 3 4 | 3.5 | |
| 60 | 9 5 | 15 3 | 0 57 | 2 45 | 11 49 | 1.2 | 3 26 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 68 35.2 | 76 -14 | 50.2 | -98 | 215 29.8 | 20 9.5 | 75 27.5 | -6 28.7 |
| 2 | 97 28.5 | 75 -15 | 9.8 | -97 | 245 33.6 | 20 9.7 | 105 32.4 | -6 28.7 |
| 4 | 126 21.4 | 73 -15 | 29.1 | -95 | 275 37.4 | 20 9.9 | 135 37.3 | -6 28.7 |
| 6 | 155 14.0 | 71 -15 | 48.1 | -93 | 305 41.2 | 20 10.1 | 165 42.2 | -6 28.8 |
| 8 | 184 6.3 | 70 -16 | 6.7 | -91 | 335 45.0 | 20 10.3 | 195 47.1 | -6 28.8 |
| 10 | 212 58.2 | 68 -16 | 24.9 | -89 | 5 48.8 | 20 10.5 | 225 52.0 | -6 28.8 |
| 12 | 241 49.8 | 66 -16 | 42.7 | -87 | 35 52.6 | 20 10.7 | 255 56.9 | -6 28.9 |
| 14 | 270 41.1 | 65 -17 | .0 | -85 | 65 56.4 | 20 10.9 | 286 1.8 | -6 28.9 |
| 16 | 299 32.1 | 63 -17 | 17.0 | -83 | 96 .2 | 20 11.1 | 316 6.7 | -6 28.9 |
| 18 | 328 22.7 | 62 -17 | 33.6 | -81 | 126 4.0 | 20 11.3 | 346 11.6 | -6 29.0 |
| 20 | 357 13.0 | 60 -17 | 49.7 | -78 | 156 7.9 | 20 11.5 | 16 16.5 | -6 29.0 |
| 22 | 386 3.0 | 58 -18 | 5.3 | -76 | 186 11.7 | 20 11.7 | 46 21.4 | -6 29.0 |
| Δ | -1 | -2 | | | 19 | 1 | 25 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | - 3 29.4 | - .5 | 15.8 | T _{m̄} | 20 12 | 2.5 | 59.7 | 16.3 |
| 12 | - 3 35.3 | T _{m̄} | 12 h | 3.6 min | Starost | 9.4 d | Faza | ○ |

| PLANETE | | | | | | | | | |
|---------|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | o | h | φ | h min | / | o | h |
| 0 | 9 54 | .1 | 294 | -6.1 | 4 | 9 37 | .0 | 298 | -1.6 |
| 0 | 17 21 | .1 | 182 | .5 | h | 18 55 | .0 | 158 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 54 52.7 | 57 -18 | 20.5 | -74 | 216 15.5 | 20 11.9 | 76 26.3 | -6 29.1 |
| 2 | 83 42.1 | 55 -18 | 35.2 | -71 | 246 19.3 | 20 12.1 | 106 31.2 | -6 29.1 |
| 4 | 112 31.2 | 54 -18 | 49.4 | -69 | 276 23.1 | 20 12.3 | 136 36.1 | -6 29.1 |
| 6 | 141 20.0 | 53 -19 | 3.1 | -66 | 306 26.9 | 20 12.5 | 166 41.0 | -6 29.2 |
| 8 | 170 8.5 | 51 -19 | 16.4 | -64 | 336 30.7 | 20 12.7 | 196 45.9 | -6 29.2 |
| 10 | 198 56.7 | 50 -19 | 29.1 | -61 | 6 34.5 | 20 12.9 | 226 50.8 | -6 29.2 |
| 12 | 227 44.7 | 48 -19 | 41.2 | -58 | 36 38.3 | 20 13.1 | 256 55.7 | -6 29.3 |
| 14 | 256 32.4 | 47 -19 | 52.9 | -55 | 66 42.1 | 20 13.3 | 287 .6 | -6 29.3 |
| 16 | 285 19.8 | 46 -20 | 3.9 | -53 | 96 46.0 | 20 13.5 | 317 5.5 | -6 29.3 |
| 18 | 314 7.0 | 45 -20 | 14.5 | -50 | 126 49.8 | 20 13.7 | 347 10.4 | -6 29.4 |
| 20 | 342 54.0 | 44 -20 | 24.4 | -47 | 156 53.6 | 20 13.9 | 17 15.3 | -6 29.4 |
| 22 | 311 40.7 | 43 -20 | 33.8 | -44 | 186 57.4 | 20 14.1 | 47 20.2 | -6 29.5 |
| Δ | - | - | - | - | 19 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | - 3 41.2 | - .5 | 15.8 | T _{m̄} | 21 11 | 2.6 | 60.2 | 16.4 |
| 12 | - 3 47.1 | T _{m̄} | 12 h | 3.8 min | Starost | 10.4 d | Faza | ○ |

| PLANETE | | | | | | | | | |
|---------|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | o | h | φ | h min | / | o | h |
| 0 | 9 51 | .1 | 294 | -6.1 | 4 | 9 34 | .0 | 298 | -1.6 |
| 0 | 17 19 | .1 | 182 | .5 | h | 18 51 | .0 | 158 | .9 |

1. JUL

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 1.7 | 23 | 5.5 | 279 | 26.6 | 212 | 50.0 |
| 2 | 209 | 1.5 | 23 | 5.1 | 309 | 31.6 | 242 | 54.2 |
| 4 | 239 | 1.3 | 23 | 4.8 | 339 | 36.5 | 272 | 58.4 |
| 6 | 269 | 1.0 | 23 | 4.4 | 9 41.4 | 303 | 2.6 | 17 30.4 |
| 8 | 299 | .8 | 23 | 4.1 | 39 46.3 | 333 | 6.8 | 17 30.2 |
| 10 | 329 | .5 | 23 | 3.7 | 69 51.3 | 3 | 10.9 | 17 29.9 |
| 12 | 359 | .3 | 23 | 3.3 | 99 56.2 | 33 | 15.1 | 17 29.7 |
| 14 | 389 | .1 | 23 | 3.0 | 130 1.1 | 63 | 19.2 | 17 29.4 |
| 16 | 58 | 59.8 | 23 | 2.6 | 160 6.1 | 93 | 23.3 | 17 29.2 |
| 18 | 88 | 59.6 | 23 | 2.3 | 190 11.0 | 123 | 27.4 | 17 28.9 |
| 20 | 118 | 59.4 | 23 | 1.9 | 220 15.9 | 153 | 31.4 | 17 28.7 |
| 22 | 148 | 59.1 | 23 | 1.5 | 250 20.8 | 183 | 35.5 | 17 28.5 |
| Δ | -1 | | | | | 21 | -1 | 13 |
| | | | | | | | | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 43 | 21 25 | 1 37 | : | : | 19 0 | 2.5 | 0 34 | 2.1 |
| 55 | 3 26 | 20 42 | 0 57 | : | : | 18 23 | 2.5 | 1 8 | 2.3 |
| 50 | 3 55 | 20 12 | 0 44 | : | : | 17 56 | 2.5 | 1 33 | 2.4 |
| 45 | 4 17 | 19 50 | 0 37 | 2 30 | 17 36 | 2.6 | 1 52 | 2.4 | |
| 40 | 4 35 | 19 33 | 0 33 | 2 2 | 17 20 | 2.6 | 2 8 | 2.4 | |
| 35 | 4 50 | 19 18 | 0 30 | 1 46 | 17 6 | 2.6 | 2 21 | 2.5 | |
| 30 | 5 3 | 19 5 | 0 27 | 1 36 | 16 54 | 2.6 | 2 33 | 2.5 | |
| 20 | 5 24 | 18 44 | 0 24 | 1 24 | 16 33 | 2.6 | 2 53 | 2.5 | |
| 10 | 5 43 | 18 25 | 0 23 | 1 17 | 16 15 | 2.6 | 3 10 | 2.6 | |
| 0 | 6 0 | 18 8 | 0 22 | 1 15 | 15 58 | 2.6 | 3 26 | 2.6 | |
| 10 | 6 17 | 17 51 | 0 23 | 1 15 | 15 42 | 2.6 | 3 42 | 2.6 | |
| 20 | 6 36 | 17 32 | 0 24 | 1 18 | 15 24 | 2.6 | 3 59 | 2.6 | |
| 30 | 6 57 | 17 11 | 0 26 | 1 25 | 15 4 | 2.6 | 4 19 | 2.7 | |
| 35 | 7 9 | 16 59 | 0 28 | 1 30 | 14 52 | 2.6 | 4 31 | 2.7 | |
| 40 | 7 23 | 16 45 | 0 30 | 1 37 | 14 38 | 2.6 | 4 44 | 2.7 | |
| 45 | 7 39 | 16 29 | 0 34 | 1 46 | 14 22 | 2.6 | 4 60 | 2.7 | |
| 50 | 7 59 | 16 9 | 0 38 | 1 59 | 14 21 | 2.6 | 5 19 | 2.8 | |
| 55 | 8 26 | 15 42 | 0 45 | 2 17 | 13 37 | 2.6 | 5 44 | 2.8 | |
| 60 | 9 4 | 15 5 | 0 57 | 2 45 | 13 1 | 2.5 | 6 20 | 2.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 40 | 27.2 | 42 | -20 42.7 | -41 | 217 | 1.2 | 20 14.3 |
| 2 | 69 | 13.6 | 41 | -20 50.9 | -38 | 247 | 5.0 | 20 14.5 |
| 4 | 97 | 59.7 | 40 | -20 58.5 | -35 | 277 | 8.8 | 20 14.7 |
| 6 | 126 | 45.7 | 39 | -21 56.6 | -32 | 307 | 12.7 | 20 14.9 |
| 8 | 155 | 31.5 | 38 | -21 12.0 | -29 | 337 | 16.5 | 20 15.1 |
| 10 | 184 | 17.2 | 38 | -21 17.8 | -26 | 7 | 20.3 | 20 15.3 |
| 12 | 213 | 2.8 | 37 | -21 23.0 | -23 | 37 | 24.1 | 20 15.5 |
| 14 | 241 | 48.3 | 37 | -21 27.6 | -20 | 67 | 27.9 | 20 15.7 |
| 16 | 270 | 33.6 | 36 | -21 31.6 | -17 | 97 | 31.7 | 20 15.9 |
| 18 | 299 | 18.9 | 36 | -21 34.9 | -14 | 127 | 35.6 | 20 16.1 |
| 20 | 328 | 4.1 | 36 | -21 37.6 | -10 | 157 | 39.4 | 20 16.3 |
| 22 | 356 | 49.3 | 36 | -21 39.7 | -7 | 187 | 43.2 | 20 16.5 |
| Δ | -1 | | | | | 20 | -1 | 13 |
| | | | | | | 1 | | -6 |
| | | | | | | 24 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min min / | h min min / | | | |
| 00 | - 3 52.9 | - .5 | 15.8 | T _{m̄} | 22 13 | 2.6 | 60.4 | 16.5 |
| 12 | - 3 58.5 | T _{m̄} | 12 h 4.0 min | Starost | 11.4 d | Faza | ○ | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|---------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | | | h min / | |
| φ | 9 47 | .1 | 293 | -6.1 | 4 |
| δ | 17 17 | .1 | 181 | .5 | h |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 25 | 34.4 | 36 | -21 41.1 | -4 | 217 | 47.0 | 20 16.7 |
| 2 | 54 | 19.5 | 36 | -21 41.9 | -1 | 247 | 50.8 | 20 16.9 |
| 4 | 83 | 4.6 | 36 | -21 42.1 | 2 | 277 | 54.6 | 20 17.0 |
| 6 | 111 | 49.8 | 36 | -21 41.6 | 6 | 307 | 58.5 | 20 17.2 |
| 8 | 140 | 34.9 | 36 | -21 40.5 | 9 | 338 | 2.3 | 20 17.4 |
| 10 | 169 | 20.2 | 36 | -21 38.8 | 12 | 8 | 6.1 | 20 17.6 |
| 12 | 198 | 5.4 | 37 | -21 36.4 | 15 | 38 | 9.9 | 20 17.8 |
| 14 | 226 | 50.8 | 37 | -21 33.4 | 18 | 68 | 13.7 | 20 18.0 |
| 16 | 255 | 36.3 | 38 | -21 29.8 | 21 | 98 | 17.6 | 20 18.2 |
| 18 | 284 | 21.9 | 39 | -21 25.5 | 24 | 128 | 21.4 | 20 18.4 |
| 20 | 313 | 7.6 | 39 | -21 20.6 | 27 | 158 | 25.2 | 20 18.6 |
| 22 | 341 | 53.5 | 40 | -21 15.2 | 30 | 188 | 29.0 | 20 18.8 |
| Δ | -1 | | | | | 19 | 1 | 0 |
| | | | | | | 24 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min min / | h min min / | | | |
| 00 | - 4 4.2 | - .5 | 15.8 | T _{m̄} | 23 16 | 2.5 | 60.5 | 16.5 |
| 12 | - 4 9.8 | T _{m̄} | 12 h 4.2 min | Starost | 12.4 d | Faza | ○ | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-----|---------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o | | | h min / | |
| φ | 9 44 | .1 | 293 | -6.0 | 4 |
| δ | 17 14 | .1 | 181 | .5 | h |

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2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 56.1 | 22 56.4 | 281 24.9 | 214 26.9 | 17 25.9 | 101 31.3 | 0 27.6 | |
| 2 | 208 55.9 | 22 56.0 | 311 29.8 | 244 30.8 | 17 25.8 | 131 33.9 | 0 26.5 | |
| 4 | 238 55.7 | 22 55.6 | 341 34.8 | 274 34.6 | 17 25.6 | 161 36.5 | 0 25.4 | |
| 6 | 268 55.5 | 22 55.2 | 11 39.7 | 304 38.4 | 17 25.5 | 191 39.0 | 0 24.3 | |
| 8 | 298 55.2 | 22 54.8 | 41 44.6 | 334 42.3 | 17 25.3 | 221 41.6 | 0 23.1 | |
| 10 | 328 55.0 | 22 54.3 | 71 49.6 | 4 46.1 | 17 25.2 | 251 44.1 | 0 22.0 | |
| 12 | 358 54.8 | 22 53.9 | 101 54.5 | 34 49.8 | 17 25.0 | 281 46.7 | 0 20.9 | |
| 14 | 28 54.6 | 22 53.5 | 131 59.4 | 64 53.6 | 17 24.9 | 311 49.3 | 0 19.7 | |
| 16 | 58 54.3 | 22 53.1 | 162 4.3 | 94 57.4 | 17 24.8 | 341 51.6 | 0 18.6 | |
| 18 | 88 54.1 | 22 52.6 | 192 9.3 | 125 1.1 | 17 24.7 | 11 54.4 | 0 17.5 | |
| 20 | 118 53.9 | 22 52.2 | 222 14.2 | 155 4.8 | 17 24.5 | 41 56.9 | 0 16.3 | |
| 22 | 148 53.7 | 22 51.8 | 252 19.1 | 185 8.6 | 17 24.4 | 71 59.5 | 0 15.2 | |
| Δ | -1 | -2 | | 19 | -1 | 13 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 45 | 21 23 | 1 34 | : | : | 20 41 | 1.2 | 2 35 | 3.5 |
| 55 | 3 28 | 20 41 | 0 56 | : | : | 20 10 | 1.4 | 3 11 | 3.3 |
| 50 | 3 57 | 20 12 | 0 44 | : | : | 19 47 | 1.6 | 3 36 | 3.1 |
| 45 | 4 19 | 19 50 | 0 37 | 2 29 | 19 29 | 1.8 | 3 56 | 3.0 | |
| 40 | 4 36 | 19 32 | 0 33 | 2 1 | 19 15 | 1.9 | 4 12 | 2.9 | |
| 35 | 4 51 | 19 18 | 0 29 | 1 46 | 19 31 | 2.0 | 4 25 | 2.8 | |
| 30 | 5 3 | 19 5 | 0 27 | 1 36 | 18 52 | 2.1 | 4 37 | 2.8 | |
| 25 | 5 25 | 18 44 | 0 24 | 1 24 | 18 33 | 2.2 | 4 57 | 2.7 | |
| 10 | 5 44 | 18 25 | 0 23 | 1 17 | 18 17 | 2.3 | 5 14 | 2.6 | |
| 0 | 6 1 | 18 8 | 0 22 | 1 15 | 18 2 | 2.4 | 5 30 | 2.5 | |
| 10 | 6 18 | 17 51 | 0 23 | 1 15 | 17 47 | 2.5 | 5 46 | 2.4 | |
| 20 | 6 36 | 17 33 | 0 24 | 1 18 | 17 30 | 2.6 | 6 3 | 2.3 | |
| 30 | 6 57 | 17 12 | 0 26 | 1 25 | 17 12 | 2.8 | 6 23 | 2.2 | |
| 35 | 7 9 | 17 0 | 0 28 | 1 30 | 17 1 | 2.8 | 6 34 | 2.1 | |
| 40 | 7 22 | 16 46 | 0 30 | 1 37 | 16 48 | 2.9 | 6 47 | 2.1 | |
| 45 | 7 39 | 16 30 | 0 34 | 1 46 | 16 34 | 3.0 | 7 2 | 2.0 | |
| 50 | 7 59 | 16 10 | 0 38 | 1 59 | 16 15 | 3.2 | 7 21 | 1.9 | |
| 55 | 8 25 | 15 44 | 0 45 | 2 16 | 15 52 | 3.4 | 7 45 | 1.7 | |
| 60 | 9 2 | 15 7 | 0 56 | 2 44 | 15 20 | 3.6 | 8 19 | 1.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 10 39.5 | 41 -21 | 9.1 | 33 | 218 32.9 | 20 19.0 | 79 22.3 | - 6 30.5 |
| 2 | 39 25.7 | 42 -21 | 2.4 | 36 | 248 36.7 | 20 19.2 | 109 27.2 | - 6 30.5 |
| 4 | 68 12.1 | 43 -20 | 55.1 | 39 | 278 40.5 | 20 19.4 | 139 32.0 | - 6 30.6 |
| 6 | 96 58.8 | 22 50.0 | 44 -20 | 47.2 | 42 308 44.3 | 20 19.5 | 169 36.9 | - 6 30.6 |
| 8 | 125 45.6 | 45 -20 | 38.8 | 45 | 338 48.2 | 20 19.7 | 199 41.8 | - 6 30.7 |
| 10 | 154 32.6 | 47 -20 | 29.8 | 48 | 8 52.0 | 20 19.9 | 229 46.7 | - 6 30.7 |
| 12 | 183 20.0 | 48 -20 | 20.2 | 51 | 35 38.8 | 20 20.1 | 259 51.5 | - 6 30.7 |
| 14 | 212 7.5 | 49 -20 | 10.0 | 53 | 68 59.6 | 20 20.3 | 289 56.4 | - 6 30.8 |
| 16 | 240 55.4 | 51 -19 | 59.3 | 56 | 99 3.5 | 20 20.5 | 320 1.3 | - 6 30.8 |
| 18 | 269 43.5 | 52 -19 | 48.1 | 59 | 129 7.3 | 20 20.7 | 350 6.2 | - 6 30.9 |
| 20 | 298 31.9 | 53 -19 | 36.4 | 61 | 159 11.1 | 20 20.9 | 20 11.0 | - 6 30.9 |
| 22 | 327 20.6 | 55 -19 | 24.1 | 64 | 189 14.9 | 20 21.1 | 50 15.9 | - 6 31.0 |
| Δ | -1 | -2 | | | 19 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|--------------------------|------|----------------------|----------------|-------------|----------------|-------------|--|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 4 15.3 | .4 | 15.8 T _{m̄} | ... 0.1 | 60.3 | 16.4 | | |
| 12 | - 4 20.7 T _{m̄} | 12 h | 4.3 min | Starost 13.4 d | Faza ○ | | | |

| UT | PLANETE | | | | | | | |
|---------|---------|-----------------|---------|---------|---------|-----------------|---------|------|
| | Pl. | T _{m̄} | π 360-ø | Vel. | Pl. | T _{m̄} | π 360-ø | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / |
| ○ | 9 41 .1 | 293 .5 | 4 h | 9 25 .0 | 158 .9 | -1.6 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 356 9.6 | 57 -19 | 11.3 | 66 | 219 18.8 | 20 21.3 | 80 20.8 | - 6 31.0 |
| 2 | 24 58.9 | 58 -18 | 58.0 | 69 | 249 22.6 | 20 21.4 | 110 25.6 | - 6 31.1 |
| 4 | 53 48.5 | 60 -18 | 44.2 | 71 | 279 26.4 | 20 21.6 | 140 30.5 | - 6 31.1 |
| 6 | 82 38.5 | 62 -18 | 30.0 | 74 | 309 30.2 | 20 21.8 | 170 35.4 | - 6 31.2 |
| 8 | 111 28.8 | 63 -18 | 15.3 | 76 | 339 34.1 | 20 22.0 | 200 40.2 | - 6 31.2 |
| 10 | 140 19.5 | 65 -18 | .1 | 78 | 9 37.9 | 20 22.2 | 230 45.1 | - 6 31.3 |
| 12 | 169 10.5 | 67 -17 | 44.5 | 80 | 39 41.7 | 20 22.4 | 260 50.0 | - 6 31.3 |
| 14 | 198 1.8 | 69 -17 | 28.5 | 82 | 69 45.6 | 20 22.6 | 290 54.8 | - 6 31.4 |
| 16 | 226 53.6 | 70 -17 | 12.0 | 84 | 99 49.4 | 20 22.8 | 320 59.7 | - 6 31.4 |
| 18 | 255 45.6 | 72 -16 | 55.2 | 86 | 129 53.2 | 20 22.9 | 351 4.6 | - 6 31.5 |
| 20 | 284 38.1 | 74 -16 | 37.9 | 88 | 159 57.1 | 20 23.1 | 21 9.4 | - 6 31.5 |
| 22 | 313 30.9 | 76 -16 | 20.3 | 90 | 190 .9 | 20 23.3 | 51 14.3 | - 6 31.6 |
| Δ | -1 | -2 | | | 19 | 1 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|--------------------------|------|----------------------|----------------|-------------|----------------|-------------|--|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 4 26.0 | .4 | 15.8 T _{m̄} | 0 16 | 2.4 | 59.9 | 16.3 | |
| 12 | - 4 31.2 T _{m̄} | 12 h | 4.5 min | Starost 14.4 d | Faza ○ | | | |

| UT | PLANETE | | | | | | | |
|---------|---------|-----------------|---------|---------|---------|-----------------|---------|------|
| | Pl. | T _{m̄} | π 360-ø | Vel. | Pl. | T _{m̄} | π 360-ø | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / |
| ○ | 9 38 .1 | 293 .5 | 4 h | 9 22 .0 | 158 .9 | -1.6 | | |

5. JUL

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 50.8 | 22 45.8 | 283 23.2 | 215 55.6 | 17 23.4 | 102 32.5 | 0 - 4 |
| 2 | 208 50.6 | 22 45.3 | 313 28.1 | 245 59.1 | 17 23.3 | 132 35.0 | - 0 4 |
| 4 | 238 50.4 | 22 44.9 | 343 33.0 | 276 6.2 | 17 23.3 | 162 37.6 | - 0 1.9 |
| 6 | 268 50.2 | 22 44.4 | 13 38.0 | 306 6.1 | 17 23.2 | 192 40.1 | - 0 3.0 |
| 8 | 298 50.0 | 22 43.9 | 43 42.9 | 336 9.6 | 17 23.2 | 222 42.6 | - 0 4.2 |
| 10 | 328 49.8 | 22 43.4 | 73 47.8 | 6 13.1 | 17 23.2 | 252 45.2 | - 0 5.3 |
| 12 | 358 49.6 | 22 42.9 | 103 52.8 | 36 16.5 | 17 23.1 | 282 47.7 | - 0 6.4 |
| 14 | 28 49.4 | 22 42.4 | 133 57.7 | 66 20.0 | 17 23.1 | 312 50.2 | - 0 7.6 |
| 16 | 58 49.2 | 22 41.9 | 164 2.6 | 96 23.4 | 17 23.1 | 342 52.6 | - 0 8.7 |
| 18 | 88 48.9 | 22 41.4 | 194 7.5 | 126 26.8 | 17 23.1 | 12 55.3 | - 0 9.9 |
| 20 | 118 48.7 | 22 40.9 | 224 12.5 | 156 30.2 | 17 23.1 | 42 57.8 | - 0 11.0 |
| 22 | 148 48.5 | 22 40.4 | 254 17.4 | 186 33.6 | 17 23.1 | 73 .3 | - 0 12.2 |
| Δ | -1 | -2 | | 17 | 0 | 13 | -6 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | MJESEC | | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|----------|---------------|-------------------|-------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | | S ϑ | $\delta\vartheta$ | $\Delta/24$ |
| h | o / | o / | o / | o / | o / | o / | h min | h min | h min |
| 0 | 178 50.8 | 22 45.8 | 283 23.2 | 215 55.6 | 17 23.4 | 102 32.5 | 0 .4 | 248 21.21 | : :: |
| 2 | 208 50.6 | 22 45.3 | 313 28.1 | 245 59.1 | 17 23.3 | 132 35.0 | - 0 .4 | 3 30 20 39 | : :: |
| 4 | 238 50.4 | 22 44.9 | 343 33.0 | 276 6.2 | 17 23.3 | 162 37.6 | - 0 1.9 | 3 58 20 11 | : :: |
| 6 | 268 50.2 | 22 44.4 | 13 38.0 | 306 6.1 | 17 23.2 | 192 40.1 | - 0 3.0 | 4 20 19 49 | 0 37 |
| 8 | 298 50.0 | 22 43.9 | 43 42.9 | 336 9.6 | 17 23.2 | 222 42.6 | - 0 4.2 | 4 37 19 32 | 0 32 |
| 10 | 328 49.8 | 22 43.4 | 73 47.8 | 6 13.1 | 17 23.2 | 252 45.2 | - 0 5.3 | 4 52 19 17 | 1 45 |
| 12 | 358 49.6 | 22 42.9 | 103 52.8 | 36 16.5 | 17 23.1 | 282 47.7 | - 0 6.4 | 5 4 19 5 | 0 27 |
| 14 | 28 49.4 | 22 42.4 | 133 57.7 | 66 20.0 | 17 23.1 | 312 50.2 | - 0 7.6 | 5 26 18 44 | 0 24 |
| 16 | 58 49.2 | 22 41.9 | 164 2.6 | 96 23.4 | 17 23.1 | 342 52.6 | - 0 8.7 | 5 44 18 25 | 0 23 |
| 18 | 88 48.9 | 22 41.4 | 194 7.5 | 126 26.8 | 17 23.1 | 12 55.3 | - 0 9.9 | 6 1 18 8 | 0 22 |
| 20 | 118 48.7 | 22 40.9 | 224 12.5 | 156 30.2 | 17 23.1 | 42 57.8 | - 0 11.0 | 6 18 17 52 | 0 23 |
| 22 | 148 48.5 | 22 40.4 | 254 17.4 | 186 33.6 | 17 23.1 | 73 .3 | - 0 12.2 | 6 36 17 34 | 0 24 |
| Δ | -1 | -2 | | 17 | 0 | 13 | -6 | 6 56 17 13 | 0 26 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|---|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 342 24.1 | 78 -16 | 2.3 | 92 | 220 4.7 | 20 23.5 | 81 19.2 | - 6 31.6 | |
| 2 | 11 17.6 | 80 -15 | 44.0 | 93 | 250 8.6 | 20 23.7 | 111 24.0 | - 6 31.7 | |
| 4 | 40 11.5 | 81 -15 | 25.3 | 95 | 280 12.4 | 20 23.9 | 141 28.9 | - 6 31.7 | |
| 6 | 69 5.8 | 83 -15 | 6.3 | 97 | 310 16.2 | 20 24.1 | 171 33.7 | - 6 31.8 | |
| 8 | 98 .4 | 85 -14 | 46.9 | 98 | 340 20.1 | 20 24.3 | 201 38.6 | - 6 31.8 | |
| 10 | 126 55.4 | 87 -14 | 27.3 | 100 | 10 23.9 | 20 24.4 | 231 43.5 | - 6 31.9 | |
| 12 | 155 50.8 | 89 -14 | 7.3 | 101 | 40 27.7 | 20 24.6 | 261 48.3 | - 6 31.9 | |
| 14 | 184 46.6 | 91 -13 | 47.1 | 103 | 70 31.6 | 20 24.8 | 291 53.2 | - 6 32.0 | |
| 16 | 213 42.7 | 92 -13 | 26.6 | 104 | 100 35.4 | 20 25.0 | 321 58.0 | - 6 32.0 | |
| 18 | 242 39.2 | 94 -13 | 5.8 | 105 | 130 39.2 | 20 25.2 | 352 2.9 | - 6 32.1 | |
| 20 | 271 36.0 | 96 -12 | 44.8 | 106 | 160 43.1 | 20 25.4 | 22 .7 | - 6 32.1 | |
| 22 | 300 33.2 | 98 -12 | 23.6 | 107 | 190 46.9 | 20 25.5 | 52 12.6 | - 6 32.2 | |
| Δ | -1 | -3 | | 16 | 0 | 13 | -6 | 19 | 1 |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|--------------|-----------------|--------|-------------|---------------|------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 - 4 36.4 | .4 | 15.8 | T _{m̄} | 1 13 | 2.2 | 59.2 | 16.1 | |
| 12 - 4 41.5 | T _{m̄} | 12 h 4.7 min | Starost | 15.4 d | Faza | ○ | | |

| PLANETE | | SUNCE | | MJESEC | | | | | |
|---------|-----------------|-------|-------------|--------|----------|-----------------|-------|-------------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | | | | h min / | o / | | | |
| 0 | 9 35 .1 | 293 | -5.9 | + | 9 18 .0 | 297 | -1.6 | | |
| ° | 17 8 .1 | 179 | .5 | h | 18 32 .0 | 158 | .9 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|--|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 329 30.7 | 99 -12 | 2.1 | 108 | 220 50.8 | 20 25.7 | 82 17.4 | - 6 32.2 | |
| 2 | 358 28.6 | 101 -11 | 40.4 | 109 | 250 54.6 | 20 25.9 | 112 22.3 | - 6 32.3 | |
| 4 | 27 26.8 | 103 -11 | 18.5 | 110 | 280 58.4 | 20 26.1 | 142 27.2 | - 6 32.3 | |
| 6 | 56 25.4 | 105 -10 | 56.4 | 111 | 311 2.3 | 20 26.3 | 172 32.0 | - 6 32.4 | |
| 8 | 85 24.3 | 106 -10 | 34.2 | 112 | 341 6.1 | 20 26.5 | 202 36.9 | - 6 32.4 | |
| 10 | 114 23.5 | 108 -10 | 11.8 | 113 | 11 10.0 | 20 26.6 | 232 41.7 | - 6 32.5 | |
| 12 | 143 23.1 | 109 -9 | 49.2 | 114 | 41 13.8 | 20 26.8 | 262 46.6 | - 6 32.5 | |
| 14 | 172 23.0 | 111 -9 | 26.4 | 114 | 71 17.6 | 20 27.0 | 292 51.4 | - 6 32.6 | |
| 16 | 201 23.2 | 112 -9 | 3.6 | 115 | 101 21.5 | 20 27.2 | 322 56.3 | - 6 32.7 | |
| 18 | 230 23.7 | 114 -8 | 40.6 | 116 | 131 25.3 | 20 27.4 | 353 1.1 | - 6 32.7 | |
| 20 | 259 24.5 | 115 -8 | 17.5 | 116 | 161 29.2 | 20 27.6 | 23 6.0 | - 6 32.8 | |
| 22 | 288 25.5 | 117 -7 | 54.2 | 117 | 191 33.0 | 20 27.7 | 53 10.8 | - 6 32.8 | |
| Δ | -1 | -3 | | 19 | 1 | 24 | 0 | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|--------------|-----------------|--------|-------------|---------------|------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | | | h min | min | / | |
| 00 - 4 46.5 | .4 | 15.8 | T _{m̄} | 2 6 | 2.1 | 58.4 | 15.9 | |
| 12 - 4 51.4 | T _{m̄} | 12 h 4.9 min | Starost | 16.4 d | Faza | ○ | | |

| PLANETE | | SUNCE | | MJESEC | | | | | |
|---------|-----------------|-------|-------------|--------|----------|-----------------|-------|-------------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | | | | h min / | o / | | | |
| 0 | 9 32 .1 | 292 | -5.9 | + | 9 15 .0 | 296 | -1.6 | | |
| ° | 17 6 .1 | 179 | .5 | h | 18 28 .0 | 158 | .9 | | |

7. JUL

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 178 45.9 | 22 33.6 | 285 21.5 | 217 16.5 | 17 23.4 | 103 33.0 | - 0 27.1 |
| 2 | 208 45.7 | 22 33.1 | 315 26.4 | 247 19.7 | 17 23.4 | 133 35.6 | - 0 28.2 |
| 4 | 238 45.5 | 22 32.5 | 345 31.3 | 277 22.9 | 17 23.5 | 163 38.1 | - 0 29.4 |
| 6 | 268 45.3 | 22 32.0 | 15 36.2 | 307 26.0 | 17 23.5 | 193 40.6 | - 0 30.5 |
| 8 | 298 45.1 | 22 31.4 | 45 41.2 | 337 29.2 | 17 23.6 | 223 43.1 | - 0 31.7 |
| 10 | 328 44.9 | 22 30.9 | 75 46.1 | 7 32.4 | 17 23.7 | 253 45.6 | - 0 32.8 |
| 12 | 358 44.7 | 22 30.3 | 105 51.0 | 37 35.5 | 17 23.7 | 283 48.1 | - 0 34.0 |
| 14 | 28 44.5 | 22 29.7 | 135 56.0 | 67 38.7 | 17 23.8 | 313 50.6 | - 0 35.1 |
| 16 | 58 44.3 | 22 29.2 | 166 .9 | 97 41.8 | 17 23.9 | 343 53.1 | - 0 36.3 |
| 18 | 88 44.1 | 22 28.6 | 196 5.8 | 127 44.9 | 17 24.0 | 13 55.6 | - 0 37.4 |
| 20 | 118 43.9 | 22 28.1 | 226 10.7 | 157 48.0 | 17 24.0 | 43 58.1 | - 0 38.6 |
| 22 | 148 43.7 | 22 27.5 | 256 15.7 | 187 51.1 | 17 24.1 | 74 .6 | - 0 39.7 |
| Δ | -1 | -3 | | 16 | 0 | 13 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 50 | 21 19 | 1 28 | : | : | 21 55 | .5 | 8 24 | 3.4 |
| 55 | 3 32 | 20 38 | 0 55 | : | : | 21 51 | .7 | 8 32 | 3.2 |
| 50 | 3 60 | 20 10 | 0 43 | : | : | 21 48 | .9 | 8 38 | 3.0 |
| 45 | 4 21 | 19 48 | 0 37 | 2 26 | 21 45 | 1.1 | 8 43 | 2.8 | |
| 40 | 4 38 | 19 31 | 0 32 | 2 0 | 21 43 | 1.2 | 8 47 | 2.6 | |
| 35 | 4 53 | 19 17 | 0 29 | 1 45 | 21 41 | 1.3 | 8 50 | 2.5 | |
| 30 | 5 5 | 19 5 | 0 27 | 1 35 | 21 39 | 1.4 | 8 53 | 2.4 | |
| 20 | 5 26 | 18 44 | 0 24 | 1 23 | 21 37 | 1.6 | 8 59 | 2.2 | |
| 10 | 5 45 | 18 25 | 0 23 | 1 17 | 21 34 | 1.7 | 9 3 | 2.1 | |
| 0 | 6 1 | 18 9 | 0 22 | 1 15 | 21 32 | 1.9 | 9 7 | 1.9 | |
| 10 | 6 18 | 17 52 | 0 23 | 1 15 | 21 29 | 2.0 | 9 11 | 1.8 | |
| 20 | 6 36 | 17 34 | 0 24 | 1 18 | 21 27 | 2.2 | 9 16 | 1.6 | |
| 30 | 6 56 | 17 14 | 0 26 | 1 25 | 21 24 | 2.4 | 9 21 | 1.4 | |
| 35 | 7 8 | 17 2 | 0 28 | 1 30 | 21 22 | 2.5 | 9 24 | 1.3 | |
| 40 | 7 21 | 16 49 | 0 30 | 1 37 | 21 20 | 2.6 | 9 27 | 1.2 | |
| 45 | 7 37 | 16 33 | 0 33 | 1 46 | 21 18 | 2.7 | 9 31 | 1.1 | |
| 50 | 7 57 | 16 13 | 0 38 | 1 58 | 21 15 | 2.9 | 9 35 | .9 | |
| 55 | 8 23 | 15 48 | 0 44 | 2 15 | 21 12 | 3.1 | 9 40 | .7 | |
| 60 | 8 58 | 15 12 | 0 56 | 2 42 | 21 8 | 3.4 | 9 47 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 317 26.9 | 118 - | 7 30.9 | 117 | 221 36.9 | 20 27.9 | 83 15.7 | - 6 32.9 |
| 2 | 346 28.6 | 120 - | 7 7.5 | 117 | 251 40.7 | 20 28.1 | 113 20.5 | - 6 32.9 |
| 4 | 15 30.5 | 121 - | 6 44.0 | 118 | 281 44.5 | 20 28.3 | 143 25.3 | - 6 33.0 |
| 6 | 44 32.7 | 122 - | 6 20.5 | 118 | 311 48.4 | 20 28.5 | 173 30.2 | - 6 33.0 |
| 8 | 73 35.2 | 124 - | 5 56.9 | 118 | 341 52.2 | 20 28.7 | 203 35.0 | - 6 33.1 |
| 10 | 102 37.9 | 125 - | 5 33.2 | 119 | 11 56.1 | 20 28.8 | 233 39.9 | - 6 33.2 |
| 12 | 131 40.9 | 126 - | 5 9.5 | 119 | 41 59.9 | 20 29.0 | 263 44.7 | - 6 33.2 |
| 14 | 160 44.1 | 127 - | 4 45.7 | 119 | 72 3.8 | 20 29.2 | 293 49.6 | - 6 33.3 |
| 16 | 189 47.5 | 128 - | 4 21.9 | 119 | 102 7.6 | 20 29.4 | 323 54.4 | - 6 33.3 |
| 18 | 218 51.2 | 129 - | 3 58.1 | 119 | 132 11.5 | 20 29.6 | 353 59.2 | - 6 33.4 |
| 20 | 247 55.1 | 130 - | 3 34.3 | 119 | 162 15.3 | 20 29.7 | 24 4.1 | - 6 33.4 |
| 22 | 276 59.2 | 131 - | 3 10.5 | 119 | 192 19.2 | 20 29.9 | 54 8.9 | - 6 33.5 |
| Δ | -1 | -3 | | 15 | 1 | 12 | 24 | 0 |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|-------------|---------------|-----------------|-------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | |
| h min s | s | / | h min min / | T _{m̄} | 2 56 | 2.0 | 57.6 | 15.7 |
| 00 - 4 56.3 | .4 | 15.8 | | | | | | |
| 12 - 5 .9 | T _{m̄} | 12 h | 5.0 min | Starost | 17.4 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| | h min / | o | h min min / | h min / | Vel. | | | |
| ♀ | 9 30 | .1 | 292 | -5.9 | 4 | 9 12 | .0 | 296 |
| ♂ | 17 4 | .1 | 178 | .5 | h | 18 24 | .0 | 158 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 306 3.4 | 132 - | 2 46.7 | 119 | 222 23.0 | 20 30.1 | 84 13.8 | - 6 33.6 |
| 2 | 335 7.9 | 133 - | 2 22.9 | 119 | 252 26.9 | 20 30.3 | 114 18.6 | - 6 33.6 |
| 4 | 4 12.6 | 134 - | 1 59.1 | 119 | 282 30.7 | 20 30.4 | 144 23.4 | - 6 33.7 |
| 6 | 33 17.5 | 135 - | 1 35.3 | 119 | 312 34.6 | 20 30.6 | 174 28.3 | - 6 33.7 |
| 8 | 62 22.5 | 136 - | 1 11.6 | 118 | 342 38.4 | 20 30.8 | 204 33.1 | - 6 33.8 |
| 10 | 91 27.7 | 137 - | 0 47.9 | 118 | 12 42.3 | 20 31.0 | 234 38.0 | - 6 33.9 |
| 12 | 120 33.1 | 138 - | 0 24.2 | 118 | 42 46.1 | 20 31.2 | 264 42.8 | - 6 33.9 |
| 14 | 149 38.6 | 138 - | 0 .7 | 118 | 72 50.0 | 20 31.3 | 294 47.6 | - 6 34.0 |
| 16 | 178 44.3 | 139 - | 0 22.9 | 117 | 102 53.8 | 20 31.5 | 324 52.5 | - 6 34.0 |
| 18 | 207 50.1 | 140 - | 0 46.4 | 117 | 132 57.7 | 20 31.7 | 354 57.3 | - 6 34.1 |
| 20 | 236 56.0 | 140 - | 1 9.8 | 117 | 163 1.5 | 20 31.9 | 25 2.1 | - 6 34.2 |
| 22 | 266 2.1 | 141 - | 1 33.1 | 116 | 193 5.4 | 20 32.0 | 55 7.0 | - 6 34.2 |
| Δ | 19 | 1 | | 24 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-------------|-----------------|-------------|---------------|-----------------|-------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | |
| h min s | s | / | h min min / | T _{m̄} | 3 43 | 1.8 | 56.7 | 15.5 |
| 00 - 5 5.6 | .4 | 15.8 | | | | | | |
| 12 - 5 10.1 | T _{m̄} | 12 h | 5.2 min | Starost | 18.4 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| | h min / | o | h min min / | h min / | Vel. | | | |
| ♀ | 9 27 | .1 | 292 | -5.8 | 4 | 9 9 | .0 | 296 |
| ♂ | 17 2 | .1 | 178 | .5 | h | 18 20 | .0 | 158 |

9. JUL

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 41.3 | 22 19.8 | 287 19.7 | 218 30.0 | 17 25.6 | 104 33.0 | - 0 54.7 | |
| 2 | 208 41.1 | 22 19.2 | 317 24.7 | 248 32.9 | 17 25.7 | 134 35.4 | - 0 55.9 | |
| 4 | 238 40.9 | 22 18.6 | 347 29.6 | 278 35.8 | 17 25.9 | 164 37.9 | - 0 57.1 | |
| 6 | 268 40.8 | 22 18.0 | 17 34.5 | 308 38.7 | 17 26.0 | 194 40.4 | - 0 58.2 | |
| 8 | 298 40.6 | 22 17.4 | 47 39.5 | 338 41.6 | 17 26.2 | 224 42.9 | - 0 59.4 | |
| 10 | 328 40.4 | 22 16.8 | 77 44.4 | 8 44.4 | 17 26.3 | 254 45.4 | - 1 5 | |
| 12 | 358 40.2 | 22 16.2 | 107 49.3 | 38 47.3 | 17 26.5 | 284 47.8 | - 1 1.7 | |
| 14 | 28 40.0 | 22 15.5 | 137 54.2 | 68 50.1 | 17 26.6 | 314 50.3 | - 1 2.9 | |
| 16 | 58 39.9 | 22 14.9 | 167 59.2 | 98 53.0 | 17 26.8 | 344 52.6 | - 1 4.0 | |
| 18 | 88 39.7 | 22 14.3 | 198 4.1 | 128 55.8 | 17 27.0 | 14 55.3 | - 1 5.2 | |
| 20 | 118 39.5 | 22 13.6 | 228 9.0 | 158 58.6 | 17 27.1 | 44 57.7 | - 1 6.3 | |
| 22 | 148 39.3 | 22 13.0 | 258 14.0 | 189 1.4 | 17 27.3 | 75 .2 | - 1 7.5 | |
| Δ | -1 | -3 | | 14 | 1 | 12 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 54 | 21 16 | 1 25 | : | 22 17 | .5 | 11 7 | 3.2 |
| 55 | 3 34 | 20 36 | 0 55 | : | 22 24 | .7 | 11 2 | 3.0 |
| 50 | 4 2 | 20 8 | 0 43 | : | 22 30 | .9 | 10 58 | 2.8 |
| 45 | 4 23 | 19 47 | 0 36 | 2 25 | 22 35 | 1.1 | 10 54 | 2.6 |
| 40 | 4 40 | 19 31 | 0 32 | 1 59 | 22 39 | 1.2 | 10 52 | 2.5 |
| 35 | 4 54 | 19 16 | 0 29 | 1 45 | 22 43 | 1.3 | 10 49 | 2.4 |
| 30 | 5 6 | 19 4 | 0 27 | 1 35 | 22 46 | 1.4 | 10 47 | 2.3 |
| 20 | 5 27 | 18 43 | 0 24 | 1 23 | 22 51 | 1.5 | 10 44 | 2.1 |
| 10 | 5 45 | 18 26 | 0 23 | 1 17 | 22 56 | 1.7 | 10 41 | 2.0 |
| 0 | 6 2 | 18 9 | 0 22 | 1 14 | 23 1 | 1.8 | 10 38 | 1.8 |
| 10 | 6 18 | 17 52 | 0 23 | 1 15 | 23 5 | 2.0 | 10 35 | 1.7 |
| 20 | 6 36 | 17 35 | 0 24 | 1 18 | 23 10 | 2.1 | 10 32 | 1.5 |
| 30 | 6 56 | 17 15 | 0 26 | 1 25 | 23 16 | 2.3 | 10 29 | 1.4 |
| 35 | 7 7 | 17 3 | 0 28 | 1 30 | 23 19 | 2.4 | 10 26 | 1.3 |
| 40 | 7 21 | 16 50 | 0 30 | 1 37 | 23 23 | 2.5 | 10 24 | 1.2 |
| 45 | 7 37 | 16 34 | 0 33 | 1 46 | 23 27 | 2.6 | 10 22 | 1.0 |
| 50 | 7 56 | 16 15 | 0 38 | 1 58 | 23 32 | 2.7 | 10 18 | .9 |
| 55 | 8 21 | 15 50 | 0 44 | 2 15 | 23 39 | 2.9 | 10 15 | .7 |
| 60 | 8 56 | 15 15 | 0 55 | 2 41 | 23 47 | 3.2 | 10 10 | .5 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 295 8.3 | 141 | 1 56.3 | 116 | 223 9.2 | 20 32.2 | 85 11.8 | - 6 34.3 |
| 2 | 324 14.5 | 142 | 2 19.5 | 115 | 253 13.1 | 20 32.4 | 115 16.6 | - 6 34.4 |
| 4 | 353 20.9 | 142 | 2 42.6 | 115 | 283 16.9 | 20 32.6 | 145 21.4 | - 6 34.4 |
| 6 | 22 27.6 | 143 | 3 5.5 | 114 | 313 20.8 | 20 32.8 | 175 26.3 | - 6 34.5 |
| 8 | 51 33.9 | 143 | 3 28.4 | 114 | 343 24.6 | 20 32.9 | 205 31.1 | - 6 34.5 |
| 10 | 80 40.6 | 144 | 3 51.1 | 113 | 13 28.5 | 20 33.1 | 235 35.9 | - 6 34.6 |
| 12 | 109 47.3 | 144 | 4 13.8 | 113 | 43 32.4 | 20 33.3 | 265 40.8 | - 6 34.7 |
| 14 | 138 54.1 | 144 | 4 36.3 | 112 | 73 36.2 | 20 33.5 | 295 45.6 | - 6 34.7 |
| 16 | 168 .9 | 144 | 4 58.7 | 111 | 103 40.1 | 20 33.6 | 325 50.4 | - 6 34.8 |
| 18 | 197 7.8 | 145 | 5 20.9 | 111 | 133 43.9 | 20 33.8 | 355 55.2 | - 6 34.9 |
| 20 | 226 14.8 | 145 | 5 43.1 | 110 | 163 47.8 | 20 34.0 | 26 .1 | - 6 34.9 |
| 22 | 255 21.7 | 145 | 6 5.0 | 109 | 193 51.7 | 20 34.2 | 56 4.9 | - 6 35.0 |
| Δ | -1 | -3 | | 19 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|-----------------|-------------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _⊖ | r | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 5 14.6 | .4 | 15.8 | T _{m̄} | 4 27 | 1.8 | 56.0 | 15.2 |
| 12 | - 5 18.9 | T _{m̄} | 12 h 5.3 min | Starost | 19.4 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | h min / | o | h min / | h min / | o | h min / | o |
| 0 | 9 25 .1 | 291 | -5.8 | 4 | 9 6 .0 | 296 | -1.6 | |
| 0' | 17 0 .1 | 177 | .5 | h | 18 16 .0 | 158 | .9 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 284 28.7 | 145 | 6 26.9 | 108 | 223 55.5 | 20 34.3 | 86 9.7 | - 6 35.0 |
| 2 | 313 35.8 | 145 | 6 48.6 | 108 | 253 59.4 | 20 34.5 | 116 14.5 | - 6 35.1 |
| 4 | 342 42.8 | 145 | 7 10.1 | 107 | 284 3.2 | 20 34.7 | 146 19.4 | - 6 35.2 |
| 6 | 11 49.9 | 145 | 7 31.5 | 106 | 314 7.1 | 20 34.9 | 176 24.2 | - 6 35.2 |
| 8 | 40 57.0 | 145 | 7 52.7 | 105 | 344 11.0 | 20 35.0 | 206 29.0 | - 6 35.3 |
| 10 | 70 4.1 | 145 | 8 13.7 | 104 | 14 14.8 | 20 35.2 | 236 33.8 | - 6 35.4 |
| 12 | 99 11.1 | 145 | 8 34.6 | 103 | 44 18.7 | 20 35.4 | 266 38.7 | - 6 35.4 |
| 14 | 128 18.2 | 145 | 8 55.3 | 103 | 74 22.5 | 20 35.5 | 296 43.5 | - 6 35.5 |
| 16 | 157 25.2 | 145 | 9 15.8 | 102 | 104 26.4 | 20 35.7 | 326 48.3 | - 6 35.6 |
| 18 | 186 32.3 | 145 | 9 36.1 | 101 | 134 30.3 | 20 35.9 | 356 53.1 | - 6 35.6 |
| 20 | 215 39.2 | 145 | 9 56.2 | 100 | 164 34.1 | 20 36.1 | 26 57.9 | - 6 35.7 |
| 22 | 244 46.2 | 145 | 10 16.2 | 99 | 194 38.0 | 20 36.2 | 57 2.7 | - 6 35.8 |
| Δ | -1 | -3 | | 19 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|-----------------|-------------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _⊖ | r | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 5 23.2 | .3 | 15.8 | T _{m̄} | 5 11 | 1.8 | 55.3 | 15.1 |
| 12 | - 5 27.2 | T _{m̄} | 12 h 5.5 min | Starost | 20.4 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | h min / | o | h min / | h min / | o | h min / | o |
| 0 | 9 23 .1 | 291 | -5.8 | 4 | 9 3 .0 | 296 | -1.6 | |
| 0' | 16 58 .1 | 177 | .5 | h | 18 12 .0 | 158 | .9 | |

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| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 37.1 | 22 4.5 | 289 18.0 | 219 36.6 | 17 29.8 | 105 32.2 | - 1 22.6 |
| 2 | 208 37.0 | 22 3.9 | 319 22.9 | 249 39.3 | 17 30.1 | 135 34.7 | - 1 23.8 |
| 4 | 238 36.8 | 22 3.2 | 349 27.9 | 279 41.9 | 17 30.3 | 165 37.1 | - 1 25.0 |
| 6 | 268 36.6 | 22 2.5 | 19 32.8 | 309 44.5 | 17 30.5 | 195 39.6 | - 1 26.1 |
| 8 | 298 36.5 | 22 1.8 | 49 37.7 | 339 47.1 | 17 30.7 | 225 42.1 | - 1 27.3 |
| 10 | 328 36.3 | 22 1.1 | 79 42.7 | 9 49.7 | 17 30.8 | 255 44.5 | - 1 28.5 |
| 12 | 358 36.1 | 22 .5 | 109 47.6 | 39 52.3 | 17 31.2 | 285 47.0 | - 1 29.6 |
| 14 | 28 36.0 | 21 59.8 | 139 52.5 | 69 54.9 | 17 31.4 | 315 49.4 | - 1 30.8 |
| 16 | 58 35.8 | 21 59.1 | 169 57.4 | 99 57.4 | 17 31.6 | 345 51.9 | - 1 32.0 |
| 18 | 88 35.7 | 21 58.4 | 200 2.4 | 129 60.0 | 17 31.9 | 15 54.3 | - 1 33.1 |
| 20 | 118 35.5 | 21 57.7 | 230 7.3 | 160 2.5 | 17 32.1 | 45 56.8 | - 1 34.3 |
| 22 | 148 35.3 | 21 57.0 | 260 12.2 | 190 5.0 | 17 32.4 | 75 59.2 | - 1 35.5 |
| Δ | -1 | -3 | | 13 | 1 | 12 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 2 57 | 21 13 | 1 22 | : | : | 22 43 | .7 | 13 40 | 3.1 |
| 55 | 3 36 | 20 34 | 0 54 | : | : | 23 2 | 1.0 | 13 23 | 2.8 |
| 4 | 4 4 | 20 7 | 0 43 | 3 45 | 23 17 | 1.1 | 13 9 | 2.7 | |
| 45 | 4 24 | 19 46 | 0 36 | 2 23 | 23 28 | 1.3 | 12 59 | 2.5 | |
| 40 | 4 41 | 19 30 | 0 32 | 1 58 | 23 38 | 1.4 | 12 50 | 2.4 | |
| 35 | 4 55 | 19 16 | 0 29 | 1 44 | 23 46 | 1.5 | 12 43 | 2.3 | |
| 30 | 5 7 | 19 4 | 0 27 | 1 34 | 23 54 | 1.5 | 12 36 | 2.2 | |
| 20 | 5 28 | 18 43 | 0 24 | 1 23 | ... | 0 | 12 25 | 2.1 | |
| 10 | 5 46 | 18 26 | 0 23 | 1 17 | ... | 0 | 12 15 | 2.0 | |
| 0 | 6 2 | 18 9 | 0 22 | 1 14 | ... | 0 | 12 6 | 1.9 | |
| 10 | 6 18 | 17 53 | 0 23 | 1 15 | ... | 0 | 11 56 | 1.7 | |
| 20 | 6 36 | 17 36 | 0 24 | 1 18 | 0 1 | 2.1 | 11 46 | 1.6 | |
| 30 | 6 55 | 17 16 | 0 26 | 1 25 | 0 10 | 2.2 | 11 35 | 1.5 | |
| 35 | 7 7 | 17 5 | 0 28 | 1 30 | 0 16 | 2.3 | 11 29 | 1.4 | |
| 40 | 7 20 | 16 51 | 0 30 | 1 36 | 0 22 | 2.4 | 11 22 | 1.3 | |
| 45 | 7 36 | 16 36 | 0 33 | 1 45 | 0 29 | 2.5 | 11 13 | 1.2 | |
| 50 | 7 55 | 16 17 | 0 38 | 1 57 | 0 38 | 2.7 | 11 3 | 1.1 | |
| 55 | 8 19 | 15 52 | 0 44 | 2 14 | 0 50 | 2.9 | 10 50 | .9 | |
| 60 | 8 54 | 15 18 | 0 55 | 2 40 | 1 4 | 3.1 | 10 34 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 273 53.1 | 14 35.9 | 98 | 224 41.9 | 20 36.4 | 87 7.6 | - 6 35.8 | |
| 2 | 303 0 | 14 55.4 | 97 | 254 45.7 | 20 36.6 | 117 12.4 | - 6 35.9 | |
| 4 | 332 6.8 | 14 14.8 | 96 | 284 49.6 | 20 36.7 | 147 17.2 | - 6 36.0 | |
| 6 | 1 13.6 | 14 33.9 | 94 | 314 53.5 | 20 36.9 | 177 22.0 | - 6 36.0 | |
| 8 | 30 20.3 | 14 52.8 | 93 | 344 57.3 | 20 37.1 | 207 26.8 | - 6 36.1 | |
| 10 | 59 26.9 | 14 3 | 92 | 15 1.2 | 20 37.3 | 237 31.6 | - 6 36.2 | |
| 12 | 88 33.5 | 14 2 | 91 | 45 5.1 | 20 37.4 | 267 36.4 | - 6 36.3 | |
| 14 | 117 40.0 | 14 48.1 | 90 | 75 8.9 | 20 37.6 | 297 41.3 | - 6 36.3 | |
| 16 | 146 46.4 | 14 2 | 89 | 105 12.8 | 20 37.8 | 327 46.1 | - 6 36.4 | |
| 18 | 175 52.8 | 14 1 | 88 | 135 16.7 | 20 37.9 | 357 50.9 | - 6 36.5 | |
| 20 | 204 59.0 | 14 1 | 86 | 165 20.5 | 20 38.1 | 27 55.7 | - 6 36.5 | |
| 22 | 234 5.2 | 14 58.6 | 85 | 195 24.4 | 20 38.3 | 58 .5 | - 6 36.6 | |
| Δ | -1 | -4 | | 19 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|-----------------|-------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | h min min / | h min min / | |
| 00 | - 5 31.3 | .3 | 15.8 | T _{m̄} | 5 55 | 1.8 | 54.8 | 14.9 |
| 12 | - 5 35.2 | T _{m̄} | 12 h 5.6 min | Starost | 21.4 d | Faza | 1 | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | / | h min / | h min / | h min / | o | h min / | |
| 0 | 9 21 | .1 | 290 | -5.7 | 4 | 9 0 | .0 | 295 |
| δ | 16 56 | .1 | 176 | .6 | h | 18 9 | .0 | 158 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 263 11.2 | 14 15.6 | 84 | 225 28.3 | 20 38.4 | 88 5.3 | - 6 36.7 | |
| 2 | 292 17.2 | 13 14 32.4 | 83 | 255 32.2 | 20 38.6 | 118 10.1 | - 6 36.7 | |
| 4 | 321 23.0 | 13 14 48.9 | 81 | 285 36.0 | 20 38.8 | 148 14.9 | - 6 36.8 | |
| 6 | 350 28.8 | 13 15 5.1 | 80 | 315 39.9 | 20 39.0 | 178 19.7 | - 6 36.9 | |
| 8 | 19 34.4 | 13 15 21.1 | 79 | 345 43.8 | 20 39.1 | 208 24.5 | - 6 37.0 | |
| 10 | 44 39.9 | 13 15 36.8 | 77 | 15 47.7 | 20 39.3 | 238 29.3 | - 6 37.0 | |
| 12 | 77 45.3 | 13 15 52.2 | 76 | 45 51.5 | 20 39.5 | 268 34.2 | - 6 37.1 | |
| 14 | 106 50.6 | 13 16 7.3 | 74 | 75 55.4 | 20 39.6 | 298 39.0 | - 6 37.2 | |
| 16 | 135 55.8 | 13 16 22.2 | 73 | 105 59.3 | 20 39.8 | 328 43.8 | - 6 37.2 | |
| 18 | 165 .8 | 13 16 36.8 | 71 | 136 3.2 | 20 40.0 | 358 48.6 | - 6 37.3 | |
| 20 | 194 5.7 | 13 16 51.1 | 70 | 166 7.0 | 20 40.1 | 28 53.4 | - 6 37.4 | |
| 22 | 223 10.5 | 13 17 5.0 | 68 | 196 10.9 | 20 40.3 | 58 58.2 | - 6 37.5 | |
| Δ | -1 | -4 | | 19 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|-------------|-----------------|-------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | h min min / | h min min / | h min min / | |
| 00 | - 5 39.0 | .3 | 15.8 | T _{m̄} | 6 39 | 1.9 | 54.4 | 14.8 |
| 12 | - 5 42.7 | T _{m̄} | 12 h 5.7 min | Starost | 22.4 d | Faza | 1 | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | / | h min / | h min / | h min / | o | h min / | |
| 0 | 9 19 | .1 | 290 | -5.7 | 4 | 8 57 | .0 | 295 |
| δ | 16 55 | .1 | 176 | .6 | h | 18 5 | .0 | 158 |

13. JUL

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 33.4 | 21 47.7 | 291 16.3 | 220 36.8 | 17 35.8 | 106 30.9 - 1 50.7 | |
| 2 | 208 33.2 | 21 47.0 | 321 21.2 | 250 39.2 | 17 36.1 | 136 33.3 - 1 51.9 | |
| 4 | 238 33.1 | 21 46.2 | 351 26.2 | 280 41.6 | 17 36.3 | 168 35.8 - 1 53.0 | |
| 6 | 268 32.9 | 21 45.5 | 21 31.1 | 310 43.9 | 17 36.6 | 196 38.2 - 1 54.2 | |
| 8 | 298 32.8 | 21 44.7 | 51 36.0 | 340 46.3 | 17 36.9 | 226 40.6 - 1 55.4 | |
| 10 | 328 32.6 | 21 44.0 | 81 40.9 | 10 48.6 | 17 37.2 | 256 43.0 - 1 56.6 | |
| 12 | 358 32.5 | 21 43.2 | 111 45.9 | 40 50.9 | 17 37.5 | 286 45.5 - 1 57.7 | |
| 14 | 28 32.4 | 21 42.5 | 141 50.8 | 70 53.2 | 17 37.8 | 316 47.9 - 1 58.9 | |
| 16 | 58 32.2 | 21 41.7 | 171 55.7 | 100 55.6 | 17 38.1 | 346 50.3 - 2 1 | |
| 18 | 88 32.1 | 21 41.0 | 202 .7 | 130 57.8 | 17 38.4 | 16 52.7 - 2 1.3 | |
| 20 | 118 31.9 | 21 40.2 | 232 5.6 | 161 .1 | 17 38.7 | 46 55.1 - 2 2.4 | |
| 22 | 148 31.8 | 21 39.5 | 262 10.5 | 191 2.4 | 17 39.0 | 76 57.6 - 2 3.6 | |
| Δ | -1 | -4 | | 12 | 1 | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-----|----------------|---------------------|--------------|---------------------|-------------|-------------------|-------------|-------------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 1 | 21 10 | 1 19 | : | : | 23 23 | 1.3 | 16 6 | 2.8 |
| 55 | 3 39 | 20 32 | 0 53 | : | : | 23 54 | 1.5 | 15 37 | 2.6 |
| 4 | 4 6 | 20 5 | 0 42 | 3 29 | .. . | .. . | 0 | 15 15 | 2.5 |
| 45 | 4 26 | 19 45 | 0 36 | 2 21 | .. . | .. . | 0 | 14 58 | 2.4 |
| 40 | 4 43 | 19 29 | 0 32 | 1 58 | 0 11 | 1.5 | 14 44 | 2.3 | |
| 35 | 4 56 | 19 15 | 0 29 | 1 43 | 0 22 | 1.6 | 14 33 | 2.2 | |
| 30 | 5 8 | 19 3 | 0 27 | 1 34 | 0 31 | 1.7 | 14 23 | 2.2 | |
| 20 | 5 29 | 18 43 | 0 24 | 1 22 | 0 47 | 1.8 | 14 5 | 2.1 | |
| 10 | 5 46 | 18 26 | 0 23 | 1 17 | 1 1 | 1.9 | 13 50 | 2.0 | |
| 0 | 6 2 | 18 9 | 0 22 | 1 14 | 1 14 | 1.9 | 13 36 | 2.0 | |
| 10 | 6 18 | 17 53 | 0 23 | 1 15 | 1 27 | 2.0 | 13 22 | 1.9 | |
| 20 | 6 35 | 17 36 | 0 24 | 1 18 | 1 41 | 2.1 | 13 7 | 1.8 | |
| 30 | 6 55 | 17 17 | 0 26 | 1 24 | 1 57 | 2.2 | 12 49 | 1.7 | |
| S | | | | | | | | | |
| | SUNCE | | | MJESEC | | | | | |
| UT | $e = T_p - UT$ | $\Delta/24$ | t | Problz | $\Delta/24$ | π_{UT} | t | | |
| h | min | s | / | h | min | min | / | | |
| 00 | - 5 46.3 | .3 | 15.8 | T \bar{m} | 7 25 | 2.0 | 54.2 | 14.8 | |
| 12 | - 5 49.8 | T \bar{m}_{\odot} | 12 h 5.8 min | Starost | 23.4 d | Faza | 0 | | |
| | PLANETE | | | | | | | | |
| Pl. | T \bar{m} | π | 360 - π | Vel. | Pl. | T \bar{m} | π | 360 - π | Vel. |
| h | min | / | ° | Vel. | h | min | / | ° | Vel. |
| 0 | 9 17 | .1 | 289 | -5.7 | 4 | 8 54 | .0 | 295 | -1.7 |
| 0 | 16 53 | .1 | 175 | .6 | h | 18 1 | .0 | 158 | .9 |

14. JUL

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 31.7 | 21 38.7 | 292 15.4 | 221 4.7 | 17 39.3 | 106 60.0 - 2 4.8 | |
| 2 | 208 31.5 | 21 37.9 | 322 20.4 | 251 6.9 | 17 39.6 | 137 2.4 - 2 6.0 | |
| 4 | 238 31.4 | 21 37.2 | 352 25.3 | 281 9.1 | 17 39.9 | 167 4.8 - 2 7.2 | |
| 6 | 268 31.2 | 21 36.4 | 22 30.2 | 311 11.4 | 17 40.2 | 197 7.2 - 2 8.3 | |
| 8 | 298 31.1 | 21 35.6 | 52 35.1 | 341 13.6 | 17 40.6 | 227 9.7 - 2 9.5 | |
| 10 | 328 31.0 | 21 34.9 | 82 40.1 | 11 15.8 | 17 40.9 | 257 12.1 - 2 10.7 | |
| 12 | 358 30.9 | 21 34.1 | 112 45.0 | 41 18.0 | 17 41.2 | 287 14.5 - 2 11.9 | |
| 14 | 28 30.7 | 21 33.3 | 142 49.9 | 73 20.2 | 17 41.5 | 317 16.9 - 2 13.1 | |
| 16 | 58 30.6 | 21 32.5 | 172 54.9 | 101 22.4 | 17 41.8 | 347 19.3 - 2 14.2 | |
| 18 | 88 30.5 | 21 31.7 | 202 59.8 | 131 24.6 | 17 42.2 | 17 21.7 - 2 15.4 | |
| 20 | 118 30.3 | 21 30.9 | 233 4.7 | 161 26.7 | 17 42.5 | 47 24.1 - 2 16.6 | |
| 22 | 148 30.2 | 21 30.2 | 263 9.6 | 191 28.9 | 17 42.8 | 77 26.5 - 2 17.8 | |
| Δ | -1 | -4 | | 11 | 2 | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-----|----------------|---------------------|--------------|---------------------|-------------|-------------------|-------------|-------------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 2 | 21 8 | 1 18 | : | : | 23 55 | 1.8 | 17 13 | 2.4 |
| 55 | 3 40 | 20 31 | 0 53 | : | : | .. . | 0 | 16 38 | 2.3 |
| 50 | 4 7 | 20 4 | 0 42 | 3 23 | 0 16 | 1.6 | 16 14 | 2.3 | |
| 45 | 4 27 | 19 44 | 0 36 | 2 21 | 0 34 | 1.7 | 15 55 | 2.2 | |
| 40 | 4 43 | 19 28 | 0 32 | 1 57 | 0 48 | 1.7 | 15 40 | 2.2 | |
| 35 | 4 57 | 19 15 | 0 29 | 1 43 | 1 0 | 1.8 | 15 27 | 2.2 | |
| 30 | 5 9 | 19 3 | 0 27 | 1 34 | 1 11 | 1.8 | 15 15 | 2.1 | |
| 20 | 5 29 | 18 43 | 0 24 | 1 22 | 1 29 | 1.9 | 14 56 | 2.1 | |
| 10 | 5 46 | 18 26 | 0 23 | 1 16 | 1 45 | 2.0 | 14 39 | 2.1 | |
| 0 | 6 2 | 18 10 | 0 22 | 1 14 | 2 0 | 2.0 | 14 23 | 2.0 | |
| 10 | 6 18 | 17 54 | 0 23 | 1 14 | 2 15 | 2.1 | 14 8 | 2.0 | |
| 20 | 6 35 | 17 37 | 0 24 | 1 18 | 2 31 | 2.1 | 13 51 | 2.0 | |
| 30 | 6 55 | 17 18 | 0 26 | 1 24 | 2 50 | 2.2 | 13 31 | 1.9 | |
| 35 | 7 6 | 17 6 | 0 28 | 1 29 | 3 1 | 2.2 | 13 20 | 1.9 | |
| 40 | 7 19 | 16 54 | 0 30 | 1 36 | 3 13 | 2.2 | 13 7 | 1.9 | |
| 45 | 7 34 | 16 38 | 0 33 | 1 45 | 3 28 | 2.3 | 12 52 | 1.8 | |
| 50 | 7 52 | 16 20 | 0 37 | 1 57 | 3 46 | 2.4 | 12 33 | 1.8 | |
| 55 | 8 16 | 15 56 | 0 43 | 2 13 | 4 10 | 2.5 | 12 9 | 1.7 | |
| 60 | 8 49 | 15 23 | 0 54 | 2 39 | 4 42 | 2.6 | 11 36 | 1.5 | |
| | SUNCE | | | MJESEC | | | | | |
| UT | $e = T_p - UT$ | $\Delta/24$ | t | Problz | $\Delta/24$ | π_{UT} | t | | |
| h | min | s | / | h | min | min | / | | |
| 00 | - 5 53.2 | .3 | 15.8 | T \bar{m} | 8 12 | 2.0 | 54.2 | 14.8 | |
| 12 | - 5 56.3 | T \bar{m}_{\odot} | 12 h 5.9 min | Starost | 24.4 d | Faza | 0 | | |
| | PLANETE | | | | | | | | |
| Pl. | T \bar{m} | π | 360 - π | Vel. | Pl. | T \bar{m} | π | 360 - π | Vel. |
| h | min | / | ° | Vel. | h | min | / | ° | Vel. |
| 0 | 9 15 | .1 | 289 | -5.6 | 4 | 8 51 | .0 | 295 | -1.7 |
| 0 | 16 51 | .1 | 175 | .6 | h | 17 57 | .0 | 158 | .9 |

15. JUL

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _θ | δ _θ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 30.1 | 21 | 29.4 | 293 | 14.6 | 221 | 31.0 |
| 2 | 208 | 29.9 | 21 | 28.6 | 323 | 19.5 | 254 | 33.1 |
| 4 | 238 | 29.8 | 21 | 27.8 | 353 | 24.4 | 281 | 35.3 |
| 6 | 268 | 29.7 | 21 | 27.0 | 23 | 29.4 | 311 | 37.4 |
| 8 | 298 | 29.6 | 21 | 26.2 | 53 | 34.3 | 341 | 39.5 |
| 10 | 328 | 29.5 | 21 | 25.4 | 83 | 39.2 | 11 | 41.6 |
| 12 | 358 | 29.3 | 21 | 24.6 | 113 | 44.1 | 41 | 43.7 |
| 14 | 28 | 29.2 | 21 | 23.7 | 143 | 49.1 | 71 | 45.7 |
| 16 | 58 | 29.1 | 21 | 22.9 | 173 | 54.0 | 101 | 47.8 |
| 18 | 88 | 29.0 | 21 | 22.1 | 203 | 58.9 | 131 | 49.9 |
| 20 | 118 | 28.8 | 21 | 21.3 | 234 | 3.9 | 161 | 51.9 |
| 22 | 148 | 28.7 | 21 | 20.5 | 264 | 8.8 | 191 | 53.9 |
| Δ | -1 | -4 | | | | | 10 | 2 |
| | | | | | | | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-----|-------------------------|-----------------|-------|---------------------|---------|-----------------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 4 | 21 6 | 1 17 | : | : | .. | .. | 18 11 | 2.0 |
| 55 | 3 42 | 20 29 | 0 52 | : | : | 0 30 | 1.9 | 17 34 | 2.0 |
| 4 | 4 8 | 20 4 | 0 42 | 3 18 | 0 55 | 1.9 | 17 8 | 2.0 | |
| 45 | 4 28 | 19 44 | 0 36 | 2 20 | 1 14 | 1.9 | 16 48 | 2.0 | |
| 40 | 4 44 | 19 28 | 0 32 | 1 57 | 1 30 | 2.0 | 16 32 | 2.0 | |
| 35 | 4 58 | 19 14 | 0 29 | 1 43 | 1 43 | 2.0 | 16 18 | 2.0 | |
| 30 | 5 9 | 19 3 | 0 27 | 1 34 | 1 55 | 2.0 | 16 6 | 2.1 | |
| 20 | 5 29 | 18 43 | 0 24 | 1 22 | 2 15 | 2.0 | 15 46 | 2.1 | |
| 10 | 5 46 | 18 26 | 0 23 | 1 16 | 2 32 | 2.0 | 15 28 | 2.1 | |
| 0 | 6 2 | 18 10 | 0 22 | 1 14 | 2 48 | 2.1 | 15 12 | 2.1 | |
| 10 | 6 18 | 17 54 | 0 22 | 1 14 | 3 4 | 2.1 | 14 55 | 2.1 | |
| 20 | 6 35 | 17 37 | 0 24 | 1 18 | 3 22 | 2.1 | 14 38 | 2.1 | |
| 30 | 6 54 | 17 18 | 0 26 | 1 24 | 3 42 | 2.1 | 14 17 | 2.1 | |
| S | | | | | | | | | |
| | SUNCE | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _{UT} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | - 5 59.5 | .2 | 15.8 | T _{m̄} | 9 0 | 2.0 | 54.3 | 14.8 | |
| 12 | - 6 2.4 | T _{m̄} | 12 h | 6.0 min | Starost | 25.4 d | Faza | ● | |
| | PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | ° | Vel. | h min | / | ° | Vel. | |
| 0 | 9 13 | .1 | 288 | -5.6 | 4 | 8 48 | .0 | 295 | -1.7 |
| 0 | 16 49 | .1 | 174 | .6 | h | 17 53 | .0 | 158 | .9 |

16. JUL

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _θ | δ _θ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 28.6 | 21 | 19.7 | 294 | 13.7 | 221 | 56.0 |
| 2 | 208 | 28.5 | 21 | 18.8 | 324 | 18.6 | 251 | 58.0 |
| 4 | 238 | 28.4 | 21 | 18.0 | 354 | 23.6 | 281 | 60.0 |
| 6 | 268 | 28.3 | 21 | 17.2 | 24 | 28.5 | 312 | 2.0 |
| 8 | 298 | 28.2 | 21 | 16.3 | 54 | 33.4 | 342 | 4.0 |
| 10 | 328 | 28.0 | 21 | 15.5 | 84 | 38.4 | 12 | 5.9 |
| 12 | 358 | 27.9 | 21 | 14.7 | 114 | 43.3 | 42 | 7.9 |
| 14 | 28 | 27.8 | 21 | 13.8 | 144 | 48.2 | 72 | 9.9 |
| 16 | 58 | 27.7 | 21 | 13.0 | 174 | 53.1 | 102 | 11.8 |
| 18 | 88 | 27.6 | 21 | 12.1 | 204 | 58.1 | 132 | 13.8 |
| 20 | 118 | 27.5 | 21 | 11.3 | 235 | 3.0 | 162 | 15.7 |
| 22 | 148 | 27.4 | 21 | 10.4 | 265 | 7.9 | 192 | 17.6 |
| Δ | -1 | -4 | | | | | 10 | 2 |
| | | | | | | | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-----|-------------------------|-----------------|-------|---------------------|---------|-----------------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 6 | 21 5 | 1 16 | : | : | 0 38 | 2.3 | 18 58 | 1.5 |
| 55 | 3 43 | 20 28 | 0 52 | : | : | 1 15 | 2.3 | 18 22 | 1.7 |
| 50 | 4 9 | 20 3 | 0 42 | 3 14 | 1 41 | 2.2 | 17 57 | 1.8 | |
| 45 | 4 29 | 19 43 | 0 36 | 2 19 | 2 1 | 2.2 | 17 37 | 1.8 | |
| 40 | 4 45 | 19 27 | 0 32 | 1 56 | 2 17 | 2.2 | 17 21 | 1.9 | |
| 35 | 4 58 | 19 14 | 0 29 | 1 43 | 2 31 | 2.2 | 17 8 | 1.9 | |
| 30 | 5 10 | 19 2 | 0 27 | 1 33 | 2 43 | 2.2 | 16 56 | 1.9 | |
| 20 | 5 30 | 18 42 | 0 24 | 1 22 | 3 31 | 2.1 | 16 36 | 2.0 | |
| 10 | 5 47 | 18 25 | 0 23 | 1 16 | 3 21 | 2.1 | 16 18 | 2.0 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 14 | 3 37 | 2.1 | 16 2 | 2.1 | |
| 10 | 6 18 | 17 54 | 0 22 | 1 14 | 3 54 | 2.1 | 15 45 | 2.1 | |
| 20 | 6 35 | 17 38 | 0 24 | 1 17 | 4 12 | 2.0 | 15 27 | 2.2 | |
| 30 | 6 54 | 17 19 | 0 26 | 1 24 | 4 32 | 2.0 | 15 7 | 2.2 | |
| 35 | 7 5 | 17 8 | 0 28 | 1 29 | 4 44 | 2.0 | 14 55 | 2.2 | |
| 40 | 7 17 | 16 55 | 0 30 | 1 36 | 4 58 | 2.0 | 14 41 | 2.3 | |
| 45 | 7 32 | 16 40 | 0 33 | 1 44 | 5 14 | 1.9 | 14 25 | 2.3 | |
| 50 | 7 50 | 16 22 | 0 37 | 1 56 | 5 35 | 1.9 | 14 5 | 2.4 | |
| 55 | 8 14 | 15 59 | 0 43 | 2 13 | 6 1 | 1.8 | 13 39 | 2.5 | |
| 60 | 8 46 | 15 27 | 0 53 | 2 38 | 6 38 | 1.7 | 13 2 | 2.6 | |
| | SUNCE | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _{UT} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | - 6 5.4 | .2 | 15.8 | T _{m̄} | 9 49 | 2.1 | 54.5 | 14.9 | |
| 12 | - 6 8.1 | T _{m̄} | 12 h | 6.1 min | Starost | 26.4 d | Faza | ● | |
| | PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | ° | Vel. | h min | / | ° | Vel. | |
| 0 | 9 12 | .1 | 288 | -5.6 | 4 | 8 45 | .0 | 294 | -1.7 |
| 0 | 16 47 | .1 | 174 | .6 | h | 17 49 | .0 | 158 | .9 |

17. JUL

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 27.3 | 21 | 9.6 | 295 | 12.9 | 222 | 19.5 |
| 2 | 208 | 27.2 | 21 | 8.7 | 325 | 17.4 | 252 | 21.5 |
| 4 | 238 | 27.1 | 21 | 7.9 | 355 | 22.7 | 282 | 23.3 |
| 6 | 268 | 27.0 | 21 | 7.0 | 25 | 27.6 | 312 | 25.2 |
| 8 | 298 | 26.9 | 21 | 6.1 | 55 | 32.6 | 342 | 27.1 |
| 10 | 328 | 26.8 | 21 | 5.3 | 85 | 37.5 | 12 | 29.0 |
| 12 | 358 | 26.7 | 21 | 4.4 | 115 | 42.4 | 42 | 30.8 |
| 14 | 28 | 26.6 | 21 | 3.5 | 145 | 47.4 | 72 | 32.7 |
| 16 | 58 | 26.5 | 21 | 2.7 | 175 | 52.3 | 102 | 34.5 |
| 18 | 88 | 26.4 | 21 | 1.8 | 205 | 57.2 | 132 | 36.4 |
| 20 | 118 | 26.3 | 21 | .9 | 236 | 2.1 | 162 | 38.2 |
| 22 | 148 | 26.2 | 21 | .0 | 266 | 7.1 | 192 | 40.0 |
| Δ | -1 | | | | | | 9 | 2 |
| | | | | | | | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-------|-------------------------|-----------------|--------------|---------------------|--------|-----------------|--------|---------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 8 | 21 3 | 1 14 | : | : | 1 34 | 2.8 | 19 34 | 1.1 |
| 55 | 3 45 | 20 27 | 0 52 | : | : | 2 9 | 2.6 | 19 2 | 1.3 |
| 50 | 4 10 | 20 2 | 0 41 | 3 11 | | 2 34 | 2.5 | 18 39 | 1.5 |
| 45 | 4 30 | 19 42 | 0 36 | 2 18 | 2 54 | 2.4 | 18 21 | 1.6 | |
| 40 | 4 46 | 19 26 | 0 32 | 1 56 | 3 9 | 2.4 | 18 6 | 1.7 | |
| 35 | 4 59 | 19 13 | 0 29 | 1 42 | 3 23 | 2.3 | 17 53 | 1.8 | |
| 30 | 5 10 | 19 2 | 0 27 | 1 33 | 3 34 | 2.3 | 17 42 | 1.8 | |
| 20 | 5 30 | 18 42 | 0 24 | 1 22 | 3 54 | 2.2 | 17 23 | 1.9 | |
| 10 | 5 47 | 18 25 | 0 23 | 1 16 | 4 11 | 2.1 | 17 7 | 2.0 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 14 | 4 27 | 2.1 | 16 52 | 2.1 | |
| 10 | 6 18 | 17 54 | 0 22 | 1 14 | 4 43 | 2.0 | 16 36 | 2.2 | |
| 20 | 6 35 | 17 38 | 0 24 | 1 17 | 5 1 | 2.0 | 16 19 | 2.2 | |
| 30 | 6 53 | 17 19 | 0 26 | 1 24 | 5 20 | 1.9 | 16 0 | 2.3 | |
| S | | | | | | | | | |
| | SUNCE | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Problaz | Δ/24 | π _{ll} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | - 6 10.7 | .2 | 15.8 | T _{ll} | 10 39 | 2.1 | 54.9 | 15.0 | |
| 12 | - 6 13.1 | T _{ll} | 12 h 6.2 min | Starost | 27.4 d | Faza | ● | | |
| | PLANETE | | | | | | | | |
| Pl. | T _{ll} | π | 360 - π | Vel. | Pl. | T _{ll} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 9 10 | .1 | 287 | -5.5 | 4 | 8 41 | .0 | 294 | -1.7 |
| ♂ | 16 45 | .1 | 173 | .6 | h | 17 46 | .0 | 158 | .9 |

18. JUL

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 26.1 | 20 | 59.1 | 296 | 12.0 | 222 | 41.8 |
| 2 | 208 | 26.0 | 20 | 58.3 | 326 | 16.9 | 252 | 43.6 |
| 4 | 238 | 25.9 | 20 | 57.4 | 356 | 21.8 | 282 | 45.4 |
| 6 | 268 | 25.8 | 20 | 56.5 | 26 | 26.8 | 312 | 47.2 |
| 8 | 298 | 25.7 | 20 | 55.6 | 56 | 31.7 | 342 | 49.0 |
| 10 | 328 | 25.6 | 20 | 54.7 | 86 | 36.6 | 12 | 50.7 |
| 12 | 358 | 25.5 | 20 | 53.8 | 116 | 41.6 | 42 | 52.5 |
| 14 | 28 | 25.4 | 20 | 52.9 | 146 | 46.5 | 72 | 54.2 |
| 16 | 58 | 25.3 | 20 | 52.0 | 176 | 51.4 | 102 | 56.0 |
| 18 | 88 | 25.2 | 20 | 51.1 | 206 | 56.3 | 132 | 57.7 |
| 20 | 118 | 25.2 | 20 | 50.2 | 237 | 1.3 | 162 | 59.4 |
| 22 | 148 | 25.1 | 20 | 49.3 | 267 | 6.2 | 193 | 1.1 |
| Δ | 0 | | | | | | 9 | 2 |
| | | | | | | | 12 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-------|-------------------------|-----------------|--------------|---------------------|--------|-----------------|--------|---------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 10 | 21 1 | 1 13 | : | : | 2 41 | 3.2 | 20 0 | .8 |
| 55 | 3 46 | 20 25 | 0 51 | : | : | 3 12 | 2.9 | 19 34 | 1.1 |
| 50 | 4 11 | 20 0 | 0 41 | 3 7 | | 3 35 | 2.7 | 19 14 | 1.3 |
| 45 | 4 31 | 19 41 | 0 35 | 2 17 | 3 52 | 2.6 | 18 59 | 1.4 | |
| 40 | 4 46 | 19 26 | 0 31 | 1 55 | 4 6 | 2.5 | 18 46 | 1.5 | |
| 35 | 4 60 | 19 13 | 0 29 | 1 42 | 4 19 | 2.4 | 18 35 | 1.6 | |
| 30 | 5 11 | 19 1 | 0 27 | 1 33 | 4 29 | 2.4 | 18 26 | 1.7 | |
| 20 | 5 30 | 18 42 | 0 24 | 1 22 | 4 47 | 2.3 | 18 9 | 1.8 | |
| 10 | 5 47 | 18 25 | 0 23 | 1 16 | 5 3 | 2.2 | 17 55 | 1.9 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 14 | 5 17 | 2.1 | 17 41 | 2.0 | |
| 10 | 6 18 | 17 55 | 0 22 | 1 14 | 5 32 | 2.0 | 17 28 | 2.2 | |
| 20 | 6 34 | 17 38 | 0 24 | 1 17 | 5 48 | 1.9 | 17 13 | 2.3 | |
| 30 | 6 53 | 17 20 | 0 26 | 1 24 | 6 6 | 1.8 | 16 56 | 2.4 | |
| 35 | 7 4 | 17 9 | 0 27 | 1 29 | 6 16 | 1.7 | 16 46 | 2.5 | |
| 40 | 7 16 | 16 57 | 0 30 | 1 35 | 6 28 | 1.6 | 16 35 | 2.6 | |
| 45 | 7 31 | 16 42 | 0 33 | 1 44 | 6 42 | 1.5 | 16 22 | 2.7 | |
| 50 | 7 49 | 16 24 | 0 37 | 1 56 | 6 59 | 1.4 | 16 5 | 2.8 | |
| 55 | 8 11 | 16 2 | 0 43 | 2 12 | 7 21 | 1.2 | 15 45 | 3.0 | |
| 60 | 8 43 | 15 30 | 0 52 | 2 36 | 7 50 | 1.0 | 15 16 | 3.3 | |
| S | | | | | | | | | |
| | SUNCE | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Problaz | Δ/24 | π _{ll} | t | | |
| h | min | s | / | h min | min | / | / | | |
| 00 | - 6 15.6 | .2 | 15.8 | T _{ll} | 11 29 | 2.1 | 55.3 | 15.1 | |
| 12 | - 6 17.7 | T _{ll} | 12 h 6.3 min | Starost | 28.4 d | Faza | ● | | |
| | PLANETE | | | | | | | | |
| Pl. | T _{ll} | π | 360 - π | Vel. | Pl. | T _{ll} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 9 9 | .1 | 286 | -5.5 | 4 | 8 38 | .0 | 294 | -1.7 |
| ♂ | 16 43 | .1 | 173 | .6 | h | 17 42 | .0 | 158 | .9 |

19. JUL

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 25.0 | 20 48.4 | 297 11.1 | 223 2.8 | 18 1.2 | 109 23.1 | - 3 15.9 | |
| 2 | 208 24.9 | 20 47.4 | 327 16.1 | 253 4.5 | 18 1.6 | 139 25.5 | - 3 17.1 | |
| 4 | 238 24.8 | 20 46.5 | 357 21.0 | 283 6.2 | 18 2.1 | 169 27.8 | - 3 18.3 | |
| 6 | 268 24.7 | 20 45.6 | 27 25.9 | 313 7.9 | 18 2.5 | 199 30.2 | - 3 19.5 | |
| 8 | 298 24.7 | 20 44.7 | 57 30.8 | 343 9.6 | 18 2.9 | 229 32.5 | - 3 20.7 | |
| 10 | 328 24.6 | 20 43.8 | 87 35.8 | 13 11.2 | 18 3.3 | 259 34.9 | - 3 21.9 | |
| 12 | 358 24.5 | 20 42.8 | 117 40.7 | 43 12.9 | 18 3.7 | 289 37.2 | - 3 23.1 | |
| 14 | 28 24.4 | 20 41.9 | 147 45.6 | 73 14.5 | 18 4.1 | 319 39.6 | - 3 24.3 | |
| 16 | 58 24.4 | 20 41.0 | 177 50.6 | 103 16.1 | 18 4.6 | 349 41.9 | - 3 25.5 | |
| 18 | 88 24.3 | 20 40.0 | 207 55.5 | 133 17.8 | 18 5.0 | 19 44.3 | - 3 26.7 | |
| 20 | 118 24.2 | 20 39.1 | 238 4.4 | 163 19.4 | 18 5.4 | 49 46.6 | - 3 27.9 | |
| 22 | 148 24.1 | 20 38.2 | 268 5.3 | 193 21.0 | 18 5.8 | 79 49.0 | - 3 29.1 | |
| Δ | 0 | -5 | | 8 | 2 | 12 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 12 | 20 59 | 1 12 | : :: | 3 57 | 3.4 | 20 20 | .7 | |
| 55 | 3 48 | 20 24 | 0 51 | :: : | 4 22 | 3.1 | 20 0 | .9 | |
| 50 | 4 13 | 19 59 | 0 41 | 3 4 | 4 40 | 2.9 | 19 45 | 1.1 | |
| 45 | 4 32 | 19 40 | 0 35 | 2 16 | 4 55 | 2.7 | 19 33 | 1.3 | |
| 40 | 4 47 | 19 25 | 0 31 | 1 55 | 5 7 | 2.6 | 19 23 | 1.4 | |
| 35 | 5 0 | 19 12 | 0 29 | 1 42 | 5 17 | 2.5 | 19 14 | 1.5 | |
| 30 | 5 12 | 19 1 | 0 27 | 1 33 | 5 26 | 2.4 | 19 6 | 1.6 | |
| 20 | 5 31 | 18 42 | 0 24 | 1 22 | 5 41 | 2.3 | 18 53 | 1.7 | |
| 10 | 5 47 | 18 25 | 0 23 | 1 16 | 5 54 | 2.1 | 18 41 | 1.9 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 14 | 6 7 | 2.0 | 18 30 | 2.0 | |
| 10 | 6 18 | 17 55 | 0 22 | 1 14 | 6 19 | 1.9 | 18 19 | 2.1 | |
| 20 | 6 34 | 17 39 | 0 24 | 1 17 | 6 33 | 1.8 | 18 7 | 2.3 | |
| 30 | 6 53 | 17 20 | 0 26 | 1 24 | 6 48 | 1.6 | 17 54 | 2.4 | |
| 35 | 7 3 | 17 10 | 0 27 | 1 29 | 6 56 | 1.6 | 17 46 | 2.5 | |
| 40 | 7 16 | 16 57 | 0 30 | 1 35 | 7 6 | 1.5 | 17 37 | 2.6 | |
| 45 | 7 30 | 16 43 | 0 33 | 1 44 | 7 18 | 1.3 | 17 26 | 2.8 | |
| 50 | 7 48 | 16 26 | 0 37 | 1 56 | 7 32 | 1.2 | 17 13 | 2.9 | |
| 55 | 8 10 | 16 3 | 0 43 | 2 12 | 7 50 | 1.0 | 16 56 | 3.1 | |
| 60 | 8 41 | 15 32 | 0 52 | 2 36 | 8 13 | .7 | 16 34 | 3.4 | |
| S | | | | | | | | | |

20. JUL

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|--|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 181 25.0 | 20 18.6 | -73 | 230 55.4 | 20 51.9 | 94 47.0 | - 6 43.4 | | |
| 2 | 210 25.4 | 20 3.9 | -75 | 260 59.3 | 20 52.5 | 124 51.8 | - 6 43.5 | | |
| 4 | 239 25.9 | 20 113 | 16 48.9 | -77 | 291 3.2 | 20 52.2 | 154 56.5 | - 6 43.6 | |
| 6 | 268 26.5 | 20 113 | 16 33.6 | -79 | 321 7.1 | 20 52.4 | 185 1.3 | - 6 43.7 | |
| 8 | 297 27.2 | 20 114 | 16 17.9 | -80 | 351 11.0 | 20 52.5 | 215 6.1 | - 6 43.8 | |
| 10 | 326 27.9 | 20 114 | 16 1.8 | -82 | 21 15.0 | 20 52.7 | 245 10.8 | - 6 43.9 | |
| 12 | 355 28.7 | 20 115 | 15 45.4 | -84 | 51 18.9 | 20 52.8 | 275 15.6 | - 6 44.0 | |
| 14 | 24 29.6 | 20 115 | 15 28.7 | -85 | 81 22.8 | 20 53.0 | 305 20.3 | - 6 44.1 | |
| 16 | 53 30.6 | 20 115 | 15 11.6 | -87 | 111 26.7 | 20 53.1 | 335 25.1 | - 6 44.2 | |
| 18 | 82 31.7 | 20 116 | 14 54.2 | -89 | 141 30.6 | 20 53.3 | 5 29.8 | - 6 44.3 | |
| 20 | 111 32.8 | 20 116 | 14 36.5 | -90 | 171 34.6 | 20 53.4 | 35 34.6 | - 6 44.4 | |
| 22 | 140 34.0 | 20 116 | 14 18.5 | -92 | 201 38.5 | 20 53.6 | 65 39.3 | - 6 44.5 | |
| Δ | 0 | -5 | | 8 | 2 | 12 | -6 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 14 | 20 57 | 1 11 | : :: | 5 18 | 3.5 | 20 36 | .6 | |
| 55 | 3 49 | 20 23 | 0 50 | :: : | 5 36 | 3.2 | 20 22 | .8 | |
| 50 | 4 14 | 19 58 | 0 41 | 3 1 | 5 50 | 3.0 | 20 12 | 1.0 | |
| 45 | 4 33 | 19 40 | 0 35 | 2 15 | 6 0 | 2.8 | 20 3 | 1.2 | |
| 40 | 4 48 | 19 24 | 0 31 | 1 54 | 6 10 | 2.7 | 19 56 | 1.3 | |
| 35 | 5 1 | 19 12 | 0 29 | 1 41 | 6 17 | 2.6 | 19 50 | 1.4 | |
| 30 | 5 12 | 19 0 | 0 27 | 1 32 | 6 24 | 2.5 | 19 45 | 1.5 | |
| 20 | 5 31 | 18 42 | 0 24 | 1 21 | 6 36 | 2.3 | 19 35 | 1.7 | |
| 10 | 5 48 | 18 25 | 0 23 | 1 16 | 6 46 | 2.1 | 19 27 | 1.8 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 6 56 | 2.0 | 19 19 | 2.0 | |
| 10 | 6 18 | 17 55 | 0 22 | 1 14 | 7 5 | 1.9 | 19 11 | 2.1 | |
| 20 | 6 34 | 17 39 | 0 23 | 1 17 | 7 15 | 1.7 | 19 2 | 2.3 | |
| 30 | 6 52 | 17 21 | 0 26 | 1 24 | 7 27 | 1.5 | 18 52 | 2.5 | |
| 35 | 7 3 | 17 10 | 0 27 | 1 29 | 7 34 | 1.5 | 18 47 | 2.6 | |
| 40 | 7 15 | 16 58 | 0 30 | 1 35 | 7 41 | 1.3 | 18 40 | 2.7 | |
| 45 | 7 29 | 16 44 | 0 33 | 1 44 | 7 50 | 1.2 | 18 32 | 2.8 | |
| 50 | 7 46 | 16 27 | 0 37 | 1 55 | 8 1 | 1.1 | 18 23 | 3.0 | |
| 55 | 8 9 | 16 5 | 0 43 | 2 11 | 8 14 | .9 | 18 12 | 3.2 | |
| 60 | 8 39 | 15 34 | 0 52 | 2 35 | 8 31 | .6 | 17 56 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ |
| h | o / | o / | o / | o / | o / | o / |
| 0 | 169 35.3 | 117 | 14 .2 | -93 | 231 42.4 | 20 53.7 |
| 2 | 198 36.7 | 117 | 13 41.5 | -95 | 261 46.3 | 20 53.9 |
| 4 | 227 38.2 | 118 | 13 22.6 | -96 | 291 50.3 | 20 54.0 |
| 6 | 256 39.7 | 118 | 13 3.4 | -97 | 321 54.2 | 20 54.2 |
| 8 | 285 41.3 | 118 | 12 43.9 | -99 | 351 58.1 | 20 54.3 |
| 10 | 314 43.0 | 119 | 12 24.1 | -100 | 22 2.0 | 20 54.5 |
| 12 | 343 44.7 | 119 | 12 4.1 | -102 | 52 6.0 | 20 54.6 |
| 14 | 12 46.5 | 119 | 11 43.8 | -103 | 82 9.9 | 20 54.8 |
| 16 | 41 48.4 | 120 | 11 23.2 | -104 | 112 13.8 | 20 54.9 |
| 18 | 70 50.3 | 120 | 11 2.4 | -105 | 142 17.7 | 20 55.1 |
| 20 | 99 52.3 | 120 | 10 41.3 | -106 | 172 21.7 | 20 55.2 |
| 22 | 128 54.4 | 121 | 10 20.0 | -108 | 202 25.6 | 20 55.4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 12 | 20 59 | 1 12 | : :: | 3 57 | 3.4 | 20 20 | .7 | |
| 55 | 3 48 | 20 24 | 0 51 | :: : | 4 22 | 3.1 | 20 0 | .9 | |
| 50 | 4 13 | 19 59 | 0 41 | 3 4 | 4 40 | 2.9 | 19 45 | 1.1 | |
| 45 | 4 32 | 19 40 | 0 35 | 2 16 | 4 55 | 2.7 | 19 33 | 1.3 | |
| 40 | 4 47 | 19 25 | 0 31 | 1 55 | 5 7 | 2.6 | 19 23 | 1.4 | |
| 35 | 5 0 | 19 12 | 0 29 | 1 42 | 5 17 | 2.5 | 19 14 | 1.5 | |
| 30 | 5 12 | 19 1 | 0 27 | 1 33 | 5 26 | 2.4 | 19 6 | 1.6 | |
| 20 | 5 31 | 18 42 | 0 24 | 1 22 | | | | | |

21. JUL

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|-------------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 23.3 | 20 25.7 | 299 9.4 | 223 41.2 | 18 11.4 | 110 19.3 - 3 44.6 | | |
| 2 | 208 23.2 | 20 24.8 | 329 14.3 | 253 42.7 | 18 11.9 | 140 21.7 - 3 45.8 | | |
| 4 | 238 23.1 | 20 23.8 | 359 19.3 | 283 44.2 | 18 12.3 | 170 24.0 - 3 47.0 | | |
| 6 | 268 23.1 | 20 22.8 | 29 24.2 | 313 45.7 | 18 12.7 | 200 26.3 - 3 48.2 | | |
| 8 | 298 23.0 | 20 21.8 | 59 29.1 | 343 47.1 | 18 13.2 | 230 28.6 - 3 49.4 | | |
| 10 | 328 23.0 | 20 20.8 | 89 34.0 | 13 48.6 | 18 13.6 | 260 31.0 - 3 50.6 | | |
| 12 | 358 22.9 | 20 19.9 | 119 39.0 | 43 50.1 | 18 14.1 | 290 33.3 - 3 51.8 | | |
| 14 | 28 22.9 | 20 18.9 | 149 43.9 | 73 51.5 | 18 14.5 | 320 35.6 - 3 53.0 | | |
| 16 | 58 22.8 | 20 17.9 | 179 46.8 | 103 53.0 | 18 14.9 | 350 37.9 - 3 54.2 | | |
| 18 | 88 22.8 | 20 16.9 | 209 53.8 | 133 54.4 | 18 15.4 | 20 40.2 - 3 55.4 | | |
| 20 | 118 22.7 | 20 15.9 | 239 58.7 | 163 55.8 | 18 15.8 | 50 42.6 - 3 56.6 | | |
| 22 | 148 22.7 | 20 14.9 | 270 3.6 | 193 57.2 | 18 16.3 | 80 44.9 - 3 57.8 | | |
| Δ | 0 | -5 | | 7 | 2 | 12 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 17 | 20 55 | 1 10 | : | 6 40 | 3.5 | 20 49 | .5 |
| 55 | 3 51 | 20 21 | 0 50 | : | 6 52 | 3.2 | 20 42 | .8 |
| 50 | 4 15 | 19 57 | 0 41 | 2 58 | 7 1 | 3.0 | 20 36 | 1.0 |
| 45 | 4 34 | 19 39 | 0 35 | 2 14 | 7 8 | 2.8 | 20 31 | 1.1 |
| 40 | 4 49 | 19 24 | 0 31 | 1 54 | 7 13 | 2.7 | 20 27 | 1.3 |
| 35 | 5 2 | 19 11 | 0 29 | 1 41 | 7 19 | 2.6 | 20 24 | 1.4 |
| 30 | 5 13 | 18 60 | 0 27 | 1 32 | 7 23 | 2.5 | 20 21 | 1.5 |
| 20 | 5 32 | 18 41 | 0 24 | 1 21 | 7 31 | 2.3 | 20 16 | 1.7 |
| 10 | 5 48 | 18 25 | 0 23 | 1 16 | 7 37 | 2.1 | 20 11 | 1.8 |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 7 44 | 2.0 | 20 6 | 2.0 |
| 10 | 6 18 | 17 55 | 0 22 | 1 14 | 7 50 | 1.8 | 20 2 | 2.1 |
| 20 | 6 34 | 17 39 | 0 23 | 1 17 | 7 57 | 1.7 | 19 57 | 2.3 |
| 30 | 6 52 | 17 21 | 0 26 | 1 24 | 8 4 | 1.5 | 19 51 | 2.5 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|----------|----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 157 56.5 | 121 | 9 58.5 -109 | 232 29.5 | 20 55.5 | 96 41.0 - 6 45.7 | | |
| 2 | 186 58.7 | 121 | 9 36.8 -110 | 262 33.5 | 20 55.7 | 126 45.8 - 6 45.8 | | |
| 4 | 216 .9 | 121 | 9 14.8 -111 | 292 37.4 | 20 55.8 | 156 50.5 - 6 45.9 | | |
| 6 | 245 3.2 | 122 | 8 52.6 -112 | 322 41.3 | 20 56.0 | 186 55.2 - 6 46.0 | | |
| 8 | 274 5.5 | 122 | 8 30.2 -113 | 352 45.3 | 20 56.1 | 216 60.0 - 6 46.1 | | |
| 10 | 303 7.8 | 122 | 8 7.6 -114 | 22 49.2 | 20 56.3 | 247 4.7 - 6 46.2 | | |
| 12 | 332 10.2 | 122 | 7 44.9 -115 | 53 53.1 | 20 56.4 | 277 9.5 - 6 46.3 | | |
| 14 | 1 12.6 | 122 | 7 21.9 -116 | 82 57.1 | 20 56.6 | 307 14.2 - 6 46.4 | | |
| 16 | 30 15.0 | 122 | 6 58.8 -116 | 113 1.0 | 20 56.7 | 337 18.9 - 6 46.5 | | |
| 18 | 59 17.5 | 122 | 6 35.5 -117 | 143 5.0 | 20 56.8 | 7 23.7 - 6 46.6 | | |
| 20 | 88 19.9 | 122 | 6 12.1 -118 | 173 8.9 | 20 57.0 | 37 28.4 - 6 46.7 | | |
| 22 | 117 22.4 | 122 | 5 48.5 -119 | 203 12.8 | 20 57.1 | 67 33.1 - 6 46.8 | | |
| Δ | 0 | -5 | | 20 | 1 | 24 | 0 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------|-----------------|---------|-----------------|---------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 6 26.8 | . -1 | 15.8 | T _{m̄} | 13 55 | 2.0 | 56.8 | 15.5 | |
| 12 | - 6 28.1 | T _{m̄} | 12 h | 6.5 min | Starost | 1.8 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | / | o | h min / | h min / | o | h min / | o | h min / |
| ♀ 9 5 | .1 | 285 | -5.4 | 7 | 8 29 | .0 | 293 | -1.7 | 0 158 |
| ♂ 16 37 | .1 | 171 | .6 | 24 | 0 | | | | |

| UT | SUNCE | | | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|----------------|----------------|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 22.6 | 20 13.9 | 300 8.5 | 223 58.6 | 18 16.7 | 110 47.2 - 3 59.0 | | | | |
| 2 | 208 22.6 | 20 12.9 | 330 13.5 | 254 .0 | 18 17.2 | 140 49.5 - 4 .2 | | | | |
| 4 | 238 22.5 | 20 11.9 | 0 18.4 | 284 1.4 | 18 17.6 | 170 51.8 - 4 1.4 | | | | |
| 6 | 268 22.5 | 20 10.9 | 30 23.3 | 314 2.8 | 18 18.1 | 200 54.1 - 4 2.6 | | | | |
| 8 | 298 22.4 | 20 9.9 | 60 28.3 | 344 4.2 | 18 18.5 | 230 56.4 - 4 3.8 | | | | |
| 10 | 328 22.4 | 20 8.9 | 90 33.2 | 14 5.6 | 18 18.9 | 260 58.8 - 4 5.0 | | | | |
| 12 | 358 22.3 | 20 7.9 | 120 38.1 | 44 7.0 | 18 19.4 | 291 1.1 - 4 6.2 | | | | |
| 14 | 28 22.3 | 20 6.8 | 150 43.0 | 74 8.3 | 18 19.8 | 321 3.4 - 4 7.4 | | | | |
| 16 | 58 22.3 | 20 5.8 | 180 48.0 | 104 9.7 | 18 20.3 | 351 5.7 - 4 8.6 | | | | |
| 18 | 88 22.2 | 20 4.8 | 210 52.9 | 134 11.0 | 18 20.7 | 21 8.0 - 4 9.8 | | | | |
| 20 | 118 22.2 | 20 3.8 | 240 57.8 | 164 12.3 | 18 21.2 | 51 10.3 - 4 11.0 | | | | |
| 22 | 148 22.1 | 20 2.8 | 271 2.8 | 194 13.7 | 18 21.6 | 81 12.6 - 4 12.2 | | | | |
| Δ | 0 | -5 | | 20 | 1 | 24 | 0 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------|-----------------|---------|-----------------|---------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 6 29.4 | . -1 | 15.8 | T _{m̄} | 14 43 | 2.0 | 57.3 | 15.6 | |
| 12 | - 6 30.4 | T _{m̄} | 12 h | 6.5 min | Starost | 2.8 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o | / | o | h min / | h min / | o | h min / | o | h min / |
| ♀ 9 4 | .1 | 284 | -5.4 | 7 | 8 26 | .0 | 293 | -1.7 | 0 157 |
| ♂ 16 36 | .1 | 171 | .6 | 24 | 0 | | | | |

23. JUL

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | | | | | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----|------|-----|------|-----|------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ | | | | | | |
| h | o | / | o | / | o | / | o | / | | | | | | |
| 0 | 178 | 22.1 | 20 | 1.7 | 301 | 7.7 | 224 | 15.0 | 18 | 22.1 | 111 | 14.9 | - 4 | 13.4 |
| 2 | 208 | 22.1 | 20 | .7 | 331 | 12.6 | 254 | 16.3 | 18 | 22.5 | 141 | 17.2 | - 4 | 14.6 |
| 4 | 238 | 22.0 | 19 | 59.7 | 1 | 17.5 | 284 | 17.6 | 18 | 23.0 | 171 | 19.5 | - 4 | 15.8 |
| 6 | 268 | 22.0 | 19 | 58.6 | 31 | 22.5 | 314 | 18.9 | 18 | 23.4 | 201 | 21.8 | - 4 | 17.0 |
| 8 | 298 | 22.0 | 19 | 57.6 | 61 | 27.4 | 344 | 20.2 | 18 | 23.9 | 231 | 24.1 | - 4 | 18.2 |
| 10 | 328 | 21.9 | 19 | 56.6 | 91 | 32.3 | 14 | 21.5 | 18 | 24.4 | 261 | 26.4 | - 4 | 19.4 |
| 12 | 358 | 21.9 | 19 | 55.5 | 121 | 37.3 | 44 | 22.7 | 18 | 24.8 | 291 | 28.7 | - 4 | 20.7 |
| 14 | 28 | 21.9 | 19 | 54.5 | 151 | 42.2 | 74 | 24.0 | 18 | 25.3 | 321 | 31.0 | - 4 | 21.9 |
| 16 | 58 | 21.9 | 19 | 53.4 | 181 | 47.1 | 104 | 25.3 | 18 | 25.7 | 351 | 33.3 | - 4 | 23.1 |
| 18 | 88 | 21.8 | 19 | 52.4 | 211 | 52.0 | 134 | 26.5 | 18 | 26.2 | 21 | 35.6 | - 4 | 24.3 |
| 20 | 118 | 21.8 | 19 | 51.3 | 241 | 57.0 | 164 | 27.8 | 18 | 26.6 | 51 | 37.9 | - 4 | 25.5 |
| 22 | 148 | 21.8 | 19 | 50.3 | 272 | 1.9 | 194 | 29.0 | 18 | 27.1 | 81 | 40.2 | - 4 | 26.7 |
| Δ | 0 | -5 | | | | | 6 | 2 | | | 11 | -6 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 21 | 20 51 | 1 8 | : | : | 9 30 | 3.6 | 21 13 | .6 |
| 55 | 3 54 | 20 18 | 0 49 | : | : | 9 28 | 3.3 | 21 18 | .8 |
| 50 | 4 18 | 19 55 | 0 40 | 2 53 | | 9 26 | 3.1 | 21 22 | 1.0 |
| 45 | 4 36 | 19 37 | 0 35 | 2 12 | 9 25 | 2.9 | 21 26 | 1.2 | |
| 40 | 4 51 | 19 22 | 0 31 | 1 53 | 9 24 | 2.8 | 21 28 | 1.3 | |
| 35 | 5 3 | 19 10 | 0 28 | 1 40 | 9 23 | 2.7 | 21 31 | 1.5 | |
| 30 | 5 14 | 18 59 | 0 26 | 1 32 | 9 23 | 2.6 | 21 33 | 1.6 | |
| 20 | 5 32 | 18 41 | 0 24 | 1 21 | 9 21 | 2.4 | 21 36 | 1.7 | |
| 10 | 5 48 | 18 25 | 0 22 | 1 15 | 9 20 | 2.2 | 21 39 | 1.9 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 9 19 | 2.0 | 21 42 | 2.1 | |
| 10 | 6 18 | 17 56 | 0 22 | 1 14 | 9 18 | 1.9 | 21 45 | 2.2 | |
| 20 | 6 33 | 17 40 | 0 23 | 1 17 | 9 17 | 1.7 | 21 48 | 2.4 | |
| 30 | 6 51 | 17 23 | 0 26 | 1 23 | 9 16 | 1.5 | 21 52 | 2.6 | |
| 35 | 7 1 | 17 12 | 0 27 | 1 28 | 9 15 | 1.4 | 21 56 | 2.7 | |
| 40 | 7 13 | 17 1 | 0 29 | 1 35 | 9 14 | 1.3 | 21 58 | 2.8 | |
| 45 | 7 26 | 16 47 | 0 32 | 1 43 | 9 14 | 1.2 | 21 59 | 3.0 | |
| 50 | 7 43 | 16 30 | 0 36 | 1 55 | 9 13 | 1.0 | 22 2 | 3.1 | |
| 55 | 8 4 | 16 9 | 0 42 | 2 10 | 9 11 | .8 | 22 6 | 3.4 | |
| 60 | 8 33 | 15 40 | 0 51 | 2 33 | 9 10 | .5 | 22 11 | 3.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | | | | | | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|---------|----------|----------|----------|----------|--|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | | | | | | |
| h | o | / | o | / | o | / | o | / | | | | | | |
| 0 | 134 | 53.3 | 120 | 0 | 31.4 | -124 | 234 | 4.1 | 20 59.0 | 98 34.6 | - 6 48.1 | | | |
| 2 | 163 | 55.4 | 120 | 0 | 6.6 | -125 | 264 | 8.0 | 20 59.1 | 128 39.4 | - 6 48.2 | | | |
| 4 | 192 | 57.4 | 120 | - | 18.4 | -125 | 294 | 12.0 | 20 59.3 | 158 44.1 | - 6 48.3 | | | |
| 6 | 221 | 59.3 | 119 | - | 4 43.3 | -125 | 324 | 15.9 | 20 59.4 | 188 48.8 | - 6 48.4 | | | |
| 8 | 251 | 1.2 | 119 | - | 1 | 8.3 | -125 | 354 | 19.9 | 20 59.6 | 218 53.6 | - 6 48.5 | | |
| 10 | 280 | 2.9 | 118 | - | 1 | 33.2 | -125 | 24 | 23.8 | 20 59.7 | 248 58.3 | - 6 48.6 | | |
| 12 | 308 | 4.5 | 118 | - | 1 | 58.2 | -125 | 54 | 27.8 | 20 59.9 | 279 3.0 | - 6 48.7 | | |
| 14 | 338 | 6.1 | 117 | - | 2 | 23.1 | -125 | 84 | 31.7 | 20 60.0 | 309 7.7 | - 6 48.8 | | |
| 16 | 7 | 7.5 | 117 | - | 2 | 48.0 | -124 | 114 | 35.7 | 21 | .1 | 339 12.5 | - 6 48.9 | |
| 18 | 36 | 8.8 | 116 | - | 3 | 12.9 | -124 | 144 | 39.6 | 21 | .3 | 9 17.2 | - 6 49.0 | |
| 20 | 65 | 10.0 | 115 | - | 3 | 37.8 | -124 | 174 | 43.6 | 21 | .4 | 39 21.9 | - 6 49.1 | |
| 22 | 94 | 11.1 | 115 | - | 4 | 2.6 | -124 | 204 | 47.5 | 21 | .6 | 69 26.6 | - 6 49.2 | |
| Δ | 0 | -5 | | | | | 6 | 2 | | | 24 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|-----------------|-------|-------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 6 31.4 | . -1 | 15.8 | T _{m̄} | 15 31 | 2.0 | 57.8 | 15.7 | |
| 12 | - 6 32.1 | T _{m̄} | 12 h | 6.5 min | Starost | 3.8 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| φ | h min / | o | | h min / | φ | h min / | o | | h min / |
| ○ | 9 3 | .1 | 283 | -5.3 | 4 | 8 23 | .0 | 293 | -1.7 |
| ○ | 16 34 | .1 | 170 | .6 | h | 17 23 | .0 | 157 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | | | | | | | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|----|-----|----------|----------|--|--|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | | | | | | |
| h | o | / | o | / | o | / | o | / | | | | | | |
| 0 | 123 | 12.0 | 114 | - | 4 27.4 | -123 | 234 | 51.5 | 21 | .7 | 99 31.3 | - 6 49.3 | | |
| 2 | 152 | 12.8 | 113 | - | 4 52.0 | -123 | 264 | 55.4 | 21 | .8 | 129 36.1 | - 6 49.4 | | |
| 4 | 181 | 13.4 | 112 | - | 5 16.7 | -123 | 294 | 59.4 | 21 | 1.0 | 159 40.8 | - 6 49.5 | | |
| 6 | 210 | 13.9 | 112 | - | 5 41.2 | -122 | 325 | 3.4 | 21 | 1.1 | 189 45.5 | - 6 49.6 | | |
| 8 | 239 | 14.2 | 111 | - | 6 5.6 | -122 | 355 | 7.3 | 21 | 1.3 | 219 50.2 | - 6 49.7 | | |
| 10 | 268 | 14.3 | 110 | - | 6 29.9 | -121 | 25 | 11.3 | 21 | 1.4 | 249 54.9 | - 6 49.8 | | |
| 12 | 297 | 14.3 | 109 | - | 6 54.2 | -120 | 55 | 15.2 | 21 | 1.5 | 279 59.6 | - 6 49.9 | | |
| 14 | 326 | 14.1 | 108 | - | 7 18.3 | -120 | 85 | 19.2 | 21 | 1.7 | 310 4.4 | - 6 50.0 | | |
| 16 | 355 | 13.7 | 107 | - | 7 42.2 | -119 | 115 | 23.1 | 21 | 1.8 | 340 9.1 | - 6 50.1 | | |
| 18 | 24 | 13.1 | 106 | - | 8 6.1 | -118 | 145 | 27.1 | 21 | 1.9 | 10 13.8 | - 6 50.2 | | |
| 20 | 53 | 12.3 | 105 | - | 8 29.7 | -118 | 175 | 31.1 | 21 | 2.1 | 40 18.5 | - 6 50.3 | | |
| 22 | 82 | 11.3 | 104 | - | 8 53.2 | -117 | 205 | 35.0 | 21 | 2.2 | 70 23.2 | - 6 50.4 | | |
| Δ | 0 | -5 | | | | | 20 | 1 | | | 24 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|-----------------|-------|-------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | - 6 32.8 | .0 | 15.8 | T _{m̄} | 16 20 | 2.1 | 58.2 | 15.9 | |
| 12 | - 6 33.2 | T _{m̄} | 12 h | 6.6 min | Starost | 4.8 d | Faza | ● | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| φ | h min / | o | | h min / | φ | h min / | o | | h min / |
| ○ | 9 2 | .1 | 282 | -5.3 | 4 | 8 19 | .0 | 293 | -1.7 |
| ○ | 16 32 | .1 | 170 | .7 | h | 17 19 | .0 | 157 | 1.0 |

25. JUL

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 21.6 | 19 | 36.4 | 303 | 6.0 | 224 | 44.5 |
| 2 | 208 | 21.5 | 19 | 35.3 | 333 | 10.9 | 254 | 45.6 |
| 4 | 238 | 21.5 | 19 | 34.2 | 3 | 15.8 | 284 | 46.7 |
| 6 | 268 | 21.5 | 19 | 33.1 | 33 | 20.7 | 314 | 47.9 |
| 8 | 298 | 21.5 | 19 | 32.1 | 63 | 25.7 | 344 | 49.0 |
| 10 | 328 | 21.5 | 19 | 31.0 | 93 | 30.6 | 14 | 50.1 |
| 12 | 358 | 21.5 | 19 | 29.9 | 123 | 35.5 | 44 | 51.2 |
| 14 | 28 | 21.5 | 19 | 28.8 | 153 | 40.5 | 74 | 52.3 |
| 16 | 58 | 21.5 | 19 | 27.7 | 183 | 45.4 | 104 | 53.4 |
| 18 | 88 | 21.5 | 19 | 26.6 | 213 | 50.3 | 134 | 54.5 |
| 20 | 118 | 21.5 | 19 | 25.5 | 243 | 55.2 | 164 | 55.6 |
| 22 | 148 | 21.5 | 19 | 24.4 | 274 | .2 | 194 | 56.6 |
| Δ | 0 | -5 | | | | | 6 | 2 |
| | | | | | | | 11 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 25 | 20 46 | 1 6 | : :: | 12 26 | 3.7 | 21 43 | .9 | |
| 55 | 3 57 | 20 15 | 0 48 | : :: | 12 10 | 3.4 | 22 1 | 1.2 | |
| 50 | 4 20 | 19 52 | 0 40 | 2 48 | 11 57 | 3.2 | 22 15 | 1.4 | |
| 45 | 4 38 | 19 35 | 0 35 | 2 11 | 11 48 | 3.0 | 22 26 | 1.5 | |
| 40 | 4 52 | 19 20 | 0 31 | 1 52 | 11 39 | 2.9 | 22 33 | 1.7 | |
| 35 | 5 4 | 19 8 | 0 28 | 1 40 | 11 33 | 2.8 | 22 43 | 1.8 | |
| 30 | 5 15 | 18 58 | 0 26 | 1 31 | 11 26 | 2.7 | 22 51 | 1.9 | |
| 20 | 5 33 | 18 40 | 0 24 | 1 21 | 11 16 | 2.5 | 23 3 | 2.0 | |
| 10 | 5 49 | 18 24 | 0 22 | 1 15 | 11 7 | 2.4 | 23 14 | 2.2 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 10 59 | 2.2 | 23 24 | 2.3 | |
| 10 | 6 17 | 17 56 | 0 22 | 1 13 | 10 50 | 2.1 | 23 34 | 2.4 | |
| 20 | 6 32 | 17 41 | 0 23 | 1 17 | 10 41 | 1.9 | 23 45 | 2.5 | |
| 30 | 6 50 | 17 24 | 0 25 | 1 23 | 10 31 | 1.8 | 23 57 | 2.7 | |
| 35 | 6 60 | 17 14 | 0 27 | 1 28 | 10 26 | 1.7 | ... . . . . | 0 | |
| 40 | 7 11 | 17 2 | 0 29 | 1 34 | 10 19 | 1.6 | ... . . . . | 0 | |
| 45 | 7 24 | 16 49 | 0 32 | 1 43 | 10 12 | 1.4 | ... . . . . | 0 | |
| 50 | 7 41 | 16 33 | 0 36 | 1 54 | 10 3 | 1.3 | ... . . . . | 0 | |
| 55 | 8 1 | 16 12 | 0 42 | 2 10 | 9 51 | 1.1 | ... . . . . | 0 | |
| 60 | 8 29 | 15 44 | 0 50 | 2 32 | 9 37 | .8 | ... . . . . | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 111 | 10.1 | 103 | - 9 16.6 | -116 | 235 | 39.0 | 21 |
| 2 | 140 | 8.6 | 102 | - 9 39.8 | -115 | 265 | 43.0 | 21 |
| 4 | 169 | 7.0 | 101 | - 10 2.7 | -114 | 295 | 46.9 | 21 |
| 6 | 198 | 5.1 | 99 | - 10 25.5 | -113 | 325 | 50.9 | 21 |
| 8 | 227 | 3.0 | 98 | - 10 48.1 | -112 | 355 | 54.8 | 21 |
| 10 | 256 | .7 | 97 | - 11 10.4 | -111 | 25 | 58.8 | 21 |
| 12 | 284 | 58.1 | 96 | - 11 32.6 | -109 | 56 | 2.8 | 21 |
| 14 | 313 | 55.3 | 95 | - 11 54.4 | -108 | 86 | 6.7 | 21 |
| 16 | 342 | 52.2 | 93 | - 12 16.1 | -107 | 116 | 10.7 | 21 |
| 18 | 371 | 49.0 | 92 | - 12 37.5 | -106 | 146 | 14.7 | 21 |
| 20 | 40 | 45.3 | 91 | - 12 58.6 | -104 | 176 | 18.6 | 21 |
| 22 | 69 | 41.4 | 89 | - 13 19.4 | -103 | 206 | 22.6 | 21 |
| Δ | 0 | -6 | | | | 5 | 2 | |
| | | | | | | 11 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min min / | h min | min / | | |
| 00 | - 6 33.6 | .0 | 15.8 | T _{m̄} | 17 11 | 2.3 | 58.6 | 16.0 |
| 12 | - 6 33.6 | T _{m̄} | 12 h | 6.6 min | Starost | 5.8 d | Faza | 0 |

PLANETE

| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| φ | 9 1 | .1 | 282 | -5.3 | 7 | 8 16 | .0 | 293 | -1.7 |
| δ | 16 30 | .1 | 169 | .7 | h | 17 15 | .0 | 157 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 98 | 37.3 | 88 | - 13 39.9 | -101 | 236 | 26.6 | 21 |
| 2 | 127 | 33.0 | 87 | - 14 .2 | -100 | 266 | 30.6 | 21 |
| 4 | 156 | 28.3 | 85 | - 14 20.1 | -98 | 296 | 34.5 | 21 |
| 6 | 185 | 23.4 | 84 | - 14 39.7 | -96 | 326 | 38.5 | 21 |
| 8 | 214 | 18.2 | 83 | - 14 59.0 | -95 | 356 | 42.5 | 21 |
| 10 | 243 | 12.8 | 81 | - 15 17.9 | -93 | 26 | 46.4 | 21 |
| 12 | 272 | 7.1 | 80 | - 15 36.5 | -91 | 56 | 50.4 | 21 |
| 14 | 301 | 1.1 | 79 | - 15 54.7 | -89 | 86 | 54.4 | 21 |
| 16 | 329 | 54.8 | 77 | - 16 12.5 | -87 | 116 | 58.4 | 21 |
| 18 | 358 | 48.2 | 76 | - 16 30.0 | -85 | 147 | 2.3 | 21 |
| 20 | 37 | 41.4 | 74 | - 16 47.1 | -83 | 177 | 6.3 | 21 |
| 22 | 56 | 34.3 | 73 | - 17 3.8 | -81 | 207 | 10.3 | 21 |
| Δ | 0 | -6 | | | | 20 | 1 | |
| | | | | | | 24 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min min / | h min | min / | | |
| 00 | - 6 33.8 | .0 | 15.8 | T _{m̄} | 18 | 5 | 2.4 | 59.0 |
| 12 | - 6 33.6 | T _{m̄} | 12 h | 6.6 min | Starost | 6.8 d | Faza | 0 |

| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
|-----|-----------------|----|-------|------|-----|-----------------|----|-------|------|
| φ | 8 60 | .1 | 281 | -5.2 | 7 | 8 13 | .0 | 292 | -1.7 |
| δ | 16 28 | .1 | 169 | .7 | h | 17 12 | .0 | 157 | 1.0 |

27. JUL

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 178 21.6 | 19 9.8 | 305 4.2 | 225 9.9 | 18 44.0 | 113 4.3 - 5 11.3 | |
| 2 | 208 21.6 | 19 8.6 | 335 9.2 | 255 10.9 | 18 44.4 | 143 6.5 - 5 12.6 | |
| 4 | 238 21.6 | 19 7.5 | 5 14.1 | 285 11.9 | 18 44.9 | 173 8.8 - 5 13.8 | |
| 6 | 268 21.7 | 19 6.4 | 35 19.0 | 315 12.8 | 18 45.3 | 203 11.0 - 5 15.0 | |
| 8 | 298 21.7 | 19 5.2 | 65 24.0 | 345 13.8 | 18 45.8 | 233 13.3 - 5 16.2 | |
| 10 | 328 21.7 | 19 4.1 | 95 28.9 | 15 14.7 | 18 46.3 | 263 15.5 - 5 17.4 | |
| 12 | 358 21.7 | 19 2.9 | 125 33.8 | 45 15.7 | 18 46.7 | 293 17.8 - 5 18.6 | |
| 14 | 28 21.7 | 19 1.8 | 155 38.7 | 75 16.6 | 18 47.2 | 323 20.0 - 5 19.8 | |
| 16 | 58 21.8 | 19 .6 | 185 43.7 | 105 17.5 | 18 47.6 | 353 22.3 - 5 21.0 | |
| 18 | 88 21.8 | 18 59.5 | 215 48.6 | 135 18.5 | 18 48.1 | 23 24.5 - 5 22.2 | |
| 20 | 118 21.8 | 18 58.3 | 245 53.5 | 165 19.4 | 18 48.5 | 53 26.8 - 5 23.4 | |
| 22 | 148 21.8 | 18 57.2 | 275 58.5 | 195 20.3 | 18 49.0 | 83 29.0 - 5 24.7 | |
| Δ | 0 | -6 | | 5 | 2 | 11 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 30 | 20 42 | 1 4 | : :: | 15 23 | 3.3 | 22 33 | 1.8 | |
| 55 | 4 1 | 20 11 | 0 48 | : :: | 14 52 | 3.1 | 23 5 | 2.0 | |
| 50 | 4 23 | 19 49 | 0 39 | 2 43 | 14 30 | 3.0 | 23 28 | 2.1 | |
| 45 | 4 40 | 19 32 | 0 34 | 2 9 | 14 12 | 2.9 | 23 47 | 2.2 | |
| 40 | 4 54 | 19 18 | 0 31 | 1 51 | 13 58 | 2.8 | ... .. | 0 | |
| 35 | 5 6 | 19 7 | 0 28 | 1 39 | 13 46 | 2.7 | ... .. | 0 | |
| 30 | 5 16 | 18 57 | 0 26 | 1 31 | 13 36 | 2.7 | ... .. | 0 | |
| 20 | 5 34 | 18 39 | 0 24 | 1 20 | 13 18 | 2.6 | ... .. | 0 | |
| 10 | 5 49 | 18 24 | 0 22 | 1 15 | 13 2 | 2.5 | 0 5 | 2.3 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 12 48 | 2.4 | 0 18 | 2.4 | |
| 10 | 6 17 | 17 56 | 0 22 | 1 13 | 12 34 | 2.4 | 0 31 | 2.5 | |
| 20 | 6 32 | 17 42 | 0 23 | 1 16 | 12 18 | 2.3 | 0 45 | 2.6 | |
| 30 | 6 49 | 17 25 | 0 25 | 1 23 | 12 1 | 2.2 | 1 2 | 2.7 | |
| 35 | 6 58 | 17 15 | 0 27 | 1 28 | 11 51 | 2.1 | 1 11 | 2.8 | |
| 40 | 7 9 | 17 4 | 0 29 | 1 34 | 11 39 | 2.1 | 1 22 | 2.9 | |
| 45 | 7 22 | 16 51 | 0 32 | 1 42 | 11 26 | 2.0 | 1 35 | 3.0 | |
| 50 | 7 38 | 16 36 | 0 36 | 1 54 | 11 9 | 1.9 | 1 50 | 3.1 | |
| 55 | 7 58 | 16 16 | 0 41 | 2 9 | 10 49 | 1.7 | 2 10 | 3.2 | |
| 60 | 8 25 | 15 49 | 0 50 | 2 31 | 10 21 | 1.5 | 2 37 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-------------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 85 26.9 | 72 -17 20.0 | -79 | 237 14.3 | 21 5.6 | 102 20.9 - 6 53.2 | | |
| 2 | 114 19.3 | 70 -17 35.9 | -77 | 267 18.3 | 21 5.7 | 132 25.6 - 6 53.3 | | |
| 4 | 143 11.4 | 69 -17 51.3 | -75 | 297 22.2 | 21 5.9 | 162 30.3 - 6 53.4 | | |
| 6 | 172 3.2 | 68 -18 6.3 | -73 | 327 26.2 | 21 6.0 | 192 35.0 - 6 53.5 | | |
| 8 | 200 54.8 | 67 -18 20.8 | -70 | 357 30.2 | 21 6.1 | 222 39.7 - 6 53.6 | | |
| 10 | 229 46.1 | 65 -18 34.9 | -68 | 27 34.2 | 21 6.3 | 252 44.4 - 6 53.7 | | |
| 12 | 258 37.1 | 66 -18 48.5 | -66 | 57 38.2 | 21 6.4 | 282 49.1 - 6 53.8 | | |
| 14 | 287 27.9 | 63 -19 1.6 | -63 | 87 42.1 | 21 6.5 | 312 53.8 - 6 54.0 | | |
| 16 | 316 18.5 | 62 -19 14.2 | -61 | 117 46.1 | 21 6.7 | 342 58.5 - 6 54.1 | | |
| 18 | 345 8.8 | 60 -19 26.4 | -58 | 147 50.1 | 21 6.8 | 13 3.2 - 6 54.2 | | |
| 20 | 13 58.9 | 59 -19 38.0 | -56 | 177 54.1 | 21 6.9 | 43 7.9 - 6 54.3 | | |
| 22 | 42 48.7 | 58 -19 49.1 | -53 | 207 58.1 | 21 7.0 | 73 12.6 - 6 54.4 | | |
| Δ | 0 | -6 | | 20 | 1 | 23 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-------------|-------------|-----------------|-------------|---------------|------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min min / | T _{m̄} | 19 2 | 2.5 | 59.3 | 16.2 |
| 00 - 6 33.4 | .0 | 15.8 | | | | | | |
| 12 - 6 32.8 | T _{m̄} | 12 h | 6.6 min | Starost | 7.8 d | Faza | 0 | |

| UT | PLANETE | | | |
|------------|---------|-----------------|---------|-------------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min / | h min / | Vel. |
| 0 8 59 .1 | 280 | -5.2 | 8 10 .0 | 292 -1.7 |
| 0 16 26 .1 | 168 | .7 | 17 8 .0 | 157 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-------------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 71 38.4 | 57 -19 59.7 | -50 | 238 2.1 | 21 7.2 | 103 17.2 - 6 54.5 | | |
| 2 | 100 27.8 | 56 -20 9.8 | -48 | 268 6.1 | 21 7.3 | 133 21.9 - 6 54.6 | | |
| 4 | 129 17.0 | 55 -20 19.4 | -45 | 298 10.0 | 21 7.4 | 163 26.6 - 6 54.7 | | |
| 6 | 158 6.1 | 54 -20 28.4 | -42 | 328 14.0 | 21 7.6 | 193 31.3 - 6 54.9 | | |
| 8 | 186 54.9 | 53 -20 36.9 | -40 | 358 18.0 | 21 7.7 | 223 36.0 - 6 55.0 | | |
| 10 | 215 43.6 | 53 -20 44.8 | -37 | 28 22.0 | 21 7.8 | 253 40.7 - 6 55.1 | | |
| 12 | 244 32.1 | 52 -20 52.2 | -34 | 58 26.0 | 21 8.0 | 283 45.4 - 6 55.2 | | |
| 14 | 273 20.5 | 51 -20 59.0 | -31 | 88 30.0 | 21 8.1 | 313 50.1 - 6 55.3 | | |
| 16 | 302 8.7 | 50 -21 5.2 | -28 | 118 34.0 | 21 8.2 | 343 54.8 - 6 55.4 | | |
| 18 | 330 56.8 | 50 -21 10.9 | -25 | 148 38.0 | 21 8.3 | 13 59.5 - 6 55.6 | | |
| 20 | 359 44.8 | 49 -21 16.0 | -23 | 178 42.0 | 21 8.5 | 44 4.1 - 6 55.7 | | |
| 22 | 28 32.6 | 49 -21 20.5 | -20 | 208 46.0 | 21 8.6 | 74 8.8 - 6 55.8 | | |
| Δ | 0 | -6 | | 20 | 1 | 23 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-------------|-------------|-----------------|-------------|---------------|------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min min / | T _{m̄} | 20 1 | 2.5 | 59.6 | 16.2 |
| 00 - 6 32.3 | .1 | 15.8 | | | | | | |
| 12 - 6 31.5 | T _{m̄} | 12 h | 6.5 min | Starost | 8.8 d | Faza | 0 | |

| UT | PLANETE | | | |
|------------|---------|-----------------|---------|-------------|
| | Pl. | T _{m̄} | π | 360 - π |
| h min / | o | h min / | h min / | Vel. |
| 0 8 58 .1 | 279 | -5.2 | 8 7 .0 | 292 -1.7 |
| 0 16 25 .1 | 167 | .7 | 17 4 .0 | 157 1.0 |

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 22.3 | 18 41.9 | 307 2.5 | 225 31.6 | 18 54.8 | 113 58.1 | - 5 40.4 | |
| 2 | 208 22.3 | 18 40.7 | 337 7.4 | 255 32.4 | 18 55.3 | 144 .3 | - 5 41.6 | |
| 4 | 238 22.4 | 18 39.5 | 7 12.4 | 285 33.2 | 18 55.7 | 174 2.5 | - 5 42.8 | |
| 6 | 268 22.4 | 18 38.3 | 37 17.3 | 315 34.0 | 18 56.1 | 204 4.7 | - 5 44.0 | |
| 8 | 298 22.5 | 18 37.1 | 67 22.2 | 345 34.8 | 18 56.6 | 234 7.0 | - 5 45.3 | |
| 10 | 328 22.5 | 18 35.9 | 97 27.2 | 15 35.6 | 18 57.0 | 264 9.2 | - 5 46.5 | |
| 12 | 358 22.6 | 18 34.7 | 127 32.1 | 45 36.4 | 18 57.5 | 294 11.4 | - 5 47.7 | |
| 14 | 22.6 | 18 33.5 | 157 37.0 | 75 37.2 | 18 57.9 | 324 13.6 | - 5 48.9 | |
| 16 | 58 22.7 | 18 32.3 | 187 41.9 | 105 38.0 | 18 58.4 | 354 15.9 | - 5 50.1 | |
| 18 | 88 22.7 | 18 31.1 | 217 46.9 | 135 38.8 | 18 58.8 | 24 18.1 | - 5 51.3 | |
| 20 | 118 22.8 | 18 29.9 | 247 51.8 | 165 39.5 | 18 59.2 | 54 20.3 | - 5 52.5 | |
| 22 | 148 22.8 | 18 28.7 | 277 56.7 | 195 40.3 | 18 59.7 | 84 22.5 | - 5 53.7 | |
| Δ | 0 | -6 | | 4 | 2 | 11 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 35 | 20 37 | 1 2 | : :: | 17 48 | 2.0 | ... | 0 |
| 55 | 4 4 | 20 8 | 0 47 | : :: | 17 11 | 2.1 | ... | 0 |
| 50 | 4 26 | 19 46 | 0 39 | 2 39 | 16 45 | 2.2 | 0 19 | 2.5 |
| 45 | 4 42 | 19 30 | 0 34 | 2 7 | 16 24 | 2.3 | 0 39 | 2.5 |
| 40 | 4 56 | 19 17 | 0 30 | 1 50 | 16 8 | 2.3 | 0 55 | 2.5 |
| 35 | 5 7 | 19 5 | 0 28 | 1 38 | 15 54 | 2.4 | 1 9 | 2.5 |
| 30 | 5 17 | 18 55 | 0 26 | 1 30 | 15 42 | 2.4 | 1 21 | 2.5 |
| 20 | 5 35 | 18 38 | 0 24 | 1 20 | 15 22 | 2.4 | 1 41 | 2.5 |
| 10 | 5 49 | 18 24 | 0 22 | 1 15 | 15 4 | 2.5 | 1 59 | 2.5 |
| 0 | 6 3 | 18 10 | 0 22 | 1 13 | 14 47 | 2.5 | 2 15 | 2.5 |
| 10 | 6 17 | 17 57 | 0 22 | 1 13 | 14 30 | 2.5 | 2 32 | 2.5 |
| 20 | 6 31 | 17 42 | 0 23 | 1 16 | 14 13 | 2.6 | 2 50 | 2.5 |
| 30 | 6 47 | 17 26 | 0 25 | 1 23 | 13 52 | 2.6 | 3 10 | 2.5 |
| 35 | 6 57 | 17 17 | 0 27 | 1 27 | 13 40 | 2.6 | 3 22 | 2.5 |
| 40 | 7 7 | 17 6 | 0 29 | 1 34 | 13 26 | 2.7 | 3 36 | 2.5 |
| 45 | 7 20 | 16 53 | 0 32 | 1 42 | 13 10 | 2.7 | 3 52 | 2.5 |
| 50 | 7 35 | 16 38 | 0 36 | 1 53 | 12 50 | 2.7 | 4 12 | 2.4 |
| 55 | 7 55 | 16 19 | 0 41 | 2 8 | 12 24 | 2.8 | 4 37 | 2.4 |
| 60 | 8 21 | 15 53 | 0 49 | 2 30 | 11 48 | 2.9 | 5 14 | 2.4 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 57 20.4 | 48 -21 24.4 | -17 | 238 50.0 | 21 8.7 | 104 13.5 | - 6 55.9 | |
| 2 | 86 8.0 | 48 -21 27.8 | -14 | 268 54.0 | 21 8.8 | 134 18.2 | - 6 56.0 | |
| 4 | 114 55.6 | 48 -21 30.5 | -11 | 298 58.0 | 21 9.0 | 164 22.9 | - 6 56.1 | |
| 6 | 143 43.2 | 47 -21 32.7 | -8 | 329 1.9 | 21 9.1 | 194 27.6 | - 6 56.3 | |
| 8 | 172 30.7 | 47 -21 34.2 | -5 | 359 5.9 | 21 9.2 | 224 32.2 | - 6 56.4 | |
| 10 | 201 18.1 | 47 -21 35.2 | -2 | 29 9.9 | 21 9.4 | 254 36.9 | - 6 56.5 | |
| 12 | 238 5.6 | 47 -21 35.6 | 1 | 53 13.9 | 21 9.5 | 284 41.6 | - 6 56.6 | |
| 14 | 258 53.0 | 47 -21 35.3 | 4 | 89 17.9 | 21 9.6 | 314 46.3 | - 6 56.7 | |
| 16 | 287 40.4 | 47 -21 34.5 | 7 | 119 21.9 | 21 9.7 | 344 51.0 | - 6 56.8 | |
| 18 | 316 27.9 | 47 -21 33.1 | 10 | 149 25.9 | 21 9.9 | 14 55.7 | - 6 57.0 | |
| 20 | 345 15.4 | 48 -21 31.1 | 13 | 179 29.9 | 21 10.0 | 45 .3 | - 6 57.1 | |
| 22 | 14 2.9 | 48 -21 28.5 | 16 | 209 33.9 | 21 10.1 | 75 5.0 | - 6 57.2 | |
| Δ | 0 | -6 | | 4 | 2 | 11 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------------|---------|--------------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | - 6 30.6 | .1 | 15.8 | T _{m̄} 21 | 1 | 2.5 | 59.7 | 16.3 |
| 12 | - 6 29.5 | T _{m̄} 12 h | 6.5 min | Starost | 9.8 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | ° |
| 0 | 8 58 | .1 | 278 | -5.2 | 4 | 8 4 | .0 | 292 |
| Δ | 16 23 | .1 | 167 | .7 | h | 17 0 | .0 | 157 |
| | | | | | | | | 1.0 |

| UT | SUNCE | | | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|---------|----------------|----------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 22.9 | 18 27.5 | 308 1.7 | 225 41.0 | 19 .1 | 114 24.7 | - 5 55.0 | | | |
| 2 | 208 22.9 | 18 26.3 | 338 6.6 | 255 41.8 | 19 .6 | 144 26.9 | - 5 56.2 | | | |
| 4 | 238 23.0 | 18 25.1 | 8 11.5 | 285 42.5 | 19 1.0 | 174 29.2 | - 5 57.4 | | | |
| 6 | 268 23.0 | 18 23.9 | 38 16.4 | 315 43.3 | 19 1.4 | 204 31.4 | - 5 58.6 | | | |
| 8 | 298 23.1 | 18 22.6 | 68 21.4 | 345 44.0 | 19 1.9 | 234 33.6 | - 5 59.8 | | | |
| 10 | 328 23.1 | 18 21.4 | 98 26.3 | 15 44.7 | 19 2.3 | 264 35.8 | - 6 1.0 | | | |
| 12 | 358 23.2 | 18 20.2 | 128 31.2 | 45 45.4 | 19 2.7 | 294 38.0 | - 6 2.2 | | | |
| 14 | 28 23.3 | 18 19.0 | 158 36.2 | 75 46.2 | 19 3.2 | 324 40.2 | - 6 3.5 | | | |
| 16 | 58 23.3 | 18 17.7 | 188 41.1 | 105 46.9 | 19 3.6 | 354 42.4 | - 6 4.7 | | | |
| 18 | 88 23.4 | 18 16.5 | 218 46.0 | 135 47.6 | 19 4.0 | 24 44.6 | - 6 5.9 | | | |
| 20 | 118 23.5 | 18 15.3 | 248 50.9 | 165 48.3 | 19 4.5 | 54 46.8 | - 6 7.1 | | | |
| 22 | 148 23.5 | 18 14.0 | 278 55.9 | 195 49.0 | 19 4.9 | 84 49.1 | - 6 8.3 | | | |
| Δ | 0 | -6 | | 4 | 2 | 11 | -6 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------------|---------|--------------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | / | h min | / |
| 00 | - 6 28.4 | .1 | 15.8 | T _{m̄} 22 | 1 | 2.4 | 59.7 | 16.3 |
| 12 | - 6 26.9 | T _{m̄} 12 h | 6.5 min | Starost | 10.8 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | h min / | ° | h min / | ° | h min / | ° | ° |
| 0 | 8 57 | .1 | 278 | -5.1 | 4 | 8 0 | .0 | 292 |
| Δ | 16 21 | .1 | 166 | .7 | h | 16 57 | .0 | 157 |
| | | | | | | | | 1.0 |

31. JUL

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|-------------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 23.6 | 18 12.8 | 309 .8 | 225 49.6 | 19 5.3 | 114 51.3 - 6 9.5 | | |
| 2 | 208 23.7 | 18 11.6 | 339 5.7 | 255 50.3 | 19 5.7 | 144 53.5 - 6 10.7 | | |
| 4 | 238 23.7 | 18 10.3 | 9 10.7 | 285 51.0 | 19 6.2 | 174 55.7 - 6 12.0 | | |
| 6 | 268 23.8 | 18 9.1 | 39 15.6 | 315 51.7 | 19 6.6 | 204 57.9 - 6 13.2 | | |
| 8 | 298 23.9 | 18 7.8 | 69 20.5 | 345 52.3 | 19 7.0 | 235 .1 - 6 14.4 | | |
| 10 | 328 23.9 | 18 6.6 | 99 25.4 | 15 53.0 | 19 7.5 | 265 2.3 - 6 15.6 | | |
| 12 | 358 24.0 | 18 5.3 | 129 30.4 | 45 53.6 | 19 7.9 | 295 4.5 - 6 16.8 | | |
| 14 | 38 24.1 | 18 4.1 | 159 35.3 | 75 54.3 | 19 8.3 | 325 6.7 - 6 18.0 | | |
| 16 | 58 24.2 | 18 2.8 | 189 40.2 | 105 54.9 | 19 8.7 | 355 8.9 - 6 19.2 | | |
| 18 | 88 24.2 | 18 1.6 | 219 45.2 | 135 55.5 | 19 9.1 | 25 11.1 - 6 20.4 | | |
| 20 | 118 24.3 | 18 0.3 | 249 50.1 | 165 56.2 | 19 9.6 | 55 13.3 - 6 21.7 | | |
| 22 | 148 24.4 | 17 59.1 | 279 55.0 | 195 56.8 | 19 10.0 | 85 15.4 - 6 22.9 | | |
| Δ | 0 | -6 | | 3 | 2 | 11 | -6 | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 39 | 20 32 | 1 0 | : :: | 19 9 | 1 0 | 1 33 | 3 6 | |
| 55 | 4 8 | 20 4 | 0 46 | : :: | 18 42 | 1 3 | 2 5 | 3 3 | |
| 50 | 4 28 | 19 44 | 0 39 | 2 35 | 18 21 | 1 5 | 2 29 | 3 1 | |
| 45 | 4 45 | 19 28 | 0 34 | 2 5 | 18 5 | 1 6 | 2 47 | 3 0 | |
| 40 | 4 58 | 19 14 | 0 30 | 1 49 | 17 52 | 1 7 | 3 2 | 2 9 | |
| 35 | 5 9 | 19 3 | 0 28 | 1 37 | 17 41 | 1 8 | 3 15 | 2 8 | |
| 30 | 5 19 | 18 54 | 0 26 | 1 30 | 17 31 | 1 9 | 3 25 | 2 7 | |
| 20 | 5 35 | 18 37 | 0 23 | 1 20 | 17 14 | 2 1 | 3 44 | 2 6 | |
| 10 | 5 50 | 18 23 | 0 22 | 1 14 | 16 59 | 2 2 | 4 0 | 2 5 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 12 | 16 45 | 2 3 | 4 15 | 2 4 | |
| 10 | 6 16 | 17 57 | 0 22 | 1 13 | 16 32 | 2 4 | 4 30 | 2 3 | |
| 20 | 6 30 | 17 43 | 0 23 | 1 16 | 16 17 | 2 6 | 4 46 | 2 2 | |
| 30 | 6 46 | 17 27 | 0 25 | 1 22 | 15 60 | 2 7 | 5 4 | 2 0 | |
| 35 | 6 55 | 17 18 | 0 27 | 1 27 | 15 50 | 2 8 | 5 15 | 2 0 | |
| 40 | 7 5 | 17 8 | 0 29 | 1 33 | 15 38 | 2 9 | 5 27 | 1 9 | |
| 45 | 7 18 | 16 56 | 0 32 | 1 42 | 15 25 | 3 0 | 5 41 | 1 8 | |
| 50 | 7 32 | 16 41 | 0 35 | 1 53 | 15 8 | 3 2 | 5 59 | 1 6 | |
| 55 | 7 51 | 16 22 | 0 41 | 2 7 | 14 47 | 3 4 | 6 21 | 1 4 | |
| 60 | 8 16 | 15 57 | 0 49 | 2 29 | 14 18 | 3 7 | 6 51 | 1 2 | |
| S | | | | | | | | | |

1. AVGUST

SRIJEDA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|-------------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 28 30.9 | 57 -20 2.0 | 53 | 240 26.0 | 21 11.9 | 106 5.8 - 6 58.8 | | |
| 2 | 57 20.4 | 59 -19 51.5 | 55 | 270 30.1 | 21 11.1 | 136 10.5 - 6 58.9 | | |
| 4 | 86 10.1 | 60 -19 40.5 | 58 | 300 34.1 | 21 12.0 | 166 15.1 - 6 59.0 | | |
| 6 | 115 .1 | 61 -19 28.9 | 60 | 330 38.1 | 21 12.1 | 196 19.8 - 6 59.1 | | |
| 8 | 143 50.3 | 62 -19 16.9 | 63 | 0 42.1 | 21 12.2 | 226 24.5 - 6 59.3 | | |
| 10 | 172 40.7 | 63 -19 4.4 | 65 | 30 46.1 | 21 12.3 | 256 29.2 - 6 59.4 | | |
| 12 | 201 31.4 | 65 -18 51.4 | 67 | 60 50.1 | 21 12.5 | 286 33.8 - 6 59.5 | | |
| 14 | 230 22.3 | 66 -18 37.9 | 70 | 90 54.1 | 21 12.6 | 316 38.5 - 6 59.6 | | |
| 16 | 259 13.5 | 67 -18 23.9 | 72 | 120 58.2 | 21 12.7 | 346 43.2 - 6 59.7 | | |
| 18 | 288 5.0 | 69 -18 9.5 | 74 | 151 2.2 | 21 12.8 | 16 47.8 - 6 59.9 | | |
| 20 | 316 56.8 | 70 -17 54.6 | 76 | 181 6.2 | 21 13.0 | 46 52.5 - 6 60.0 | | |
| 22 | 345 48.9 | 72 -17 39.3 | 79 | 211 10.2 | 21 13.1 | 76 57.2 - 7 .1 | | |
| Δ | 0 | -6 | | 3 | 2 | 11 | -6 | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 42 | 20 29 | 0 59 | : :: | 19 32 | .7 | 2 59 | 3 7 | |
| 55 | 4 9 | 20 2 | 0 46 | : :: | 19 12 | 1.0 | 3 25 | 3 4 | |
| 50 | 4 30 | 19 42 | 0 38 | 2 34 | 18 56 | 1.2 | 3 44 | 3 2 | |
| 45 | 4 46 | 19 26 | 0 34 | 2 5 | 18 44 | 1.4 | 3 59 | 3 0 | |
| 40 | 4 59 | 19 13 | 0 30 | 1 48 | 18 34 | 1.5 | 4 11 | 2 9 | |
| 35 | 5 10 | 19 3 | 0 28 | 1 37 | 18 25 | 1.6 | 4 21 | 2 8 | |
| 30 | 5 19 | 18 53 | 0 26 | 1 29 | 18 17 | 1.7 | 4 31 | 2 7 | |
| 20 | 5 36 | 18 37 | 0 23 | 1 19 | 18 4 | 1.9 | 4 46 | 2 5 | |
| 10 | 5 50 | 18 23 | 0 22 | 1 14 | 17 52 | 2.0 | 4 60 | 2 4 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 12 | 17 41 | 2.2 | 5 12 | 2 2 | |
| 10 | 6 16 | 17 57 | 0 22 | 1 13 | 17 30 | 2.3 | 5 25 | 2 1 | |
| 20 | 6 30 | 17 43 | 0 23 | 1 16 | 17 18 | 2.5 | 5 38 | 2 0 | |
| 30 | 6 45 | 17 28 | 0 25 | 1 22 | 17 4 | 2.6 | 5 53 | 1 8 | |
| 35 | 6 54 | 17 19 | 0 27 | 1 27 | 16 56 | 2.7 | 6 2 | 1 7 | |
| 40 | 7 4 | 17 9 | 0 29 | 1 33 | 16 47 | 2.8 | 6 12 | 1 6 | |
| 45 | 7 16 | 16 57 | 0 32 | 1 41 | 16 37 | 3.0 | 6 24 | 1 5 | |
| 50 | 7 31 | 16 42 | 0 35 | 1 52 | 16 24 | 3.2 | 6 38 | 1 3 | |
| 55 | 7 49 | 16 24 | 0 40 | 2 7 | 16 8 | 3.4 | 6 55 | 1 1 | |
| 60 | 8 14 | 15 60 | 0 48 | 2 28 | 15 46 | 3.7 | 7 19 | .8 | |
| S | | | | | | | | | |

2. AVGUST

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 25.5 | 17 42.5 | 310 59.1 | 226 4.3 | 19 15.3 | 115 43.9 | - 6 38.7 | |
| 2 | 208 25.6 | 17 41.2 | 341 4.0 | 256 4.9 | 19 15.7 | 145 46.1 | - 6 39.9 | |
| 4 | 238 25.7 | 17 39.9 | 11 8.9 | 286 5.4 | 19 16.1 | 175 48.2 | - 6 41.1 | |
| 6 | 268 25.8 | 17 38.6 | 41 13.9 | 316 5.9 | 19 16.5 | 205 50.4 | - 6 42.3 | |
| 8 | 298 25.9 | 17 37.3 | 71 18.8 | 346 6.5 | 19 16.9 | 235 52.6 | - 6 43.5 | |
| 10 | 328 26.0 | 17 36.0 | 101 23.7 | 16 7.0 | 19 17.3 | 265 54.8 | - 6 44.7 | |
| 12 | 358 26.1 | 17 34.7 | 131 28.6 | 46 7.5 | 19 17.7 | 295 56.9 | - 6 46.0 | |
| 14 | 28 26.2 | 17 33.4 | 161 33.6 | 76 8.0 | 19 18.1 | 325 59.1 | - 6 47.2 | |
| 16 | 58 26.3 | 17 32.1 | 191 38.5 | 106 8.5 | 19 18.5 | 356 1.3 | - 6 48.4 | |
| 18 | 88 26.4 | 17 30.8 | 221 43.4 | 136 9.0 | 19 18.9 | 26 3.5 | - 6 49.6 | |
| 20 | 118 26.5 | 17 29.5 | 251 48.4 | 166 9.5 | 19 19.3 | 56 5.6 | - 6 50.8 | |
| 22 | 148 26.6 | 17 28.2 | 281 53.3 | 196 10.0 | 19 19.7 | 86 7.8 | - 6 52.0 | |
| Δ | 0 | -6 | | 3 | 2 | 11 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 44 | 20 27 | 0 59 | : :: | 19 49 | .6 | 4 28 | 3.7 | |
| 55 | 4 11 | 20 0 | 0 46 | : :: | 19 35 | .8 | 4 46 | 3.4 | |
| 50 | 4 31 | 19 40 | 0 38 | 2 32 | 19 25 | 1.0 | 5 0 | 3.1 | |
| 45 | 4 47 | 19 25 | 0 33 | 2 4 | 19 17 | 1.2 | 5 11 | 3.0 | |
| 40 | 4 60 | 19 12 | 0 30 | 1 48 | 19 10 | 1.3 | 5 20 | 2.8 | |
| 35 | 5 10 | 19 2 | 0 28 | 1 37 | 19 4 | 1.5 | 5 28 | 2.7 | |
| 30 | 5 20 | 18 52 | 0 26 | 1 29 | 18 58 | 1.6 | 5 35 | 2.6 | |
| 20 | 5 36 | 18 36 | 0 23 | 1 19 | 18 49 | 1.7 | 5 46 | 2.4 | |
| 10 | 5 50 | 18 23 | 0 22 | 1 14 | 18 41 | 1.9 | 5 57 | 2.3 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 12 | 18 33 | 2.0 | 6 6 | 2.1 | |
| 10 | 6 16 | 17 57 | 0 22 | 1 13 | 18 25 | 2.2 | 6 16 | 2.0 | |
| 20 | 6 29 | 17 44 | 0 23 | 1 16 | 18 17 | 2.4 | 6 25 | 1.8 | |
| 30 | 6 44 | 17 28 | 0 25 | 1 22 | 18 7 | 2.5 | 6 37 | 1.6 | |
| 35 | 6 53 | 17 20 | 0 27 | 1 27 | 18 2 | 2.6 | 6 43 | 1.5 | |
| 40 | 7 3 | 17 10 | 0 29 | 1 33 | 17 56 | 2.8 | 6 51 | 1.4 | |
| 45 | 7 15 | 16 58 | 0 31 | 1 41 | 17 48 | 2.9 | 6 59 | 1.3 | |
| 50 | 7 29 | 16 44 | 0 35 | 1 52 | 17 40 | 3.1 | 7 9 | 1.1 | |
| 55 | 7 47 | 16 26 | 0 40 | 2 7 | 17 29 | 3.3 | 7 22 | .9 | |
| 60 | 8 11 | 16 2 | 0 48 | 2 28 | 17 14 | 3.6 | 7 39 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 1 33.0 | 92 -13 45.6 | 101 | 242 2.6 | 21 14.6 | 107 57.8 | - 7 1.7 | |
| 2 | 30 29.4 | 93 -13 25.3 | 103 | 272 6.6 | 21 14.8 | 138 2.4 | - 7 1.9 | |
| 4 | 59 26.0 | 95 -13 4.8 | 104 | 302 10.6 | 21 14.9 | 168 7.1 | - 7 2.0 | |
| 6 | 88 23.0 | 96 -12 44.0 | 105 | 332 14.6 | 21 15.0 | 198 11.7 | - 7 2.1 | |
| 8 | 117 20.2 | 98 -12 22.9 | 106 | 2 18.7 | 21 15.1 | 228 16.4 | - 7 2.3 | |
| 10 | 146 17.7 | 99 -12 1.6 | 108 | 32 22.7 | 21 15.2 | 258 21.1 | - 7 2.4 | |
| 12 | 175 15.6 | 101 -11 40.1 | 109 | 62 26.7 | 21 15.3 | 288 25.7 | - 7 2.5 | |
| 14 | 204 13.7 | 102 -11 18.4 | 110 | 92 30.8 | 21 15.5 | 318 30.4 | - 7 2.6 | |
| 16 | 233 12.2 | 104 -10 56.4 | 111 | 122 34.8 | 21 15.6 | 348 35.0 | - 7 2.8 | |
| 18 | 262 10.9 | 105 -10 34.3 | 112 | 152 38.9 | 21 15.7 | 18 39.7 | - 7 2.9 | |
| 20 | 291 9.9 | 106 -10 12.0 | 112 | 182 42.9 | 21 15.8 | 48 44.3 | - 7 3.0 | |
| 22 | 320 9.2 | 108 - 9 49.5 | 113 | 212 46.9 | 21 15.9 | 78 49.0 | - 7 3.1 | |
| Δ | 20 | 1 | | 2 | 2 | 11 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------------|--------------------------|----------------|-------------|-----------------|------------------------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 6 17.8 | .2 | 15.8 T _{m̄} ... | 1.0 | 58.6 | 16.0 | | |
| 12 | - 6 15.4 | T _{m̄} 12 h | 6.3 min | Starost 13.8 d | Faza ○ | | | |
| PLANETE | Pl. | T _{m̄} | π 360 - π _Ω | Vel. | Pl. | T _{m̄} | π 360 - π _Ω | Vel. |
| h min / | o | h min / | o | h min / | h min / | h min / | o | h min / |
| φ | 8 56 .1 | 275 | -5.0 4 | 7 51 .0 | 291 | -1.7 | | |
| δ | 16 16 .1 | 165 | .7 | 16 46 .0 | 157 | 1.0 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 349 8.8 109 - 9 26.8 | 114 | 242 51.0 | 21 16.0 | 108 53.6 | - 7 3.3 | | |
| 2 | 18 8.6 111 - 9 4.0 | 115 | 272 55.0 | 21 16.2 | 138 58.3 | - 7 3.4 | | |
| 4 | 47 8.8 112 - 8 41.0 | 115 | 302 59.0 | 21 16.3 | 169 2.9 | - 7 3.5 | | |
| 6 | 76 9.1 113 - 8 17.9 | 116 | 333 3.1 | 21 16.4 | 199 7.6 | - 7 3.7 | | |
| 8 | 105 9.8 114 - 7 54.7 | 117 | 3 7.1 | 21 16.5 | 229 12.2 | - 7 3.8 | | |
| 10 | 134 10.7 116 - 7 31.4 | 117 | 33 11.2 | 21 16.6 | 259 16.9 | - 7 3.9 | | |
| 12 | 163 11.8 117 - 7 8.0 | 118 | 63 15.2 | 21 16.7 | 289 21.5 | - 7 4.0 | | |
| 14 | 192 13.2 118 - 6 44.5 | 118 | 93 19.3 | 21 16.9 | 319 26.2 | - 7 4.2 | | |
| 16 | 221 14.8 119 - 6 20.9 | 118 | 123 23.3 | 21 17.0 | 349 30.8 | - 7 4.3 | | |
| 18 | 250 16.7 120 - 5 57.2 | 119 | 153 27.4 | 21 17.1 | 19 35.5 | - 7 4.4 | | |
| 20 | 279 18.8 122 - 5 33.4 | 119 | 183 31.4 | 21 17.2 | 49 40.1 | - 7 4.6 | | |
| 22 | 308 21.1 123 - 5 9.6 | 119 | 213 35.4 | 21 17.3 | 79 44.8 | - 7 4.7 | | |
| Δ | 20 | 1 | | 23 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------------|---------------------------|----------------|-------------|-----------------|------------------------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 6 13.0 | .2 | 15.8 T _{m̄} 0 45 | 2.0 | 58.0 | 15.8 | | |
| 12 | - 6 10.3 | T _{m̄} 12 h | 6.2 min | Starost 14.8 d | Faza ○ | | | |
| PLANETE | Pl. | T _{m̄} | π 360 - π _Ω | Vel. | Pl. | T _{m̄} | π 360 - π _Ω | Vel. |
| h min / | o | h min / | o | h min / | h min / | h min / | o | h min / |
| φ | 8 55 .1 | 274 | -5.0 4 | 7 48 .0 | 291 | -1.8 | | |
| δ | 16 14 .1 | 164 | .7 | 16 42 .0 | 157 | 1.0 | | |

4. AVGUST

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 28.0 | 17 | 11.1 | 312 | 57.4 | 226 | 15.8 |
| 2 | 208 | 28.2 | 17 | 9.7 | 343 | 2.3 | 256 | 16.2 |
| 4 | 238 | 28.3 | 17 | 8.4 | 13 | 7.2 | 286 | 16.7 |
| 6 | 268 | 28.4 | 17 | 7.0 | 43 | 12.1 | 316 | 17.1 |
| 8 | 298 | 28.5 | 17 | 5.7 | 73 | 17.1 | 346 | 17.5 |
| 10 | 328 | 28.6 | 17 | 4.4 | 103 | 22.0 | 16 | 17.8 |
| 12 | 358 | 28.8 | 17 | 3.0 | 133 | 26.9 | 46 | 18.2 |
| 14 | 28 | 28.9 | 17 | 1.7 | 163 | 31.8 | 76 | 18.6 |
| 16 | 58 | 29.0 | 17 | .3 | 193 | 36.8 | 106 | 19.0 |
| 18 | 88 | 29.1 | 16 | 59.0 | 223 | 41.7 | 136 | 19.4 |
| 20 | 118 | 29.3 | 16 | 57.6 | 253 | 46.6 | 166 | 19.7 |
| 22 | 148 | 29.4 | 16 | 56.3 | 283 | 51.6 | 196 | 20.1 |
| Δ | 1 | | -7 | | | | 2 | 2 |
| | | | | | | | 11 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 49 | 20 22 | 0 57 | : | 20 14 | .5 | 7 21 | 3.4 | |
| 55 | 4 15 | 19 56 | 0 45 | 3 54 | 20 13 | .7 | 7 25 | 3.1 | |
| 50 | 4 34 | 19 37 | 0 38 | 2 29 | 20 13 | .9 | 7 28 | 2.9 | |
| 45 | 4 49 | 19 22 | 0 33 | 2 2 | 20 12 | 1.1 | 7 31 | 2.8 | |
| 40 | 5 1 | 19 10 | 0 30 | 1 47 | 20 11 | 1.2 | 7 33 | 2.6 | |
| 35 | 5 12 | 18 60 | 0 28 | 1 36 | 20 11 | 1.3 | 7 35 | 2.5 | |
| 30 | 5 21 | 18 51 | 0 26 | 1 29 | 20 11 | 1.4 | 7 37 | 2.4 | |
| 20 | 5 37 | 18 35 | 0 23 | 1 19 | 20 10 | 1.6 | 7 40 | 2.2 | |
| 10 | 5 50 | 18 22 | 0 22 | 1 14 | 20 9 | 1.7 | 7 42 | 2.1 | |
| 0 | 6 3 | 18 10 | 0 22 | 1 12 | 20 9 | 1.9 | 7 45 | 1.9 | |
| 10 | 6 15 | 17 57 | 0 22 | 1 12 | 20 8 | 2.0 | 7 47 | 1.8 | |
| 20 | 6 28 | 17 44 | 0 23 | 1 16 | 20 | 8 2.2 | 7 49 | 1.6 | |
| 30 | 6 43 | 17 30 | 0 25 | 1 22 | 20 | 7 2.4 | 7 52 | 1.4 | |
| 35 | 6 52 | 17 21 | 0 27 | 1 27 | 20 | 7 2.5 | 7 54 | 1.3 | |
| 40 | 7 1 | 17 11 | 0 29 | 1 33 | 20 | 6 2.6 | 7 56 | 1.2 | |
| 45 | 7 13 | 17 0 | 0 31 | 1 41 | 20 | 6 2.7 | 7 58 | 1.1 | |
| 50 | 7 26 | 16 46 | 0 35 | 1 52 | 20 | 5 2.9 | 8 0 | .9 | |
| 55 | 7 44 | 16 29 | 0 40 | 2 6 | 20 | 5 3.1 | 8 3 | .7 | |
| 60 | 8 7 | 16 6 | 0 47 | 2 27 | 20 | 4 3.4 | 8 7 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 337 | 23.6 | 124 | - 4 45.8 | 119 | 243 | 39.5 | 21 17.4 |
| 2 | 6 | 26.4 | 125 | - 4 21.9 | 120 | 273 | 43.5 | 21 17.5 |
| 4 | 35 | 29.3 | 126 | - 3 58.0 | 120 | 303 | 47.6 | 21 17.7 |
| 6 | 66 | 32.5 | 127 | - 3 34.0 | 120 | 333 | 51.6 | 21 17.8 |
| 8 | 93 | 35.8 | 128 | - 3 10.1 | 120 | 355 | 57.7 | 21 17.9 |
| 10 | 122 | 39.3 | 128 | - 2 46.1 | 120 | 33 | 59.8 | 21 18.0 |
| 12 | 151 | 43.0 | 129 | - 2 22.1 | 120 | 64 | 3.8 | 21 18.1 |
| 14 | 180 | 46.9 | 130 | - 1 58.2 | 120 | 94 | 7.9 | 21 18.2 |
| 16 | 209 | 50.9 | 131 | - 1 34.3 | 120 | 124 | 11.9 | 21 18.3 |
| 18 | 238 | 55.1 | 132 | - 1 10.4 | 119 | 154 | 16.0 | 21 18.4 |
| 20 | 267 | 59.5 | 133 | - 0 46.5 | 119 | 184 | 20.0 | 21 18.6 |
| 22 | 297 | 4.0 | 133 | - 0 22.7 | 119 | 214 | 24.1 | 21 18.7 |
| Δ | 1 | | -7 | | | 20 | 1 | 23 -1 |
| | | | | | | 2 | 2 | 11 -6 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|---------|-----------------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 1 33 | 2.0 | 57.3 | 15.6 |
| 00 | - 6 7.7 | .2 | 15.8 | T _{m̄} | | | | |
| 12 | - 6 4.7 | T _{m̄} | 12 h 6.1 min | Starost | 15.8 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| | h min / | s | / | h min min / | h min / | s | / | |
| ♀ | 8 55 | .1 | 273 | -5.0 | 7 44 | .0 | 291 | -1.8 |
| ♂ | 16 12 | .1 | 164 | .7 | h | 16 38 | .0 | 157 1.0 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|--------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 326 | 8.6 | 134 | 0 1.1 | 119 | 244 | 28.1 | 21 18.8 |
| 2 | 355 | 13.4 | 135 | 0 24.9 | 118 | 274 | 32.2 | 21 18.9 |
| 4 | 24 | 18.3 | 135 | 0 48.5 | 118 | 304 | 36.3 | 21 19.0 |
| 6 | 53 | 23.3 | 136 | 1 12.1 | 118 | 334 | 40.3 | 21 19.1 |
| 8 | 82 | 28.5 | 136 | 1 35.6 | 117 | 44 | 44.4 | 21 19.2 |
| 10 | 111 | 33.7 | 137 | 1 59.1 | 117 | 34 | 48.4 | 21 19.3 |
| 12 | 140 | 39.1 | 137 | 2 22.4 | 116 | 64 | 52.5 | 21 19.4 |
| 14 | 169 | 44.5 | 138 | 2 45.7 | 116 | 94 | 56.6 | 21 19.6 |
| 16 | 198 | 50.1 | 138 | 3 8.8 | 115 | 125 | .6 | 21 19.7 |
| 18 | 227 | 55.7 | 139 | 3 31.9 | 115 | 155 | 4.7 | 21 19.8 |
| 20 | 257 | 1.4 | 139 | 3 54.8 | 114 | 185 | 8.8 | 21 19.9 |
| 22 | 286 | 7.2 | 139 | 4 17.6 | 113 | 215 | 12.8 | 21 20.0 |
| Δ | 1 | | -7 | | | 20 | 1 | 23 -1 |
| | | | | | | 2 | 2 | 11 -6 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|---------|-----------------|---------|---------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 2 20 | 1.9 | 56.5 | 15.4 |
| 00 | - 6 1.7 | .3 | 15.8 | T _{m̄} | | | | |
| 12 | - 5 58.4 | T _{m̄} | 12 h 6.0 min | Starost | 16.8 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| | h min / | s | / | h min min / | h min / | s | / | |
| ♀ | 8 55 | .1 | 272 | -5.0 | 7 41 | .0 | 291 | -1.8 |
| ♂ | 16 11 | .1 | 163 | .7 | h | 16 34 | .0 | 157 1.0 |

6. AVGUST

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|-------------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 31.2 | 16 38.5 | 314 55.6 | 226 24.4 | 19 33.3 | 117 27.3 - 7 37.0 | |
| 2 | 208 31.3 | 16 37.1 | 345 .6 | 256 24.6 | 19 33.6 | 147 29.5 - 7 38.2 | |
| 4 | 238 31.4 | 16 35.7 | 15 5.5 | 286 24.9 | 19 33.9 | 177 31.6 - 7 39.4 | |
| 6 | 268 31.6 | 16 34.4 | 45 10.4 | 316 25.2 | 19 34.3 | 207 33.7 - 7 40.6 | |
| 8 | 298 31.7 | 16 33.0 | 75 15.3 | 346 25.5 | 19 34.6 | 237 35.8 - 7 41.9 | |
| 10 | 328 31.9 | 16 31.6 | 105 20.3 | 16 25.8 | 19 34.9 | 267 38.0 - 7 43.1 | |
| 12 | 358 32.0 | 16 30.2 | 135 25.2 | 46 26.0 | 19 35.3 | 297 40.1 - 7 44.3 | |
| 14 | 388 32.2 | 16 28.8 | 165 30.1 | 76 26.3 | 19 35.6 | 327 42.2 - 7 45.5 | |
| 16 | 58 32.3 | 16 27.4 | 195 35.1 | 106 26.6 | 19 35.9 | 357 44.3 - 7 46.7 | |
| 18 | 88 32.5 | 16 26.0 | 225 40.0 | 136 26.8 | 19 36.2 | 27 46.5 - 7 47.9 | |
| 20 | 118 32.6 | 16 24.6 | 255 44.9 | 166 27.1 | 19 36.5 | 57 48.6 - 7 49.2 | |
| 22 | 148 32.8 | 16 23.2 | 285 49.8 | 196 27.3 | 19 36.9 | 87 50.7 - 7 50.4 | |
| Δ | 1 | -7 | | 1 | 2 | 11 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 53 | 20 17 | 0 56 | : :: | 20 37 | .6 | 10 2 | 3.2 |
| 55 | 4 18 | 19 52 | 0 44 | 3 29 | 20 48 | .8 | 9 54 | 3.0 |
| 50 | 4 37 | 19 34 | 0 37 | 2 25 | 20 56 | 1.0 | 9 47 | 2.8 |
| 45 | 4 51 | 19 20 | 0 33 | 2 1 | 21 3 | 1.1 | 9 42 | 2.6 |
| 40 | 5 3 | 19 8 | 1 46 | 2 1 | 9 1.2 | 9 38 | 2.5 | |
| 35 | 5 13 | 18 58 | 0 27 | 1 35 | 21 14 | 1.3 | 9 34 | 2.4 |
| 30 | 5 22 | 18 49 | 0 26 | 1 28 | 21 18 | 1.4 | 9 31 | 2.3 |
| 20 | 5 37 | 18 34 | 0 23 | 1 19 | 21 26 | 1.6 | 9 25 | 2.1 |
| 10 | 5 50 | 18 21 | 0 22 | 1 14 | 21 32 | 1.7 | 9 20 | 2.0 |
| 0 | 6 2 | 18 9 | 0 22 | 1 12 | 21 38 | 1.9 | 9 15 | 1.9 |
| 10 | 6 14 | 17 57 | 0 22 | 1 12 | 21 45 | 2.0 | 9 11 | 1.7 |
| 20 | 6 27 | 17 45 | 0 23 | 1 15 | 21 52 | 2.1 | 9 6 | 1.6 |
| 30 | 6 41 | 17 31 | 0 25 | 1 22 | 21 59 | 2.3 | 9 0 | 1.4 |
| 35 | 6 50 | 17 22 | 0 27 | 1 26 | 22 4 | 2.4 | 8 57 | 1.3 |
| 40 | 6 59 | 17 13 | 0 29 | 1 33 | 22 9 | 2.5 | 8 53 | 1.2 |
| 45 | 7 10 | 17 2 | 0 31 | 1 41 | 22 15 | 2.6 | 8 49 | 1.1 |
| 50 | 7 23 | 16 49 | 0 35 | 1 51 | 22 22 | 2.7 | 8 44 | .9 |
| 55 | 7 40 | 16 33 | 0 40 | 2 5 | 22 31 | 2.9 | 8 38 | .8 |
| 60 | 8 2 | 16 11 | 0 47 | 2 26 | 22 43 | 3.2 | 8 30 | .5 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 315 13.1 | 140 | 4 40.3 | 113 | 245 16.9 | 21 20.1 | 111 40.8 - 7 8.0 | |
| 2 | 344 19.0 | 140 | 5 2.8 | 112 | 275 21.0 | 21 20.2 | 141 45.4 - 7 8.2 | |
| 4 | 13 24.9 | 140 | 5 25.3 | 111 | 305 25.0 | 21 20.3 | 171 50.0 - 7 8.3 | |
| 6 | 42 30.9 | 140 | 5 47.5 | 111 | 335 29.1 | 21 20.4 | 201 54.7 - 7 8.4 | |
| 8 | 71 37.0 | 140 | 6 9.7 | 110 | 5 33.2 | 21 20.5 | 231 59.3 - 7 8.6 | |
| 10 | 100 43.1 | 141 | 6 31.6 | 109 | 35 37.2 | 21 20.6 | 262 3.9 - 7 8.7 | |
| 12 | 128 49.2 | 141 | 6 53.4 | 108 | 65 41.3 | 21 20.8 | 292 8.6 - 7 8.8 | |
| 14 | 158 55.4 | 141 | 7 15.1 | 107 | 95 45.4 | 21 20.9 | 322 13.2 - 7 9.0 | |
| 16 | 188 1.6 | 141 | 7 36.6 | 107 | 125 49.5 | 21 21.0 | 352 17.8 - 7 9.1 | |
| 18 | 217 7.7 | 141 | 7 57.9 | 106 | 155 53.5 | 21 21.1 | 22 22.5 - 7 9.3 | |
| 20 | 246 13.9 | 141 | 8 19.0 | 105 | 185 57.6 | 21 21.2 | 52 27.1 - 7 9.4 | |
| 22 | 275 20.1 | 141 | 8 40.0 | 104 | 216 1.7 | 21 21.3 | 82 31.7 - 7 9.5 | |
| Δ | 1 | -7 | | | 20 | 1 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | - 5 55.2 | .3 | 15.8 | T _{m̄} | 3 5 | 1.8 | 55.9 | 15.2 |
| 12 | - 5 51.6 | T _{m̄} | 12 h | 5.9 min | Starost | 17.8 d | Faza | ○ |

| UT | PLANETE | | | | |
|-------|---------|-----------------|-------|---------|------|
| | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | h min | / | |
| 0 | 8 54 | .1 | 271 | -4.9 | + |
| 12 | 16 9 | .1 | 162 | .7 | h |
| 16 31 | .0 | 157 | 1.0 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 304 26.3 | 141 | 9 .7 | 103 | 246 5.8 | 21 21.4 | 112 36.3 - 7 9.7 | |
| 2 | 333 32.5 | 141 | 9 21.3 | 102 | 276 9.8 | 21 21.5 | 142 41.0 - 7 9.8 | |
| 4 | 2 38.7 | 141 | 9 41.7 | 101 | 306 13.9 | 21 21.6 | 172 45.6 - 7 9.9 | |
| 6 | 31 44.9 | 141 | 10 1.8 | 100 | 336 18.0 | 21 21.7 | 202 50.2 - 7 10.1 | |
| 8 | 60 51.0 | 141 | 10 21.8 | 99 | 6 22.1 | 21 21.8 | 232 54.8 - 7 10.2 | |
| 10 | 89 57.2 | 140 | 10 41.5 | 98 | 36 26.2 | 21 21.9 | 262 59.5 - 7 10.4 | |
| 12 | 119 3.2 | 140 | 11 1.0 | 97 | 66 30.2 | 21 22.0 | 293 4.1 - 7 10.5 | |
| 14 | 148 9.3 | 140 | 11 20.4 | 95 | 96 34.3 | 21 22.1 | 323 8.7 - 7 10.6 | |
| 16 | 177 15.3 | 140 | 11 39.4 | 94 | 126 38.4 | 21 22.2 | 353 13.3 - 7 10.8 | |
| 18 | 206 21.3 | 140 | 11 58.3 | 93 | 156 42.5 | 21 22.4 | 23 18.0 - 7 10.9 | |
| 20 | 235 27.2 | 139 | 12 16.9 | 92 | 186 46.6 | 21 22.5 | 53 22.6 - 7 11.1 | |
| 22 | 264 33.0 | 139 | 12 35.3 | 91 | 216 50.7 | 21 22.6 | 83 27.2 - 7 11.2 | |
| Δ | 20 | 1 | | | 23 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | - 5 48.0 | .3 | 15.8 | T _{m̄} | 3 49 | 1.9 | 55.2 | 15.1 |
| 12 | - 5 44.2 | T _{m̄} | 12 h | 5.7 min | Starost | 18.8 d | Faza | ○ |

| UT | PLANETE | | | | |
|-------|---------|-----------------|-------|---------|------|
| | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | h min | / | |
| 0 | 8 54 | .1 | 271 | -4.9 | + |
| 12 | 16 7 | .1 | 162 | .7 | h |
| 16 27 | .0 | 157 | 1.0 | | |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 34.9 | 16 4.9 | 316 53.9 | 226 30.1 | 19 40.9 | 118 18.2 - 8 6.2 | |
| 2 | 208 35.0 | 16 3.4 | 346 58.8 | 256 30.2 | 19 41.2 | 148 20.3 - 8 7.4 | |
| 4 | 238 35.2 | 16 2.0 | 17 3.8 | 286 30.4 | 19 41.4 | 178 22.4 - 8 8.6 | |
| 6 | 268 35.4 | 16 .6 | 47 8.7 | 316 30.6 | 19 41.7 | 208 24.5 - 8 9.8 | |
| 8 | 298 35.5 | 15 59.1 | 77 13.6 | 346 30.8 | 19 42.0 | 238 26.6 - 8 11.0 | |
| 10 | 328 35.7 | 15 57.7 | 107 18.5 | 16 30.9 | 19 42.3 | 268 28.7 - 8 12.2 | |
| 12 | 358 35.9 | 15 56.3 | 137 23.5 | 46 31.1 | 19 42.6 | 298 30.8 - 8 13.4 | |
| 14 | 28 36.1 | 15 54.8 | 167 28.4 | 76 31.2 | 19 42.9 | 328 32.9 - 8 14.7 | |
| 16 | 58 36.2 | 15 53.4 | 197 33.3 | 106 31.4 | 19 43.2 | 358 35.0 - 8 15.9 | |
| 18 | 88 36.4 | 15 52.0 | 227 38.3 | 136 31.5 | 19 43.4 | 28 37.1 - 8 17.1 | |
| 20 | 118 36.6 | 15 50.5 | 257 43.2 | 166 31.7 | 19 43.7 | 58 39.2 - 8 18.3 | |
| 22 | 148 36.8 | 15 49.1 | 287 48.1 | 196 31.8 | 19 44.0 | 88 41.2 - 8 19.5 | |
| Δ | 1 | -7 | | 1 | 1 | 10 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 3 58 | 20 11 | 0 55 | : : | 21 7 | .9 | 12 35 | 3.0 | |
| 55 | 4 22 | 19 48 | 0 44 | 3 16 | 21 29 | 1.1 | 12 15 | 2.8 | |
| 50 | 4 40 | 19 30 | 0 37 | 2 23 | 21 46 | 1.3 | 11 59 | 2.6 | |
| 45 | 4 54 | 19 17 | 0 33 | 1 59 | 21 60 | 1.4 | 11 47 | 2.5 | |
| 40 | 5 5 | 19 5 | 0 30 | 1 45 | 22 11 | 1.5 | 11 36 | 2.4 | |
| 35 | 5 15 | 18 56 | 0 27 | 1 35 | 22 20 | 1.6 | 11 28 | 2.3 | |
| 30 | 5 23 | 18 47 | 0 25 | 1 27 | 22 29 | 1.6 | 11 20 | 2.2 | |
| 25 | 5 38 | 18 33 | 0 23 | 1 18 | 22 43 | 1.7 | 11 7 | 2.1 | |
| 10 | 5 51 | 18 21 | 0 22 | 1 13 | 22 56 | 1.8 | 10 55 | 2.0 | |
| 0 | 6 2 | 18 9 | 0 21 | 1 11 | 23 8 | 1.9 | 10 44 | 1.9 | |
| 10 | 6 14 | 17 58 | 0 22 | 1 12 | 23 20 | 2.0 | 10 34 | 1.8 | |
| 20 | 6 26 | 17 46 | 0 23 | 1 15 | 23 33 | 2.1 | 10 22 | 1.7 | |
| 30 | 6 40 | 17 32 | 0 25 | 1 22 | 23 48 | 2.2 | 10 9 | 1.6 | |
| 35 | 6 48 | 17 24 | 0 26 | 1 26 | 23 56 | 2.3 | 10 2 | 1.5 | |
| 40 | 6 57 | 17 15 | 0 28 | 1 32 | .. .. | .. .. | 9 53 | 1.4 | |
| 45 | 7 7 | 17 5 | 0 31 | 1 40 | .. .. | .. .. | 9 43 | 1.3 | |
| 50 | 7 20 | 16 52 | 0 34 | 1 51 | .. .. | .. .. | 9 31 | 1.2 | |
| 55 | 7 36 | 16 36 | 0 39 | 2 5 | .. .. | .. .. | 9 17 | 1.0 | |
| 60 | 7 57 | 16 15 | 0 46 | 2 25 | .. .. | .. .. | 8 57 | .. .. |  |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|-------------------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 293 38.8 | 139 | 12 53.4 | 89 | 246 54.8 | 21 22.7 | 113 31.8 - 7 11.3 | |
| 2 | 322 44.6 | 138 | 13 11.3 | 88 | 276 58.8 | 21 22.8 | 143 36.4 - 7 11.5 | |
| 4 | 351 50.3 | 138 | 13 29.0 | 87 | 307 2.9 | 21 22.9 | 173 41.1 - 7 11.6 | |
| 6 | 20 55.9 | 138 | 13 46.4 | 86 | 337 7.0 | 21 23.0 | 203 45.7 - 7 11.8 | |
| 8 | 50 1.4 | 137 | 14 3.5 | 84 | 7 11.1 | 21 23.1 | 233 50.3 - 7 11.9 | |
| 10 | 79 6.8 | 137 | 14 20.4 | 83 | 37 15.2 | 21 23.2 | 263 54.9 - 7 12.0 | |
| 12 | 108 12.2 | 136 | 14 37.0 | 82 | 67 19.3 | 21 23.3 | 293 59.5 - 7 12.2 | |
| 14 | 137 17.5 | 136 | 14 53.3 | 80 | 97 23.4 | 21 23.4 | 324 4.2 - 7 12.3 | |
| 16 | 166 22.7 | 136 | 15 9.4 | 79 | 127 27.5 | 21 23.5 | 354 8.8 - 7 12.5 | |
| 18 | 195 27.8 | 135 | 15 25.1 | 77 | 157 31.6 | 21 23.6 | 24 13.4 - 7 12.6 | |
| 20 | 224 32.8 | 135 | 15 40.6 | 76 | 187 35.7 | 21 23.7 | 54 18.0 - 7 12.7 | |
| 22 | 253 37.8 | 134 | 15 55.8 | 75 | 217 39.8 | 21 23.8 | 84 22.6 - 7 12.9 | |
| Δ | 1 | -7 | | | 20 | 1 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|-----------------|---------------|-----------------|-------------|-----------------|---------------|------|
| | h min s | s / | h min min / | T _{m̄} | h min min / | T _{m̄} | π_{ζ} | t' |
| 00 | - 5 40.3 | .3 | 15.8 | T _{m̄} | 4 34 | 1.9 | 54.8 | 14.9 |
| 12 | - 5 36.2 | T _{m̄} | 12 h 5.6 min | Starost | 19.8 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360 - z | Vel. | Pl. | T _{m̄} | π 360 - z | Vel. |
| | h min / | o / | h min / | h min / | h min / | o / | h min / | o / |
| Q | 8 54 | .1 | 270 | -4.9 | 7 31 | .0 | 290 | -1.8 |
| O | 16 6 | .1 | 161 | .8 | 16 23 | .0 | 157 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|-------------------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 282 42.6 | 134 | 16 10.8 | 73 | 247 43.9 | 21 23.9 | 114 27.2 - 7 13.0 | |
| 2 | 311 47.3 | 133 | 16 25.4 | 72 | 277 48.0 | 21 24.0 | 144 31.8 - 7 13.2 | |
| 4 | 340 51.9 | 133 | 16 39.7 | 70 | 307 52.1 | 21 24.1 | 174 36.5 - 7 13.3 | |
| 6 | 9 56.4 | 132 | 16 53.7 | 69 | 337 56.2 | 21 24.2 | 204 41.1 - 7 13.5 | |
| 8 | 39 .8 | 131 | 17 7.4 | 67 | 8 .3 | 21 24.3 | 234 45.7 - 7 13.6 | |
| 10 | 68 5.1 | 131 | 17 20.9 | 66 | 38 4.4 | 21 24.4 | 264 50.3 - 7 13.7 | |
| 12 | 97 9.3 | 130 | 17 34.0 | 64 | 68 8.5 | 21 24.5 | 294 54.9 - 7 13.9 | |
| 14 | 126 13.4 | 130 | 17 46.7 | 62 | 98 12.6 | 21 24.6 | 324 59.5 - 7 14.0 | |
| 16 | 155 17.4 | 129 | 17 59.2 | 61 | 128 16.7 | 21 24.7 | 355 4.1 - 7 14.2 | |
| 18 | 184 21.2 | 129 | 18 11.3 | 59 | 158 20.8 | 21 24.8 | 25 8.7 - 7 14.3 | |
| 20 | 213 24.9 | 128 | 18 23.2 | 57 | 188 24.9 | 21 24.9 | 55 13.4 - 7 14.5 | |
| 22 | 242 28.5 | 127 | 18 34.6 | 56 | 218 29.0 | 21 25.0 | 85 18.0 - 7 14.6 | |
| Δ | 21 | 1 | | | 23 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|-----------------|---------------|-----------------|-------------|-----------------|---------------|------|
| | h min s | s / | h min min / | T _{m̄} | h min min / | T _{m̄} | π_{ζ} | t' |
| 00 | - 5 32.1 | .4 | 15.8 | T _{m̄} | 5 19 | 1.9 | 54.4 | 14.8 |
| 12 | - 5 27.7 | T _{m̄} | 12 h 5.5 min | Starost | 20.8 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π 360 - z | Vel. | Pl. | T _{m̄} | π 360 - z | Vel. |
| | h min / | o / | h min / | h min / | h min / | o / | h min / | o / |
| Q | 8 54 | .1 | 269 | -4.9 | 7 28 | .0 | 290 | -1.8 |
| O | 16 4 | .1 | 161 | .8 | 16 20 | .0 | 157 | 1.0 |

10. AVGUST

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|-------------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 39.1 | 15 30.2 | 318 52.2 | 226 33.2 | 19 47.4 | 119 8.4 - 8 35.3 | | |
| 2 | 208 39.3 | 15 28.7 | 348 57.1 | 256 33.2 | 19 47.6 | 149 10.4 - 8 36.5 | | |
| 4 | 238 39.5 | 15 27.2 | 19 2.0 | 286 33.3 | 19 47.9 | 179 12.5 - 8 37.7 | | |
| 6 | 268 39.7 | 15 25.8 | 49 7.0 | 316 33.4 | 19 48.1 | 209 14.6 - 8 38.9 | | |
| 8 | 298 39.9 | 15 24.3 | 79 11.9 | 346 33.4 | 19 48.4 | 239 16.7 - 8 40.1 | | |
| 10 | 328 40.1 | 15 22.8 | 109 16.8 | 16 33.5 | 19 48.6 | 269 18.7 - 8 41.3 | | |
| 12 | 358 40.3 | 15 21.4 | 139 21.8 | 46 33.6 | 19 48.8 | 299 20.8 - 8 42.6 | | |
| 14 | 388 40.5 | 15 19.9 | 169 26.7 | 76 33.6 | 19 49.1 | 329 22.9 - 8 43.8 | | |
| 16 | 418 40.7 | 15 18.4 | 199 31.6 | 106 33.7 | 19 49.3 | 359 25.0 - 8 45.0 | | |
| 18 | 88 40.9 | 15 16.9 | 229 36.5 | 136 33.7 | 19 49.5 | 29 27.0 - 8 46.2 | | |
| 20 | 118 41.1 | 15 15.4 | 259 41.5 | 166 33.7 | 19 49.8 | 59 29.1 - 8 47.4 | | |
| 22 | 148 41.3 | 15 14.0 | 289 46.4 | 196 33.8 | 19 50.0 | 89 31.2 - 8 48.6 | | |
| Δ | 1 | -7 | | 0 | 1 | 10 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 3 | 20 6 | 0 53 | : | 21 56 | 1 6 | 14 57 | 2 6 | |
| 55 | 4 26 | 19 44 | 0 43 | 3 7 | 22 29 | 1 7 | 14 25 | 2 4 | |
| 50 | 4 43 | 19 27 | 0 37 | 2 20 | 22 52 | 1 8 | 14 2 | 2 3 | |
| 45 | 4 56 | 19 14 | 0 32 | 1 58 | 23 11 | 1 8 | 13 44 | 2 3 | |
| 40 | 5 7 | 19 3 | 0 29 | 1 44 | 23 26 | 1 9 | 13 30 | 2 2 | |
| 35 | 5 16 | 18 54 | 0 27 | 1 34 | 23 39 | 1 9 | 13 17 | 2 2 | |
| 30 | 5 25 | 18 46 | 0 25 | 1 27 | 23 50 | 1 9 | 13 6 | 2 2 | |
| 20 | 5 39 | 18 32 | 0 23 | 1 18 | ... | 0 | 12 48 | 2 1 | |
| 10 | 5 51 | 18 20 | 0 22 | 1 13 | ... | 0 | 12 32 | 2 0 | |
| 0 | 6 2 | 18 9 | 0 21 | 1 11 | ... | 0 | 12 17 | 2 0 | |
| 10 | 6 13 | 17 58 | 0 22 | 1 12 | 0 8 | 2 0 | 12 2 | 2 0 | |
| 20 | 6 25 | 17 46 | 0 23 | 1 15 | 0 23 | 2 1 | 11 46 | 1 9 | |
| 30 | 6 38 | 17 33 | 0 25 | 1 21 | 0 41 | 2 2 | 11 27 | 1 8 | |
| 35 | 6 46 | 17 25 | 0 26 | 1 26 | 0 51 | 2 2 | 11 17 | 1 8 | |
| 40 | 6 54 | 17 17 | 0 28 | 1 32 | 1 3 | 2 3 | 11 4 | 1 8 | |
| 45 | 7 4 | 17 7 | 0 31 | 1 40 | 1 17 | 2 3 | 10 50 | 1 7 | |
| 50 | 7 16 | 16 55 | 0 34 | 1 50 | 1 34 | 2 4 | 10 32 | 1 6 | |
| 55 | 7 32 | 16 40 | 0 39 | 2 4 | 1 56 | 2 5 | 10 10 | 1 5 | |
| 60 | 7 52 | 16 20 | 0 46 | 2 24 | 2 26 | 2 7 | 9 39 | 1 4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 271 32.0 | 127 | 18 45.8 | 54 | 248 33.1 | 21 25.1 | 115 22.6 - 7 14.7 | |
| 2 | 300 35.4 | 126 | 18 56.6 | 52 | 278 37.2 | 21 25.2 | 145 27.2 - 7 14.9 | |
| 4 | 329 38.6 | 126 | 19 7.1 | 51 | 308 41.3 | 21 25.3 | 175 31.8 - 7 15.0 | |
| 6 | 358 41.8 | 125 | 19 17.2 | 49 | 338 45.4 | 21 25.4 | 205 36.4 - 7 15.2 | |
| 8 | 27 44.8 | 124 | 19 27.0 | 47 | 8 49.5 | 21 25.5 | 235 41.0 - 7 15.3 | |
| 10 | 56 47.6 | 124 | 19 36.4 | 45 | 38 53.6 | 21 25.6 | 265 45.6 - 7 15.5 | |
| 12 | 85 50.4 | 123 | 19 45.5 | 44 | 68 57.7 | 21 25.7 | 295 50.2 - 7 15.6 | |
| 14 | 114 53.1 | 123 | 19 54.2 | 42 | 99 1.9 | 21 25.8 | 325 54.8 - 7 15.8 | |
| 16 | 143 55.6 | 122 | 20 2.5 | 40 | 129 6.0 | 21 25.9 | 355 59.4 - 7 15.9 | |
| 18 | 172 58.0 | 121 | 20 10.5 | 38 | 159 10.1 | 21 26.0 | 26 4.0 - 7 16.1 | |
| 20 | 202 .3 | 121 | 20 18.1 | 36 | 189 14.2 | 21 26.1 | 56 8.6 - 7 16.2 | |
| 22 | 231 2.5 | 120 | 20 25.4 | 34 | 219 18.3 | 21 26.2 | 86 13.2 - 7 16.3 | |
| Δ | 1 | -7 | | | 21 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|-------|---|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 - 5 23.3 | .4 | 15.8 | T _{m̄} | 6 5 | 2.0 | 54.3 | 14.8 | |
| 12 - 5 18.6 | T _{m̄} | 12 h | 5.3 min | Starost | 21 | 8 d | Faza | 1 |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-------|---------|-------|
| | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min | min / | o / | h min |
| ø 8 54 | .1 | 268 | -4.8 | 4 | 7 25 |
| ø 16 2 | .1 | 160 | .8 | h | 16 16 |

| UT | SUNCE | | | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|---------|----------------|----------|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 41.5 | 15 12.5 | 319 51.3 | 226 33.8 | 19 50.2 | 119 33.2 - 8 49.8 | | | | |
| 2 | 208 41.7 | 15 11.0 | 349 56.3 | 256 33.8 | 19 50.4 | 149 35.3 - 8 51.0 | | | | |
| 4 | 238 41.9 | 15 9.5 | 20 1.2 | 286 33.8 | 19 50.6 | 179 37.4 - 8 52.3 | | | | |
| 6 | 268 42.1 | 15 8.0 | 50 6.1 | 316 33.9 | 19 50.9 | 209 39.4 - 8 53.5 | | | | |
| 8 | 298 42.3 | 15 6.5 | 60 11.0 | 346 33.9 | 19 51.1 | 239 41.5 - 8 54.7 | | | | |
| 10 | 328 42.5 | 15 5.0 | 110 16.0 | 16 33.9 | 19 51.3 | 269 43.5 - 8 55.9 | | | | |
| 12 | 358 42.7 | 15 3.5 | 140 20.9 | 46 33.9 | 19 51.5 | 299 45.6 - 8 57.1 | | | | |
| 14 | 28 42.9 | 15 2.0 | 170 25.8 | 76 33.9 | 19 51.7 | 329 47.7 - 8 58.3 | | | | |
| 16 | 58 43.1 | 15 .5 | 200 30.8 | 106 33.9 | 19 51.9 | 359 49.7 - 8 59.5 | | | | |
| 18 | 88 43.3 | 14 59.0 | 230 35.7 | 136 33.9 | 19 52.1 | 29 51.8 - 9 .7 | | | | |
| 20 | 118 43.5 | 14 57.5 | 260 40.6 | 166 33.9 | 19 52.3 | 59 53.8 - 9 1.9 | | | | |
| 22 | 148 43.8 | 14 56.0 | 290 45.5 | 196 33.9 | 19 52.5 | 89 55.9 - 9 3.2 | | | | |
| Δ | 1 | -7 | | 0 | 1 | 10 | -6 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|-------|---|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 - 5 13.9 | .4 | 15.8 | T _{m̄} | 6 53 | 2.0 | 54.3 | 14.8 | |
| 12 - 5 8.9 | T _{m̄} | 12 h | 5.2 min | Starost | 22 | 8 d | Faza | 1 |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-------|---------|-------|
| | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min | min / | o / | h min |
| ø 8 54 | .1 | 268 | -4.8 | 4 | 7 21 |
| ø 16 1 | .1 | 160 | .8 | h | 16 12 |

12. AVGUST

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|-------------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 44.0 | 14 54.5 | 320 50.5 | 226 33.8 | 19 52.7 | 119 57.9 - 9 4.4 | |
| 2 | 208 44.2 | 14 53.0 | 350 55.4 | 256 33.8 | 19 52.9 | 149 60.0 - 9 5.6 | |
| 4 | 238 44.4 | 14 51.5 | 21 .3 | 286 33.8 | 19 53.1 | 180 2.0 - 9 6.8 | |
| 6 | 268 44.6 | 14 50.0 | 51 5.2 | 316 33.8 | 19 53.3 | 210 4.1 - 9 8.0 | |
| 8 | 298 44.8 | 14 48.5 | 81 10.2 | 346 33.7 | 19 53.5 | 240 6.1 - 9 9.2 | |
| 10 | 328 45.0 | 14 47.0 | 111 15.1 | 16 33.7 | 19 53.6 | 270 8.2 - 9 10.4 | |
| 12 | 358 45.3 | 14 45.4 | 141 20.0 | 46 33.6 | 19 53.8 | 300 10.2 - 9 11.6 | |
| 14 | 28 45.5 | 14 43.9 | 171 25.0 | 76 33.6 | 19 54.0 | 330 12.3 - 9 12.8 | |
| 16 | 58 45.7 | 14 42.4 | 201 29.9 | 106 33.5 | 19 54.2 | 0 14.3 - 9 14.0 | |
| 18 | 88 45.9 | 14 40.9 | 231 34.8 | 136 33.5 | 19 54.4 | 30 16.4 - 9 15.3 | |
| 20 | 118 46.1 | 14 39.4 | 261 39.7 | 166 33.4 | 19 54.5 | 60 18.4 - 9 16.5 | |
| 22 | 148 46.4 | 14 37.8 | 291 44.7 | 196 33.4 | 19 54.7 | 90 20.5 - 9 17.7 | |
| Δ | 1 | -8 | | 0 | 1 | 10 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 8 | 20 0 | 0 52 | : : | 23 24 | 2.6 | 16 51 | 1.7 | |
| 55 | 4 29 | 19 39 | 0 42 | 2 59 | 23 60 | 2.5 | 16 15 | 1.8 | |
| 50 | 4 46 | 19 23 | 0 36 | 2 17 | ... . | 0 15 | 49 | 1.9 | |
| 45 | 4 58 | 19 11 | 0 32 | 1 56 | .. . | 0 15 | 29 | 1.9 | |
| 40 | 5 9 | 19 0 | 0 29 | 1 43 | 0 11 | 2.1 | 15 13 | 1.9 | |
| 35 | 5 18 | 18 51 | 0 27 | 1 33 | 0 24 | 2.1 | 14 60 | 2.0 | |
| 30 | 5 26 | 18 44 | 0 25 | 1 26 | 0 36 | 2.1 | 14 48 | 2.0 | |
| 25 | 5 39 | 18 31 | 0 23 | 1 18 | 0 56 | 2.1 | 14 28 | 2.0 | |
| 10 | 5 51 | 18 19 | 0 22 | 1 13 | 1 14 | 2.1 | 14 10 | 2.0 | |
| 0 | 6 2 | 18 8 | 0 21 | 1 11 | 1 30 | 2.1 | 13 54 | 2.1 | |
| 10 | 6 12 | 17 58 | 0 22 | 1 12 | 1 46 | 2.1 | 13 37 | 2.1 | |
| 20 | 6 23 | 17 47 | 0 23 | 1 15 | 2 4 | 2.0 | 13 20 | 2.1 | |
| 30 | 6 36 | 17 34 | 0 25 | 1 21 | 2 24 | 2.0 | 12 59 | 2.1 | |
| 35 | 6 43 | 17 27 | 0 26 | 1 26 | 2 36 | 2.0 | 12 47 | 2.2 | |
| 40 | 6 52 | 17 19 | 0 28 | 1 32 | 2 50 | 2.0 | 12 34 | 2.2 | |
| 45 | 7 1 | 17 9 | 0 31 | 1 40 | 3 6 | 2.0 | 12 18 | 2.2 | |
| 50 | 7 13 | 16 58 | 0 34 | 1 50 | 3 26 | 2.0 | 11 58 | 2.2 | |
| 55 | 7 27 | 16 43 | 0 39 | 2 4 | 3 52 | 2.0 | 11 32 | 2.3 | |
| 60 | 7 46 | 16 24 | 0 45 | 2 23 | 4 28 | 1.9 | 10 55 | 2.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 248 20.8 | 114 | 21 24.8 | 9 | 250 11.9 | 21 27.5 | 117 13.0 - 7 18.3 | |
| 2 | 277 21.5 | 113 | 21 26.6 | 7 | 280 16.0 | 21 27.6 | 147 17.6 - 7 18.4 | |
| 4 | 306 22.2 | 113 | 21 28.0 | 5 | 310 20.2 | 21 27.7 | 177 22.2 - 7 18.6 | |
| 6 | 335 22.7 | 112 | 21 29.0 | 3 | 340 24.3 | 21 27.8 | 207 26.8 - 7 18.7 | |
| 8 | 4 23.2 | 112 | 21 29.5 | 1 | 10 28.4 | 21 27.9 | 237 31.4 - 7 18.9 | |
| 10 | 33 23.6 | 112 | 21 29.7 | -1 | 40 32.6 | 21 28.0 | 267 36.0 - 7 19.0 | |
| 12 | 62 24.0 | 111 | 21 29.5 | -3 | 70 36.7 | 21 28.0 | 297 40.6 - 7 19.2 | |
| 14 | 91 24.2 | 111 | 21 28.8 | -5 | 100 40.8 | 21 28.1 | 327 45.2 - 7 19.3 | |
| 16 | 120 24.4 | 111 | 21 27.7 | -7 | 130 45.0 | 21 28.2 | 357 49.8 - 7 19.5 | |
| 18 | 149 24.6 | 110 | 21 26.2 | -10 | 160 49.1 | 21 28.3 | 27 54.4 - 7 19.6 | |
| 20 | 178 24.7 | 110 | 21 24.3 | -12 | 190 53.3 | 21 28.4 | 57 58.9 - 7 19.8 | |
| 22 | 207 24.7 | 110 | 21 22.0 | -14 | 220 57.4 | 21 28.5 | 88 3.5 - 7 19.9 | |
| Δ | 1 | -8 | | | 21 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|----|-------|--------|-----------------|------|---------|-----------------|--------|----------|
| | h | min | s | / | h | min | min | / |
| 00 | - | 5 | 4.0 | . | 15.8 | T _{m̄} | 7 42 | 2.0 |
| 12 | - | 4 58.7 | T _{m̄} | 12 h | 5.0 min | Starost | 23.8 d | Faza (●) |
| | | | | | | | | |

| PL | PLANETE | | | |
|-------|-----------------|-----|-------|------|
| | T _{m̄} | π | 360-π | Vel. |
| 0 | h min | / | o | Vel. |
| 15 59 | .1 | 266 | -4.8 | + |
| 0 | 15 59 | .1 | 159 | h |
| 16 9 | .0 | 156 | 1.0 | |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|---------|----------------|----------|----------------|-------------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 44.0 | 14 54.5 | 320 50.5 | 226 33.8 | 19 52.7 | 119 57.9 - 9 4.4 | | |
| 2 | 208 44.2 | 14 53.0 | 350 55.4 | 256 33.8 | 19 52.9 | 149 60.0 - 9 5.6 | | |
| 4 | 238 44.4 | 14 51.5 | 21 .3 | 286 33.8 | 19 53.1 | 180 2.0 - 9 6.8 | | |
| 6 | 268 44.6 | 14 50.0 | 51 5.2 | 316 33.8 | 19 53.3 | 210 4.1 - 9 8.0 | | |
| 8 | 298 44.8 | 14 48.5 | 81 10.2 | 346 33.7 | 19 53.5 | 240 6.1 - 9 9.2 | | |
| 10 | 328 45.0 | 14 47.0 | 111 15.1 | 16 33.7 | 19 53.6 | 270 8.2 - 9 10.4 | | |
| 12 | 358 45.3 | 14 45.4 | 141 20.0 | 46 33.6 | 19 53.8 | 300 10.2 - 9 11.6 | | |
| 14 | 28 45.5 | 14 43.9 | 171 25.0 | 76 33.6 | 19 54.0 | 330 12.3 - 9 12.8 | | |
| 16 | 58 45.7 | 14 42.4 | 201 29.9 | 106 33.5 | 19 54.2 | 0 14.3 - 9 14.0 | | |
| 18 | 88 45.9 | 14 40.9 | 231 34.8 | 136 33.5 | 19 54.4 | 30 16.4 - 9 15.3 | | |
| 20 | 118 46.1 | 14 39.4 | 261 39.7 | 166 33.4 | 19 54.5 | 60 18.4 - 9 16.5 | | |
| 22 | 148 46.4 | 14 37.8 | 291 44.7 | 196 33.4 | 19 54.7 | 90 20.5 - 9 17.7 | | |
| Δ | 1 | -8 | | 0 | 1 | 10 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|----|-------|--------|-----------------|------|-----------------|---------|--------|----------|
| | h | min | s | / | h | min | min | / |
| 00 | - | 4 53.5 | .5 | 15.8 | T _{m̄} | 8 31 | 2.1 | 54.8 |
| 12 | - | 4 48.0 | T _{m̄} | 12 h | 4.8 min | Starost | 24.8 d | Faza (●) |
| | | | | | | | | |

| PL | PLANETE | | | |
|-------|-----------------|-----|-------|------|
| | T _{m̄} | π | 360-π | Vel. |
| 0 | h min | / | o | Vel. |
| 15 57 | .1 | 265 | -4.8 | + |
| 0 | 15 57 | .1 | 159 | h |
| 16 5 | .0 | 156 | 1.0 | |

14. AVGUST

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 49.3 | 14 | 17.9 | 322 | 48.7 | 226 | 32.2 |
| 2 | 208 | 49.6 | 14 | 16.3 | 352 | 53.7 | 256 | 32.1 |
| 4 | 238 | 49.8 | 14 | 14.8 | 22 | 58.6 | 286 | 32.0 |
| 6 | 268 | 50.0 | 14 | 13.2 | 53 | 3.5 | 316 | 31.9 |
| 8 | 298 | 50.3 | 14 | 11.7 | 83 | 8.5 | 346 | 31.8 |
| 10 | 328 | 50.5 | 14 | 10.1 | 113 | 13.4 | 16 | 31.6 |
| | | | | | -1 | | 1 | 10 |
| Δ | 1 | -8 | | | | | -1 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 13 | 19 55 | 0 51 | : | 0 26 | 3.0 | 18 | 2 | 1.0 |
| 55 | 4 33 | 19 35 | 0 42 | 2 53 | 0 59 | 2.8 | 17 | 33 | 1.2 |
| 50 | 4 49 | 19 20 | 0 36 | 2 15 | 1 22 | 2.6 | 17 12 | 1.4 | |
| 45 | 5 1 | 19 8 | 0 32 | 1 55 | 1 41 | 2.5 | 16 56 | 1.5 | |
| 40 | 5 11 | 18 58 | 0 29 | 1 42 | 1 55 | 2.5 | 16 42 | 1.6 | |
| 35 | 5 19 | 18 49 | 0 27 | 1 33 | 2 8 | 2.4 | 16 33 | 1.7 | |
| 30 | 5 27 | 18 42 | 0 25 | 1 26 | 2 19 | 2.3 | 16 20 | 1.8 | |
| 20 | 5 40 | 18 29 | 0 23 | 1 17 | 2 38 | 2.2 | 16 3 | 1.9 | |
| 10 | 5 51 | 18 18 | 0 22 | 1 13 | 2 54 | 2.2 | 15 48 | 2.0 | |
| 0 | 6 1 | 18 8 | 0 21 | 1 11 | 3 9 | 2.1 | 15 33 | 2.1 | |
| 10 | 6 11 | 17 58 | 0 22 | 1 12 | 3 25 | 2.0 | 15 19 | 2.2 | |
| 20 | 6 22 | 17 47 | 0 23 | 1 15 | 3 41 | 1.9 | 15 3 | 2.3 | |
| 30 | 6 34 | 17 35 | 0 25 | 1 21 | 3 59 | 1.8 | 14 46 | 2.4 | |
| 35 | 6 41 | 17 28 | 0 26 | 1 26 | 4 10 | 1.8 | 14 35 | 2.4 | |
| 40 | 6 49 | 17 21 | 0 28 | 1 31 | 4 23 | 1.7 | 14 23 | 2.5 | |
| 45 | 6 58 | 17 11 | 0 31 | 1 39 | 4 37 | 1.6 | 14 9 | 2.6 | |
| 50 | 7 9 | 17 1 | 0 34 | 1 49 | 4 55 | 1.5 | 13 52 | 2.7 | |
| 55 | 7 23 | 16 47 | 0 38 | 2 3 | 5 18 | 1.3 | 13 30 | 2.9 | |
| 60 | 7 41 | 16 29 | 0 45 | 2 22 | 5 50 | 1.1 | 12 59 | 3.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o | / | o | / | o | / | o | / |
| 0 | 224 | 22.1 | 109 | 20 | 13.6 | -41 | 251 | 51.3 |
| 2 | 253 | 21.8 | 109 | 20 | 5.4 | -43 | 281 | 55.4 |
| 4 | 282 | 21.5 | 109 | 19 | 56.8 | -45 | 311 | 59.6 |
| 6 | 311 | 21.3 | 109 | 19 | 47.8 | -47 | 342 | 3.7 |
| 8 | 340 | 21.0 | 109 | 19 | 38.4 | -49 | 12 | 7.9 |
| 10 | 9 | 20.7 | 109 | 19 | 28.6 | -51 | 42 | 12.0 |
| 12 | 38 | 20.5 | 109 | 19 | 18.4 | -53 | 76 | 16.2 |
| 14 | 67 | 20.2 | 109 | 19 | 7.8 | -55 | 102 | 20.3 |
| 16 | 96 | 20.0 | 109 | 18 | 56.7 | -57 | 132 | 24.5 |
| 18 | 125 | 19.8 | 109 | 18 | 45.3 | -59 | 162 | 28.7 |
| 20 | 154 | 19.7 | 109 | 18 | 33.5 | -61 | 192 | 32.8 |
| 22 | 183 | 19.6 | 110 | 18 | 21.3 | -63 | 222 | 37.0 |
| Δ | 1 | -8 | | | | | 21 | 0 |
| | | | | | | | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|---------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | - 4 42.5 | .5 | 15.8 | T _{m̄} | 9 21 | 2.1 | 55.2 | 15.1 |
| 12 | - 4 36.7 | T _{m̄} | 12 h 4.6 min | Starost | 25.8 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h min / | o | | | | h min / | o | | |
| 0 | 8 54 | .1 | 264 | -4.7 | 7 | 12 | .0 | 289 |
| 0' | 15 56 | .1 | 158 | .8 | h | 16 | 1 | 156 |
| | | | | | | | | 1.0 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o | / | o | / | o | / | o | / |
| 0 | 178 | 52.2 | 13 | 59.2 | 323 | 47.9 | 226 | 30.6 |
| 2 | 208 | 52.5 | 13 | 57.6 | 353 | 52.8 | 256 | 30.5 |
| 4 | 238 | 52.7 | 13 | 56.1 | 23 | 57.7 | 286 | 30.3 |
| 6 | 268 | 53.0 | 13 | 54.5 | 54 | 2.7 | 316 | 30.2 |
| 8 | 298 | 53.2 | 13 | 52.9 | 84 | 7.6 | 346 | 30.0 |
| 10 | 328 | 53.5 | 13 | 51.4 | 114 | 12.5 | 16 | 29.8 |
| 12 | 358 | 53.7 | 13 | 49.8 | 144 | 17.4 | 46 | 29.7 |
| 14 | 28 | 54.0 | 13 | 48.2 | 174 | 22.4 | 76 | 29.5 |
| 16 | 58 | 54.2 | 13 | 46.7 | 204 | 27.3 | 106 | 29.3 |
| 18 | 88 | 54.5 | 13 | 45.1 | 234 | 32.2 | 136 | 29.1 |
| 20 | 118 | 54.7 | 13 | 43.5 | 264 | 37.2 | 166 | 28.9 |
| 22 | 148 | 55.0 | 13 | 41.9 | 294 | 42.1 | 196 | 28.8 |
| Δ | 1 | -8 | | | | | -1 | 0 |
| | | | | | | | 10 | -6 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|---------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | - 4 31.0 | .5 | 15.8 | T _{m̄} | 10 11 | 2.0 | 55.8 | 15.2 |
| 12 | - 4 24.9 | T _{m̄} | 12 h 4.4 min | Starost | 26.8 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. |
| h min / | o | | | | h min / | o | | |
| 0 | 8 54 | .1 | 263 | -4.7 | 7 | 8 | .0 | 289 |
| 0' | 15 54 | .1 | 157 | .8 | h | 15 | .0 | 156 |
| | | | | | | | | 1.0 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 178 55.2 | 13 40.3 | 324 47.0 | 226 28.6 | 19 59.3 | 121 35.2 | -10 2.3 | |
| 2 | 208 55.5 | 13 38.7 | 354 51.9 | 256 28.4 | 19 59.4 | 151 37.2 | -10 3.5 | |
| 4 | 238 55.7 | 13 37.2 | 24 56.9 | 286 28.2 | 19 59.4 | 181 39.2 | -10 4.7 | |
| 6 | 268 56.0 | 13 35.6 | 55 1.8 | 316 28.0 | 19 59.5 | 211 41.2 | -10 5.9 | |
| 8 | 298 56.3 | 13 34.0 | 85 6.7 | 346 27.8 | 19 59.6 | 241 43.2 | -10 7.2 | |
| 10 | 328 56.5 | 13 32.4 | 115 11.7 | 16 27.5 | 19 59.6 | 271 45.2 | -10 8.4 | |
| 12 | 358 56.8 | 13 30.8 | 145 16.6 | 46 27.3 | 19 59.7 | 301 47.2 | -10 9.6 | |
| 14 | 28 57.0 | 13 29.2 | 175 21.5 | 76 27.1 | 19 59.8 | 331 49.2 | -10 10.8 | |
| 16 | 58 57.3 | 13 27.6 | 205 26.4 | 106 26.9 | 19 59.8 | 1 51.2 | -10 12.0 | |
| 18 | 88 57.6 | 13 26.0 | 235 31.4 | 136 26.7 | 19 59.9 | 31 53.2 | -10 13.2 | |
| 20 | 118 57.8 | 13 24.4 | 265 36.3 | 166 26.4 | 19 59.9 | 61 55.2 | -10 14.4 | |
| 22 | 148 58.1 | 13 22.8 | 295 41.2 | 196 26.2 | 19 60.0 | 91 57.1 | -10 15.6 | |
| Δ | 1 | -8 | | -1 | 0 | 10 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 17 | 19 49 | 0 50 | : :: | 2 58 | 3.5 | 18 43 | .6 | |
| 55 | 4 37 | 19 30 | 0 41 | 2 47 | 3 18 | 3.2 | 18 26 | .9 | |
| 50 | 4 52 | 19 16 | 0 36 | 2 13 | 3 34 | 3.0 | 18 14 | 1.1 | |
| 45 | 5 3 | 19 4 | 0 32 | 1 53 | 3 46 | 2.8 | 18 4 | 1.2 | |
| 40 | 5 13 | 18 55 | 0 29 | 1 41 | 3 57 | 2.7 | 17 56 | 1.4 | |
| 35 | 5 21 | 18 47 | 0 27 | 1 32 | 4 5 | 2.6 | 17 49 | 1.5 | |
| 30 | 5 28 | 18 40 | 0 25 | 1 25 | 4 13 | 2.5 | 17 42 | 1.6 | |
| 20 | 5 40 | 18 28 | 0 23 | 1 17 | 4 26 | 2.3 | 17 31 | 1.7 | |
| 10 | 5 51 | 18 17 | 0 22 | 1 12 | 4 38 | 2.2 | 17 21 | 1.9 | |
| 0 | 6 1 | 18 8 | 0 21 | 1 11 | 4 49 | 2.0 | 17 12 | 2.0 | |
| 10 | 6 11 | 17 58 | 0 22 | 1 11 | 4 59 | 1.9 | 17 3 | 2.2 | |
| 20 | 6 21 | 17 48 | 0 23 | 1 14 | 5 11 | 1.8 | 16 53 | 2.3 | |
| 30 | 6 32 | 17 36 | 0 25 | 1 21 | 5 24 | 1.6 | 16 41 | 2.5 | |
| 35 | 6 39 | 17 30 | 0 26 | 1 25 | 5 31 | 1.5 | 16 35 | 2.6 | |
| 40 | 6 46 | 17 22 | 0 28 | 1 31 | 5 40 | 1.4 | 16 27 | 2.7 | |
| 45 | 6 55 | 17 14 | 0 30 | 1 39 | 5 50 | 1.3 | 16 18 | 2.8 | |
| 50 | 7 6 | 17 3 | 0 34 | 1 49 | 6 2 | 1.1 | 16 8 | 3.0 | |
| 55 | 7 19 | 16 51 | 0 38 | 2 3 | 6 17 | .9 | 15 54 | 3.2 | |
| 60 | 7 36 | 16 34 | 0 45 | 2 22 | 6 37 | .7 | 15 36 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 200 21.5 | 112 | 15 8.3 | -87 | 253 31.1 | 21 31.9 | 120 53.0 | -7 25.6 |
| 2 | 229 22.0 | 113 | 14 51.0 | -88 | 283 35.3 | 21 32.0 | 150 57.6 | -7 25.7 |
| 4 | 258 22.5 | 113 | 14 33.3 | -90 | 313 39.5 | 21 32.0 | 181 2.2 | -7 25.9 |
| 6 | 287 23.1 | 113 | 14 15.3 | -92 | 343 43.7 | 21 32.1 | 211 6.7 | -7 26.1 |
| 8 | 316 23.7 | 113 | 13 57.0 | -93 | 13 47.8 | 21 32.2 | 241 11.3 | -7 26.2 |
| 10 | 345 24.3 | 114 | 13 38.4 | -95 | 43 52.0 | 21 32.3 | 271 15.9 | -7 26.4 |
| 12 | 14 25.1 | 114 | 13 19.5 | -96 | 73 56.2 | 21 32.4 | 301 20.5 | -7 26.5 |
| 14 | 43 25.8 | 114 | 13 .2 | -98 | 104 .4 | 21 32.5 | 331 25.0 | -7 26.7 |
| 16 | 72 26.6 | 114 | 12 40.7 | -99 | 134 4.6 | 21 32.6 | 1 29.6 | -7 26.9 |
| 18 | 101 27.4 | 114 | 12 20.9 | -101 | 164 8.7 | 21 32.6 | 31 34.2 | -7 27.0 |
| 20 | 130 28.3 | 115 | 12 .8 | -102 | 194 12.9 | 21 32.7 | 61 38.7 | -7 27.2 |
| 22 | 159 29.2 | 115 | 11 40.4 | -103 | 224 17.1 | 21 32.8 | 91 43.3 | -7 27.3 |
| Δ | 1 | -8 | | | -1 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|----------------|-------|-----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | - 4 18.9 | .5 | 15.8 | T _{m̄} | 11 | 0 | 2.0 | 56.4 15.4 |
| 12 | - 4 12.6 | T _{m̄} | 12 h 4.2 min | Starost | 27.8 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|----------|-----------------|-------|----------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | min / | o / | h min |
| φ | 8 54 .1 | 262 | -4.7 | 7 5 .0 | 289 -1.8 |
| δ | 15 53 .1 | 157 | .8 | 15 54 .0 | 156 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 188 30.2 | 115 | 11 19.7 | -105 | 254 21.3 | 21 32.9 | 121 47.9 | -7 27.5 |
| 2 | 217 31.2 | 115 | 10 58.8 | -106 | 284 25.5 | 21 33.0 | 151 52.4 | -7 27.6 |
| 4 | 246 32.2 | 115 | 10 37.6 | -107 | 314 29.7 | 21 33.1 | 181 57.0 | -7 27.8 |
| 6 | 275 33.3 | 115 | 10 16.2 | -108 | 344 33.8 | 21 33.2 | 212 1.6 | -7 28.0 |
| 8 | 304 34.4 | 116 | 9 54.5 | -110 | 14 38.0 | 21 33.2 | 242 6.1 | -7 28.1 |
| 10 | 333 35.5 | 116 | 9 32.6 | -111 | 44 42.2 | 21 33.3 | 272 10.7 | -7 28.3 |
| 12 | 2 36.6 | 116 | 9 10.4 | -112 | 74 46.4 | 21 33.4 | 302 15.3 | -7 28.4 |
| 14 | 31 37.8 | 116 | 8 48.0 | -113 | 104 50.6 | 21 33.5 | 332 19.8 | -7 28.6 |
| 16 | 60 39.0 | 116 | 8 25.4 | -114 | 134 54.8 | 21 33.6 | 2 24.4 | -7 28.8 |
| 18 | 89 40.2 | 116 | 8 2.6 | -115 | 164 59.0 | 21 33.7 | 32 28.9 | -7 28.9 |
| 20 | 118 41.4 | 116 | 7 39.6 | -116 | 195 3.2 | 21 33.7 | 62 33.5 | -7 29.1 |
| 22 | 147 42.6 | 116 | 7 16.4 | -117 | 225 7.4 | 21 33.8 | 92 38.1 | -7 29.2 |
| Δ | 21 | 0 | | | 23 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | - 4 6.4 | .5 | 15.8 | T _{m̄} | 11 49 | 2.0 | 57.0 | 15.5 |
| 12 | - 3 59.8 | T _{m̄} | 12 h 4.0 min | Starost | 28.8 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|----------|-----------------|-------|----------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | min / | o / | h min |
| φ | 8 54 .1 | 261 | -4.7 | 7 2 .0 | 289 -1.8 |
| δ | 15 51 .1 | 156 | .8 | 15 50 .0 | 156 1.0 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 1.6 | 13 | 1.9 | 326 | 45.3 | 226 | 23.0 |
| 2 | 209 | 1.9 | 13 | .3 | 356 | 50.2 | 256 | 22.7 |
| 4 | 239 | 2.2 | 12 | 58.7 | 26 | 55.2 | 286 | 22.4 |
| 6 | 269 | 2.5 | 12 | 57.1 | 57 | .1 | 316 | 22.1 |
| 8 | 299 | 2.8 | 12 | 55.4 | 87 | 5.0 | 346 | 21.9 |
| 10 | 329 | 3.0 | 12 | 53.8 | 117 | 9.9 | 16 | 21.6 |
| 12 | 359 | 3.3 | 12 | 52.2 | 147 | 14.9 | 46 | 21.3 |
| 14 | 29 | 3.6 | 12 | 50.6 | 177 | 19.8 | 76 | 21.0 |
| 16 | 59 | 3.9 | 12 | 48.9 | 207 | 24.7 | 106 | 20.7 |
| 18 | 89 | 4.2 | 12 | 47.3 | 237 | 29.7 | 136 | 20.4 |
| 20 | 119 | 4.5 | 12 | 45.7 | 267 | 34.6 | 166 | 20.1 |
| 22 | 149 | 4.7 | 12 | 44.0 | 297 | 39.5 | 196 | 19.8 |
| Δ | 1 | -8 | | | | | -1 | 0 |
| | | | | | | | 10 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 22 | 19 44 | 0 49 | : :: | 5 46 | 3 6 | 19 10 | .5 | |
| 55 | 4 41 | 19 26 | 0 41 | 2 42 | 5 53 | 3 3 | 19 7 | .8 | |
| 50 | 4 55 | 19 12 | 0 35 | 2 10 | 5 58 | 3 1 | 19 4 | 1.0 | |
| 45 | 5 6 | 19 1 | 0 31 | 1 52 | 6 3 | 2 9 | 19 2 | 1.2 | |
| 40 | 5 15 | 18 52 | 0 29 | 1 40 | 6 7 | 2 8 | 18 60 | 1.3 | |
| 35 | 5 23 | 18 45 | 0 27 | 1 31 | 6 10 | 2.7 | 18 58 | 1.4 | |
| 30 | 5 29 | 18 38 | 0 25 | 1 25 | 6 13 | 2.5 | 18 57 | 1.5 | |
| 20 | 5 41 | 18 26 | 0 23 | 1 17 | 6 18 | 2.4 | 18 54 | 1.7 | |
| 10 | 5 51 | 18 16 | 0 22 | 1 12 | 6 22 | 2.2 | 18 52 | 1.9 | |
| 0 | 6 0 | 18 7 | 0 21 | 1 10 | 6 26 | 2.0 | 18 49 | 2.0 | |
| 10 | 6 10 | 17 58 | 0 21 | 1 11 | 6 30 | 1.9 | 18 47 | 2.2 | |
| 20 | 6 19 | 17 48 | 0 23 | 1 14 | 6 35 | 1.7 | 18 45 | 2.4 | |
| 30 | 6 30 | 17 38 | 0 24 | 1 21 | 6 40 | 1.5 | 18 42 | 2.6 | |
| 35 | 6 37 | 17 31 | 0 26 | 1 25 | 6 43 | 1.4 | 18 40 | 2.7 | |
| 40 | 6 44 | 17 24 | 0 28 | 1 31 | 6 46 | 1.3 | 18 38 | 2.8 | |
| 45 | 6 52 | 17 16 | 0 30 | 1 39 | 6 50 | 1.2 | 18 36 | 3.0 | |
| 50 | 7 2 | 17 6 | 0 33 | 1 49 | 6 54 | 1.0 | 18 34 | 3.1 | |
| 55 | 7 14 | 16 54 | 0 38 | 2 2 | 6 59 | .8 | 18 30 | 3.3 | |
| 60 | 7 30 | 16 38 | 0 44 | 2 21 | 7 6 | .5 | 18 26 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o | / | o | / | o | / | o | / |
| 0 | 176 | 43.8 | 116 | 6 | 53.0 | -118 | 255 | 11.6 |
| 2 | 205 | 45.0 | 116 | 6 | 29.5 | -119 | 285 | 15.8 |
| 4 | 234 | 46.2 | 116 | 6 | 5.8 | -119 | 315 | 20.0 |
| 6 | 263 | 47.4 | 116 | 5 | 41.9 | -120 | 345 | 24.2 |
| 8 | 292 | 48.6 | 116 | 5 | 17.8 | -121 | 15 | 28.4 |
| 10 | 321 | 49.8 | 116 | 4 | 53.6 | -122 | 45 | 32.6 |
| 12 | 350 | 51.0 | 116 | 4 | 29.3 | -123 | 105 | 41.0 |
| 14 | 19 | 52.1 | 116 | 4 | 4.9 | -123 | 33 | 14.5 |
| 16 | 48 | 53.2 | 115 | 3 | 40.3 | -123 | 135 | 45.2 |
| 18 | 77 | 54.3 | 115 | 3 | 15.6 | -124 | 165 | 49.4 |
| 20 | 106 | 55.3 | 115 | 2 | 20.9 | -124 | 195 | 53.6 |
| 22 | 135 | 56.3 | 115 | 2 | 26.0 | -125 | 225 | 57.8 |
| Δ | 1 | -8 | | | | | 21 | 0 |
| | | | | | | | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-----------------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 3 53.3 | .6 | 15.8 | T _{m̄} | 12 38 | 2.0 | 57.6 | 15.7 |
| 12 | - 3 46.5 | T _{m̄} | 12 h | 3.8 min | Starost | .3 d | Faza ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | s | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| 0 | 8 55 | .1 | 260 | -4.6 | 4 | 6 58 | .0 | 288 |
| ○ | 15 49 | .1 | 156 | .8 | h | 15 47 | .0 | 156 |
| | | | | | | | | 1.0 |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|-----|----------------|------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊖ | δ _⊖ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 5.0 | 12 | 42.4 | 327 | 44.4 | 226 | 19.5 |
| 2 | 209 | 5.3 | 12 | 40.8 | 357 | 49.4 | 256 | 19.2 |
| 4 | 239 | 5.6 | 12 | 39.1 | 27 | 54.3 | 286 | 18.9 |
| 6 | 269 | 5.9 | 12 | 37.5 | 57 | 59.2 | 316 | 18.6 |
| 8 | 299 | 6.2 | 12 | 35.9 | 88 | 4.1 | 346 | 18.2 |
| 10 | 329 | 6.5 | 12 | 34.2 | 118 | 9.1 | 16 | 17.9 |
| 12 | 359 | 6.8 | 12 | 32.6 | 148 | 14.0 | 46 | 17.6 |
| 14 | 29 | 7.1 | 12 | 30.9 | 178 | 18.9 | 76 | 17.3 |
| 16 | 59 | 7.4 | 12 | 29.3 | 208 | 23.9 | 106 | 16.9 |
| 18 | 89 | 7.7 | 12 | 27.6 | 238 | 28.8 | 136 | 16.6 |
| 20 | 119 | 8.0 | 12 | 26.0 | 268 | 33.7 | 166 | 16.3 |
| 22 | 149 | 8.2 | 12 | 24.3 | 298 | 38.6 | 196 | 15.9 |
| Δ | 1 | -8 | | | | | -2 | 0 |
| | | | | | | | 10 | -6 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|-----------------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 | - 3 39.7 | .6 | 15.8 | T _{m̄} | 13 27 | 2.1 | 58.2 | 15.8 |
| 12 | - 3 32.7 | T _{m̄} | 12 h | 3.5 min | Starost | .3 d | Faza ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | s | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| 0 | 8 55 | .1 | 259 | -4.6 | 4 | 6 55 | .0 | 288 |
| ○ | 15 48 | .1 | 155 | .8 | h | 15 43 | .0 | 156 |
| | | | | | | | | 1.0 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 8.5 12 22.7 | 328 43.6 | 226 15.6 19 59.9 | 123 9.9 -10 59.9 | | | | |
| 2 | 209 8.8 12 21.0 | 358 48.5 | 256 15.3 19 59.8 | 153 11.9 -11 1.1 | | | | |
| 4 | 239 9.1 12 19.4 | 28 53.4 | 286 14.9 19 59.7 | 183 13.8 -11 2.3 | | | | |
| 6 | 269 9.4 12 17.7 | 58 58.4 | 316 14.6 19 59.7 | 213 15.7 -11 3.5 | | | | |
| 8 | 299 9.7 12 16.1 | 89 3.3 | 346 14.2 19 59.6 | 243 17.7 -11 4.7 | | | | |
| 10 | 329 10.0 12 14.4 | 119 8.2 | 16 13.9 19 59.5 | 273 19.6 -11 5.9 | | | | |
| 12 | 359 10.3 12 12.8 | 149 13.1 | 46 13.5 19 59.5 | 303 21.6 -11 7.1 | | | | |
| 14 | 29 10.7 12 11.1 | 179 18.1 | 76 13.2 19 59.4 | 333 23.5 -11 8.3 | | | | |
| 16 | 59 11.0 12 9.4 | 209 23.0 | 106 12.8 19 59.3 | 3 25.4 -11 9.5 | | | | |
| 18 | 89 11.3 12 7.8 | 239 27.9 | 136 12.4 19 59.2 | 33 27.4 -11 10.7 | | | | |
| 20 | 119 11.6 12 6.1 | 269 32.9 | 166 12.1 19 59.1 | 63 29.3 -11 11.8 | | | | |
| 22 | 149 11.9 12 4.4 | 299 37.8 | 196 11.7 19 59.1 | 93 31.2 -11 13.0 | | | | |
| Δ | 2 | -8 | | -2 | 0 | | 10 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 27 | 19 38 | 0 49 | : | 8 40 | 3.7 | 19 36 | .6 |
| 55 | 4 44 | 19 21 | 0 40 | 2 38 | 8 34 | 3.4 | 19 46 | .9 |
| 50 | 4 58 | 19 8 | 0 35 | 2 8 | 8 29 | 3.2 | 19 53 | 1.1 |
| 45 | 5 8 | 18 58 | 0 31 | 1 51 | 8 25 | 3.0 | 19 58 | 1.3 |
| 40 | 5 17 | 18 49 | 0 29 | 1 39 | 8 21 | 2.9 | 20 3 | 1.4 |
| 35 | 5 24 | 18 42 | 0 26 | 1 31 | 8 19 | 2.7 | 20 8 | 1.6 |
| 30 | 5 30 | 18 36 | 0 25 | 1 25 | 8 16 | 2.6 | 20 11 | 1.7 |
| 20 | 5 42 | 18 25 | 0 23 | 1 16 | 8 12 | 2.4 | 20 18 | 1.9 |
| 10 | 5 51 | 18 15 | 0 22 | 1 12 | 8 8 | 2.3 | 20 23 | 2.0 |
| 0 | 6 60 | 18 7 | 0 21 | 1 10 | 8 5 | 2.1 | 20 29 | 2.2 |
| 10 | 6 9 | 17 58 | 0 21 | 1 11 | 8 1 | 2.0 | 20 34 | 2.3 |
| 20 | 6 18 | 17 49 | 0 22 | 1 14 | 7 58 | 1.8 | 20 40 | 2.5 |
| 30 | 6 28 | 17 39 | 0 24 | 1 20 | 7 54 | 1.6 | 20 46 | 2.7 |
| S | | | | | | | | |
| 35 | 6 34 | 17 33 | 0 26 | 1 25 | 7 51 | 1.5 | 20 50 | 2.8 |
| 40 | 6 41 | 17 26 | 0 28 | 1 31 | 7 49 | 1.4 | 20 54 | 2.9 |
| 45 | 6 49 | 17 18 | 0 30 | 1 38 | 7 46 | 1.3 | 20 59 | 3.0 |
| 50 | 6 58 | 17 9 | 0 33 | 1 49 | 7 42 | 1.1 | 21 5 | 3.2 |
| 55 | 7 10 | 16 58 | 0 38 | 2 2 | 7 38 | .9 | 21 12 | 3.4 |
| 60 | 7 25 | 16 43 | 0 44 | 2 21 | 7 32 | .6 | 21 22 | 3.7 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 153 3.1 109 - 3 1.3 -126 | 256 52.6 | 21 35.8 | 124 31.9 - 7 33.3 | | | | |
| 2 | 182 3.0 109 - 3 26.5 -126 | 286 56.8 | 21 35.9 | 154 36.5 - 7 33.5 | | | | |
| 4 | 211 2.8 108 - 3 51.6 -125 | 317 1.0 | 21 36.0 | 184 41.0 - 7 33.6 | | | | |
| 6 | 240 2.4 107 - 4 16.7 -125 | 347 5.2 | 21 36.1 | 214 45.6 - 7 33.8 | | | | |
| 8 | 269 1.9 107 - 4 41.7 -124 | 17 9.5 | 21 36.2 | 244 50.1 - 7 33.9 | | | | |
| 10 | 298 1.2 106 - 5 6.5 -124 | 47 13.7 | 21 36.2 | 274 54.7 - 7 34.1 | | | | |
| 12 | 327 .5 105 - 5 31.4 -124 | 77 17.9 | 21 36.3 | 304 59.2 - 7 34.3 | | | | |
| 14 | 355 59.5 105 - 5 56.1 -123 | 107 22.1 | 21 36.4 | 335 3.8 - 7 34.4 | | | | |
| 16 | 24 58.5 104 - 6 20.6 -122 | 137 26.4 | 21 36.5 | 5 8.3 - 7 34.6 | | | | |
| 18 | 53 57.2 103 - 6 45.1 -122 | 167 30.6 | 21 36.5 | 35 12.9 - 7 34.8 | | | | |
| 20 | 82 55.8 102 - 7 9.5 -121 | 197 34.8 | 21 36.6 | 65 17.4 - 7 34.9 | | | | |
| 22 | 111 54.3 101 - 7 33.6 -120 | 227 39.1 | 21 36.7 | 95 22.0 - 7 35.1 | | | | |
| Δ | 2 | -8 | | -2 | -1 | | 10 | -6 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|----------------|--------------|----------------------|--------|----------------|---------|------|
| | h min | s | s / | h min min / | h min | min | h min | min |
| 00 | - 3 25.6 | .6 | 15.8 | T _⊖ 14 17 | 2.1 | 58.6 | 16.0 | |
| 12 | - 3 18.3 | T _⊕ | 12 h 3.3 min | Starost | 2.3 d | Faza | ● | |
| | | | | | | | | |
| PLANETE | Pl. | T _⊕ | π 360-2 | Vel. | Pl. | T _⊕ | π 360-2 | Vel. |
| | h min | / | o | h min | / | h min | / | o |
| ♀ | 8 55 | .1 | 258 | -4.6 | 4 | 6 52 | .0 | 288 |
| ♂ | 15 46 | .1 | 154 | .8 | h | 15 39 | .0 | 156 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------------|----------|----------------|-------------------|-------------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 140 52.6 101 - 7 57.7 -119 | 257 43.3 | 21 36.8 | 125 26.5 - 7 35.3 | | | | |
| 2 | 169 50.7 100 - 8 21.6 -119 | 287 47.5 | 21 36.8 | 155 31.1 - 7 35.4 | | | | |
| 4 | 198 48.6 99 - 8 45.3 -118 | 317 51.8 | 21 36.9 | 185 35.6 - 7 35.6 | | | | |
| 6 | 227 46.3 98 - 9 8.8 -117 | 347 56.0 | 21 37.0 | 215 40.1 - 7 35.8 | | | | |
| 8 | 256 43.9 97 - 9 32.1 -116 | 18 | .2 | 21 37.1 | 245 44.7 - 7 35.9 | | | |
| 10 | 285 41.3 96 - 9 55.2 -115 | 48 | 4.5 | 21 37.1 | 275 49.2 - 7 36.1 | | | |
| 12 | 314 38.4 95 - 10 18.1 -113 | 78 8.7 | 21 37.2 | 305 53.8 - 7 36.3 | | | | |
| 14 | 343 35.4 94 - 10 40.8 -112 | 108 13.0 | 21 37.3 | 338 58.3 - 7 36.4 | | | | |
| 16 | 13 32.2 93 - 11 3.2 -111 | 138 17.2 | 21 37.4 | 6 2.8 - 7 36.6 | | | | |
| 18 | 41 28.8 92 - 11 25.4 -110 | 168 21.4 | 21 37.4 | 36 7.4 - 7 36.8 | | | | |
| 20 | 70 25.1 91 - 11 47.4 -108 | 198 25.7 | 21 37.5 | 66 11.9 - 7 36.9 | | | | |
| 22 | 99 21.3 90 - 12 9.1 -107 | 228 29.9 | 21 37.6 | 96 16.5 - 7 37.1 | | | | |
| Δ | 21 | 0 | | 23 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|----------|----------------|--------------|---------------------|--------|----------------|---------|------|
| | h min | s | s / | h min min / | h min | min | h min | min |
| 00 | - 3 11.1 | .6 | 15.8 | T _⊖ 15 8 | 2.2 | 58.9 | 16.1 | |
| 12 | - 3 3.6 | T _⊕ | 12 h 3.1 min | Starost | 3.3 d | Faza | ● | |
| | | | | | | | | |
| PLANETE | Pl. | T _⊕ | π 360-2 | Vel. | Pl. | T _⊕ | π 360-2 | Vel. |
| | h min | / | o | h min | / | h min | / | o |
| ♀ | 8 55 | .1 | 258 | -4.6 | 4 | 6 48 | .0 | 288 |
| ♂ | 15 45 | .1 | 154 | .8 | h | 15 36 | .0 | 156 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 15.9 | 11 | 42.7 | 330 | 41.9 | 226 | 6.6 |
| 2 | 209 | 16.3 | 11 | 41.0 | 0 | 46.8 | 256 | 6.2 |
| 4 | 239 | 16.6 | 11 | 39.3 | 30 | 51.7 | 286 | 5.8 |
| 6 | 269 | 16.9 | 11 | 37.6 | 60 | 56.6 | 316 | 5.4 |
| 8 | 299 | 17.2 | 11 | 35.9 | 91 | 1.6 | 346 | 5.0 |
| 10 | 329 | 17.5 | 11 | 34.2 | 121 | 6.5 | 16 | 4.6 |
| 12 | 359 | 17.9 | 11 | 32.6 | 151 | 11.4 | 46 | 4.2 |
| 14 | 29 | 18.2 | 11 | 30.9 | 181 | 16.3 | 76 | 3.7 |
| 16 | 59 | 18.5 | 11 | 29.2 | 211 | 21.3 | 106 | 3.3 |
| 18 | 89 | 18.8 | 11 | 27.5 | 241 | 26.2 | 136 | 2.9 |
| 20 | 119 | 19.2 | 11 | 25.8 | 271 | 31.1 | 166 | 2.5 |
| 22 | 149 | 19.5 | 11 | 24.1 | 301 | 36.1 | 196 | 2.0 |
| Δ | 2 | -8 | | | | | -2 | -1 |
| | | | | | | | 10 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 32 | 19 32 | 0 48 | 3 44 | 11 40 | 3 7 | 20 12 | 1 1 | |
| 55 | 4 48 | 19 16 | 0 40 | 2 34 | 11 19 | 3 4 | 20 34 | 1 4 | |
| 50 | 5 1 | 19 4 | 0 35 | 2 7 | 11 3 | 3 2 | 20 52 | 1 6 | |
| 45 | 5 10 | 18 54 | 0 31 | 1 50 | 10 50 | 3 0 | 21 5 | 1 7 | |
| 40 | 5 19 | 18 46 | 0 28 | 1 38 | 10 40 | 2 9 | 21 17 | 1 8 | |
| 35 | 5 26 | 18 40 | 0 26 | 1 30 | 10 31 | 2 8 | 21 26 | 1 9 | |
| 30 | 5 32 | 18 34 | 0 25 | 1 24 | 10 24 | 2 7 | 21 35 | 2 0 | |
| 20 | 5 42 | 18 23 | 0 23 | 1 16 | 10 11 | 2 6 | 21 50 | 2 1 | |
| 10 | 5 51 | 18 14 | 0 21 | 1 12 | 9 59 | 2 4 | 22 3 | 2 2 | |
| 0 | 5 59 | 18 6 | 0 21 | 1 10 | 9 49 | 2 3 | 22 15 | 2 4 | |
| 10 | 6 8 | 17 58 | 0 21 | 1 11 | 9 38 | 2 2 | 22 27 | 2 5 | |
| 20 | 6 16 | 17 49 | 0 22 | 1 14 | 9 27 | 2 1 | 22 40 | 2 6 | |
| 30 | 6 26 | 17 40 | 0 24 | 1 20 | 9 14 | 1 9 | 22 55 | 2 7 | |
| 35 | 6 32 | 17 34 | 0 26 | 1 25 | 9 7 | 1 8 | 23 3 | 2 8 | |
| 40 | 6 38 | 17 28 | 0 28 | 1 31 | 8 59 | 1 7 | 23 13 | 2 9 | |
| 45 | 6 45 | 17 21 | 0 30 | 1 38 | 8 49 | 1 6 | 23 25 | 3 0 | |
| 50 | 6 54 | 17 12 | 0 33 | 1 48 | 8 37 | 1 4 | 23 39 | 3 1 | |
| 55 | 7 5 | 17 2 | 0 37 | 2 2 | 8 23 | 1 2 | 23 57 | 3 3 | |
| 60 | 7 19 | 16 48 | 0 43 | 2 20 | 8 4 | 1 0 | ... | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 128 | 17.2 | 89 | -12 30.4 | -106 | 258 | 34.2 | 21 37.7 |
| 2 | 157 | 13.0 | 88 | -12 51.6 | -104 | 288 | 38.4 | 21 37.7 |
| 4 | 186 | 8.5 | 87 | -13 12.4 | -103 | 318 | 42.7 | 21 37.8 |
| 6 | 215 | 3.8 | 85 | -13 32.9 | -101 | 348 | 46.9 | 21 37.9 |
| 8 | 243 | 58.9 | 84 | -13 53.1 | -99 | 185 | 51.2 | 21 38.0 |
| 10 | 272 | 53.7 | 83 | -14 12.9 | -98 | 48 | 55.4 | 21 38.0 |
| 12 | 301 | 48.4 | 82 | -14 32.4 | -96 | 78 | 59.7 | 21 38.1 |
| 14 | 330 | 42.8 | 81 | -14 51.6 | -94 | 109 | 3.9 | 21 38.2 |
| 16 | 359 | 37.0 | 80 | -15 10.4 | -92 | 139 | 8.2 | 21 38.3 |
| 18 | 28 | 31.0 | 79 | -15 28.9 | -90 | 169 | 12.4 | 21 38.3 |
| 20 | 57 | 24.7 | 78 | -15 47.0 | -88 | 199 | 16.7 | 21 38.4 |
| 22 | 86 | 18.3 | 77 | -16 4.6 | -87 | 229 | 20.9 | 21 38.5 |
| Δ | 2 | -9 | | | | 21 | 0 | 23 -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|-----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | - 2 56.1 | .6 | 15.8 | T _{m̄} | 16 | 2 | 2.3 | 59.1 16.1 |
| 12 | - 2 48.3 | T _{m̄} | 12 h | 2.8 min | Starost | 4.3 d | Faza | ● |

| UT | PLANETE | | | | | | | |
|---------|---------|-----------------|-----|-------|------|-------|----|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | | |
| h min / | o | s | / | o | Vel. | | | |
| 0 | 8 56 | .1 | 255 | -4.6 | 4 | 6 45 | .0 | 288 -1.9 |
| 0 | 15 43 | .1 | 153 | .8 | h | 15 32 | .0 | 156 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 115 | 11.6 | 75 | -16 21.9 | -84 | 259 | 25.2 | 21 38.6 |
| 2 | 144 | 4.7 | 74 | -16 38.8 | -82 | 289 | 29.4 | 21 38.6 |
| 4 | 172 | 57.6 | 73 | -16 55.3 | -80 | 319 | 33.7 | 21 38.7 |
| 6 | 201 | 50.2 | 72 | -17 11.4 | -78 | 349 | 38.0 | 21 38.8 |
| 8 | 230 | 42.7 | 71 | -17 27.0 | -76 | 19 | 42.2 | 21 38.8 |
| 10 | 258 | 34.9 | 70 | -17 42.2 | -75 | 49 | 46.8 | 21 38.9 |
| 12 | 288 | 27.0 | 69 | -17 57.0 | -71 | 79 | 50.7 | 21 39.0 |
| 14 | 317 | 18.8 | 68 | -18 11.2 | -69 | 109 | 55.0 | 21 39.1 |
| 16 | 346 | 10.8 | 67 | -18 25.1 | -67 | 139 | 59.3 | 21 39.1 |
| 18 | 15 | 2.0 | 66 | -18 38.4 | -64 | 170 | 3.5 | 21 39.2 |
| 20 | 43 | 53.2 | 65 | -18 51.3 | -62 | 200 | 7.8 | 21 39.3 |
| 22 | 72 | 44.3 | 65 | -19 3.7 | -60 | 230 | 12.1 | 21 39.3 |
| Δ | 21 | 0 | | | 23 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|---------|----------------|------|-----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | - 2 40.6 | .7 | 15.8 | T _{m̄} | 16 | 57 | 2.4 | 59.3 16.2 |
| 12 | - 2 32.6 | T _{m̄} | 12 h | 2.5 min | Starost | 5.3 d | Faza | ● |

| UT | PLANETE | | | | | | | |
|---------|---------|-----------------|-----|-------|------|-------|----|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | | |
| h min / | o | s | / | o | Vel. | | | |
| 0 | 8 56 | .1 | 254 | -4.5 | 4 | 6 41 | .0 | 288 -1.9 |
| 0 | 15 42 | .1 | 153 | .8 | h | 15 29 | .0 | 156 1.0 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 23.8 | 11 1.9 | 332 40.1 | 225 56.2 | 19 53.7 | 124 42.0 | -11 56.9 |
| 2 | 209 24.1 | 11 -2 | 2 45.1 | 255 58.8 | 19 53.5 | 154 43.9 | -11 58.1 |
| 4 | 239 24.5 | 10 58.5 | 32 50.0 | 285 55.3 | 19 53.3 | 184 45.8 | -11 59.3 |
| 6 | 269 24.8 | 10 56.8 | 62 54.9 | 315 54.8 | 19 53.1 | 214 47.7 | -12 -5 |
| 8 | 299 25.1 | 10 55.1 | 92 59.8 | 345 54.3 | 19 52.9 | 244 49.5 | -12 1.7 |
| 10 | 329 25.5 | 10 53.4 | 123 4.8 | 15 53.9 | 19 52.7 | 274 51.4 | -12 2.8 |
| 12 | 359 25.8 | 10 51.6 | 153 9.7 | 45 53.4 | 19 52.5 | 304 53.3 | -12 4.0 |
| 14 | 29 26.2 | 10 49.9 | 183 14.6 | 75 52.9 | 19 52.3 | 334 55.2 | -12 5.2 |
| 16 | 59 26.5 | 10 48.2 | 213 19.6 | 105 52.4 | 19 52.0 | 4 57.1 | -12 6.4 |
| 18 | 89 26.9 | 10 46.5 | 243 24.5 | 135 52.0 | 19 51.8 | 34 59.0 | -12 7.6 |
| 20 | 119 27.2 | 10 44.7 | 273 29.4 | 165 51.5 | 19 51.6 | 65 -8 | -12 8.7 |
| 22 | 149 27.5 | 10 43.0 | 303 34.3 | 195 51.0 | 19 51.3 | 95 2.7 | -12 9.9 |
| Δ | 2 | -9 | | -2 | -1 | 9 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 37 | 19 26 | 0 47 | 3 28 | 14 30 | 2 9 | 21 16 | 2 2 | |
| 55 | 4 52 | 19 11 | 0 40 | 2 31 | 13 56 | 2 8 | 21 51 | 2 3 | |
| 50 | 5 4 | 18 60 | 0 34 | 2 5 | 13 31 | 2 7 | 22 16 | 2 3 | |
| 45 | 5 13 | 18 51 | 0 31 | 1 49 | 13 12 | 2 7 | 22 36 | 2 4 | |
| 40 | 5 20 | 18 43 | 0 28 | 1 38 | 12 57 | 2 6 | 22 51 | 2 4 | |
| 35 | 5 27 | 18 37 | 0 26 | 1 30 | 12 44 | 2 6 | 23 23 | 2 4 | |
| 30 | 5 33 | 18 31 | 0 25 | 1 24 | 12 33 | 2 6 | 23 16 | 2 4 | |
| 20 | 5 43 | 18 22 | 0 23 | 1 16 | 12 14 | 2 5 | 23 36 | 2 4 | |
| 10 | 5 51 | 18 13 | 0 21 | 1 12 | 11 57 | 2 5 | 23 53 | 2 4 | |
| 0 | 5 59 | 18 6 | 0 21 | 1 10 | 11 41 | 2 4 | ... | 0 | |
| 10 | 6 7 | 17 58 | 0 21 | 1 11 | 11 26 | 2 4 | ... | 0 | |
| 20 | 6 15 | 17 50 | 0 22 | 1 14 | 11 9 | 2 4 | ... | 0 | |
| 30 | 6 24 | 17 41 | 0 24 | 1 20 | 10 51 | 2 3 | ... | 0 | |
| 35 | 6 29 | 17 36 | 0 26 | 1 25 | 10 40 | 2 3 | 0 10 | 2 7 | |
| 40 | 6 35 | 17 30 | 0 28 | 1 30 | 10 27 | 2 2 | 0 22 | 2 7 | |
| 45 | 6 42 | 17 23 | 0 30 | 1 38 | 10 12 | 2 2 | 0 36 | 2 8 | |
| 50 | 6 50 | 17 15 | 0 33 | 1 48 | 9 54 | 2 1 | 0 54 | 2 9 | |
| 55 | 7 0 | 17 5 | 0 37 | 2 1 | 9 31 | 2 0 | 1 16 | 3 0 | |
| 60 | 7 13 | 16 52 | 0 43 | 2 20 | 8 59 | 1.9 | 1 47 | 3.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 101 35.2 | 64 -19 15.6 | -57 | 260 16.3 | 21 39.4 | 128 9.8 | -7 41.3 | |
| 2 | 130 26.0 | 63 -19 27.0 | -55 | 290 20.6 | 21 39.5 | 158 14.3 | -7 41.5 | |
| 4 | 159 16.6 | 62 -19 37.9 | -52 | 320 24.9 | 21 39.5 | 188 18.9 | -7 41.7 | |
| 6 | 188 7.0 | 61 -19 48.3 | -49 | 350 29.2 | 21 39.6 | 218 29.4 | -7 41.8 | |
| 8 | 216 57.3 | 61 -19 58.2 | -47 | 20 33.4 | 21 39.7 | 248 27.9 | -7 42.0 | |
| 10 | 245 47.4 | 60 -20 7.5 | -44 | 50 37.0 | 21 39.8 | 278 32.4 | -7 42.2 | |
| 12 | 274 37.4 | 59 -20 16.4 | -41 | 80 42.0 | 21 39.8 | 308 37.0 | -7 42.4 | |
| 14 | 303 27.3 | 59 -20 24.7 | -39 | 110 46.3 | 21 39.9 | 338 41.5 | -7 42.5 | |
| 16 | 332 17.1 | 58 -20 32.4 | -36 | 140 50.5 | 21 40.0 | 8 46.0 | -7 42.7 | |
| 18 | 1 6.7 | 58 -20 39.6 | -33 | 170 54.8 | 21 40.0 | 38 50.5 | -7 42.9 | |
| 20 | 29 56.3 | 57 -20 46.3 | -31 | 200 59.1 | 21 40.1 | 68 55.1 | -7 43.1 | |
| 22 | 58 45.7 | 57 -20 52.4 | -28 | 231 3.4 | 21 40.2 | 98 59.6 | -7 43.2 | |
| Δ | 2 | -9 | | -3 | -1 | 9 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-------------|-----------------------|-------------|-------------|---------------|-------------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 - 2 24.6 | .7 | 15.8 | T _{m̄} 17 55 | 2.5 | 59.3 | 16.2 | | |
| 12 - 2 16.4 | T _{m̄} 12 h | 2.3 min | Starost | 6.3 d | Faza | 0 | | |

PLANETE

| Pl. | T _{m̄} | π | 360 - π | Vel. | PLANETE | | | | | | |
|-----|-----------------|-------|-------------|------|---------|-------|-----|-----------------|-------|-------------|------|
| | | | | | h min / | o / | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Q | 8 56 | .1 | 252 | -4.5 | 4 | 6 38 | .0 | 288 | -1.9 | | |
| O | 15 39 | .1 | 151 | .8 | h | 15 25 | .0 | 155 | 1.0 | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 87 35.1 | 57 -20 58.0 | -25 | 261 7.7 | 21 40.2 | 129 4.1 | -7 43.4 | |
| 2 | 116 24.4 | 56 -21 3.0 | -22 | 291 11.9 | 21 40.3 | 159 8.6 | -7 43.6 | |
| 4 | 145 13.7 | 56 -21 7.4 | -19 | 321 16.2 | 21 40.4 | 189 13.1 | -7 43.7 | |
| 6 | 174 2.9 | 56 -21 11.3 | -17 | 351 20.5 | 21 40.4 | 219 17.7 | -7 43.9 | |
| 8 | 202 52.0 | 56 -21 14.6 | -14 | 21 24.8 | 21 40.5 | 249 22.2 | -7 44.1 | |
| 10 | 231 41.2 | 56 -21 17.4 | -11 | 51 29.1 | 21 40.6 | 279 26.7 | -7 44.3 | |
| 12 | 260 30.3 | 56 -21 19.6 | -8 | 81 33.4 | 21 40.6 | 309 31.2 | -7 44.4 | |
| 14 | 289 19.4 | 56 -21 21.2 | -5 | 111 37.7 | 21 40.7 | 339 35.7 | -7 44.6 | |
| 16 | 318 8.5 | 56 -21 22.2 | -2 | 141 42.0 | 21 40.8 | 9 40.3 | -7 44.8 | |
| 18 | 346 57.6 | 56 -21 22.7 | 0 | 171 46.3 | 21 40.8 | 39 44.8 | -7 45.0 | |
| 20 | 15 16.8 | 56 -21 22.6 | 3 | 201 50.5 | 21 40.9 | 69 49.3 | -7 45.1 | |
| 22 | 44 36.0 | 56 -21 22.0 | 6 | 231 54.8 | 21 41.0 | 99 53.8 | -7 45.3 | |
| Δ | 21 | 0 | | 23 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-------------|-----------------------|-------------|-------------|---------------|-------------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | |
| 00 - 2 8.3 | .7 | 15.8 | T _{m̄} 18 54 | 2.5 | 59.2 | 16.1 | | |
| 12 - 1 59.9 | T _{m̄} 12 h | 2.0 min | Starost | 7.3 d | Faza | 0 | | |

| Pl. | T _{m̄} | π | 360 - π | Vel. | PLANETE | | | | | | |
|-----|-----------------|-------|-------------|------|---------|-------|-----|-----------------|-------|-------------|------|
| | | | | | h min / | o / | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Q | 8 57 | .1 | 252 | -4.5 | 4 | 6 35 | .0 | 287 | -1.9 | | |
| O | 15 39 | .1 | 151 | .8 | h | 15 21 | .0 | 155 | 1.0 | | |

26. AVGUST

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 32.1 | 10 20.5 | 334 38.4 | 225 44.5 | 19 48.0 | 125 27.1 | -12 25.2 | |
| 2 | 209 32.4 | 10 18.7 | 4 43.3 | 255 43.9 | 19 47.7 | 155 28.9 | -12 26.4 | |
| 4 | 239 32.8 | 10 17.0 | 34 48.3 | 285 43.4 | 19 47.4 | 185 30.8 | -12 27.5 | |
| 6 | 269 33.2 | 10 15.3 | 64 53.2 | 315 42.9 | 19 47.2 | 215 32.6 | -12 28.7 | |
| 8 | 299 33.5 | 10 13.5 | 94 58.1 | 345 42.4 | 19 46.9 | 245 34.5 | -12 29.9 | |
| 10 | 329 33.9 | 10 11.8 | 125 3.0 | 15 41.9 | 19 46.6 | 275 36.4 | -12 31.1 | |
| 12 | 359 34.2 | 10 10.0 | 155 8.0 | 45 41.3 | 19 46.3 | 305 38.2 | -12 32.2 | |
| 14 | 29 34.6 | 10 8.3 | 185 12.9 | 75 40.8 | 19 46.0 | 335 40.1 | -12 33.4 | |
| 16 | 59 34.9 | 10 6.5 | 215 17.8 | 105 40.3 | 19 47.5 | 5 41.9 | -12 34.6 | |
| 18 | 89 35.3 | 10 4.8 | 245 22.8 | 135 39.7 | 19 45.4 | 35 43.8 | -12 35.7 | |
| 20 | 119 35.7 | 10 3.0 | 275 27.7 | 165 39.2 | 19 45.1 | 65 45.6 | -12 36.9 | |
| 22 | 149 36.0 | 10 1.3 | 305 32.6 | 195 38.7 | 19 44.8 | 95 47.5 | -12 38.1 | |
| Δ | 2 | -9 | | -3 | -1 | 9 | -6 | |

| φ | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 41 | 19 20 | 0 46 | 3 17 | 16 32 | 1.6 | 23 18 | 3.3 |
| 55 | 4 56 | 19 6 | 0 39 | 2 27 | 15 57 | 1.8 | 23 53 | 3.1 |
| 50 | 5 7 | 18 56 | 0 34 | 2 3 | 15 32 | 1.9 | ... | 0 |
| 45 | 5 15 | 18 47 | 0 31 | 1 48 | 15 13 | 2.0 | ... | 0 |
| 40 | 5 22 | 18 40 | 0 28 | 1 37 | 14 57 | 2.1 | ... | 0 |
| 35 | 5 28 | 18 34 | 0 26 | 1 29 | 14 44 | 2.1 | 0 | 2.6 |
| 30 | 5 34 | 18 29 | 0 25 | 1 23 | 14 32 | 2.2 | 0 14 | 2.6 |
| 20 | 5 43 | 18 20 | 0 22 | 1 15 | 14 12 | 2.3 | 0 34 | 2.5 |
| 10 | 5 51 | 18 12 | 0 21 | 1 11 | 13 55 | 2.3 | 0 52 | 2.5 |
| 0 | 5 58 | 18 5 | 0 21 | 1 10 | 13 39 | 2.4 | 1 8 | 2.4 |
| 10 | 6 6 | 17 58 | 0 21 | 1 11 | 13 23 | 2.5 | 1 25 | 2.4 |
| 20 | 6 13 | 17 50 | 0 22 | 1 14 | 13 6 | 2.5 | 1 42 | 2.3 |
| 30 | 6 22 | 17 42 | 0 24 | 1 20 | 12 46 | 2.6 | 2 | 2.3 |
| 35 | 6 27 | 17 37 | 0 26 | 1 24 | 12 34 | 2.6 | 2 14 | 2.3 |
| 40 | 6 32 | 17 32 | 0 27 | 1 30 | 12 21 | 2.7 | 2 28 | 2.2 |
| 45 | 6 39 | 17 26 | 0 30 | 1 38 | 12 5 | 2.8 | 2 44 | 2.2 |
| 50 | 6 46 | 17 18 | 0 33 | 1 48 | 11 46 | 2.8 | 3 3 | 2.1 |
| 55 | 6 55 | 17 9 | 0 37 | 2 1 | 11 21 | 3.0 | 3 28 | 2.0 |
| 60 | 7 8 | 16 57 | 0 43 | 2 19 | 10 46 | 3.1 | 4 4 | 1.9 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 73 25.2 | 56 -21 20.8 | 9 | 261 59.1 | 21 41.0 | 129 58.3 | - 7 45.5 | |
| 2 | 102 14.5 | 57 -21 19.0 | 12 | 292 3.4 | 21 41.1 | 160 2.9 | - 7 45.7 | |
| 4 | 131 3.8 | 57 -21 16.7 | 14 | 322 7.7 | 21 41.2 | 190 7.4 | - 7 45.8 | |
| 6 | 158 53.2 | 58 -21 13.8 | 17 | 352 12.0 | 21 41.2 | 220 11.9 | - 7 46.0 | |
| 8 | 188 42.7 | 58 -21 10.3 | 20 | 22 16.3 | 21 41.3 | 250 16.4 | - 7 46.2 | |
| 10 | 217 32.4 | 59 -21 6.3 | 23 | 52 20.6 | 21 41.4 | 280 20.9 | - 7 46.4 | |
| 12 | 246 22.1 | 59 -21 1.8 | 25 | 82 24.9 | 21 41.4 | 310 25.4 | - 7 46.5 | |
| 14 | 275 11.9 | 60 -20 56.7 | 28 | 112 29.2 | 21 41.5 | 340 30.0 | - 7 46.7 | |
| 16 | 304 1.9 | 61 -20 51.0 | 31 | 142 33.5 | 21 41.6 | 10 34.5 | - 7 46.9 | |
| 18 | 332 52.0 | 61 -20 44.8 | 34 | 172 37.8 | 21 41.6 | 40 39.0 | - 7 47.1 | |
| 20 | 1 42.2 | 62 -20 38.1 | 36 | 202 42.2 | 21 41.7 | 70 43.5 | - 7 47.2 | |
| 22 | 30 32.6 | 63 -20 30.9 | 39 | 232 46.5 | 21 41.8 | 100 48.0 | - 7 47.4 | |
| Δ | 2 | -9 | | 22 | 0 | 23 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|-------|---|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 - 1 51.5 | .7 | 15.9 | T _{m̄} | 19 53 | 2.4 | 59.1 | 16.1 | |
| 12 - 1 42.9 | T _{m̄} | 12 h | 1.7 min | Starost | 8.3 d | Faza | 0 | |

| PL | PLANETE | | | |
|------------|-----------------|------|---------|----------|
| | T _{m̄} | π | 360 - π | Vel. |
| h min / | ° | ° | ° | Vel. |
| 0 8 57 .1 | 251 | -4.5 | 4 | 6 31 .0 |
| 0 15 37 .1 | 151 | .8 | h | 15 18 .0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 59 23.2 | 64 -20 23.1 | 41 | 262 50.8 | 21 41.8 | 130 52.5 | - 7 47.6 | |
| 2 | 88 14.0 | 65 -20 14.8 | 44 | 292 55.1 | 21 41.9 | 160 57.0 | - 7 47.8 | |
| 4 | 117 4.9 | 66 -20 6.0 | 47 | 322 59.4 | 21 42.0 | 191 1.5 | - 7 47.9 | |
| 6 | 145 56.0 | 67 -19 56.7 | 49 | 353 3.7 | 21 42.0 | 221 6.1 | - 7 48.1 | |
| 8 | 174 47.3 | 68 -19 46.9 | 51 | 23 8.0 | 21 42.1 | 251 10.6 | - 7 48.3 | |
| 10 | 203 38.8 | 69 -19 36.6 | 54 | 53 12.3 | 21 42.1 | 281 15.1 | - 7 48.5 | |
| 12 | 232 30.5 | 70 -19 25.8 | 56 | 83 16.6 | 21 42.2 | 311 19.6 | - 7 48.6 | |
| 14 | 261 22.5 | 71 -19 14.5 | 59 | 113 21.0 | 21 42.3 | 341 24.1 | - 7 48.8 | |
| 16 | 290 14.6 | 72 -19 2.8 | 61 | 143 25.3 | 21 42.3 | 11 28.6 | - 7 49.0 | |
| 18 | 319 7.0 | 73 -18 50.6 | 63 | 173 29.6 | 21 42.4 | 41 33.1 | - 7 49.2 | |
| 20 | 347 59.7 | 74 -18 38.0 | 66 | 203 33.9 | 21 42.5 | 71 37.6 | - 7 49.3 | |
| 22 | 16 52.5 | 76 -18 24.9 | 68 | 233 38.2 | 21 42.5 | 101 42.1 | - 7 49.5 | |
| Δ | 22 | 0 | | 23 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|------|-----------------|---------|--------|----------------|-------|---|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 - 1 34.3 | .7 | 15.9 | T _{m̄} | 20 50 | 2.2 | 58.9 | 16.0 | |
| 12 - 1 25.5 | T _{m̄} | 12 h | 1.4 min | Starost | 9.3 d | Faza | 0 | |

| PL | PLANETE | | | |
|------------|-----------------|------|---------|----------|
| | T _{m̄} | π | 360 - π | Vel. |
| h min / | ° | ° | ° | Vel. |
| 0 8 58 .1 | 250 | -4.4 | 4 | 6 28 .0 |
| 0 15 36 .1 | 150 | .8 | h | 15 14 .0 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 40.8 | 9 38.4 | 336 36.7 | 225 31.5 | 19 40.4 | 126 11.5 | -12 53.3 |
| 2 | 209 41.2 | 9 36.6 | 6 41.6 | 255 30.9 | 19 40.1 | 156 13.3 | -12 54.4 |
| 4 | 239 41.5 | 9 34.9 | 36 46.5 | 285 30.4 | 19 39.7 | 186 15.1 | -12 55.6 |
| 6 | 269 41.9 | 9 33.1 | 66 51.5 | 315 29.8 | 19 39.3 | 216 17.0 | -12 56.7 |
| 8 | 299 42.3 | 9 31.3 | 96 56.4 | 345 29.2 | 19 39.0 | 246 18.8 | -12 57.9 |
| 10 | 329 42.6 | 9 29.6 | 127 1.3 | 15 28.6 | 19 38.6 | 276 20.6 | -12 59.1 |
| 12 | 359 43.0 | 9 27.8 | 157 6.3 | 45 28.1 | 19 38.2 | 306 22.4 | -13 .2 |
| 14 | 29 43.4 | 9 26.0 | 187 11.2 | 75 27.5 | 19 37.9 | 336 23.4 | -13 1.4 |
| 16 | 59 43.8 | 9 24.2 | 217 16.1 | 105 26.9 | 19 37.5 | 6 26.1 | -13 2.6 |
| 18 | 89 44.1 | 9 22.5 | 247 21.0 | 135 26.3 | 19 37.1 | 36 27.9 | -13 3.7 |
| 20 | 119 44.5 | 9 20.7 | 277 26.0 | 165 25.8 | 19 36.7 | 66 29.8 | -13 4.9 |
| 22 | 149 44.9 | 9 18.9 | 307 30.9 | 195 25.2 | 19 36.3 | 96 31.6 | -13 6.0 |
| Δ | 2 | -9 | | -3 | -2 | 9 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 46 | 19 14 | 0 46 | 3 9 | 17 35 | .8 | 0 39 | 3.6 | |
| 55 | 4 59 | 19 2 | 0 39 | 2 25 | 17 12 | 1.1 | 1 7 | 3.3 | |
| 50 | 5 10 | 18 52 | 0 34 | 2 2 | 16 55 | 1.3 | 1 28 | 3.1 | |
| 45 | 5 18 | 18 44 | 0 31 | 1 47 | 16 41 | 1.4 | 1 44 | 2.9 | |
| 40 | 5 24 | 18 37 | 0 28 | 1 36 | 16 30 | 1.6 | 1 57 | 2.8 | |
| 35 | 5 30 | 18 32 | 0 26 | 1 29 | 16 20 | 1.7 | 2 29 | 2.7 | |
| 30 | 5 35 | 18 27 | 0 24 | 1 23 | 16 12 | 1.8 | 2 18 | 2.6 | |
| 20 | 5 44 | 18 18 | 0 22 | 1 15 | 15 57 | 1.9 | 2 35 | 2.5 | |
| 10 | 5 51 | 18 11 | 0 21 | 1 11 | 15 44 | 2.1 | 2 50 | 2.4 | |
| 0 | 5 58 | 18 4 | 0 21 | 1 10 | 15 32 | 2.2 | 3 3 | 2.2 | |
| 10 | 6 5 | 17 58 | 0 21 | 1 10 | 15 19 | 2.3 | 3 17 | 2.1 | |
| 20 | 6 12 | 17 51 | 0 22 | 1 14 | 15 6 | 2.4 | 3 31 | 2.0 | |
| 30 | 6 20 | 17 43 | 0 24 | 1 20 | 14 51 | 2.6 | 3 47 | 1.9 | |
| 35 | 6 24 | 17 39 | 0 26 | 1 24 | 14 43 | 2.7 | 3 57 | 1.8 | |
| 40 | 6 29 | 17 34 | 0 27 | 1 30 | 14 33 | 2.8 | 4 7 | 1.7 | |
| 45 | 6 35 | 17 28 | 0 30 | 1 38 | 14 21 | 2.9 | 4 20 | 1.6 | |
| 50 | 6 42 | 17 21 | 0 33 | 1 48 | 14 7 | 3.1 | 4 35 | 1.4 | |
| 55 | 6 51 | 17 12 | 0 37 | 2 1 | 13 49 | 3.3 | 4 55 | 1.2 | |
| 60 | 7 2 | 17 2 | 0 43 | 2 19 | 13 24 | 3.6 | 5 20 | .9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 45 45.6 | 77 -18 11.3 | 70 | 263 42.6 | 21 42.6 | 131 46.6 | - 7 49.7 | |
| 2 | 74 39.0 | 78 -17 57.3 | 72 | 293 46.9 | 21 42.6 | 161 51.1 | - 7 49.9 | |
| 4 | 103 32.6 | 79 -17 42.9 | 74 | 323 51.2 | 21 42.7 | 191 55.7 | - 7 50.1 | |
| 6 | 132 26.4 | 81 -17 28.1 | 76 | 353 55.5 | 21 42.8 | 222 .2 | - 7 50.2 | |
| 8 | 161 20.5 | 82 -17 12.9 | 78 | 23 59.9 | 21 42.8 | 252 4.7 | - 7 50.4 | |
| 10 | 190 14.9 | 83 -16 57.3 | 80 | 54 4.2 | 21 42.9 | 282 9.2 | - 7 50.6 | |
| 12 | 219 9.5 | 84 -16 41.3 | 82 | 88 8.5 | 21 43.0 | 312 13.7 | - 7 50.8 | |
| 14 | 248 4.4 | 86 -16 24.9 | 84 | 114 12.8 | 21 43.0 | 342 18.2 | - 7 50.9 | |
| 16 | 276 59.6 | 87 -16 8.2 | 85 | 144 17.2 | 21 43.1 | 12 22.7 | - 7 51.1 | |
| 18 | 305 55.0 | 88 -15 51.1 | 87 | 174 21.5 | 21 43.1 | 42 27.2 | - 7 51.3 | |
| 20 | 334 50.7 | 90 -15 33.6 | 89 | 204 25.8 | 21 43.2 | 72 31.7 | - 7 51.5 | |
| 22 | 3 46.7 | 91 -15 15.8 | 91 | 234 30.2 | 21 43.3 | 102 36.2 | - 7 51.7 | |
| Δ | 2 | -9 | | -3 | -2 | 23 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|-------------|---------------|-------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | - 1 16.7 | .7 | 15.9 | T _{m̄} | 21 44 | 2.2 | 58.6 | 16.0 |
| 12 | - 1 7.7 | T _{m̄} | 12 h | 1.1 min | Starost | 10.3 d | Faza | O |

| UT | PLANETE | | | | | | | |
|----------|---------|-----------------|---------|-------------|--------|----|-----|------|
| | Pl. | T _{m̄} | π | 360 - π | | | | |
| h min / | o / | h min / | h min / | h min / | | | | |
| 0 | 8 58 | .1 | 249 | -4.4 | 7 6 24 | .0 | 287 | -1.9 |
| δ | 15 34 | .1 | 150 | .9 | 15 11 | .0 | 155 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|--------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 32 42.9 | 92 -14 57.7 | 92 | 264 34.5 | 21 43.3 | 132 40.7 | - 7 51.8 | |
| 2 | 61 39.4 | 94 -14 39.3 | 94 | 294 38.8 | 21 43.4 | 162 45.2 | - 7 52.0 | |
| 4 | 90 36.2 | 95 -14 20.5 | 95 | 324 43.2 | 21 43.4 | 192 49.7 | - 7 52.2 | |
| 6 | 119 33.2 | 96 -14 1.5 | 97 | 354 47.5 | 21 43.5 | 222 54.2 | - 7 52.4 | |
| 8 | 148 30.5 | 98 -13 42.1 | 98 | 24 51.9 | 21 43.6 | 252 58.7 | - 7 52.6 | |
| 10 | 177 28.1 | 99 -13 22.5 | 99 | 54 56.2 | 21 43.6 | 283 3.2 | - 7 52.7 | |
| 12 | 206 25.9 | 100 -13 2.6 | 101 | 85 .5 | 21 43.7 | 313 7.7 | - 7 52.9 | |
| 14 | 235 24.0 | 102 -12 42.5 | 102 | 115 4.9 | 21 43.7 | 343 12.2 | - 7 53.1 | |
| 16 | 264 22.3 | 103 -12 22.1 | 103 | 145 9.2 | 21 43.8 | 13 16.7 | - 7 53.3 | |
| 18 | 293 20.9 | 104 -12 1.4 | 104 | 175 13.6 | 21 43.9 | 43 21.2 | - 7 53.5 | |
| 20 | 322 19.8 | 106 -11 40.5 | 106 | 205 17.9 | 21 43.9 | 73 25.7 | - 7 53.6 | |
| 22 | 351 18.9 | 107 -11 19.4 | 107 | 235 22.3 | 21 44.0 | 103 30.2 | - 7 53.8 | |
| Δ | 22 | 0 | | 23 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-------|-----------------|-------------|---------------|-------|------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | - 0 58.7 | .8 | 15.9 | T _{m̄} | 22 36 | 2.0 | 58.2 | 15.9 |
| 12 | - 0 49.5 | T _{m̄} | 12 h | .8 min | Starost | 11.3 d | Faza | O |

| UT | PLANETE | | | | | | | |
|----------|---------|-----------------|---------|-------------|--------|----|-----|------|
| | Pl. | T _{m̄} | π | 360 - π | | | | |
| h min / | o / | h min / | h min / | h min / | | | | |
| 0 | 8 59 | .1 | 248 | -4.4 | 7 6 21 | .0 | 287 | -1.9 |
| δ | 15 33 | .1 | 149 | .9 | 15 7 | .0 | 155 | 1.0 |

30. AVGUST

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----|-----------|---------------|-------------------------------|-------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 49.9 | 8 55.7 | 338 35.0 | 225 17.4 | 19 30.9 | 126 55.2 | -13 21.1 |
| 2 | 209 50.3 | 8 53.9 | 8 39.9 | 255 16.8 | 19 30.5 | 156 57.0 | -13 22.2 |
| 4 | 239 50.6 | 8 52.1 | 38 44.8 | 285 16.2 | 19 30.1 | 186 58.8 | -13 23.4 |
| 6 | 269 51.0 | 8 50.3 | 68 49.7 | 315 15.6 | 19 29.6 | 217 .6 | -13 24.5 |
| 8 | 299 51.4 | 8 48.5 | 98 54.7 | 345 15.0 | 19 29.2 | 247 2.4 | -13 25.7 |
| 10 | 329 51.8 | 8 46.7 | 128 59.6 | 15 14.4 | 19 28.7 | 277 4.2 | -13 26.9 |
| 12 | 359 52.2 | 8 44.9 | 159 4.5 | 45 13.8 | 19 28.3 | 307 6.0 | -13 28.0 |
| 14 | 29 52.6 | 8 43.1 | 189 9.5 | 75 13.2 | 19 27.8 | 337 7.8 | -13 29.2 |
| 16 | 59 53.0 | 8 41.3 | 219 14.4 | 105 12.5 | 19 27.4 | 7 9.6 | -13 30.3 |
| 18 | 89 53.4 | 8 39.5 | 249 19.3 | 135 11.9 | 19 26.9 | 37 11.4 | -13 31.5 |
| 20 | 119 53.8 | 8 37.7 | 279 24.2 | 165 11.3 | 19 26.4 | 67 13.2 | -13 32.6 |
| 22 | 149 54.1 | 8 35.9 | 309 29.2 | 195 10.7 | 19 26.0 | 97 15.0 | -13 33.8 |
| Δ | 2 | -9 | | -3 | -2 | 9 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 51 | 19 9 | 0 45 | 3 2 | 18 9 | .5 | 3 31 | 3.5 |
| 55 | 5 3 | 18 57 | 0 38 | 2 22 | 17 59 | .8 | 3 45 | 3.3 |
| 50 | 5 12 | 18 48 | 0 34 | 2 0 | 17 52 | 1.0 | 3 36 | 3.0 |
| 45 | 5 20 | 18 40 | 0 30 | 1 46 | 17 46 | 1.1 | 4 5 | 2.9 |
| 40 | 5 26 | 18 34 | 0 28 | 1 36 | 17 41 | 1.3 | 4 12 | 2.7 |
| 35 | 5 31 | 18 29 | 0 26 | 1 28 | 17 36 | 1.4 | 4 18 | 2.6 |
| 30 | 5 36 | 18 25 | 0 24 | 1 23 | 17 32 | 1.5 | 4 23 | 2.5 |
| 20 | 5 44 | 18 17 | 0 22 | 1 15 | 17 25 | 1.7 | 4 32 | 2.3 |
| 10 | 5 51 | 18 10 | 0 21 | 1 11 | 17 19 | 1.8 | 4 40 | 2.2 |
| 0 | 5 57 | 18 4 | 0 21 | 1 9 | 17 13 | 2.0 | 4 48 | 2.0 |
| 10 | 6 3 | 17 58 | 0 21 | 1 10 | 17 8 | 2.1 | 4 55 | 1.9 |
| 20 | 6 10 | 17 51 | 0 22 | 1 14 | 17 2 | 2.3 | 5 3 | 1.7 |
| 30 | 6 17 | 17 44 | 0 24 | 1 20 | 16 55 | 2.5 | 5 12 | 1.5 |
| 35 | 6 21 | 17 40 | 0 26 | 1 24 | 16 51 | 2.6 | 5 17 | 1.4 |
| 40 | 6 26 | 17 35 | 0 27 | 1 30 | 16 46 | 2.7 | 5 23 | 1.3 |
| 45 | 6 32 | 17 30 | 0 30 | 1 38 | 16 41 | 2.8 | 5 30 | 1.2 |
| 50 | 6 38 | 17 24 | 0 33 | 1 48 | 16 34 | 3.0 | 5 38 | 1.0 |
| 55 | 6 46 | 17 16 | 0 37 | 2 1 | 16 26 | 3.2 | 5 47 | .8 |
| 60 | 6 56 | 17 6 | 0 42 | 2 19 | 16 16 | 3.5 | 6 0 | .6 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|--------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 20 18.2 | 108 -10 58.1 | 108 | 265 26.6 | 21 44.0 | 133 34.7 | -7 54.0 | |
| 49 | 17.8 | 109 -10 36.6 | 109 | 295 31.0 | 21 44.1 | 163 39.2 | -7 54.2 | |
| 4 | 78 17.6 | 110 -10 14.9 | 109 | 325 35.3 | 21 44.1 | 193 43.7 | -7 54.4 | |
| 6 | 107 17.7 | 112 -9 53.0 | 110 | 355 39.7 | 21 44.2 | 223 48.2 | -7 54.5 | |
| 8 | 136 18.0 | 113 -9 30.9 | 111 | 25 44.0 | 21 44.3 | 253 52.7 | -7 54.7 | |
| 10 | 165 18.6 | 114 -9 8.7 | 112 | 55 48.4 | 21 44.3 | 283 57.2 | -7 54.9 | |
| 12 | 194 19.3 | 115 -8 46.4 | 113 | 85 52.7 | 21 44.4 | 314 1.7 | -7 55.1 | |
| 14 | 223 20.3 | 116 -8 23.8 | 113 | 115 57.1 | 21 44.4 | 344 6.2 | -7 55.3 | |
| 16 | 252 21.5 | 117 -8 1.1 | 114 | 146 1.5 | 21 44.5 | 14 10.7 | -7 55.4 | |
| 18 | 281 22.9 | 118 -7 38.3 | 115 | 176 5.8 | 21 44.6 | 44 15.2 | -7 55.6 | |
| 20 | 310 24.5 | 119 -7 15.4 | 115 | 206 10.2 | 21 44.6 | 74 19.7 | -7 55.8 | |
| 22 | 339 26.4 | 120 -6 52.4 | 116 | 236 14.5 | 21 44.7 | 104 24.2 | -7 56.0 | |
| Δ | 2 | -9 | | -3 | -2 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-----------------|---------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _z | t | |
| h min s | s | / | h min min / | h min | min | / | h min | / |
| 00 - 0 40.4 | .8 | 15.9 | T _{m̄} | 23 25 | 2.0 | 57.8 | 15.7 | |
| 12 - 0 31.0 | T _{m̄} | 12 h .5 min | Starost | 12.3 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | | | h min / | o | | h min / | o |
| ♀ 8 59 .1 | 247 | -4.4 | 7 | 6 17 | .0 | 287 | -1.9 | |
| ♂ 15 31 .1 | 148 | .9 | h | 15 3 | .0 | 155 | 1.0 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------|-------------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 8 28.4 | 121 -6 29.2 | 116 | 266 18.9 | 21 44.7 | 134 28.7 | -7 56.2 | |
| 2 | 37 30.6 | 122 -6 6.0 | 116 | 296 23.3 | 21 44.8 | 164 33.2 | -7 56.3 | |
| 4 | 66 33.0 | 123 -5 42.7 | 117 | 326 27.6 | 21 44.8 | 194 37.6 | -7 56.5 | |
| 6 | 95 35.6 | 124 -5 19.3 | 117 | 356 32.0 | 21 44.9 | 224 42.1 | -7 56.7 | |
| 8 | 124 38.4 | 125 -4 55.9 | 117 | 26 36.4 | 21 44.9 | 254 46.6 | -7 56.9 | |
| 10 | 153 41.3 | 126 -4 32.4 | 118 | 56 40.7 | 21 45.0 | 284 51.1 | -7 57.1 | |
| 12 | 182 44.5 | 126 -4 8.9 | 118 | 86 45.1 | 21 45.1 | 314 55.6 | -7 57.3 | |
| 14 | 211 47.7 | 127 -3 45.3 | 118 | 116 49.5 | 21 45.1 | 345 .1 | -7 57.4 | |
| 16 | 240 51.2 | 128 -3 21.7 | 118 | 146 53.8 | 21 45.2 | 15 4.6 | -7 57.6 | |
| 18 | 269 54.8 | 129 -2 58.1 | 118 | 176 58.2 | 21 45.2 | 45 9.1 | -7 57.8 | |
| 20 | 298 58.5 | 129 -2 34.4 | 118 | 207 2.6 | 21 45.3 | 75 13.6 | -7 58.0 | |
| 22 | 328 2.4 | 130 -2 10.8 | 118 | 237 7.0 | 21 45.3 | 105 18.1 | -7 58.2 | |
| Δ | 22 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-------------|-------------------------|-----------------|-----------------|---------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _z | t | |
| h min s | s | / | h min min / | h min | min | / | h min | / |
| 00 - 0 21.7 | .8 | 15.9 | T _{m̄} |1 | 1.0 | 57.2 | 15.6 | |
| 12 - 0 12.2 | T _{m̄} | 12 h .2 min | Starost | 13.3 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π 360-2 | Vel. | Pl. | T _{m̄} | π 360-2 | Vel. |
| h min / | o | | | h min / | o | | h min / | o |
| ♀ 8 60 .1 | 246 | -4.4 | 7 | 6 14 | .0 | 287 | -1.9 | |
| ♂ 15 30 .1 | 148 | .9 | h | 14 60 | .0 | 155 | 1.0 | |

1. SEPTEMBAR

2012.

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 59.3 | 8 12.4 | 340 33.2 | 225 2.4 | 19 19.5 | 127 38.3 -13 48.7 | |
| 2 | 209 59.7 | 8 10.6 | 10 38.2 | 255 1.8 | 19 19.0 | 157 40.1 -13 49.8 | |
| 4 | 240 .1 | 8 8.8 | 40 43.1 | 285 1.1 | 19 18.3 | 187 41.8 -13 51.0 | |
| 6 | 270 .5 | 8 7.0 | 70 48.0 | 315 .5 | 19 18.0 | 217 43.6 -13 52.1 | |
| 8 | 300 .9 | 8 5.2 | 100 53.0 | 344 59.8 | 19 17.4 | 247 45.4 -13 53.3 | |
| 10 | 330 1.3 | 8 3.4 | 130 57.9 | 14 59.2 | 19 16.9 | 277 47.2 -13 54.4 | |
| 12 | 0 1.7 | 8 1.5 | 161 2.8 | 44 58.5 | 19 16.4 | 307 48.9 -13 55.5 | |
| 14 | 30 2.1 | 7 59.7 | 191 7.7 | 74 57.9 | 19 15.8 | 337 50.7 -13 56.7 | |
| 16 | 60 2.5 | 7 57.9 | 221 12.7 | 104 57.2 | 19 15.3 | 7 52.5 -13 57.8 | |
| 18 | 90 2.9 | 7 56.1 | 251 17.6 | 134 56.6 | 19 14.7 | 37 54.3 -13 59.0 | |
| 20 | 120 3.3 | 7 54.3 | 281 22.5 | 164 55.9 | 19 14.2 | 67 56.0 -14 .1 | |
| 22 | 150 3.7 | 7 52.4 | 311 27.5 | 194 55.3 | 19 13.6 | 97 57.8 -14 1.2 | |
| Δ | 2 | -9 | | -3 | -3 | 9 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 4 56 | 19 3 | 0 45 | 2 56 | 18 34 | .5 | 6 19 | 3.4 | |
| 55 | 5 7 | 18 52 | 0 38 | 2 20 | 18 36 | .7 | 6 20 | 3.1 | |
| 50 | 5 15 | 18 43 | 0 34 | 1 59 | 18 38 | .9 | 6 20 | 2.9 | |
| 45 | 5 22 | 18 37 | 0 30 | 1 45 | 18 39 | 1.1 | 6 21 | 2.7 | |
| 40 | 5 28 | 18 31 | 0 28 | 1 38 | 18 40 | 1.2 | 6 21 | 2.6 | |
| 35 | 5 33 | 18 26 | 0 26 | 1 28 | 18 41 | 1.3 | 6 21 | 2.5 | |
| 30 | 5 37 | 18 22 | 0 24 | 1 22 | 18 42 | 1.4 | 6 22 | 2.4 | |
| 20 | 5 44 | 18 15 | 0 22 | 1 15 | 18 44 | 1.6 | 6 22 | 2.2 | |
| 10 | 5 51 | 18 9 | 0 21 | 1 11 | 18 45 | 1.7 | 6 23 | 2.0 | |
| 0 | 5 57 | 18 3 | 0 21 | 1 9 | 18 47 | 1.9 | 6 23 | 1.9 | |
| 10 | 6 2 | 17 58 | 0 21 | 1 10 | 18 48 | 2.0 | 6 23 | 1.7 | |
| 20 | 6 8 | 17 52 | 0 22 | 1 13 | 18 50 | 2.2 | 6 24 | 1.6 | |
| 30 | 6 15 | 17 45 | 0 24 | 1 20 | 18 51 | 2.3 | 6 24 | 1.4 | |
| 35 | 6 19 | 17 42 | 0 25 | 1 24 | 18 52 | 2.4 | 6 24 | 1.3 | |
| 40 | 6 23 | 17 37 | 0 27 | 1 30 | 18 53 | 2.6 | 6 25 | 1.2 | |
| 45 | 6 28 | 17 33 | 0 30 | 1 38 | 18 55 | 2.7 | 6 25 | 1.1 | |
| 50 | 6 34 | 17 27 | 0 33 | 1 48 | 18 56 | 2.9 | 6 25 | .9 | |
| 55 | 6 41 | 17 20 | 0 37 | 2 1 | 18 58 | 3.1 | 6 26 | .7 | |
| 60 | 6 50 | 17 11 | 0 42 | 2 19 | 19 1 | 3.3 | 6 26 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|-------------------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 357 6.4 | 131 - 1 | 47.1 | 118 | 267 11.3 | 21 45.4 | 135 22.6 - 7 58.4 | |
| 2 | 26 10.5 | 131 - 1 | 23.5 | 118 | 297 15.7 | 21 45.4 | 165 27.0 - 7 58.5 | |
| 4 | 55 14.8 | 132 - 0 | 59.9 | 118 | 327 20.1 | 21 45.5 | 195 31.5 - 7 58.7 | |
| 6 | 88 19.2 | 133 - 0 | 36.3 | 118 | 357 24.5 | 21 45.5 | 225 36.0 - 7 58.9 | |
| 8 | 113 23.7 | 133 - 0 | 12.7 | 118 | 27 28.9 | 21 45.6 | 255 40.5 - 7 59.1 | |
| 10 | 142 28.3 | 134 - 0 | 10.8 | 117 | 57 33.2 | 21 45.7 | 285 45.0 - 7 59.3 | |
| 12 | 171 33.0 | 134 - 0 | 34.3 | 117 | 87 37.6 | 21 45.7 | 315 49.5 - 7 59.5 | |
| 14 | 200 37.8 | 135 - 0 | 57.8 | 117 | 117 42.0 | 21 45.8 | 345 54.0 - 7 59.6 | |
| 16 | 229 42.7 | 135 - 1 | 21.1 | 117 | 147 46.4 | 21 45.8 | 15 58.5 - 7 59.8 | |
| 18 | 258 47.7 | 135 - 1 | 44.4 | 116 | 177 50.8 | 21 45.9 | 46 2.9 - 8 .0 | |
| 20 | 287 52.8 | 136 - 2 | 7.6 | 116 | 207 55.2 | 21 45.9 | 76 7.4 - 8 .2 | |
| 22 | 316 58.0 | 136 - 2 | 30.8 | 115 | 237 59.6 | 21 46.0 | 106 11.9 - 8 .4 | |
| Δ | 2 | -9 | | -3 | -3 | 9 | -6 | |

| UT | SUNCE | | | | MJESEC | | | |
|------------|-------------------------|---------------|-----------------|--------|-------------|---------------|-------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min / | h min | / | h min | |
| 00 - 0 2.7 | .8 | 15.9 | T _{m̄} | 0 12 | 1.9 | 56.7 | 15.4 | |
| 12 0 7.0 | T _{m̄} | 11 h 59.9 min | Starost | 14.3 d | Faza | ○ | | |

| PLANETE | | | | | | | | | |
|----------|-----------------|------------|-------------|---------|---------|-----------------|----------|-------------|---------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / | h min / |
| 0 9 0 .1 | 244 -4.3 | 4 287 -1.9 | 6 10 .0 | 155 1.0 | 0 14 56 | .9 | 14 53 .0 | .0 | 155 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|------------------|--------------|--|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | |
| 0 | 346 3.2 | 136 - 2 | 53.8 | 115 | 268 4.0 | 21 46.0 | 136 16.4 - 8 .6 | | |
| 2 | 15 8.5 | 137 - 3 | 16.8 | 114 | 298 8.3 | 21 46.1 | 166 20.9 - 8 .7 | | |
| 4 | 44 13.8 | 137 - 3 | 39.7 | 114 | 328 12.7 | 21 46.1 | 196 25.4 - 8 .9 | | |
| 6 | 73 19.3 | 137 - 4 | 2.4 | 113 | 358 17.1 | 21 46.2 | 226 29.8 - 8 1.1 | | |
| 8 | 102 24.7 | 138 - 4 | 25.0 | 113 | 28 21.5 | 21 46.2 | 258 34.3 - 8 1.3 | | |
| 10 | 131 30.2 | 138 - 4 | 47.6 | 112 | 55 25.9 | 21 46.3 | 286 38.8 - 8 1.5 | | |
| 12 | 160 35.8 | 138 - 5 | 9.9 | 111 | 88 30.3 | 21 46.3 | 316 43.3 - 8 1.7 | | |
| 14 | 189 41.3 | 138 - 5 | 32.2 | 111 | 118 34.7 | 21 46.4 | 346 47.8 - 8 1.9 | | |
| 16 | 218 47.0 | 138 - 5 | 54.3 | 110 | 148 39.1 | 21 46.4 | 16 52.3 - 8 2.0 | | |
| 18 | 247 52.6 | 138 - 6 | 16.3 | 109 | 178 43.5 | 21 46.5 | 46 56.7 - 8 2.2 | | |
| 20 | 276 58.3 | 138 - 6 | 38.1 | 108 | 208 47.9 | 21 46.5 | 77 1.2 - 8 2.4 | | |
| 22 | 306 3.9 | 138 - 6 | 59.8 | 107 | 238 52.3 | 21 46.6 | 107 5.7 - 8 2.6 | | |
| Δ | 22 | 0 | | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|-----------|-------------------------|---------------|-----------------|--------|-------------|---------------|-------|--|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | |
| h min s | s | / | h min | min / | h min | / | h min | |
| 00 0 16.6 | .8 | 15.9 | T _{m̄} | 0 58 | 1.8 | 56.1 | 15.3 | |
| 12 0 26.4 | T _{m̄} | 11 h 59.6 min | Starost | 15.3 d | Faza | ○ | | |

| PLANETE | | | | | | | | | |
|----------|-----------------|------------|-------------|---------|---------|-----------------|----------|-------------|---------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min / | o / | h min / | h min / | o / | h min / | o / | h min / |
| 0 9 1 .1 | 243 -4.3 | 4 287 -1.9 | 6 10 .0 | 155 1.0 | 0 14 56 | .9 | 14 53 .0 | .0 | 155 1.0 |

3. SEPTEMBER

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 9.0 | 7 28.7 | 342 31.5 | 224 46.6 19 6.2 | 128 20.7 -14 16.0 | | | |
| 2 | 210 9.4 | 7 26.8 | 12 36.4 | 254 45.9 19 5.6 | 158 22.4 -14 17.1 | | | |
| 4 | 240 9.8 | 7 25.0 | 42 41.4 | 284 45.2 19 4.9 | 188 24.2 -14 18.3 | | | |
| 6 | 270 10.2 | 7 23.1 | 72 46.3 | 314 44.5 19 4.3 | 218 25.9 -14 19.4 | | | |
| 8 | 300 10.6 | 7 21.3 | 102 51.2 | 344 43.8 19 3.7 | 248 27.7 -14 20.5 | | | |
| 10 | 330 11.0 | 7 19.5 | 132 56.2 | 14 43.2 19 3.1 | 278 29.4 -14 21.7 | | | |
| 12 | 0 11.5 | 7 17.6 | 163 1.1 | 44 42.5 19 2.5 | 308 31.2 -14 22.8 | | | |
| 14 | 30 11.9 | 7 15.8 | 193 6.0 | 74 41.8 19 1.9 | 338 32.9 -14 23.9 | | | |
| 16 | 60 12.3 | 7 13.9 | 223 10.9 | 104 41.1 19 1.3 | 8 34.7 -14 25.1 | | | |
| 18 | 90 12.7 | 7 12.1 | 253 15.9 | 134 40.4 19 .6 | 38 36.4 -14 26.2 | | | |
| 20 | 120 13.1 | 7 10.3 | 283 20.8 | 164 39.7 18 60.0 | 68 38.1 -14 27.3 | | | |
| 22 | 150 13.5 | 7 8.4 | 313 25.7 | 194 39.0 18 59.4 | 98 39.9 -14 28.4 | | | |
| Δ | 2 | -9 | | -3 | -3 | 9 | -6 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 0 | 18 57 | 0 44 | 2 51 | 18 59 | .6 | 8 58 | 3.2 | |
| 55 | 5 11 | 18 47 | 0 38 | 2 17 | 19 13 | .9 | 8 46 | 2.9 | |
| 50 | 5 18 | 18 39 | 0 33 | 1 58 | 19 23 | 1.1 | 8 37 | 2.8 | |
| 45 | 5 25 | 18 33 | 0 30 | 1 44 | 19 32 | 1.2 | 8 30 | 2.6 | |
| 40 | 5 30 | 18 28 | 0 28 | 1 34 | 19 39 | 1.3 | 8 24 | 2.5 | |
| 35 | 5 34 | 18 24 | 0 26 | 1 27 | 19 45 | 1.4 | 8 19 | 2.4 | |
| 30 | 5 38 | 18 20 | 0 24 | 1 22 | 19 51 | 1.5 | 8 14 | 2.3 | |
| 20 | 5 45 | 18 13 | 0 22 | 1 15 | 20 0 | 1.6 | 8 6 | 2.1 | |
| 10 | 5 51 | 18 8 | 0 21 | 1 11 | 20 9 | 1.8 | 7 60 | 2.0 | |
| 0 | 5 56 | 18 3 | 0 21 | 1 9 | 20 17 | 1.9 | 7 53 | 1.9 | |
| 10 | 6 1 | 17 57 | 0 21 | 1 10 | 20 25 | 2.0 | 7 47 | 1.7 | |
| 20 | 6 7 | 17 52 | 0 22 | 1 13 | 20 33 | 2.1 | 7 40 | 1.6 | |
| 30 | 6 13 | 17 46 | 0 24 | 1 20 | 20 43 | 2.3 | 7 32 | 1.5 | |
| 35 | 6 16 | 17 43 | 0 25 | 1 24 | 20 49 | 2.4 | 7 28 | 1.4 | |
| 40 | 6 20 | 17 39 | 0 27 | 1 30 | 20 55 | 2.5 | 7 23 | 1.3 | |
| 45 | 6 24 | 17 35 | 0 29 | 1 38 | 21 3 | 2.6 | 7 17 | 1.2 | |
| 50 | 6 30 | 17 30 | 0 32 | 1 48 | 21 12 | 2.7 | 7 10 | 1.0 | |
| 55 | 6 36 | 17 23 | 0 36 | 2 1 | 21 23 | 2.9 | 7 2 | .8 | |
| 60 | 6 44 | 17 15 | 0 42 | 2 19 | 21 38 | 3.2 | 6 51 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 335 9.6 138 | 7 21.3 | 107 | 268 56.7 21 46.6 | 137 10.2 -8 2.8 | | | |
| 2 | 4 15.3 138 | 7 42.6 | 106 | 299 1.1 21 46.7 | 167 14.7 -8 3.0 | | | |
| 4 | 33 21.0 138 | 8 3.7 | 105 | 329 5.6 21 46.7 | 197 19.1 -8 3.2 | | | |
| 6 | 62 26.7 138 | 8 24.7 | 104 | 359 10.0 21 46.8 | 227 23.6 -8 3.3 | | | |
| 8 | 91 32.4 138 | 8 45.5 | 103 | 29 14.4 21 46.8 | 257 28.1 -8 3.5 | | | |
| 10 | 120 38.1 138 | 9 6.1 | 102 | 59 18.8 21 46.9 | 287 32.6 -8 3.7 | | | |
| 12 | 149 43.7 138 | 9 26.5 | 101 | 89 23.2 21 46.9 | 317 37.0 -8 3.9 | | | |
| 14 | 178 49.4 138 | 9 46.7 | 100 | 119 27.6 21 47.0 | 347 41.5 -8 4.1 | | | |
| 16 | 207 55.0 138 | 10 6.7 | 99 | 149 32.0 21 47.0 | 17 46.0 -8 4.3 | | | |
| 18 | 237 .6 138 | 10 26.5 | 98 | 179 36.4 21 47.1 | 47 50.5 -8 4.5 | | | |
| 20 | 266 6.2 138 | 10 46.1 | 97 | 209 40.9 21 47.1 | 77 55.0 -8 4.6 | | | |
| 22 | 295 11.7 137 | 11 5.5 | 96 | 239 45.3 21 47.2 | 107 59.4 -8 4.8 | | | |
| Δ | 2 | -9 | | -3 | -3 | 9 | -6 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|-------------|-----------------|--------------------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | |
| 00 | 0 36.2 | .8 | 15.9 | T _{m̄} | 1 42 | 1.9 | 55.5 | 15.1 | |
| 12 | 0 46.1 | T _{m̄} | 11 h 59.2 min | Starost | 16.3 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | |
| Pl. | h min / | o | h min / | h min / | h min / | h min / | o | h min / | |
| φ | 9 1 | .1 | 242 | -4.3 | 4 | 6 3 | .0 | 286 | -1.9 |
| φ' | 15 26 | .1 | 146 | .9 | h | 14 49 | .0 | 155 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 324 17.2 137 | 11 24.6 | 95 | 269 49.7 21 47.2 | 138 3.9 -8 5.0 | | | |
| 2 | 353 22.6 137 | 11 43.5 | 93 | 299 54.1 21 47.3 | 168 8.4 -8 5.2 | | | |
| 4 | 22 28.1 137 | 12 2.2 | 92 | 329 58.5 21 47.3 | 198 12.9 -8 5.4 | | | |
| 6 | 51 33.4 137 | 12 20.6 | 91 | 0 3.0 21 47.4 | 228 17.3 -8 5.6 | | | |
| 8 | 80 38.7 136 | 12 38.8 | 90 | 30 7.4 21 47.4 | 258 21.8 -8 5.8 | | | |
| 10 | 109 44.0 136 | 12 56.7 | 88 | 60 11.8 21 47.5 | 288 26.3 -8 6.0 | | | |
| 12 | 138 49.2 136 | 13 14.4 | 87 | 90 16.2 21 47.5 | 318 30.7 -8 6.1 | | | |
| 14 | 167 54.3 135 | 13 31.8 | 86 | 120 20.7 21 47.6 | 348 35.2 -8 6.3 | | | |
| 16 | 196 59.4 135 | 13 49.0 | 85 | 150 25.1 21 47.6 | 18 39.7 -8 6.5 | | | |
| 18 | 226 4.4 135 | 14 5.9 | 83 | 180 29.5 21 47.7 | 48 44.2 -8 6.7 | | | |
| 20 | 255 9.3 134 | 14 22.5 | 82 | 210 34.0 21 47.7 | 78 48.6 -8 6.9 | | | |
| 22 | 284 14.1 134 | 14 38.8 | 80 | 240 38.4 21 47.8 | 108 53.1 -8 7.1 | | | |
| Δ | 22 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|-------------|-----------------|--------------------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | |
| 00 | 0 56.0 | .8 | 15.9 | T _{m̄} | 2 27 | 1.9 | 55.0 | 15.0 | |
| 12 | 1 6.0 | T _{m̄} | 11 h 58.9 min | Starost | 17.3 d | Faza | ○ | | |
| PLANETE | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | Pl. | T _{m̄} | π ₃₆₀₋₂ | Vel. | |
| Pl. | h min / | o | h min / | h min / | h min / | h min / | o | h min / | |
| φ | 9 2 | .1 | 241 | -4.3 | 4 | 5 60 | .0 | 286 | -1.9 |
| φ' | 15 24 | .1 | 145 | .9 | h | 14 46 | .0 | 155 | 1.0 |

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|----------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S $_\sigma$ | $\delta\sigma$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 19.0 | 6 44.4 | 344 29.8 | 224 30.0 | 18 50.8 | 129 2.4 -14 43.1 | |
| 2 | 210 19.4 | 6 42.5 | 14 34.7 | 254 29.3 | 18 50.1 | 159 4.1 -14 44.2 | |
| 4 | 240 19.8 | 6 40.7 | 44 39.7 | 284 28.6 | 18 49.9 | 189 5.8 -14 45.3 | |
| 6 | 270 20.2 | 6 38.8 | 74 44.6 | 314 27.8 | 18 48.7 | 219 7.6 -14 46.4 | |
| 8 | 300 20.6 | 6 36.9 | 104 49.5 | 344 27.1 | 18 48.0 | 249 9.3 -14 47.5 | |
| 10 | 330 21.1 | 6 35.1 | 134 54.4 | 14 26.4 | 18 47.3 | 279 11.0 -14 48.7 | |
| 12 | 0 21.5 | 6 33.2 | 164 59.4 | 44 25.7 | 18 46.6 | 309 12.7 -14 49.8 | |
| 14 | 30 21.9 | 6 31.4 | 195 4.3 | 74 25.0 | 18 45.9 | 339 14.4 -14 50.9 | |
| 16 | 60 22.3 | 6 29.5 | 225 9.2 | 104 24.3 | 18 45.2 | 9 16.1 -14 52.0 | |
| 18 | 90 22.7 | 6 27.6 | 255 14.1 | 134 23.6 | 18 44.5 | 39 17.9 -14 53.1 | |
| 20 | 120 23.2 | 6 25.8 | 285 19.1 | 164 22.9 | 18 43.8 | 69 19.6 -14 54.2 | |
| 22 | 150 23.6 | 6 23.9 | 315 24.0 | 194 22.1 | 18 43.1 | 99 21.3 -14 55.4 | |
| Δ | 2 | -9 | | -4 | -4 | 9 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 5 | 18 50 | 0 44 | 2 47 | 19 33 | 1.0 | 11 29 | 2.9 | |
| 55 | 5 14 | 18 42 | 0 38 | 2 15 | 19 59 | 1.3 | 11 5 | 2.7 | |
| 50 | 5 21 | 18 35 | 0 33 | 1 56 | 20 18 | 1.4 | 10 47 | 2.6 | |
| 45 | 5 27 | 18 29 | 0 30 | 1 43 | 20 32 | 1.5 | 10 33 | 2.5 | |
| 40 | 5 32 | 18 25 | 0 27 | 1 34 | 20 45 | 1.6 | 10 22 | 2.4 | |
| 35 | 5 36 | 18 21 | 0 26 | 1 27 | 20 55 | 1.6 | 10 12 | 2.3 | |
| 30 | 5 39 | 18 17 | 0 24 | 1 22 | 21 5 | 1.7 | 10 3 | 2.2 | |
| 20 | 5 45 | 18 12 | 0 22 | 1 14 | 21 20 | 1.8 | 9 49 | 2.1 | |
| 10 | 5 51 | 18 6 | 0 21 | 1 10 | 21 34 | 1.9 | 9 36 | 2.0 | |
| 0 | 5 55 | 18 2 | 0 21 | 1 9 | 21 48 | 2.0 | 9 24 | 1.9 | |
| 10 | 5 60 | 17 57 | 0 21 | 1 10 | 22 1 | 2.0 | 9 12 | 1.8 | |
| 20 | 6 5 | 17 53 | 0 22 | 1 13 | 22 15 | 2.1 | 8 59 | 1.8 | |
| 30 | 6 10 | 17 47 | 0 24 | 1 19 | 22 31 | 2.2 | 8 44 | 1.6 | |
| 35 | 6 13 | 17 44 | 0 25 | 1 24 | 22 41 | 2.3 | 8 36 | 1.6 | |
| 40 | 6 17 | 17 41 | 0 27 | 1 30 | 22 52 | 2.3 | 8 26 | 1.5 | |
| 45 | 6 21 | 17 37 | 0 29 | 1 38 | 23 4 | 2.4 | 8 15 | 1.4 | |
| 50 | 6 25 | 17 33 | 0 32 | 1 48 | 23 20 | 2.5 | 8 1 | 1.3 | |
| 55 | 6 31 | 17 27 | 0 36 | 2 1 | 23 40 | 2.6 | 7 44 | 1.1 | |
| 60 | 6 38 | 17 20 | 0 42 | 2 19 | ... | 0 | 7 22 | 0.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|------------------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S $_\eta$ | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 313 18.9 | 134 | 14 54.9 | 79 | 270 42.8 | 21 47.8 | 138 57.6 - 8 7.3 | |
| 2 | 342 23.6 | 133 | 15 10.7 | 78 | 300 47.3 | 21 47.9 | 169 2.1 - 8 7.5 | |
| 4 | 11 28.3 | 133 | 15 26.2 | 76 | 330 51.7 | 21 47.9 | 199 6.5 - 8 7.6 | |
| 6 | 40 32.8 | 132 | 15 41.4 | 75 | 0 56.1 | 21 48.0 | 229 11.0 - 8 7.8 | |
| 8 | 69 37.3 | 132 | 15 56.3 | 73 | 31 26.6 | 21 48.0 | 259 15.5 - 8 8.0 | |
| 10 | 98 41.7 | 131 | 16 11.0 | 72 | 61 5.0 | 21 48.0 | 289 19.9 - 8 8.2 | |
| 12 | 127 46.0 | 131 | 16 25.3 | 70 | 91 9.4 | 21 48.1 | 319 24.4 - 8 8.4 | |
| 14 | 156 50.2 | 131 | 16 39.3 | 69 | 121 13.9 | 21 48.1 | 349 28.9 - 8 8.6 | |
| 16 | 185 54.3 | 130 | 16 53.0 | 67 | 151 18.3 | 21 48.2 | 19 33.3 - 8 8.8 | |
| 18 | 214 58.3 | 130 | 17 6.4 | 65 | 181 22.8 | 21 48.2 | 49 37.8 - 8 9.0 | |
| 20 | 244 2.3 | 129 | 17 19.5 | 64 | 211 27.2 | 21 48.3 | 79 42.3 - 8 9.2 | |
| 22 | 273 6.1 | 129 | 17 32.2 | 62 | 241 31.7 | 21 48.3 | 109 46.7 - 8 9.3 | |
| Δ | 2 | -9 | | -4 | -4 | 22 | 0 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|-------------|------|------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_ζ | r | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 1 16.0 | .8 | 15.9 | T _{m̄} | 3 13 | 1.9 | 54.6 | 14.9 |
| 12 | 1 26.1 | T _{m̄} | 11 h 58.6 min | Starost | 18.3 d | Faza | ○ | |

| UT | PLANETE | | | | | | | | |
|----------|---------|-----------------|---------|-------------|---|-------|----|-----|------|
| | Pl. | T _{m̄} | π | 360 - π | | | | | |
| h min / | o / | h min | h min / | Vel. | | | | | |
| 0 | 9 2 | .1 | 240 | -4.3 | 4 | 5 56 | .0 | 286 | -2.0 |
| δ | 15 23 | .1 | 145 | .9 | h | 14 42 | .0 | 154 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|-------------------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S $_\eta$ | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 302 9.9 | 128 | 17 44.7 | 61 | 271 36.1 | 21 48.4 | 139 51.2 - 8 9.5 | |
| 2 | 331 13.6 | 128 | 17 56.8 | 59 | 301 40.6 | 21 48.4 | 169 55.7 - 8 9.7 | |
| 4 | 0 17.1 | 127 | 18 8.6 | 57 | 331 45.0 | 21 48.5 | 200 .1 - 8 9.9 | |
| 6 | 29 20.6 | 127 | 18 20.0 | 56 | 1 49.5 | 21 48.5 | 230 4.6 - 8 10.1 | |
| 8 | 58 24.0 | 126 | 18 31.1 | 54 | 31 53.9 | 21 48.5 | 260 9.1 - 8 10.3 | |
| 10 | 87 27.3 | 126 | 18 41.9 | 52 | 61 58.4 | 21 48.6 | 290 13.5 - 8 10.5 | |
| 12 | 116 30.5 | 125 | 18 52.3 | 50 | 92 2.8 | 21 48.6 | 320 18.0 - 8 10.7 | |
| 14 | 145 33.5 | 125 | 19 2.4 | 49 | 122 7.3 | 21 48.7 | 350 22.5 - 8 10.9 | |
| 16 | 175 36.5 | 125 | 19 12.1 | 47 | 152 11.8 | 21 48.7 | 20 26.9 - 8 11.1 | |
| 18 | 203 39.5 | 124 | 19 21.5 | 45 | 182 16.2 | 21 48.8 | 50 31.4 - 8 11.2 | |
| 20 | 232 42.3 | 124 | 19 30.5 | 43 | 212 20.7 | 21 48.8 | 80 35.8 - 8 11.4 | |
| 22 | 261 45.0 | 123 | 19 39.2 | 42 | 242 25.1 | 21 48.8 | 110 40.3 - 8 11.6 | |
| Δ | 22 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|-------------|------|------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_ζ | r | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 1 36.3 | .9 | 15.9 | T _{m̄} | 3 59 | 2.0 | 54.4 | 14.8 |
| 12 | 1 46.5 | T _{m̄} | 11 h 58.2 min | Starost | 19.3 d | Faza | ○ | |

| UT | PLANETE | | | | | | | | |
|----------|---------|-----------------|---------|-------------|---|-------|----|-----|------|
| | Pl. | T _{m̄} | π | 360 - π | | | | | |
| h min / | o / | h min | h min / | Vel. | | | | | |
| 0 | 9 3 | .1 | 239 | -4.3 | 4 | 5 53 | .0 | 286 | -2.0 |
| δ | 15 22 | .1 | 144 | .9 | h | 14 38 | .0 | 154 | 1.0 |

7. SEPTEMBAR

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 29.1 | 5 59.6 | 346 28.1 | 224 12.7 | 18 33.4 | 129 43.4 -15 9.8 | |
| 2 | 210 29.6 | 5 57.8 | 16 33.0 | 254 12.0 | 18 32.7 | 159 45.1 -15 10.9 | |
| 4 | 240 30.0 | 5 55.9 | 46 37.9 | 284 11.3 | 18 31.9 | 189 46.8 -15 12.0 | |
| 6 | 270 30.4 | 5 54.0 | 76 42.9 | 314 10.5 | 18 31.1 | 219 48.5 -15 13.1 | |
| 8 | 300 30.8 | 5 52.1 | 106 47.8 | 344 9.8 | 18 30.3 | 249 50.2 -15 14.2 | |
| 10 | 330 31.3 | 5 50.3 | 136 52.7 | 14 9.1 | 18 29.6 | 279 51.9 -15 15.3 | |
| 12 | 0 31.7 | 5 48.4 | 166 57.6 | 44 8.4 | 18 28.8 | 309 53.5 -15 16.4 | |
| 14 | 30 32.1 | 5 46.5 | 197 2.6 | 74 7.6 | 18 28.0 | 339 55.2 -15 17.5 | |
| 16 | 60 32.6 | 5 44.6 | 227 7.5 | 104 6.9 | 18 27.2 | 9 56.9 -15 18.6 | |
| 18 | 90 33.0 | 5 42.8 | 257 12.4 | 134 6.1 | 18 26.4 | 39 58.6 -15 19.7 | |
| 20 | 120 33.4 | 5 40.9 | 287 17.4 | 164 5.4 | 18 25.6 | 70 3 -15 20.9 | |
| 22 | 150 33.8 | 5 39.0 | 317 22.3 | 194 4.7 | 18 24.8 | 100 2.0 -15 22.0 | |
| Δ | 2 | -9 | | -4 | -4 | 8 | -6 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-------|----------------|---------------------|---------------|---------------------|-------------|-------------------|-------------|-------------------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 10 | 18 44 | 0 43 | 2 43 | 20 32 | 1 9 | 13 44 | 2 3 | |
| 55 | 5 18 | 18 37 | 0 37 | 2 14 | 21 6 | 1 9 | 13 11 | 2 2 | |
| 50 | 5 24 | 18 30 | 0 33 | 1 55 | 21 31 | 1 9 | 12 47 | 2 2 | |
| 45 | 5 29 | 18 26 | 0 30 | 1 43 | 21 50 | 2 0 | 12 28 | 2 2 | |
| 40 | 5 34 | 18 21 | 0 27 | 1 33 | 22 5 | 2 0 | 12 13 | 2 1 | |
| 35 | 5 37 | 18 18 | 0 26 | 1 26 | 22 18 | 2 0 | 12 0 | 2 1 | |
| 30 | 5 40 | 18 15 | 0 24 | 1 21 | 22 30 | 2 0 | 11 49 | 2 1 | |
| 20 | 5 46 | 18 10 | 0 22 | 1 14 | 22 49 | 2 0 | 11 30 | 2 1 | |
| 10 | 5 50 | 18 5 | 0 21 | 1 10 | 23 6 | 2 0 | 11 13 | 2 0 | |
| 0 | 5 55 | 18 1 | 0 21 | 1 9 | 23 22 | 2 0 | 10 58 | 2 0 | |
| 10 | 5 59 | 17 57 | 0 21 | 1 10 | 23 38 | 2 0 | 10 42 | 2 0 | |
| 20 | 6 3 | 17 53 | 0 22 | 1 13 | 23 56 | 2 0 | 10 25 | 2 0 | |
| 30 | 6 8 | 17 48 | 0 24 | 1 19 | ... | 0 | 10 6 | 1 9 | |
| 35 | 6 10 | 17 46 | 0 25 | 1 24 | ... | 0 | 9 55 | 1 9 | |
| 40 | 6 13 | 17 43 | 0 27 | 1 30 | ... | 0 | 9 42 | 1 9 | |
| 45 | 6 17 | 17 40 | 0 29 | 1 38 | 0 2 | 2 3 | 9 27 | 1 8 | |
| 50 | 6 21 | 17 36 | 0 32 | 1 48 | 0 20 | 2 3 | 9 9 | 1 8 | |
| 55 | 6 26 | 17 31 | 0 36 | 2 1 | 0 43 | 2 4 | 8 45 | 1 7 | |
| 60 | 6 32 | 17 25 | 0 42 | 2 20 | 1 15 | 2 5 | 8 12 | 1 6 | |
| S | | | | | | | | | |
| UT | SUNCE | | | MJESEC | | | MJESEC | | |
| UT | $e = T_p - UT$ | $\Delta/24$ | t | Probaz | $\Delta/24$ | π_{UT} | t | π_{UT} | t |
| h | min | s | / | h | min | min | / | h | / |
| 00 | 1 56.7 | .9 | 15.9 | T \bar{m} | 4 46 | 2.0 | 54.2 | 14.8 | |
| 12 | 2 7.0 | T \bar{m}_{\odot} | 11 h 57.9 min | Starost | 20.3 d | Faza ① | | | |
| UT | PLANETE | | | PLANETE | | | PLANETE | | |
| Pl. | T \bar{m} | π | 360 - π | Vel. | Pl. | T \bar{m} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| 0 | 9 3 | .1 | 238 | -4.2 | 4 | 5 49 | .0 | 286 | -2.0 |
| 0 | 15 20 | .1 | 143 | .9 | h | 14 35 | .0 | 154 | 1.0 |

8. SEPTEMBAR

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 34.3 | 5 37.1 | 347 27.2 | 224 3.9 | 18 24.0 | 130 3.6 -15 23.1 | |
| 2 | 210 34.7 | 5 35.2 | 17 32.1 | 154 3.2 | 18 23.2 | 160 5.3 -15 24.2 | |
| 4 | 240 35.1 | 5 33.4 | 47 37.1 | 284 2.4 | 18 22.4 | 190 7.0 -15 25.3 | |
| 6 | 270 35.6 | 5 31.5 | 77 42.0 | 314 1.7 | 18 21.6 | 220 8.7 -15 26.4 | |
| 8 | 300 36.0 | 5 29.6 | 107 46.9 | 344 1.0 | 18 20.7 | 250 10.4 -15 27.5 | |
| 10 | 330 36.4 | 5 27.7 | 137 51.9 | 14 .2 | 18 19.9 | 280 12.0 -15 28.6 | |
| 12 | 0 36.9 | 5 25.8 | 167 56.8 | 43 59.5 | 18 19.1 | 310 13.7 -15 29.6 | |
| 14 | 30 37.3 | 5 23.9 | 198 1.7 | 73 58.7 | 18 18.3 | 340 15.4 -15 30.7 | |
| 16 | 60 37.7 | 5 22.1 | 228 6.6 | 103 58.0 | 18 17.4 | 10 17.0 -15 31.8 | |
| 18 | 90 38.2 | 5 20.2 | 258 11.6 | 133 57.2 | 18 16.6 | 40 18.7 -15 32.9 | |
| 20 | 120 38.6 | 5 18.3 | 288 16.5 | 163 56.5 | 18 15.7 | 70 20.4 -15 34.0 | |
| 22 | 150 39.0 | 5 16.4 | 318 21.4 | 193 55.7 | 18 14.9 | 100 22.0 -15 35.1 | |
| Δ | 2 | -9 | | -4 | -4 | 8 | -5 |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|-------|----------------|---------------------|---------------|---------------------|-------------|-------------------|-------------|-------------------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 12 | 18 41 | 0 43 | 2 41 | 21 17 | 2.3 | 14 40 | 1.9 | |
| 55 | 5 20 | 18 34 | 0 37 | 2 13 | 21 52 | 2.3 | 14 5 | 1.9 | |
| 50 | 5 26 | 18 28 | 0 33 | 1 55 | 22 17 | 2.2 | 13 40 | 2.0 | |
| 45 | 5 31 | 18 24 | 0 30 | 1 42 | 22 37 | 2.2 | 13 20 | 2.0 | |
| 40 | 5 35 | 18 20 | 0 27 | 1 33 | 22 52 | 2.2 | 13 4 | 2.0 | |
| 35 | 5 38 | 18 17 | 0 26 | 1 26 | 23 6 | 2.1 | 12 51 | 2.0 | |
| 30 | 5 41 | 18 14 | 0 24 | 1 21 | 23 17 | 2.1 | 12 39 | 2.0 | |
| 20 | 5 46 | 18 9 | 0 22 | 1 14 | 23 37 | 2.1 | 12 19 | 2.0 | |
| 10 | 5 50 | 18 5 | 0 21 | 1 10 | 23 55 | 2.1 | 12 2 | 2.0 | |
| 0 | 5 54 | 18 1 | 0 21 | 1 9 | ... | 0 | 11 46 | 2.0 | |
| 10 | 5 58 | 17 57 | 0 21 | 1 10 | ... | 0 | 11 30 | 2.0 | |
| 20 | 6 2 | 17 53 | 0 22 | 1 13 | ... | 0 | 11 12 | 2.1 | |
| 30 | 6 7 | 17 49 | 0 24 | 1 19 | 0 15 | 2.1 | 10 52 | 2.1 | |
| 35 | 6 9 | 17 47 | 0 25 | 1 24 | 0 27 | 2.1 | 10 41 | 2.1 | |
| 40 | 6 12 | 17 44 | 0 27 | 1 30 | 0 40 | 2.1 | 10 27 | 2.1 | |
| 45 | 6 15 | 17 41 | 0 29 | 1 38 | 0 56 | 2.1 | 10 11 | 2.1 | |
| 50 | 6 19 | 17 37 | 0 32 | 1 48 | 1 15 | 2.1 | 9 52 | 2.1 | |
| 55 | 6 23 | 17 33 | 0 36 | 2 1 | 1 40 | 2.1 | 9 26 | 2.1 | |
| 60 | 6 29 | 17 27 | 0 42 | 2 20 | 2 16 | 2.1 | 8 51 | 2.1 | |
| S | | | | | | | | | |
| UT | SUNCE | | | MJESEC | | | MJESEC | | |
| UT | $e = T_p - UT$ | $\Delta/24$ | t | Probaz | $\Delta/24$ | π_{UT} | t | π_{UT} | t |
| h | min | s | / | h | min | min | / | h | / |
| 00 | 2 17.3 | .9 | 15.9 | T \bar{m} | 5 34 | 2.0 | 54.3 | 14.8 | |
| 12 | 2 27.7 | T \bar{m}_{\odot} | 11 h 57.5 min | Starost | 21.3 d | Faza ① | | | |
| UT | PLANETE | | | PLANETE | | | PLANETE | | |
| Pl. | T \bar{m} | π | 360 - π | Vel. | Pl. | T \bar{m} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| 0 | 9 4 | .1 | 237 | -4.2 | 4 | 5 46 | .0 | 286 | -2.0 |
| 0 | 15 19 | .1 | 143 | .9 | h | 14 31 | .0 | 154 | 1.0 |

9. SEPTEMBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 39.5 | 5 | 14.5 | 348 | 26.4 | 223 | 55.0 |
| 2 | 210 | 39.9 | 5 | 12.6 | 18 | 31.3 | 253 | 54.3 |
| 4 | 240 | 40.3 | 5 | 10.7 | 48 | 36.2 | 283 | 53.5 |
| 6 | 270 | 40.8 | 5 | 8.8 | 78 | 41.1 | 313 | 52.8 |
| 8 | 300 | 41.2 | 5 | 7.0 | 108 | 46.1 | 343 | 52.0 |
| 10 | 330 | 41.6 | 5 | 5.1 | 138 | 51.0 | 13 | 51.2 |
| 12 | 0 | 42.1 | 5 | 3.2 | 168 | 55.9 | 43 | 50.5 |
| 14 | 30 | 42.5 | 5 | 1.3 | 199 | 8 | 73 | 49.7 |
| 16 | 60 | 42.9 | 4 | 59.4 | 229 | 5.8 | 103 | 49.0 |
| 18 | 90 | 43.4 | 4 | 57.5 | 259 | 10.7 | 133 | 48.2 |
| 20 | 120 | 43.8 | 4 | 55.6 | 289 | 15.6 | 163 | 47.5 |
| 22 | 150 | 44.3 | 4 | 53.7 | 319 | 20.6 | 193 | 46.7 |
| Δ | 2 | -9 | | | | | -4 | -4 |
| | | | | | | | 8 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 15 | 18 38 | 0 43 | 2 40 | 22 13 | 2.8 | 15 25 | 1.4 | |
| 55 | 5 22 | 18 31 | 0 37 | 2 12 | 22 47 | 2.6 | 14 51 | 1.6 | |
| 50 | 5 27 | 18 26 | 0 33 | 1 54 | 23 11 | 2.5 | 14 26 | 1.7 | |
| 45 | 5 32 | 18 22 | 0 30 | 1 42 | 23 29 | 2.4 | 14 7 | 1.8 | |
| 40 | 5 36 | 18 18 | 0 27 | 1 33 | 23 45 | 2.4 | 13 52 | 1.8 | |
| 35 | 5 39 | 18 15 | 0 25 | 1 26 | 23 57 | 2.3 | 13 39 | 1.9 | |
| 30 | 5 41 | 18 12 | 0 24 | 1 21 | ... | ... | 13 27 | 1.9 | |
| 20 | 5 46 | 18 8 | 0 22 | 1 14 | ... | ... | 13 8 | 2.0 | |
| 10 | 5 50 | 18 4 | 0 21 | 1 10 | ... | ... | 12 51 | 2.0 | |
| 0 | 5 54 | 18 0 | 0 21 | 1 9 | 0 11 | 2.0 | 12 35 | 2.0 | |
| 10 | 5 58 | 17 57 | 0 21 | 1 10 | 0 27 | 2.0 | 12 19 | 2.1 | |
| 20 | 6 1 | 17 53 | 0 22 | 1 13 | 0 45 | 2.0 | 12 1 | 2.1 | |
| 30 | 6 5 | 17 49 | 0 24 | 1 19 | 1 5 | 2.0 | 11 42 | 2.2 | |
| 35 | 6 8 | 17 47 | 0 25 | 1 24 | 1 16 | 1.9 | 11 30 | 2.2 | |
| 40 | 6 10 | 17 45 | 0 27 | 1 30 | 1 30 | 1.9 | 11 17 | 2.3 | |
| 45 | 6 13 | 17 42 | 0 29 | 1 38 | 1 46 | 1.9 | 11 1 | 2.3 | |
| 50 | 6 17 | 17 39 | 0 32 | 1 48 | 2 5 | 1.8 | 10 42 | 2.4 | |
| 55 | 6 21 | 17 34 | 0 36 | 2 1 | 2 30 | 1.8 | 10 16 | 2.4 | |
| 60 | 6 26 | 17 29 | 0 42 | 2 20 | 3 6 | 1.7 | 9 41 | 2.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 267 | 26.5 | 114 | 21 | 13.1 | -7 | 274 | 17.1 |
| 2 | 296 | 27.3 | 114 | 21 | 11.7 | -9 | 304 | 21.6 |
| 4 | 325 | 28.1 | 114 | 21 | 10.0 | -11 | 334 | 26.1 |
| 6 | 354 | 28.8 | 114 | 21 | 7.8 | -13 | 4 | 30.6 |
| 8 | 323 | 29.6 | 113 | 21 | 5.2 | -15 | 34 | 35.1 |
| 10 | 52 | 30.2 | 113 | 21 | 2.2 | -17 | 64 | 39.6 |
| 12 | 81 | 30.9 | 113 | 20 | 58.8 | -19 | 94 | 44.1 |
| 14 | 110 | 31.5 | 113 | 20 | 55.0 | -21 | 124 | 48.6 |
| 16 | 139 | 32.1 | 113 | 20 | 50.8 | -23 | 154 | 53.1 |
| 18 | 168 | 32.7 | 113 | 20 | 46.2 | -25 | 184 | 57.6 |
| 20 | 197 | 33.3 | 113 | 20 | 41.2 | -27 | 215 | 21 |
| 22 | 226 | 33.8 | 113 | 20 | 35.8 | -29 | 245 | 6.6 |
| Δ | 2 | -9 | | | | | 23 | 0 |
| | | | | | | | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-----------------|--------|-----------------|----------------|-----------------|---------------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h | min | s | / | h | min | min | / | |
| 00 | 2 | 38.1 | .9 | 15.9 | T _{m̄} | 6 | 23 | 2.0 |
| 12 | 2 | 48.5 | T _{m̄} | 11 | 57.2 | min | Starost | 22.3 d Faza ① |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min | / | o | h min | / | h min | / | o |
| ♀ | 9 | 5 | .1 | 235 | -4.2 | 5 | 42 | .0 |
| ♂ | 15 | 18 | .1 | 142 | .9 | 14 | 28 | .0 |
| | 154 | 1 | | | | 154 | 1 | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 255 | 34.4 | 113 | 20 | 30.0 | -31 | 275 | 11.1 |
| 2 | 284 | 34.9 | 113 | 20 | 23.7 | -33 | 305 | 15.6 |
| 4 | 313 | 35.4 | 113 | 20 | 17.1 | -35 | 335 | 20.2 |
| 6 | 342 | 35.9 | 112 | 20 | 10.1 | -37 | 5 | 24.7 |
| 8 | 11 | 36.4 | 112 | 20 | 2.6 | -39 | 35 | 29.2 |
| 10 | 40 | 36.9 | 112 | 19 | 54.8 | -41 | 65 | 33.7 |
| 12 | 69 | 37.4 | 112 | 19 | 46.5 | -43 | 95 | 38.2 |
| 14 | 98 | 37.9 | 112 | 19 | 37.9 | -45 | 125 | 42.7 |
| 16 | 127 | 38.4 | 113 | 19 | 28.9 | -47 | 155 | 47.3 |
| 18 | 156 | 38.9 | 113 | 19 | 19.4 | -49 | 185 | 51.8 |
| 20 | 185 | 39.4 | 113 | 19 | 9.6 | -51 | 215 | 56.3 |
| 22 | 214 | 39.9 | 113 | 18 | 59.4 | -53 | 246 | .8 |
| Δ | 2 | -9 | | | | | 23 | 0 |
| | | | | | | | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-----------------|--------|-----------------|----------------|-----------------|---------------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h | min | s | / | h | min | min | / | |
| 00 | 2 | 59.0 | .9 | 15.9 | T _{m̄} | 7 | 12 | 2.0 |
| 12 | 3 | 9.5 | T _{m̄} | 11 | 56.8 | min | Starost | 23.3 d Faza ① |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min | / | o | h min | / | h min | / | o |
| ♀ | 9 | 5 | .1 | 234 | -4.2 | 5 | 38 | .0 |
| ♂ | 15 | 16 | .1 | 141 | .9 | 14 | 24 | .0 |
| | 154 | 1 | | | | 154 | 1 | |

11. SEPTEMBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-----------|---------------|-------------------------------|-------------|-----------------|-------------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 49.9 | 4 29.0 | 350 24.6 | 223 36.9 | 17 52.7 | 131 3.3 -16 2.3 | |
| 2 | 210 50.4 | 4 27.1 | 20 29.6 | 253 36.1 | 17 51.8 | 161 4.9 -16 3.4 | |
| 4 | 240 50.8 | 4 25.2 | 50 34.5 | 283 35.3 | 17 50.8 | 191 6.6 -16 4.5 | |
| 6 | 270 51.3 | 4 23.3 | 80 39.4 | 313 34.6 | 17 49.9 | 221 8.2 -16 5.5 | |
| 8 | 300 51.7 | 4 21.4 | 110 44.3 | 343 33.8 | 17 48.9 | 251 9.8 -16 6.6 | |
| 10 | 330 52.1 | 4 19.5 | 140 49.3 | 13 33.0 | 17 48.0 | 281 11.5 -16 7.7 | |
| 12 | 0 52.6 | 4 17.6 | 170 54.2 | 43 32.3 | 17 47.0 | 311 13.1 -16 8.8 | |
| 14 | 30 53.0 | 4 15.7 | 200 59.1 | 73 31.5 | 17 46.1 | 341 14.7 -16 9.8 | |
| 16 | 60 53.5 | 4 13.8 | 231 4.1 | 103 30.7 | 17 45.1 | 11 16.3 -16 10.9 | |
| 18 | 90 53.9 | 4 11.9 | 261 9.0 | 133 30.0 | 17 44.2 | 41 18.0 -16 12.0 | |
| 20 | 120 54.3 | 4 10.0 | 291 13.9 | 163 29.2 | 17 43.2 | 71 19.6 -16 13.1 | |
| 22 | 150 54.8 | 4 8.1 | 321 18.8 | 193 28.4 | 17 42.2 | 101 21.2 -16 14.1 | |
| Δ | 2 | -10 | | -4 | -5 | 8 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 19 | 18 32 | 0 43 | 2 37 | ... | ... | 0 | 16 26 | .8 |
| 55 | 5 26 | 18 26 | 0 37 | 2 10 | ... | ... | 0 | 16 1 | 1.1 |
| 50 | 5 30 | 18 22 | 0 33 | 1 53 | 0 11 | 2.7 | 15 42 | 1.3 | |
| 45 | 5 34 | 18 18 | 0 30 | 1 41 | 0 27 | 2.6 | 15 28 | 1.4 | |
| 40 | 5 37 | 18 15 | 0 27 | 1 32 | 0 41 | 2.5 | 15 15 | 1.5 | |
| 35 | 5 40 | 18 12 | 0 25 | 1 26 | 0 53 | 2.4 | 15 15 | 1.6 | |
| 30 | 5 43 | 18 10 | 0 24 | 1 21 | 1 3 | 2.4 | 14 56 | 1.7 | |
| 20 | 5 47 | 18 6 | 0 22 | 1 14 | 1 20 | 2.2 | 14 40 | 1.8 | |
| 10 | 5 50 | 18 3 | 0 21 | 1 10 | 1 35 | 2.1 | 14 26 | 1.9 | |
| 0 | 5 53 | 17 60 | 0 21 | 1 9 | 1 49 | 2.0 | 14 13 | 2.0 | |
| 10 | 5 56 | 17 57 | 0 21 | 1 10 | 2 31 | 2.0 | 13 60 | 2.1 | |
| 20 | 5 59 | 17 54 | 0 22 | 1 13 | 2 19 | 1.9 | 13 46 | 2.3 | |
| 30 | 6 3 | 17 51 | 0 24 | 1 19 | 2 36 | 1.7 | 13 30 | 2.4 | |
| 35 | 6 5 | 17 49 | 0 25 | 1 24 | 2 46 | 1.7 | 13 20 | 2.5 | |
| 40 | 6 7 | 17 47 | 0 27 | 1 30 | 2 57 | 1.6 | 13 9 | 2.6 | |
| 45 | 6 9 | 17 44 | 0 29 | 1 38 | 3 11 | 1.5 | 12 57 | 2.7 | |
| 50 | 6 12 | 17 42 | 0 32 | 1 48 | 3 27 | 1.4 | 12 41 | 2.8 | |
| 55 | 6 16 | 17 38 | 0 36 | 2 2 | 3 48 | 1.2 | 12 21 | 3.0 | |
| 60 | 6 20 | 17 34 | 0 41 | 2 21 | 4 16 | 1.0 | 11 54 | 3.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 243 40.4 | 113 | 18 48.8 | -55 | 276 5.3 | 21 50.9 | 144 18.6 | -8 21.1 |
| 2 | 272 41.0 | 113 | 18 37.8 | -57 | 306 9.9 | 21 50.8 | 174 23.0 | -8 21.3 |
| 4 | 301 41.5 | 113 | 18 26.4 | -59 | 336 14.4 | 21 50.9 | 204 27.4 | -8 21.5 |
| 6 | 330 42.1 | 113 | 18 14.6 | -61 | 6 18.9 | 21 50.9 | 234 31.9 | -8 21.7 |
| 8 | 359 42.7 | 113 | 18 2.5 | -63 | 36 23.5 | 21 50.9 | 264 36.3 | -8 21.9 |
| 10 | 28 43.3 | 113 | 17 50.0 | -65 | 66 28.0 | 21 51.0 | 294 40.8 | -8 22.1 |
| 12 | 57 43.9 | 113 | 17 37.1 | -66 | 96 32.5 | 21 51.0 | 324 45.2 | -8 22.3 |
| 14 | 86 44.5 | 113 | 17 23.8 | -68 | 126 37.1 | 21 51.0 | 354 49.7 | -8 22.5 |
| 16 | 115 45.2 | 113 | 17 10.1 | -70 | 156 41.6 | 21 51.1 | 24 54.1 | -8 22.7 |
| 18 | 144 45.9 | 113 | 16 56.1 | -72 | 186 46.1 | 21 51.1 | 54 58.6 | -8 22.9 |
| 20 | 173 46.6 | 114 | 16 41.7 | -74 | 216 50.7 | 21 51.1 | 85 3.0 | -8 23.0 |
| 22 | 202 47.3 | 114 | 16 27.0 | -75 | 246 55.2 | 21 51.2 | 115 7.4 | -8 23.2 |
| Δ | 2 | -10 | | -4 | -5 | 8 | -5 | |
| | 23 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | | |
| h min s | s | / | h min min / | T _{m̄} | 8 1 | 2.0 | 55.4 | 15.1 | |
| 00 | 3 20.0 | .9 | 15.9 | | | | | | |
| 12 | 3 30.5 | T _{m̄} | 11 h 56.5 min | Starost 24.3 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min min / | o / | h min / | h min / | h min min / | o / | h min / | h min / |
| 0 | 9 6 .1 | 233 | -4.2 | 4 | 5 35 | .0 | 286 | -2.0 | |
| δ | 15 15 .1 | 141 | .9 | h | 14 21 | .0 | 154 | 1.0 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|-----------|----------|---------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 231 48.0 | 114 | 16 11.9 | -77 | 276 59.7 | 21 51.2 | 145 11.9 | -8 23.4 |
| 2 | 260 48.8 | 114 | 15 56.4 | -79 | 307 4.3 | 21 51.2 | 175 16.3 | -8 23.6 |
| 4 | 289 49.5 | 114 | 15 40.6 | -81 | 337 8.8 | 21 51.3 | 205 20.8 | -8 23.8 |
| 6 | 318 50.3 | 114 | 15 24.5 | -82 | 7 13.4 | 21 51.3 | 235 25.2 | -8 24.0 |
| 8 | 347 51.1 | 114 | 15 8.0 | -84 | 37 17.9 | 21 51.3 | 265 29.6 | -8 24.2 |
| 10 | 16 52.0 | 114 | 14 51.1 | -86 | 67 22.5 | 21 51.4 | 295 34.1 | -8 24.4 |
| 12 | 45 52.8 | 114 | 14 34.0 | -88 | 97 27.0 | 21 51.4 | 325 38.5 | -8 24.6 |
| 14 | 74 53.7 | 114 | 14 16.5 | -89 | 127 31.6 | 21 51.4 | 355 43.0 | -8 24.8 |
| 16 | 103 54.5 | 114 | 13 58.6 | -91 | 157 36.1 | 21 51.5 | 25 47.4 | -8 25.0 |
| 18 | 132 55.4 | 114 | 13 40.5 | -92 | 187 40.7 | 21 51.5 | 55 51.8 | -8 25.2 |
| 20 | 161 56.3 | 115 | 13 22.0 | -94 | 217 45.2 | 21 51.5 | 85 56.3 | -8 25.4 |
| 22 | 190 57.2 | 115 | 13 3.2 | -95 | 247 49.8 | 21 51.6 | 116 .7 | -8 25.6 |
| Δ | 23 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|---------|
| | e = T _p - UT | $\Delta/24$ | r | Prolaz | $\Delta/24$ | π_{ζ} | r | | |
| h min s | s | / | h min min / | T _{m̄} | 8 50 | 2.0 | 56.1 | 15.3 | |
| 00 | 3 41.1 | .9 | 15.9 | | | | | | |
| 12 | 3 51.7 | T _{m̄} | 11 h 56.1 min | Starost 25.3 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min / | o / | h min min / | o / | h min / | h min / | h min min / | o / | h min / | h min / |
| 0 | 9 6 .1 | 232 | -4.2 | 4 | 5 31 | .0 | 286 | -2.0 | |
| δ | 15 14 .1 | 140 | .9 | h | 14 17 | .0 | 154 | 1.0 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | .5 | 3 43.2 | 352 22.9 | 223 18.4 | 17 29.4 | 131 42.2 | -16 28.0 |
| 2 | 211 | 1.0 | 3 41.3 | 22 27.8 | 253 17.6 | 17 28.3 | 161 43.8 | -16 29.1 |
| 4 | 241 | 1.4 | 3 39.4 | 52 32.8 | 283 16.8 | 17 27.3 | 191 45.4 | -16 30.1 |
| 6 | 271 | 1.8 | 3 37.5 | 82 37.7 | 313 16.1 | 17 26.3 | 221 47.0 | -16 31.2 |
| 8 | 301 | 2.3 | 3 35.5 | 112 42.6 | 343 15.3 | 17 25.3 | 251 48.6 | -16 32.3 |
| 10 | 331 | 2.7 | 3 33.6 | 142 47.5 | 13 14.5 | 17 24.7 | 281 50.2 | -16 33.3 |
| 12 | 1 | 3.2 | 3 31.7 | 172 52.5 | 43 13.7 | 17 23.2 | 311 51.8 | -16 34.4 |
| 14 | 31 | 3.6 | 3 29.8 | 202 57.4 | 73 13.0 | 17 22.2 | 341 53.4 | -16 35.4 |
| 16 | 61 | 4.1 | 3 27.9 | 233 2.3 | 103 12.2 | 17 21.1 | 11 55.0 | -16 36.5 |
| 18 | 91 | 4.5 | 3 26.0 | 263 7.3 | 133 11.4 | 17 20.1 | 41 56.5 | -16 37.6 |
| 20 | 121 | 4.9 | 3 24.0 | 293 12.2 | 163 10.6 | 17 19.1 | 71 58.1 | -16 38.6 |
| 22 | 151 | 5.4 | 3 22.1 | 323 17.1 | 193 9.9 | 17 18.0 | 101 59.7 | -16 39.7 |
| Δ | 2 | -10 | | | -4 | -5 | 8 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 24 | 18 26 | 0 42 | 2 34 | 1 56 | 3 5 | 17 2 | .6 | |
| 55 | 5 29 | 18 21 | 0 37 | 2 9 | 2 13 | 3 2 | 16 50 | .9 | |
| 50 | 5 33 | 18 17 | 0 33 | 1 52 | 2 25 | 3 0 | 16 40 | 1.1 | |
| 45 | 5 37 | 18 14 | 0 30 | 1 41 | 2 36 | 2 8 | 16 32 | 1.2 | |
| 40 | 5 39 | 18 12 | 0 27 | 1 32 | 2 44 | 2 7 | 16 26 | 1.3 | |
| 35 | 5 42 | 18 9 | 0 25 | 1 26 | 2 51 | 2.6 | 16 20 | 1.5 | |
| 30 | 5 44 | 18 7 | 0 24 | 1 20 | 2 58 | 2.5 | 16 15 | 1.6 | |
| 20 | 5 47 | 18 4 | 0 22 | 1 14 | 3 9 | 2.3 | 16 6 | 1.7 | |
| 10 | 5 50 | 18 2 | 0 21 | 1 10 | 3 18 | 2.2 | 15 58 | 1.9 | |
| 0 | 5 53 | 17 59 | 0 21 | 1 9 | 3 27 | 2.0 | 15 51 | 2.0 | |
| 10 | 5 55 | 17 57 | 0 21 | 1 10 | 3 36 | 1.9 | 15 43 | 2.2 | |
| 20 | 5 58 | 17 54 | 0 22 | 1 13 | 3 46 | 1.8 | 15 35 | 2.3 | |
| 30 | 6 0 | 17 52 | 0 24 | 1 19 | 3 57 | 1.6 | 15 26 | 2.5 | |
| 35 | 6 2 | 17 50 | 0 25 | 1 24 | 4 3 | 1.5 | 15 21 | 2.6 | |
| 40 | 6 4 | 17 49 | 0 27 | 1 30 | 4 10 | 1.4 | 15 15 | 2.7 | |
| 45 | 6 6 | 17 47 | 0 29 | 1 38 | 4 19 | 1.2 | 15 8 | 2.9 | |
| 50 | 6 8 | 17 44 | 0 32 | 1 48 | 4 29 | 1.1 | 14 59 | 3.1 | |
| 55 | 6 11 | 17 42 | 0 36 | 2 2 | 4 41 | .9 | 14 49 | 3.3 | |
| 60 | 6 14 | 17 39 | 0 41 | 2 21 | 4 57 | .6 | 14 35 | 3.6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|----------------|---------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 219 | 58.1 | 115 | 12 44.1 | -97 | 277 54.3 | 21 51.6 | 146 5.2 | -8 25.8 |
| 2 | 248 | 59.1 | 115 | 12 24.7 | -98 | 307 58.9 | 21 51.6 | 176 9.6 | -8 26.0 |
| 4 | 278 | .0 | 115 | 12 5.1 | -100 | 338 3.5 | 21 51.7 | 206 14.0 | -8 26.2 |
| 6 | 307 | .9 | 115 | 11 45.1 | -101 | 8 80 | 21 51.7 | 236 18.5 | -8 26.4 |
| 8 | 336 | 1.9 | 115 | 11 24.8 | -103 | 38 12.6 | 21 51.7 | 266 22.9 | -8 26.6 |
| 10 | 5 | 2.8 | 115 | 11 4.3 | -104 | 68 17.1 | 21 51.8 | 296 27.3 | -8 26.8 |
| 12 | 34 | 3.7 | 115 | 10 43.5 | -105 | 98 21.7 | 21 51.8 | 326 31.8 | -8 27.0 |
| 14 | 63 | 4.6 | 115 | 10 22.4 | -107 | 128 26.3 | 21 51.8 | 356 36.2 | -8 27.2 |
| 16 | 92 | 5.5 | 114 | 10 1.1 | -108 | 158 30.8 | 21 51.9 | 26 40.7 | -8 27.4 |
| 18 | 121 | 6.4 | 114 | 9 39.5 | -109 | 188 35.4 | 21 51.9 | 56 45.1 | -8 27.6 |
| 20 | 150 | 7.3 | 114 | 9 17.6 | -110 | 218 40.0 | 21 51.9 | 86 49.5 | -8 27.8 |
| 22 | 179 | 8.2 | 114 | 8 55.5 | -112 | 248 44.6 | 21 52.0 | 116 54.0 | -8 28.0 |
| Δ | 2 | -10 | | | -4 | -5 | 8 | -5 | |
| | | | | | 23 | 0 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | | | | |
|---------|-------|-----------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|------|
| | h min | s | s / | h min | min | min / | h min | t' | | | |
| 00 | 4 | 2.3 | .9 | 15.9 | T _{m̄} | 9.39 | 2.0 | 56.8 | 15.5 | | |
| 12 | 4 | 12.9 | T _{m̄} | 11 h 55.8 min | Starost | 26.3 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. | |
| | h min | / | o | h min | / | h min | / | o | h min | / | |
| ♀ | 9 | 7 | .1 | 231 | -4.1 | 4 | 5 | 28 | .0 | 286 | -2.0 |
| ♂ | 15 | 12 | .1 | 139 | .9 | h | 14 | 14 | .0 | 154 | 1.0 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|--------|----------------|----------------|----------------|----------------|---------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 208 | 9.0 | 114 | 8 33.2 | -113 | 278 49.1 | 21 52.0 | 146 58.4 | -8 28.2 |
| 2 | 237 | 9.8 | 114 | 8 10.7 | -114 | 308 53.7 | 21 52.0 | 177 2.8 | -8 28.4 |
| 4 | 266 | 10.6 | 114 | 7 47.9 | -115 | 338 58.3 | 21 52.1 | 207 7.3 | -8 28.6 |
| 6 | 295 | 11.3 | 114 | 7 24.9 | -116 | 9 2.9 | 21 52.1 | 237 11.7 | -8 28.8 |
| 8 | 324 | 12.0 | 113 | 7 1.7 | -117 | 39 7.4 | 21 52.1 | 267 16.1 | -8 29.0 |
| 10 | 353 | 12.7 | 113 | 6 38.4 | -118 | 69 12.0 | 21 52.1 | 297 20.6 | -8 29.2 |
| 12 | 22 | 13.3 | 113 | 6 14.8 | -119 | 99 16.6 | 21 52.2 | 327 25.0 | -8 29.4 |
| 14 | 51 | 13.9 | 113 | 5 51.0 | -120 | 129 21.2 | 21 52.2 | 357 29.4 | -8 29.6 |
| 16 | 80 | 14.4 | 112 | 5 27.1 | -120 | 159 25.8 | 21 52.2 | 27 33.9 | -8 29.8 |
| 18 | 109 | 14.9 | 112 | 5 3.0 | -121 | 189 30.3 | 21 52.3 | 57 38.3 | -8 30.0 |
| 20 | 138 | 15.3 | 112 | 4 38.7 | -122 | 219 34.9 | 21 52.3 | 87 42.7 | -8 30.2 |
| 22 | 167 | 15.6 | 111 | 4 14.3 | -123 | 249 39.5 | 21 52.3 | 117 47.2 | -8 30.4 |
| Δ | 2 | -10 | | | -4 | -5 | 8 | -5 | |
| | | | | | 23 | 0 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | | | | |
|---------|-------|-----------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|------|
| | h min | s | s / | h min | min | min / | h min | t' | | | |
| 00 | 4 | 23.5 | .9 | 15.9 | T _{m̄} | 10.28 | 2.1 | 57.6 | 15.7 | | |
| 12 | 4 | 34.2 | T _{m̄} | 11 h 55.4 min | Starost | 27.3 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. | |
| | h min | / | o | h min | / | h min | / | o | h min | / | |
| ♀ | 9 | 8 | .1 | 230 | -4.1 | 4 | 5 | 24 | .0 | 285 | -2.0 |
| ♂ | 15 | 11 | .1 | 139 | .9 | h | 14 | 10 | .0 | 154 | 1.0 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 11.2 | 2 | 57.1 | 354 | 21.2 | 222 | 59.7 |
| 2 | 211 | 11.6 | 2 | 55.2 | 24 | 26.1 | 252 | 58.9 |
| 4 | 241 | 12.0 | 2 | 53.3 | 54 | 31.0 | 282 | 58.2 |
| 6 | 271 | 12.5 | 2 | 51.4 | 84 | 36.0 | 312 | 57.4 |
| 8 | 301 | 12.9 | 2 | 49.4 | 114 | 40.9 | 342 | 56.6 |
| 10 | 331 | 13.4 | 2 | 47.5 | 144 | 45.8 | 12 | 55.8 |
| 12 | 1 | 13.8 | 2 | 45.6 | 174 | 50.8 | 42 | 55.0 |
| 14 | 31 | 14.3 | 2 | 43.6 | 204 | 55.7 | 72 | 54.3 |
| 16 | 61 | 14.7 | 2 | 41.7 | 235 | .6 | 102 | 53.5 |
| 18 | 91 | 15.2 | 2 | 39.8 | 265 | 5.5 | 132 | 52.7 |
| 20 | 121 | 15.6 | 2 | 37.9 | 295 | 10.5 | 162 | 51.9 |
| 22 | 151 | 16.0 | 2 | 35.9 | 325 | 15.4 | 192 | 51.1 |
| Δ | 2 | -10 | | | | | -4 | -6 |
| | | | | | | | 8 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 29 | 18 20 | 0 42 | 2 32 | 4 46 | 3.7 | 17 30 | .6 | |
| 55 | 5 33 | 18 16 | 0 36 | 2 8 | 4 50 | 3.4 | 17 30 | .8 | |
| 50 | 5 36 | 18 13 | 0 32 | 1 52 | 4 52 | 3.2 | 17 30 | 1.0 | |
| 45 | 5 39 | 18 10 | 0 29 | 1 40 | 4 54 | 3.0 | 17 30 | 1.2 | |
| 40 | 5 41 | 18 8 | 0 27 | 1 32 | 4 56 | 2.9 | 17 30 | 1.4 | |
| 35 | 5 43 | 18 7 | 0 25 | 1 25 | 4 58 | 2.7 | 17 30 | 1.5 | |
| 30 | 5 45 | 18 5 | 0 24 | 1 20 | 4 59 | 2.6 | 17 30 | 1.6 | |
| 20 | 5 47 | 18 2 | 0 22 | 1 14 | 5 2 | 2.4 | 17 30 | 1.8 | |
| 10 | 5 50 | 18 0 | 0 21 | 1 10 | 5 4 | 2.3 | 17 30 | 2.0 | |
| 0 | 5 52 | 17 58 | 0 21 | 1 9 | 5 6 | 2.1 | 17 29 | 2.1 | |
| 10 | 5 54 | 17 56 | 0 21 | 1 10 | 5 8 | 1.9 | 17 29 | 2.3 | |
| 20 | 5 56 | 17 55 | 0 22 | 1 13 | 5 10 | 1.8 | 17 29 | 2.5 | |
| 30 | 5 58 | 17 53 | 0 24 | 1 19 | 5 12 | 1.6 | 17 29 | 2.6 | |
| 35 | 5 59 | 17 52 | 0 25 | 1 24 | 5 14 | 1.5 | 17 29 | 2.8 | |
| 40 | 6 0 | 17 50 | 0 27 | 1 30 | 5 15 | 1.3 | 17 29 | 2.9 | |
| 45 | 6 2 | 17 49 | 0 29 | 1 38 | 5 17 | 1.2 | 17 28 | 3.0 | |
| 50 | 6 4 | 17 47 | 0 32 | 1 48 | 5 20 | 1.0 | 17 28 | 3.2 | |
| 55 | 6 6 | 17 46 | 0 36 | 2 2 | 5 22 | .8 | 17 28 | 3.4 | |
| 60 | 6 8 | 17 43 | 0 41 | 2 22 | 5 26 | .6 | 17 27 | 3.7 | |
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| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 196 | 15.9 | 111 | 3 49.8 | -123 | 279 | 44.1 | 21 52.3 |
| 2 | 225 | 16.1 | 111 | 3 25.1 | -124 | 309 | 48.7 | 21 52.4 |
| 4 | 254 | 16.2 | 110 | 3 .3 | -125 | 339 | 53.3 | 21 52.4 |
| 6 | 283 | 16.2 | 110 | 2 35.4 | -125 | 9 | 57.9 | 21 52.4 |
| 8 | 312 | 16.2 | 109 | 2 10.4 | -126 | 40 | 2.5 | 21 52.5 |
| 10 | 341 | 16.0 | 109 | 1 45.3 | -126 | 70 | 7.1 | 21 52.5 |
| 12 | 10 | 15.8 | 108 | 1 20.1 | -126 | 100 | 11.7 | 21 52.5 |
| 14 | 39 | 15.4 | 108 | 0 54.8 | -127 | 130 | 16.3 | 21 52.5 |
| 16 | 68 | 14.9 | 107 | 0 29.5 | -127 | 160 | 20.9 | 21 52.6 |
| 18 | 97 | 14.4 | 107 | 0 4.1 | -127 | 190 | 25.5 | 21 52.6 |
| 20 | 126 | 13.7 | 106 | - 0 21.3 | -127 | 220 | 30.1 | 21 52.6 |
| 22 | 155 | 12.9 | 105 | - 0 46.8 | -127 | 250 | 34.7 | 21 52.7 |
| Δ | 2 | -10 | | | | -4 | -6 | 8 -5 |
| | | | | | | 23 | 0 | 22 -1 |

| UT | SUNCE | | | | MJESEC | | | |
|----|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h | min | s | / | h min | min | / | / | |
| 00 | 4 44.8 | .9 | 15.9 | T _{m̄} | 11 18 | 2.1 | 58.3 | 15.9 |
| 12 | 4 55.5 | T _{m̄} | 11 h 55.1 min | Starost | 28 | 3 d | Faza | ● |

| UT | PLANETE | | | | |
|-------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | o | |
| 0 | 9 8 | .1 | 229 | -4.1 | 4 |
| 15 10 | .1 | 138 | .9 | h | 14 6 |

| UT | SUNCE | | | | TRAJANJE SUMRAKA | | | | MJESEC | | | |
|----|-------|-------|-------|-------|---------------------|-------|-------|-------|--------|-------|-----|-----|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | h min | min | min |
| 60 | 5 31 | 18 17 | 0 42 | 2 31 | 6 15 | 3.8 | 17 44 | .6 | | | | |
| 55 | 5 35 | 18 13 | 0 36 | 2 7 | 6 11 | 3.5 | 17 50 | .9 | | | | |
| 50 | 5 38 | 18 11 | 0 32 | 1 51 | 6 9 | 3.3 | 17 55 | 1.1 | | | | |
| 45 | 5 40 | 18 8 | 0 29 | 1 40 | 6 7 | 3.1 | 17 59 | 1.3 | | | | |
| 40 | 5 42 | 18 7 | 0 27 | 1 32 | 6 5 | 2.9 | 18 3 | 1.5 | | | | |
| 35 | 5 44 | 18 5 | 0 25 | 1 25 | 6 3 | 2.8 | 18 5 | 1.6 | | | | |
| 30 | 5 45 | 18 4 | 0 24 | 1 20 | 6 2 | 2.7 | 18 8 | 1.7 | | | | |
| 20 | 5 48 | 18 2 | 0 22 | 1 13 | 5 60 | 2.5 | 18 13 | 1.9 | | | | |
| 10 | 5 50 | 17 60 | 0 21 | 1 10 | 5 58 | 2.3 | 18 17 | 2.0 | | | | |
| 0 | 5 51 | 17 58 | 0 21 | 1 9 | 5 56 | 2.2 | 18 20 | 2.2 | | | | |
| 10 | 5 53 | 17 56 | 0 21 | 1 10 | 5 54 | 2.0 | 18 24 | 2.4 | | | | |
| 20 | 5 55 | 17 55 | 0 22 | 1 13 | 5 52 | 1.8 | 18 28 | 2.5 | | | | |
| 30 | 5 57 | 17 53 | 0 24 | 1 20 | 5 50 | 1.6 | 18 32 | 2.7 | | | | |
| 35 | 5 58 | 17 52 | 0 25 | 1 24 | 5 49 | 1.5 | 18 35 | 2.8 | | | | |
| 40 | 5 59 | 17 51 | 0 27 | 1 30 | 5 48 | 1.4 | 18 38 | 3.0 | | | | |
| 45 | 5 60 | 17 50 | 0 29 | 1 38 | 5 46 | 1.3 | 18 41 | 3.1 | | | | |
| 50 | 6 1 | 17 49 | 0 32 | 1 49 | 5 44 | 1.1 | 18 46 | 3.3 | | | | |
| 55 | 6 3 | 17 47 | 0 36 | 2 3 | 5 42 | .9 | 18 51 | 3.5 | | | | |
| 60 | 6 5 | 17 45 | 0 41 | 2 23 | 5 39 | .6 | 18 57 | 3.8 | | | | |
| S | | | | | | | | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|----|-------------------------|-----------------|---------------|-----------------|--------|----------------|------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h | min | s | / | h min | min | / | / | |
| 00 | 5 6.2 | .9 | 15.9 | T _{m̄} | 12 8 | 2.2 | 59.0 | 16.1 |
| 12 | 5 16.8 | T _{m̄} | 11 h 54.7 min | Starost | 29 | 3 d | Faza | ● |

| UT | PLANETE | | | | |
|-------|---------|-----------------|-----|-------|------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | o | |
| 0 | 9 9 | .1 | 227 | -4.1 | 4 |
| 15 9 | .1 | 137 | .9 | h | 14 3 |

17. SEPTEMBAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 181 21.8 | 2 10.8 | 356 19.5 | 222 40.9 | 16 36.8 | 132 57.7 | -17 18.2 | |
| 2 | 211 22.3 | 2 8.9 | 26 24.4 | 252 40.2 | 16 35.6 | 162 59.2 | -17 19.3 | |
| 4 | 241 22.7 | 2 7.0 | 56 29.3 | 282 39.4 | 16 34.8 | 193 .8 | -17 20.3 | |
| 6 | 271 23.2 | 2 5.0 | 86 34.2 | 312 38.6 | 16 33.3 | 223 2.3 | -17 21.3 | |
| 8 | 301 23.6 | 2 3.1 | 116 39.2 | 342 37.8 | 16 32.1 | 253 3.9 | -17 22.3 | |
| 10 | 331 24.1 | 2 1.2 | 146 44.1 | 12 37.0 | 16 30.9 | 283 5.4 | -17 23.4 | |
| 12 | 1 24.5 | 1 59.2 | 176 49.0 | 42 36.2 | 16 29.7 | 313 6.9 | -17 24.4 | |
| 14 | 31 24.9 | 1 57.3 | 206 54.0 | 72 35.4 | 16 28.5 | 343 8.5 | -17 25.4 | |
| 16 | 61 25.4 | 1 55.4 | 236 58.9 | 102 34.7 | 16 27.3 | 13 10.0 | -17 26.4 | |
| 18 | 91 25.8 | 1 53.4 | 267 3.8 | 132 33.9 | 16 26.1 | 43 11.5 | -17 27.5 | |
| 20 | 121 26.3 | 1 51.5 | 297 8.7 | 162 33.1 | 16 24.9 | 73 13.1 | -17 28.5 | |
| 22 | 151 26.7 | 1 49.5 | 327 13.7 | 192 32.3 | 16 23.7 | 103 14.6 | -17 29.5 | |
| Δ | 2 | -10 | | -4 | -6 | 8 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 33 | 18 14 | 0 42 | 2 30 | 7 46 | 3.8 | 17 59 | 1.8 | |
| 55 | 5 37 | 18 11 | 0 36 | 2 7 | 7 35 | 3.5 | 18 12 | 1.1 | |
| 50 | 5 39 | 18 8 | 0 32 | 1 51 | 7 27 | 3.3 | 18 22 | 1.3 | |
| 45 | 5 41 | 18 7 | 0 29 | 1 40 | 7 21 | 3.1 | 18 30 | 1.5 | |
| 40 | 5 43 | 18 5 | 0 27 | 1 31 | 7 15 | 3.0 | 18 37 | 1.6 | |
| 35 | 5 45 | 18 4 | 0 25 | 1 25 | 7 10 | 2.9 | 18 43 | 1.7 | |
| 30 | 5 46 | 18 2 | 0 24 | 1 20 | 7 6 | 2.7 | 18 48 | 1.8 | |
| 25 | 5 48 | 18 1 | 0 22 | 1 13 | 6 59 | 2.6 | 18 58 | 2.0 | |
| 10 | 5 50 | 17 59 | 0 21 | 1 10 | 6 53 | 2.4 | 19 5 | 2.1 | |
| 0 | 5 51 | 17 58 | 0 21 | 1 9 | 6 48 | 2.2 | 19 13 | 2.3 | |
| 10 | 5 53 | 17 56 | 0 21 | 1 10 | 6 42 | 2.1 | 19 20 | 2.4 | |
| 20 | 5 54 | 17 55 | 0 22 | 1 13 | 6 36 | 1.9 | 19 28 | 2.6 | |
| 30 | 5 55 | 17 54 | 0 24 | 1 20 | 6 29 | 1.7 | 19 38 | 2.8 | |
| 35 | 5 56 | 17 53 | 0 25 | 1 24 | 6 26 | 1.6 | 19 43 | 2.9 | |
| 40 | 5 57 | 17 52 | 0 27 | 1 30 | 6 21 | 1.5 | 19 49 | 3.0 | |
| 45 | 5 58 | 17 51 | 0 29 | 1 38 | 6 16 | 1.4 | 19 56 | 3.1 | |
| 50 | 5 59 | 17 50 | 0 32 | 1 49 | 6 11 | 1.2 | 20 4 | 3.3 | |
| 55 | 6 1 | 17 49 | 0 36 | 2 3 | 6 3 | 1.0 | 20 15 | 3.5 | |
| 60 | 6 2 | 17 48 | 0 41 | 2 23 | 5 54 | .7 | 20 29 | 3.8 | |
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| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 171 49.2 | 95 - 6 16.2 | -124 | 281 34.7 | 21 53.0 | 149 37.8 | - 8 35.4 | |
| 2 | 200 46.2 | 94 - 6 41.0 | -123 | 311 39.3 | 21 53.0 | 179 42.3 | - 8 35.6 | |
| 4 | 229 43.0 | 93 - 7 5.7 | -123 | 341 43.9 | 21 53.0 | 209 46.7 | - 8 35.8 | |
| 6 | 258 39.6 | 92 - 7 30.3 | -122 | 11 48.5 | 21 53.1 | 239 51.1 | - 8 36.0 | |
| 8 | 287 36.0 | 91 - 7 54.7 | -121 | 41 53.2 | 21 53.1 | 269 55.5 | - 8 36.2 | |
| 10 | 316 32.3 | 90 - 8 18.9 | -120 | 71 57.8 | 21 53.1 | 299 59.9 | - 8 36.4 | |
| 12 | 345 28.3 | 89 - 8 43.0 | -119 | 102 2.4 | 21 53.1 | 330 4.4 | - 8 36.6 | |
| 14 | 14 24.1 | 88 - 9 6.8 | -118 | 132 7.1 | 21 53.2 | 0 8.8 | - 8 36.8 | |
| 16 | 43 19.8 | 87 - 9 30.5 | -117 | 162 11.7 | 21 53.2 | 30 13.2 | - 8 37.0 | |
| 18 | 72 15.2 | 86 - 9 53.9 | -116 | 192 16.3 | 21 53.2 | 60 17.6 | - 8 37.2 | |
| 20 | 101 10.4 | 85 - 10 17.2 | -115 | 222 21.0 | 21 53.2 | 90 22.1 | - 8 37.4 | |
| 22 | 130 5.4 | 84 - 10 40.2 | -114 | 252 25.6 | 21 53.3 | 120 26.5 | - 8 37.6 | |
| Δ | 2 | -10 | | -4 | -6 | 8 | -5 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 5 27.5 | .9 | 15.9 | T _{m̄} | 13 0 | 2.3 | 59.5 | 16.2 | |
| 12 | 5 38.2 | T _{m̄} | 11 h 54.4 min | Starost | 1.9 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | o | h min | / | h min | / | o | h min |
| ○ | 9 10 | .1 | 226 | -4.1 | 4 | 5 13 | .0 | 285 | -2.0 |
| ○' | 15 7 | .1 | 137 | .9 | h | 13 59 | .0 | 153 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 159 .2 | 83 -11 2.9 | -112 | 282 30.2 | 21 53.3 | 150 30.9 | - 8 37.8 | |
| 2 | 187 54.7 | 82 -11 25.4 | -111 | 312 34.9 | 21 53.3 | 180 35.3 | - 8 38.0 | |
| 4 | 216 49.1 | 81 -11 47.6 | -110 | 342 39.5 | 21 53.3 | 210 39.7 | - 8 38.2 | |
| 6 | 245 43.2 | 80 -12 9.5 | -108 | 12 44.2 | 21 53.4 | 240 44.2 | - 8 38.4 | |
| 8 | 274 37.1 | 78 -12 31.1 | -107 | 42 48.8 | 21 53.4 | 270 48.6 | - 8 38.6 | |
| 10 | 303 30.8 | 77 -12 52.5 | -105 | 72 53.8 | 21 53.4 | 300 53.0 | - 8 38.8 | |
| 12 | 332 24.3 | 76 -13 13.5 | -103 | 102 58.1 | 21 53.4 | 330 57.4 | - 8 39.0 | |
| 14 | 1 17.5 | 75 -13 34.1 | -102 | 133 2.8 | 21 53.5 | 1 1.8 | - 8 39.2 | |
| 16 | 30 10.6 | 74 -13 54.5 | -100 | 163 7.4 | 21 53.5 | 31 6.2 | - 8 39.4 | |
| 18 | 59 3.4 | 73 -14 14.5 | -98 | 193 12.1 | 21 53.5 | 61 10.7 | - 8 39.6 | |
| 20 | 87 56.0 | 72 -14 34.1 | -96 | 223 16.7 | 21 53.5 | 91 15.1 | - 8 39.8 | |
| 22 | 116 48.4 | 71 -14 53.3 | -94 | 253 21.4 | 21 53.5 | 121 19.5 | - 8 40.0 | |
| Δ | 23 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 5 48.8 | .9 | 15.9 | T _{m̄} | 13 55 | 2.3 | 59.8 | 16.3 | |
| 12 | 5 59.5 | T _{m̄} | 11 h 54.0 min | Starost | 1.9 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| φ | h min | / | o | h min | / | h min | / | o | h min |
| ○ | 15 6 | .1 | 136 | .9 | h | 13 56 | .0 | 153 | .9 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 32.5 | 1 | 24.4 | 358 | 17.7 | 222 | 22.1 |
| 2 | 211 | 32.9 | 1 | 22.4 | 28 | 22.7 | 252 | 21.3 |
| 4 | 241 | 33.4 | 1 | 20.5 | 58 | 27.6 | 282 | 20.5 |
| 6 | 271 | 33.8 | 1 | 18.5 | 88 | 32.5 | 312 | 19.7 |
| 8 | 301 | 34.3 | 1 | 16.6 | 118 | 37.5 | 342 | 19.0 |
| 10 | 331 | 34.7 | 1 | 14.7 | 148 | 42.4 | 12 | 18.2 |
| 12 | 1 | 35.2 | 1 | 12.7 | 178 | 47.3 | 42 | 17.4 |
| 14 | 31 | 35.6 | 1 | 10.8 | 208 | 52.2 | 72 | 16.6 |
| 16 | 61 | 36.0 | 1 | 8.8 | 238 | 57.2 | 102 | 15.8 |
| 18 | 91 | 36.5 | 1 | 6.9 | 269 | 2.1 | 132 | 15.0 |
| 20 | 121 | 36.9 | 1 | 4.9 | 299 | 7.0 | 162 | 14.2 |
| 22 | 151 | 37.4 | 1 | 3.0 | 329 | 11.9 | 192 | 13.5 |
| Δ | 2 | -10 | | | | | -4 | -6 |
| | | | | | | | 8 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 38 | 18 8 | 0 42 | 2 28 | 10 50 | 3.6 | 18 43 | 1.5 | |
| 55 | 5 40 | 18 6 | 0 36 | 2 6 | 10 24 | 3.3 | 19 10 | 1.7 | |
| 50 | 5 42 | 18 4 | 0 32 | 1 50 | 10 51 | 3.1 | 19 30 | 1.9 | |
| 45 | 5 44 | 18 3 | 0 29 | 1 39 | 9 50 | 3.0 | 19 46 | 2.0 | |
| 40 | 5 45 | 18 2 | 0 27 | 1 31 | 9 38 | 2.9 | 19 59 | 2.1 | |
| 35 | 5 46 | 18 1 | 0 25 | 1 25 | 9 28 | 2.8 | 20 10 | 2.1 | |
| 30 | 5 47 | 17 60 | 0 24 | 1 20 | 9 19 | 2.8 | 20 20 | 2.2 | |
| 20 | 5 48 | 17 59 | 0 22 | 1 13 | 9 3 | 2.6 | 20 37 | 2.3 | |
| 10 | 5 49 | 17 58 | 0 21 | 1 10 | 8 50 | 2.5 | 20 51 | 2.4 | |
| 0 | 5 50 | 17 57 | 0 21 | 1 9 | 8 38 | 2.4 | 21 5 | 2.5 | |
| 10 | 5 51 | 17 56 | 0 21 | 1 10 | 8 25 | 2.3 | 21 19 | 2.5 | |
| 20 | 5 52 | 17 55 | 0 22 | 1 13 | 8 12 | 2.2 | 21 34 | 2.6 | |
| 30 | 5 53 | 17 55 | 0 24 | 1 20 | 7 57 | 2.1 | 21 50 | 2.7 | |
| 35 | 5 53 | 17 55 | 0 25 | 1 24 | 7 48 | 2.0 | 22 0 | 2.8 | |
| 40 | 5 54 | 17 54 | 0 27 | 1 31 | 7 39 | 1.9 | 22 12 | 2.8 | |
| 45 | 5 54 | 17 54 | 0 29 | 1 39 | 7 27 | 1.8 | 22 25 | 2.9 | |
| 50 | 5 55 | 17 53 | 0 32 | 1 49 | 7 13 | 1.7 | 22 41 | 3.0 | |
| 55 | 5 55 | 17 53 | 0 36 | 2 4 | 6 56 | 1.5 | 23 2 | 3.2 | |
| 60 | 5 56 | 17 52 | 0 42 | 2 24 | 6 33 | 1.2 | 23 30 | 3.4 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o | / | o | / | o | / | o | / |
| 0 | 145 | 40.5 | 70 | -15 12.2 | -92 | 283 | 26.0 | 21 53.6 |
| 2 | 174 | 32.5 | 69 | -15 30.7 | -90 | 313 | 30.7 | 21 53.6 |
| 4 | 203 | 24.3 | 68 | -15 48.8 | -88 | 343 | 35.3 | 21 53.6 |
| 6 | 232 | 15.8 | 67 | -16 6.4 | -86 | 1340 | 40.0 | 21 53.6 |
| 8 | 261 | 7.2 | 66 | -16 23.6 | -84 | 43 | 44.7 | 21 53.7 |
| 10 | 289 | 58.3 | 65 | -16 40.4 | -82 | 73 | 49.3 | 21 53.7 |
| 12 | 318 | 49.3 | 64 | -16 56.8 | -80 | 103 | 54.0 | 21 53.7 |
| 14 | 347 | 40.1 | 63 | -17 12.7 | -77 | 133 | 58.6 | 21 53.7 |
| 16 | 16 | 30.7 | 62 | -17 28.2 | -75 | 164 | 3.3 | 21 53.7 |
| 18 | 45 | 21.1 | 61 | -17 43.1 | -73 | 194 | 8.0 | 21 53.8 |
| 20 | 74 | 11.4 | 60 | -17 57.6 | -70 | 224 | 12.6 | 21 53.8 |
| 22 | 103 | 1.4 | 60 | -18 11.7 | -68 | 254 | 17.3 | 21 53.8 |
| Δ | 2 | -10 | | | | -4 | -7 | -5 |
| | | | | | | 23 | 0 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 6 10.2 | .9 | 15.9 | T _{m̄} | 14 51 | 2.5 | 59.9 | 16.3 |
| 12 | 6 20.8 | T _{m̄} | 11 h 53.7 min | Starost | 2.9 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pi. | h min | / | o | h min | / | h min | / | o |
| Q | 9 11 | .1 | 224 | -4.0 | 4 | 5 5 | .0 | 285 |
| Q' | 15 5 | .1 | 135 | .9 | h | 13 52 | .0 | 153 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o | / | o | / | o | / | o | / |
| 0 | 131 | 51.4 | 59 | -18 25.2 | -65 | 284 | 22.0 | 21 53.8 |
| 2 | 160 | 41.1 | 58 | -18 38.2 | -63 | 314 | 26.7 | 21 53.8 |
| 4 | 189 | 30.8 | 57 | -18 50.7 | -60 | 344 | 31.3 | 21 53.9 |
| 6 | 218 | 20.3 | 57 | -19 2.7 | -57 | 14 | 36.0 | 21 53.9 |
| 8 | 247 | 9.6 | 56 | -19 14.2 | -55 | 44 | 40.7 | 21 53.9 |
| 10 | 275 | 58.9 | 56 | -19 25.2 | -52 | 74 | 45.4 | 21 53.9 |
| 12 | 304 | 48.0 | 55 | -19 35.6 | -49 | 104 | 50.1 | 21 53.9 |
| 14 | 333 | 37.1 | 55 | -19 45.5 | -47 | 134 | 54.7 | 21 54.0 |
| 16 | 2 | 26.0 | 54 | -19 54.8 | -44 | 164 | 59.4 | 21 54.0 |
| 18 | 31 | 14.9 | 54 | -20 3.6 | -41 | 195 | 4.1 | 21 54.0 |
| 20 | 60 | 3.7 | 54 | -20 11.9 | -38 | 225 | 8.8 | 21 54.0 |
| 22 | 88 | 52.4 | 53 | -20 19.6 | -36 | 255 | 13.5 | 21 54.0 |
| Δ | 2 | -10 | | | | -4 | -7 | -5 |
| | | | | | | 23 | 0 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 6 31.4 | .9 | 16.0 | T _{m̄} | 15 50 | 2.5 | 59.9 | 16.3 |
| 12 | 6 42.1 | T _{m̄} | 11 h 53.3 min | Starost | 3.9 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pi. | h min | / | o | h min | / | h min | / | o |
| Q | 9 11 | .1 | 223 | -4.0 | 4 | 5 2 | .0 | 285 |
| Q' | 15 4 | .1 | 135 | .9 | h | 13 49 | .0 | 153 |

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|-------------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 181 43.1 | 0 37.8 | 0 16.0 | 222 3.3 | 15 36.7 | 134 10.3 -18 6.7 | |
| 2 | 211 43.6 | 0 35.8 | 30 20.9 | 252 2.5 | 15 35.3 | 164 11.8 -18 7.7 | |
| 4 | 241 44.0 | 0 33.9 | 60 25.9 | 282 1.7 | 15 34.0 | 194 13.3 -18 8.7 | |
| 6 | 271 44.4 | 0 31.9 | 90 30.8 | 312 .9 | 15 32.6 | 224 14.7 -18 9.6 | |
| 8 | 301 44.9 | 0 30.0 | 120 35.7 | 342 .1 | 15 31.3 | 254 16.2 -18 10.6 | |
| 10 | 331 45.3 | 0 28.0 | 150 40.7 | 11 59.4 | 15 30.3 | 284 17.7 -18 11.6 | |
| 12 | 1 45.8 | 0 26.1 | 180 45.6 | 41 58.6 | 15 28.6 | 314 19.2 -18 12.6 | |
| 14 | 31 46.2 | 0 24.1 | 210 50.5 | 71 57.8 | 15 27.3 | 344 20.6 -18 13.6 | |
| 16 | 61 46.6 | 0 22.2 | 240 55.4 | 101 57.0 | 15 25.9 | 14 22.1 -18 14.6 | |
| 18 | 91 47.1 | 0 20.3 | 271 .4 | 131 56.2 | 15 24.6 | 44 23.6 -18 15.6 | |
| 20 | 121 47.5 | 0 18.3 | 301 5.3 | 161 55.4 | 15 23.2 | 74 25.1 -18 16.5 | |
| 22 | 151 48.0 | 0 16.4 | 331 10.2 | 191 54.7 | 15 21.8 | 104 26.5 -18 17.5 | |
| Δ | 2 | -10 | | -4 | -7 | 7 | -5 |

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|-----------------------------------|--------|--------|-------|------|-------|------|---------------------|-------|--------|-------|-------|-------|--|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | h min | h min | h min | h min | h min | h min | |
| N | | | | | | | | | | | | | | | | |
| 60 | 5 43 | 18 2 | | 0 42 | 2 26 | 13 30 | 2.4 | 20 7 | 2.7 | | | | | | | |
| 55 | 5 44 | 18 1 | | 0 36 | 2 5 | 12 54 | 2.4 | 20 43 | 2.6 | | | | | | | |
| 50 | 5 45 | 17 60 | | 0 32 | 1 50 | 12 29 | 2.4 | 21 9 | 2.6 | | | | | | | |
| 45 | 5 46 | 17 59 | | 0 29 | 1 39 | 12 9 | 2.5 | 21 28 | 2.6 | | | | | | | |
| 40 | 5 47 | 17 58 | | 0 27 | 1 31 | 11 53 | 2.5 | 21 44 | 2.5 | | | | | | | |
| 35 | 5 47 | 17 58 | | 0 25 | 1 25 | 11 40 | 2.5 | 21 58 | 2.5 | | | | | | | |
| 30 | 5 48 | 17 57 | | 0 24 | 1 20 | 11 28 | 2.5 | 22 10 | 2.5 | | | | | | | |
| 20 | 5 49 | 17 57 | | 0 22 | 1 13 | 11 9 | 2.5 | 22 30 | 2.5 | | | | | | | |
| 10 | 5 49 | 17 56 | | 0 21 | 1 10 | 10 51 | 2.5 | 22 47 | 2.5 | | | | | | | |
| 0 | 5 50 | 17 56 | | 0 21 | 1 9 | 10 35 | 2.5 | 23 3 | 2.4 | | | | | | | |
| 10 | 5 50 | 17 56 | | 0 21 | 1 10 | 10 19 | 2.5 | 23 20 | 2.4 | | | | | | | |
| 20 | 5 50 | 17 56 | | 0 22 | 1 13 | 10 2 | 2.5 | 23 37 | 2.4 | | | | | | | |
| 30 | 5 50 | 17 56 | | 0 24 | 1 20 | 9 42 | 2.5 | 23 57 | 2.4 | | | | | | | |
| 35 | 5 50 | 17 56 | | 0 25 | 1 25 | 9 31 | 2.4 | ... | 0 | | | | | | | |
| 40 | 5 50 | 17 56 | | 0 27 | 1 31 | 9 18 | 2.4 | ... | 0 | | | | | | | |
| 45 | 5 50 | 17 56 | | 0 29 | 1 39 | 9 2 | 2.4 | ... | 0 | | | | | | | |
| 50 | 5 50 | 17 56 | | 0 32 | 1 50 | 8 43 | 2.4 | ... | 0 | | | | | | | |
| 55 | 5 50 | 17 57 | | 0 36 | 2 4 | 8 19 | 2.4 | 0 17 | 2.7 | | | | | | | |
| 60 | 5 50 | 17 57 | | 0 42 | 2 26 | 7 45 | 2.4 | 0 51 | 2.8 | | | | | | | |
| S | | | | | | | | | | | | | | | | |

| UT | MJESEC | | | JUPITER | | | SATURN | | | SUNCE | | | MJESEC | | | | | | | |
|---------|----------------|-----------------|----------------|-----------------|-------|----------------|-----------------|------|----------------|-------|-------------------------|-----------------|--------|---------|------|----------------|-----------------|---|---------|------|
| | S _Ω | Δ | δ _Ω | S _φ | Δ | δ _φ | S _η | Δ | δ _η | UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | | | | | | | | | | | |
| 00 | 6 52.7 | .9 | 16.0 | T _{m̄} | 16 49 | 2.5 | 59.6 | 16.3 | | | | | | | | | | | | |
| 12 | 7 3.3 | T _{m̄} | 11 h 53.0 min | Starost | 4.9 d | Faza | ● | | | | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| 0 | 9 12 | .1 | 222 | -4.0 | 4 | 4 58 | .0 | 285 | -2.1 | | | | | | | | | | | |
| ° | 15 3 | .1 | 134 | .9 | h | 13 45 | .0 | 153 | .9 | | | | | | | | | | | |

22. SEPTEMBAR

SUBOTA

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|-------------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 181 48.4 | 0 14.4 | 1 15.2 | 221 53.9 | 15 20.5 | 134 28.0 -18 18.5 | |
| 2 | 211 48.8 | 0 12.5 | 31 20.1 | 251 53.1 | 15 19.3 | 164 29.5 -18 19.5 | |
| 4 | 241 49.3 | 0 10.5 | 61 25.0 | 281 52.3 | 15 17.7 | 194 30.9 -18 20.5 | |
| 6 | 271 49.7 | 0 8.6 | 91 29.9 | 311 51.5 | 15 16.3 | 224 32.4 -18 21.4 | |
| 8 | 301 50.2 | 0 6.6 | 121 34.9 | 341 50.8 | 15 15.6 | 254 33.9 -18 22.4 | |
| 10 | 331 50.6 | 0 4.7 | 151 39.8 | 11 50.0 | 15 13.6 | 284 35.3 -18 23.4 | |
| 12 | 1 51.0 | 0 2.7 | 181 44.7 | 41 49.2 | 15 12.2 | 314 36.8 -18 24.4 | |
| 14 | 31 51.5 | 0 .8 | 211 49.7 | 73 48.4 | 15 10.8 | 344 38.2 -18 25.3 | |
| 16 | 61 51.9 | - 0 1.2 | 241 54.6 | 101 47.6 | 15 9.4 | 14 39.7 -18 26.3 | |
| 18 | 91 52.4 | - 0 3.1 | 271 59.5 | 131 46.9 | 15 8.0 | 44 41.1 -18 27.3 | |
| 20 | 121 52.8 | - 0 5.0 | 302 4.4 | 161 46.1 | 15 6.6 | 74 42.6 -18 28.3 | |
| 22 | 151 53.2 | - 0 7.0 | 332 9.4 | 191 45.3 | 15 5.2 | 104 44.1 -18 29.2 | |
| Δ | 2 | -10 | | -4 | -7 | 7 | -5 |

| UT | MJESEC | | | JUPITER | | | SATURN | | | SUNCE | | | MJESEC | | | | | | | |
|---------|----------------|-----------------|----------------|-----------------|-------|----------------|-----------------|------|----------------|-------|-------------------------|-----------------|--------|---------|------|----------------|-----------------|---|---------|------|
| | S _Ω | Δ | δ _Ω | S _φ | Δ | δ _φ | S _η | Δ | δ _η | UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | | | | | | | | | | | |
| 00 | 7 13.8 | .9 | 16.0 | T _{m̄} | 17 48 | 2.4 | 59.3 | 16.2 | | | | | | | | | | | | |
| 12 | 7 24.4 | T _{m̄} | 11 h 52.6 min | Starost | 5.9 d | Faza | ● | | | | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| 0 | 9 13 | .1 | 221 | -4.0 | 4 | 4 54 | .0 | 285 | -2.1 | | | | | | | | | | | |
| ° | 15 1 | .1 | 133 | .9 | h | 13 42 | .0 | 153 | .9 | | | | | | | | | | | |

23. SEPTEMBAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|-------------------|----------------|-----------------------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 181 53.7 - 0 8.9 | 2 14.3 | 221 44.5 15 3.8 | 134 45.5 -18 30.2 | | | |
| 2 | 211 54.1 - 0 10.9 | 32 19.2 | 251 43.7 15 2.4 | 164 47.0 -18 31.2 | | | |
| 4 | 241 54.6 - 0 12.8 | 62 24.2 | 281 43.0 15 1.0 | 194 48.4 -18 32.1 | | | |
| 6 | 271 55.0 - 0 14.8 | 92 29.1 | 311 42.2 14 59.6 | 224 49.9 -18 33.1 | | | |
| 8 | 301 55.4 - 0 16.7 | 122 34.0 | 341 41.4 14 58.2 | 254 51.3 -18 34.1 | | | |
| 10 | 331 55.9 - 0 18.7 | 152 38.9 | 11 40.6 14 56.7 | 284 52.7 -18 35.0 | | | |
| 12 | 1 56.3 - 0 20.6 | 182 43.9 | 41 39.9 14 55.3 | 314 54.2 -18 36.0 | | | |
| 14 | 31 56.7 - 0 22.6 | 212 48.8 | 71 39.1 14 53.9 | 344 55.6 -18 37.0 | | | |
| 16 | 61 57.2 - 0 24.5 | 242 53.7 | 101 38.3 14 52.5 | 14 57.1 -18 37.9 | | | |
| 18 | 91 57.6 - 0 26.5 | 272 58.6 | 131 37.5 14 51.0 | 44 58.5 -18 38.9 | | | |
| 20 | 121 58.0 - 0 28.4 | 303 3.6 | 161 36.7 14 49.6 | 74 60.0 -18 39.8 | | | |
| 22 | 151 58.5 - 0 30.3 | 333 8.5 | 191 36.0 14 48.2 | 105 1.4 -18 40.8 | | | |
| Δ | 2 | -10 | | -4 | -7 | 7 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 47 | 17 56 | 0 41 | 2 25 | 15 9 | 1 2 | 22 28 | 3.4 | |
| 55 | 5 48 | 17 55 | 0 36 | 2 4 | 14 39 | 1.5 | 22 58 | 3.2 | |
| 50 | 5 48 | 17 55 | 0 32 | 1 49 | 14 16 | 1.6 | 23 20 | 3.0 | |
| 45 | 5 49 | 17 55 | 0 29 | 1 39 | 13 59 | 1.8 | 23 36 | 2.9 | |
| 40 | 5 49 | 17 55 | 0 27 | 1 31 | 13 44 | 1.9 | 23 50 | 2.7 | |
| 35 | 5 49 | 17 55 | 0 25 | 1 24 | 13 32 | 1.9 | ... | 0 | |
| 30 | 5 49 | 17 55 | 0 24 | 1 20 | 13 21 | 2.0 | ... | 0 | |
| 20 | 5 49 | 17 55 | 0 22 | 1 13 | 13 3 | 2.1 | ... | 0 | |
| 10 | 5 49 | 17 55 | 0 21 | 1 10 | 12 47 | 2.2 | ... | 0 | |
| 0 | 5 49 | 17 55 | 0 21 | 1 9 | 12 32 | 2.3 | 0 2 | 2.4 | |
| 10 | 5 49 | 17 56 | 0 21 | 1 10 | 12 17 | 2.4 | 0 18 | 2.3 | |
| 20 | 5 48 | 17 56 | 0 22 | 1 13 | 12 1 | 2.5 | 0 34 | 2.2 | |
| 30 | 5 48 | 17 57 | 0 24 | 1 20 | 11 42 | 2.6 | 0 54 | 2.1 | |
| 35 | 5 48 | 17 57 | 0 25 | 1 25 | 11 32 | 2.7 | 1 5 | 2.1 | |
| 40 | 5 47 | 17 58 | 0 27 | 1 31 | 11 19 | 2.7 | 1 18 | 2.0 | |
| 45 | 5 47 | 17 59 | 0 29 | 1 39 | 11 5 | 2.8 | 1 33 | 1.9 | |
| 50 | 5 46 | 17 59 | 0 32 | 1 50 | 10 47 | 2.9 | 1 51 | 1.8 | |
| 55 | 5 45 | 18 0 | 0 36 | 2 5 | 10 24 | 3.1 | 2 14 | 1.7 | |
| 60 | 5 44 | 18 2 | 0 42 | 2 27 | 9 52 | 3.3 | 2 47 | 1.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 89 20.7 64 -20 28.7 | 34 | 287 11.1 21 54.5 | 154 55.6 -8 50.0 | | | | |
| 2 | 118 11.4 65 -20 21.9 | 36 | 317 15.9 21 54.5 | 185 0 -8 50.2 | | | | |
| 4 | 147 2.4 66 -20 14.7 | 39 | 347 20.6 21 54.5 | 215 4.4 -8 50.4 | | | | |
| 6 | 175 53.6 67 -20 6.9 | 41 | 17 25.3 21 54.5 | 245 8.8 -8 50.6 | | | | |
| 8 | 204 44.9 68 -19 58.6 | 44 | 47 30.0 21 54.5 | 275 13.2 -8 50.8 | | | | |
| 10 | 233 36.5 69 -19 49.8 | 46 | 77 34.8 21 54.5 | 305 17.6 -8 51.0 | | | | |
| 12 | 262 28.4 70 -19 40.6 | 49 | 107 39.5 21 54.5 | 335 22.0 -8 51.2 | | | | |
| 14 | 291 20.5 72 -19 30.8 | 51 | 137 44.2 21 54.6 | 5 26.4 -8 51.4 | | | | |
| 16 | 320 12.8 73 -19 20.6 | 53 | 167 49.0 21 54.6 | 35 30.8 -8 51.6 | | | | |
| 18 | 349 5.4 74 -19 9.9 | 56 | 197 53.7 21 54.6 | 65 35.2 -8 51.8 | | | | |
| 20 | 17 58.2 75 -18 58.8 | 58 | 227 58.5 21 54.6 | 95 39.6 -8 52.0 | | | | |
| 22 | 46 51.2 77 -18 47.2 | 60 | 258 3.2 21 54.6 | 125 44.0 -8 52.3 | | | | |
| Δ | 2 | -10 | | -4 | -7 | 7 | -5 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 7 34.9 | .9 | 16.0 | T _{m̄} | 18 45 | 2.3 | 58.9 | 16.0 |
| 12 | 7 45.4 | T _{m̄} | 11 h 52.2 min | Starost | 6.9 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min | / | o | h min | / | h min | / | o |
| φ | 9 13 | .1 | 219 | -4.0 | 4 50 | .0 | 285 | -2.1 |
| δ | 15 0 | .1 | 133 | 1.0 | h | 13 38 | .0 | 153 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 75 44.6 78 -18 35.2 | 62 | 288 7.9 21 54.6 | 155 48.4 -8 52.5 | | | | |
| 2 | 104 38.2 79 -18 22.7 | 64 | 318 12.7 21 54.6 | 185 52.8 -8 52.7 | | | | |
| 4 | 133 32.1 81 -18 9.8 | 66 | 348 17.4 21 54.7 | 215 57.2 -8 52.9 | | | | |
| 6 | 162 26.2 82 -17 56.5 | 68 | 18 22.2 21 54.7 | 246 1.6 -8 53.1 | | | | |
| 8 | 191 20.6 83 -17 42.8 | 70 | 48 26.9 21 54.7 | 276 6.0 -8 53.3 | | | | |
| 10 | 220 15.3 85 -17 28.7 | 72 | 78 31.7 21 54.7 | 306 10.4 -8 53.5 | | | | |
| 12 | 249 10.2 86 -17 14.3 | 74 | 108 36.4 21 54.7 | 336 14.8 -8 53.7 | | | | |
| 14 | 278 5.5 88 -16 59.4 | 76 | 138 41.2 21 54.7 | 6 19.2 -8 53.9 | | | | |
| 16 | 307 1.0 89 -16 44.1 | 78 | 168 45.9 21 54.7 | 36 23.6 -8 54.1 | | | | |
| 18 | 335 56.7 90 -16 28.5 | 80 | 198 50.7 21 54.7 | 66 28.0 -8 54.3 | | | | |
| 20 | 4 52.8 92 -16 12.5 | 82 | 228 55.4 21 54.8 | 96 32.4 -8 54.5 | | | | |
| 22 | 33 49.1 93 -15 56.2 | 83 | 259 .2 21 54.8 | 126 36.8 -8 54.7 | | | | |
| Δ | 24 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 7 55.8 | .9 | 16.0 | T _{m̄} | 19 40 | 2.1 | 58.4 | 15.9 |
| 12 | 8 6.3 | T _{m̄} | 11 h 51.9 min | Starost | 7.9 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min | / | o | h min | / | h min | / | o |
| φ | 9 14 | .1 | 218 | -4.0 | 4 47 | .0 | 285 | -2.1 |
| δ | 14 59 | .1 | 132 | 1.0 | h | 13 35 | .0 | 153 |

25. SEPTEMBAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 4.1 - 0 55.7 | 4 12.6 | 221 25.9 14 29.2 | 135 20.0 -18 53.2 | | | | |
| 2 | 212 4.6 - 0 57.6 | 34 17.5 | 251 25.1 14 27.7 | 165 21.4 -18 54.1 | | | | |
| 4 | 242 5.0 - 0 59.6 | 64 22.4 | 281 24.3 14 26.2 | 195 22.8 -18 55.1 | | | | |
| 6 | 272 5.4 - 1 1.5 | 94 27.4 | 311 23.6 14 24.7 | 225 24.2 -18 56.0 | | | | |
| 8 | 302 5.9 - 1 3.4 | 124 32.3 | 341 22.8 14 23.3 | 255 25.7 -18 57.0 | | | | |
| 10 | 332 6.3 - 1 5.4 | 154 37.2 | 11 22.0 14 21.8 | 285 27.1 -18 57.9 | | | | |
| 12 | 2 6.7 - 1 7.3 | 184 42.1 | 41 21.3 14 20.3 | 315 28.5 -18 58.8 | | | | |
| 14 | 32 7.1 - 1 9.3 | 214 47.1 | 71 20.5 14 18.8 | 345 29.8 -18 59.8 | | | | |
| 16 | 62 7.6 - 1 11.2 | 244 52.0 | 101 19.7 14 17.3 | 15 31.3 -19 .7 | | | | |
| 18 | 92 8.0 - 1 13.2 | 274 56.9 | 131 18.9 14 15.8 | 45 32.7 -19 1.7 | | | | |
| 20 | 122 8.4 - 1 15.1 | 305 1.9 | 161 18.2 14 14.3 | 75 34.1 -19 2.6 | | | | |
| 22 | 152 8.9 - 1 17.1 | 335 6.8 | 191 17.4 14 12.7 | 105 35.5 -19 3.5 | | | | |
| Δ | 2 | -10 | | -4 | -7 | 7 | -5 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 52 | 17 50 | 0 41 | 2 24 | 15 60 | .7 | .. .0 | | |
| 55 | 5 52 | 17 50 | 0 36 | 2 3 | 15 41 | .9 | 0 14 | 3.2 | |
| 50 | 5 51 | 17 51 | 0 32 | 1 49 | 15 28 | 1.1 | 0 32 | 3.0 | |
| 45 | 5 51 | 17 51 | 0 29 | 1 38 | 15 16 | 1.3 | 0 45 | 2.9 | |
| 40 | 5 51 | 17 52 | 0 27 | 1 30 | 15 7 | 1.4 | 0 56 | 2.7 | |
| 35 | 5 50 | 17 52 | 0 25 | 1 24 | 14 59 | 1.5 | 1 6 | 2.6 | |
| 30 | 5 50 | 17 53 | 0 24 | 1 20 | 14 52 | 1.6 | 1 14 | 2.5 | |
| 20 | 5 50 | 17 53 | 0 22 | 1 13 | 14 40 | 1.8 | 1 28 | 2.4 | |
| 10 | 5 49 | 17 54 | 0 21 | 1 10 | 14 29 | 1.9 | 1 41 | 2.2 | |
| 0 | 5 48 | 17 55 | 0 21 | 1 9 | 14 19 | 2.1 | 1 52 | 2.1 | |
| 10 | 5 48 | 17 56 | 0 21 | 1 10 | 14 9 | 2.2 | 2 4 | 2.0 | |
| 20 | 5 47 | 17 57 | 0 22 | 1 13 | 13 58 | 2.3 | 2 16 | 1.9 | |
| 30 | 5 45 | 17 58 | 0 24 | 1 20 | 13 46 | 2.5 | 2 30 | 1.7 | |
| 35 | 5 45 | 17 59 | 0 25 | 1 25 | 13 39 | 2.6 | 2 38 | 1.6 | |
| 40 | 5 44 | 17 60 | 0 27 | 1 31 | 13 31 | 2.7 | 2 47 | 1.5 | |
| 45 | 5 43 | 18 1 | 0 29 | 1 40 | 13 21 | 2.8 | 2 58 | 1.4 | |
| 50 | 5 42 | 18 2 | 0 32 | 1 51 | 13 10 | 3.0 | 3 10 | 1.2 | |
| 55 | 5 40 | 18 4 | 0 36 | 2 6 | 12 55 | 3.2 | 3 26 | 1.0 | |
| 60 | 5 38 | 18 7 | 0 42 | 2 29 | 12 36 | 3.5 | 3 47 | .8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 62 45.7 94 -15 39.6 | 85 | 289 4.9 21 54.8 | 156 41.2 -8 54.9 | | | | |
| 2 | 91 42.6 96 -15 22.6 | 86 | 319 9.7 21 54.8 | 186 45.6 -8 55.1 | | | | |
| 4 | 120 39.8 97 -15 5.3 | 88 | 349 14.5 21 54.8 | 216 50.0 -8 55.3 | | | | |
| 6 | 149 37.2 99 -14 47.7 | 90 | 19 19.2 21 54.8 | 246 54.4 -8 55.6 | | | | |
| 8 | 178 34.9 100 -14 29.8 | 91 | 49 24.0 21 54.8 | 276 58.8 -8 55.8 | | | | |
| 10 | 207 32.9 101 -14 11.6 | 92 | 79 28.7 21 54.8 | 307 3.2 -8 56.0 | | | | |
| 12 | 236 31.1 103 -13 53.1 | 94 | 109 33.5 21 54.9 | 337 7.6 -8 56.2 | | | | |
| 14 | 265 29.6 104 -13 34.3 | 95 | 139 38.3 21 54.9 | 7 12.0 -8 56.4 | | | | |
| 16 | 294 28.4 105 -13 15.3 | 96 | 169 43.1 21 54.9 | 37 16.4 -8 56.6 | | | | |
| 18 | 323 27.4 106 -12 56.0 | 98 | 199 47.8 21 54.9 | 67 20.8 -8 56.8 | | | | |
| 20 | 352 26.7 108 -12 36.4 | 99 | 229 52.6 21 54.9 | 97 25.2 -8 57.0 | | | | |
| 22 | 21 26.2 109 -12 16.6 | 100 | 259 57.4 21 54.9 | 127 29.6 -8 57.2 | | | | |
| Δ | 2 | -10 | | -4 | -8 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|----|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 8 16.7 | .9 | 16.0 | T _{m̄} | 20 31 | 2.0 | 57.9 | 15.8 | |
| 12 | 8 27.0 | T _{m̄} | 11 h 51.6 min | Starost | 8.9 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | |
| h min | / | o | / | h min | / | h min | / | o | |
| ♀ | 9 15 | .1 | 216 | -3.9 | 4 43 | .0 | 285 | -2.1 | |
| ♂ | 14 58 | .1 | 130 | 1.0 | h | 13 31 | .0 | 152 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 50 26.0 110 -11 56.6 | 101 | 290 2.1 21 54.9 | 157 34.0 -8 57.4 | | | | |
| 2 | 79 26.0 111 -11 36.4 | 102 | 320 6.9 21 54.9 | 187 38.4 -8 57.6 | | | | |
| 4 | 108 26.3 113 -11 16.0 | 103 | 350 11.7 21 54.9 | 217 42.8 -8 57.8 | | | | |
| 6 | 137 26.8 114 -10 55.3 | 104 | 20 16.5 21 54.9 | 247 47.2 -8 58.0 | | | | |
| 8 | 166 27.5 115 -10 34.5 | 105 | 50 21.3 21 55.0 | 277 51.6 -8 58.2 | | | | |
| 10 | 195 28.5 116 -10 13.4 | 106 | 80 26.0 21 55.0 | 307 56.0 -8 58.4 | | | | |
| 12 | 224 29.7 117 -9 52.2 | 107 | 110 30.8 21 55.0 | 338 4.4 -8 58.7 | | | | |
| 14 | 253 31.1 118 -9 30.8 | 108 | 140 35.6 21 55.0 | 8 4.8 -8 58.9 | | | | |
| 16 | 282 32.7 119 -9 9.3 | 108 | 170 40.4 21 55.0 | 38 9.2 -8 59.1 | | | | |
| 18 | 311 34.5 120 -8 47.6 | 109 | 200 45.2 21 55.0 | 68 13.6 -8 59.3 | | | | |
| 20 | 340 36.6 121 -8 25.7 | 110 | 230 50.0 21 55.0 | 98 17.9 -8 59.5 | | | | |
| 22 | 9 38.8 122 -8 3.8 | 111 | 260 54.8 21 55.0 | 128 22.3 -8 59.7 | | | | |
| Δ | 24 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|----|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 8 37.4 | .9 | 16.0 | T _{m̄} | 21 20 | 2.0 | 57.4 | 15.7 | |
| 12 | 8 47.6 | T _{m̄} | 11 h 51.2 min | Starost | 9.9 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | |
| h min | / | o | / | h min | / | h min | / | o | |
| ♀ | 9 15 | .1 | 216 | -3.9 | 4 43 | .0 | 285 | -2.1 | |
| ♂ | 14 57 | .1 | 130 | 1.0 | h | 13 28 | .0 | 152 | .9 |

| UT | SUNCE | | PROLJ. TAČKA S _T | VENERA | | MARS | |
|----|-------------------|----------------|-----------------------------------|--------------------|----------------|-----------------|-----------------|
| | S _Ø | δ _Ø | | S _Ø | δ _Ø | S _{Ø'} | δ _{Ø'} |
| h | o / | o / | | o / | o / | o / | o / |
| 0 | 182 14.4 - 1 42.4 | 6 10.8 | 221 7.4 13 52.8 | 135 53.7 - 19 15.6 | | | |
| 2 | 212 14.8 - 1 44.3 | 36 15.8 | 251 6.7 13 51.3 | 168 55.1 - 19 16.6 | | | |
| 4 | 242 15.3 - 1 46.3 | 66 20.7 | 281 5.9 13 49.7 | 198 56.5 - 19 17.5 | | | |
| 6 | 272 15.7 - 1 48.2 | 96 25.6 | 311 5.1 13 48.2 | 225 57.9 - 19 18.4 | | | |
| 8 | 302 16.1 - 1 50.2 | 126 30.6 | 341 4.4 13 46.6 | 255 59.3 - 19 19.3 | | | |
| 10 | 332 16.5 - 1 52.1 | 156 35. | 311 3.6 13 45.0 | 286 .7 - 19 20.2 | | | |
| 12 | 2 17.0 - 1 54.0 | 186 40.4 | 41 2.8 13 43.5 | 316 2.1 - 19 21.2 | | | |
| 14 | 32 17.4 - 1 56.0 | 216 45.3 | 71 2.1 13 41.9 | 346 3.5 - 19 22.1 | | | |
| 16 | 62 17.8 - 1 57.9 | 246 50.3 | 101 1.3 13 40.3 | 16 4.8 - 19 23.0 | | | |
| 18 | 92 18.2 - 1 59.9 | 276 55.2 | 131 .5 13 38.8 | 46 6.2 - 19 23.9 | | | |
| 20 | 122 18.7 - 2 1.8 | 307 1.1 | 160 59.8 13 37.2 | 76 7.6 - 19 24.8 | | | |
| 22 | 152 19.1 - 2 3.8 | 337 5.1 | 190 59.0 13 35.6 | 106 9.0 - 19 25.7 | | | |
| Δ | 2 | -10 | | -4 | -8 | 7 | -5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 5 57 | 17 44 | 0 41 | 2 22 | 16 29 | .5 | 2 39 | 3.4 | |
| 55 | 5 55 | 17 45 | 0 36 | 2 3 | 16 23 | .8 | 2 49 | 3.1 | |
| 50 | 5 54 | 17 46 | 0 32 | 1 48 | 16 19 | .9 | 2 56 | 2.9 | |
| 45 | 5 53 | 17 48 | 0 29 | 1 38 | 16 15 | 1.1 | 3 2 | 2.8 | |
| 40 | 5 53 | 17 48 | 0 27 | 1 30 | 16 12 | 1.2 | 3 7 | 2.6 | |
| 35 | 5 52 | 17 49 | 0 25 | 1 24 | 16 9 | 1.3 | 3 11 | 2.5 | |
| 30 | 5 51 | 17 50 | 0 24 | 1 19 | 16 7 | 1.4 | 3 14 | 2.4 | |
| 20 | 5 50 | 17 51 | 0 22 | 1 13 | 16 3 | 1.6 | 3 21 | 2.2 | |
| 10 | 5 49 | 17 53 | 0 21 | 1 10 | 15 59 | 1.8 | 3 26 | 2.1 | |
| 0 | 5 48 | 17 54 | 0 21 | 1 9 | 15 56 | 1.9 | 3 31 | 1.9 | |
| 10 | 5 46 | 17 56 | 0 21 | 1 10 | 15 52 | 2.0 | 3 37 | 1.8 | |
| 20 | 5 45 | 17 57 | 0 22 | 1 13 | 15 49 | 2.2 | 3 42 | 1.6 | |
| 30 | 5 43 | 17 59 | 0 24 | 1 20 | 15 45 | 2.4 | 3 48 | 1.5 | |
| 35 | 5 42 | 18 0 | 0 25 | 1 25 | 15 42 | 2.5 | 3 52 | 1.4 | |
| 40 | 5 41 | 18 2 | 0 27 | 1 32 | 15 40 | 2.6 | 3 56 | 1.3 | |
| 45 | 5 39 | 18 4 | 0 29 | 1 40 | 15 36 | 2.7 | 4 0 | 1.1 | |
| 50 | 5 37 | 18 6 | 0 32 | 1 51 | 15 33 | 2.9 | 4 6 | 1.0 | |
| 55 | 5 35 | 18 8 | 0 37 | 2 7 | 15 28 | 3.1 | 4 12 | .8 | |
| 60 | 5 32 | 18 11 | 0 42 | 2 31 | 15 22 | 3.4 | 4 21 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _Ø | δ _Ø | S _Ø | δ _Ø |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 38 41.2 123 - 7 41.7 | 111 | 290 59.6 21 55.0 | 158 26.7 - 8 59.9 | | | | |
| 2 | 67 43.8 124 - 7 19.4 | 112 | 321 4.4 21 55.0 | 188 31.1 - 9 .1 | | | | |
| 4 | 96 46.6 125 - 6 57.1 | 112 | 351 9.2 21 55.0 | 218 35.5 - 9 .3 | | | | |
| 6 | 125 49.6 126 - 6 34.6 | 113 | 21 14.0 21 55.1 | 248 39.9 - 9 .5 | | | | |
| 8 | 154 52.8 127 - 6 12.1 | 113 | 51 18.8 21 55.1 | 278 44.3 - 9 .7 | | | | |
| 10 | 183 56.1 127 - 5 49.5 | 114 | 81 23.6 21 55.1 | 308 48.7 - 9 .9 | | | | |
| 12 | 212 59.6 128 - 5 26.8 | 114 | 111 28.4 21 55.1 | 338 53.1 - 9 1.1 | | | | |
| 14 | 242 3.2 129 - 5 4.0 | 114 | 141 33.2 21 55.1 | 8 57.5 - 9 1.4 | | | | |
| 16 | 271 7.0 130 - 4 41.1 | 115 | 171 38.0 21 55.1 | 39 1.9 - 9 1.6 | | | | |
| 18 | 300 11.0 130 - 4 18.2 | 115 | 201 42.8 21 55.1 | 69 6.3 - 9 1.8 | | | | |
| 20 | 329 15.1 131 - 3 55.3 | 115 | 231 47.6 21 55.1 | 99 10.7 - 9 2.0 | | | | |
| 22 | 358 19.3 132 - 3 32.3 | 115 | 261 52.4 21 55.1 | 129 15.0 - 9 2.2 | | | | |
| Δ | 2 | -10 | | -4 | -8 | 7 | -5 | |

| UT | SUNCE | | | | MJESEC | | | | | | |
|--|-------------------------|-----------------|-------|-----------------|--------|----------------|-----------------|-----------|-------|-------|----|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t | | | | |
| h min s | s | / | h min | min / | h min | / | h min | / | | | |
| 00 | 8 57.9 | .8 | 16.0 | T _{m̄} | 22 | 7 | 1.9 | 56.9 15.5 | | | |
| 12 9 8.0 T _{m̄} 11 h 50.9 min Starost 10.9 d Faza C | | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-ø | Vel. | Pl. | T _{m̄} | π | 360-ø | Vel. | |
| h min / | o / | h min | / | o / | h min | / | h min | / | o / | h min | |
| ø | 9 16 .1 | 215 | -3.9 | 4 35 | 4 35 | .0 | 285 | -2.1 | .9 | 152 | .9 |
| ø' | 14 56 .1 | 130 | 1.0 | h | 13 24 | .0 | 152 | .9 | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|-----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _Ø | δ _Ø | S _Ø | δ _Ø |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 27 23.6 132 - 3 9.2 | 115 | 291 57.2 21 55.1 | 159 19.4 - 9 2.4 | | | | |
| 2 | 56 28.1 133 - 2 46.2 | 115 | 322 2.0 21 55.1 | 189 23.8 - 9 2.6 | | | | |
| 4 | 85 32.7 134 - 2 23.1 | 115 | 352 6.8 21 55.1 | 219 28.2 - 9 2.8 | | | | |
| 6 | 114 37.4 134 - 2 0.0 | 115 | 22 11.6 21 55.1 | 249 32.6 - 9 3.0 | | | | |
| 8 | 143 42.2 135 - 1 36.9 | 115 | 52 16.5 21 55.2 | 279 37.0 - 9 3.2 | | | | |
| 10 | 172 47.1 135 - 1 13.8 | 115 | 82 21.3 21 55.2 | 309 41.4 - 9 3.4 | | | | |
| 12 | 201 52.1 136 - 0 50.8 | 115 | 112 26.1 21 55.2 | 339 45.8 - 9 3.6 | | | | |
| 14 | 230 57.2 136 - 0 27.7 | 115 | 142 30.9 21 55.2 | 9 50.2 - 9 3.8 | | | | |
| 16 | 260 2.4 136 - 0 4.7 | 115 | 172 35.7 21 55.2 | 39 54.6 - 9 4.1 | | | | |
| 18 | 289 7.7 137 0 18.4 | 115 | 202 40.6 21 55.2 | 69 58.9 - 9 4.3 | | | | |
| 20 | 318 13.1 137 0 41.3 | 115 | 232 45.4 21 55.2 | 100 3.3 - 9 4.5 | | | | |
| 22 | 347 18.5 137 1 4.3 | 114 | 262 50.2 21 55.2 | 130 7.7 - 9 4.7 | | | | |
| Δ | 24 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | | | |
|---|-------------------------|-----------------|-------|-----------------|--------|----------------|-----------------|-----------|-------|-------|----|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t | | | | |
| h min s | s | / | h min | min / | h min | / | h min | / | | | |
| 00 | 9 18.2 | .8 | 16.0 | T _{m̄} | 22 | 52 | 1.9 | 56.4 15.4 | | | |
| 12 9 28.2 T _{m̄} 11 h 50.5 min Starost 11.9 d Faza C | | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-ø | Vel. | Pl. | T _{m̄} | π | 360-ø | Vel. | |
| h min / | o / | h min | / | o / | h min | / | h min | / | o / | h min | |
| ø | 9 16 .1 | 214 | -3.9 | 4 31 | 4 31 | .0 | 285 | -2.1 | .9 | 152 | .9 |
| ø' | 14 55 .1 | 129 | 1.0 | h | 13 21 | .0 | 152 | .9 | | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|--------------------|--------------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 182 | 24.5 - 2 | 29.0 | 8 9.1 | 220 | 49.1 13 | 14.8 | 136 26.8 - 19 37.5 |
| 2 | 212 | 24.9 - 2 | 31.0 | 38 14.1 | 250 | 48.4 13 | 13.2 | 166 28.1 - 19 38.4 |
| 4 | 242 | 25.4 - 2 | 32.9 | 68 19.0 | 280 | 47.6 13 | 11.6 | 196 29.5 - 19 39.3 |
| 6 | 272 | 25.8 - 2 | 34.9 | 98 23.9 | 310 | 46.8 13 | 9.9 | 226 30.9 - 19 40.2 |
| 8 | 302 | 26.2 - 2 | 36.8 | 128 28.8 | 340 | 46.1 13 | 8.3 | 256 32.2 - 19 41.1 |
| 10 | 332 | 26.6 - 2 | 38.7 | 158 33.8 | 10 45.3 | 13 | 6.7 | 286 33.6 - 19 42.0 |
| 12 | 2 27.0 - 2 | 40.7 | 188 38.7 | 40 44.6 | 13 | 5.0 | 316 34.9 - 19 42.9 | |
| 14 | 32 | 27.4 - 2 | 42.6 | 218 43.6 | 70 43.8 | 13 | 3.4 | 346 36.3 - 19 43.8 |
| 16 | 62 | 27.8 - 2 | 44.6 | 248 48.6 | 100 43.1 | 13 | 1.8 | 16 37.6 - 19 44.7 |
| 18 | 92 | 28.3 - 2 | 46.5 | 278 53.5 | 130 | 42.3 13 | .1 | 46 39.0 - 19 45.6 |
| 20 | 122 | 28.7 - 2 | 48.5 | 308 58.4 | 160 | 41.6 12 | 58.5 | 76 40.3 - 19 46.5 |
| 22 | 152 | 29.1 - 2 | 50.4 | 339 3.3 | 190 | 40.8 12 | 56.8 | 106 41.7 - 19 47.4 |
| Δ | 2 | -10 | | | -4 | -8 | 7 | -4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 2 | 17 38 | 0 41 | 2 22 | 16 54 | .5 | 5 20 | 3.3 | |
| 55 | 5 59 | 17 40 | 0 36 | 2 2 | 16 59 | .8 | 5 17 | 3.0 | |
| 50 | 5 57 | 17 42 | 0 32 | 1 48 | 17 4 | 1.0 | 5 15 | 2.8 | |
| 45 | 5 56 | 17 44 | 0 29 | 1 38 | 17 7 | 1.1 | 5 13 | 2.7 | |
| 40 | 5 55 | 17 45 | 0 27 | 1 30 | 17 10 | 1.2 | 5 11 | 2.5 | |
| 35 | 5 53 | 17 46 | 0 25 | 1 24 | 17 13 | 1.3 | 5 10 | 2.4 | |
| 30 | 5 52 | 17 48 | 0 24 | 1 19 | 17 15 | 1.4 | 5 9 | 2.3 | |
| 20 | 5 50 | 17 50 | 0 22 | 1 13 | 17 19 | 1.6 | 5 7 | 2.2 | |
| 10 | 5 49 | 17 52 | 0 21 | 1 10 | 17 23 | 1.7 | 5 5 | 2.0 | |
| 0 | 5 47 | 17 53 | 0 21 | 1 9 | 17 26 | 1.9 | 5 3 | 1.9 | |
| 10 | 5 45 | 17 55 | 0 21 | 1 10 | 17 30 | 2.0 | 5 1 | 1.7 | |
| 20 | 5 43 | 17 58 | 0 22 | 1 14 | 17 34 | 2.1 | 4 59 | 1.6 | |
| 30 | 5 40 | 18 0 | 0 24 | 1 20 | 17 38 | 2.3 | 4 57 | 1.4 | |
| 35 | 5 39 | 18 2 | 0 25 | 1 25 | 17 40 | 2.4 | 4 56 | 1.3 | |
| 40 | 5 37 | 18 4 | 0 27 | 1 32 | 17 43 | 2.5 | 4 55 | 1.2 | |
| 45 | 5 35 | 18 6 | 0 30 | 1 41 | 17 46 | 2.6 | 4 53 | 1.1 | |
| 50 | 5 33 | 18 9 | 0 33 | 1 52 | 17 50 | 2.8 | 4 51 | .9 | |
| 55 | 5 30 | 18 12 | 0 37 | 2 8 | 17 55 | 3.0 | 4 49 | .7 | |
| 60 | 5 26 | 18 16 | 0 42 | 2 33 | 18 1 | 3.2 | 4 46 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|--------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 16 | 24.0 | 138 | 1 27.1 | 114 | 292 | 55.0 | 21 55.2 |
| 2 | 45 | 29.5 | 138 | 1 49.9 | 114 | 322 | 59.9 | 21 55.2 |
| 4 | 74 | 35.1 | 138 | 2 12.7 | 113 | 353 | 4.7 | 21 55.2 |
| 6 | 103 | 40.7 | 138 | 2 35.4 | 113 | 23 | 9.5 | 21 55.2 |
| 8 | 132 | 46.4 | 139 | 2 58.0 | 113 | 53 | 14.4 | 21 55.2 |
| 10 | 161 | 52.2 | 139 | 3 20.5 | 112 | 83 | 19.2 | 21 55.2 |
| 12 | 190 | 57.9 | 139 | 3 42.9 | 112 | 113 | 24.0 | 21 55.2 |
| 14 | 220 | 3.7 | 139 | 4 5.3 | 111 | 123 | 28.9 | 21 55.2 |
| 16 | 249 | 9.5 | 139 | 4 27.5 | 111 | 173 | 33.7 | 21 55.2 |
| 18 | 278 | 15.4 | 139 | 4 49.6 | 110 | 203 | 38.6 | 21 55.2 |
| 20 | 307 | 21.2 | 139 | 5 11.6 | 109 | 213 | 43.4 | 21 55.2 |
| 22 | 336 | 27.1 | 139 | 5 33.5 | 109 | 263 | 48.3 | 21 55.3 |
| Δ | 2 | -10 | | | -4 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 9 38.3 | .8 | 16.0 | T _{m̄} | 23 37 | 1.9 | 56.0 | 15.2 |
| 12 | 9 48.2 | T _{m̄} | 11 h 50.2 min | Starost | 12.9 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | | | | h min / | o | h min / | o |
| 0 | 9 17 | .1 | 213 | -3.9 | 4 28 | .0 | 285 | -2.1 |
| ο | 14 54 | .1 | 128 | 1.0 | h | 13 17 | .0 | 152 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|--------|----------------|----------------|----------------|-----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 5 32.9 | 139 | 5 55.2 | 108 | 293 | 53.1 | 21 55.3 | 161 4.8 - 9 7.4 |
| 2 | 34 | 38.8 | 139 | 6 16.8 | 107 | 323 | 57.9 | 21 55.3 |
| 4 | 63 | 44.7 | 139 | 6 38.3 | 107 | 354 | 2.8 | 21 55.3 |
| 6 | 92 | 50.5 | 139 | 6 59.6 | 106 | 24 | 7.6 | 21 55.3 |
| 8 | 121 | 56.4 | 139 | 7 20.8 | 105 | 54 | 12.5 | 21 55.3 |
| 10 | 151 | 2.2 | 139 | 7 41.8 | 105 | 84 | 17.3 | 21 55.3 |
| 12 | 180 | 8.0 | 139 | 8 2.7 | 103 | 114 | 22.2 | 21 55.3 |
| 14 | 209 | 13.8 | 139 | 8 23.4 | 103 | 144 | 27.1 | 21 55.3 |
| 16 | 238 | 19.6 | 139 | 8 43.9 | 102 | 174 | 31.9 | 21 55.3 |
| 18 | 267 | 25.3 | 138 | 9 4.2 | 101 | 204 | 36.8 | 21 55.3 |
| 20 | 296 | 31.0 | 138 | 9 24.4 | 100 | 234 | 41.6 | 21 55.3 |
| 22 | 325 | 36.7 | 138 | 9 44.3 | 99 | 264 | 46.5 | 21 55.3 |
| Δ | 2 | -10 | | | 24 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 9 58.1 | .8 | 16.0 | T _{m̄} | ... | 1.0 | 55.5 | 15.1 |
| 12 | 10 7.9 | T _{m̄} | 11 h 49.9 min | Starost | 13.9 d | Faza | ○ | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min / | o | | | | h min / | o | h min / | o |
| 0 | 9 18 | .1 | 212 | -3.9 | 4 24 | .0 | 285 | -2.1 |
| ο | 14 52 | .1 | 128 | 1.0 | h | 13 14 | .0 | 152 |

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|------------------|----------------|--------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 34.4 - 3 15.6 | 10 7.4 | 220 31.0 12 35.1 | | 136 59.1 - 19 58.8 | | | |
| 2 | 212 34.8 - 3 17.5 | 40 12.3 | 250 30.3 12 33.4 | | 167 .4 - 19 59.7 | | | |
| 4 | 242 35.2 - 3 19.5 | 70 17.3 | 280 29.5 12 31.8 | | 197 1.8 - 20 .6 | | | |
| 6 | 272 35.6 - 3 21.4 | 100 22.2 | 310 28.8 12 30.1 | | 227 3.1 - 20 1.4 | | | |
| 8 | 302 36.0 - 3 23.4 | 130 27.1 | 340 28.0 12 28.4 | | 257 4.4 - 20 2.3 | | | |
| 10 | 332 36.4 - 3 25.3 | 160 32.0 | 10 27.3 12 26.7 | | 287 5.7 - 20 3.2 | | | |
| 12 | 2 36.8 - 3 27.2 | 190 37.0 | 40 26.5 12 25.0 | | 317 7.1 - 20 4.1 | | | |
| 14 | 32 37.2 - 3 29.2 | 220 41.9 | 70 25.8 12 23.3 | | 347 8.4 - 20 4.9 | | | |
| 16 | 62 37.6 - 3 31.1 | 250 46.8 | 100 25.0 12 21.6 | | 17 9.7 - 20 5.8 | | | |
| 18 | 92 38.0 - 3 33.0 | 280 51.8 | 130 24.3 12 19.9 | | 47 11.0 - 20 6.7 | | | |
| 20 | 122 38.4 - 3 35.0 | 310 56.7 | 160 23.5 12 18.1 | | 77 12.3 - 20 7.5 | | | |
| 22 | 152 38.8 - 3 36.9 | 341 1.6 | 190 22.8 12 16.4 | | 107 13.7 - 20 8.4 | | | |
| Δ | 2 -10 | | -4 -9 | | 7 -4 | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 6 | 17 32 | 0 41 | 2 21 | 17 21 | .7 | 7 56 | 3.1 |
| 55 | 6 3 | 17 35 | 0 36 | 2 2 | 17 38 | 1.0 | 7 41 | 2.9 |
| 50 | 6 0 | 17 38 | 0 32 | 1 48 | 17 51 | 1.2 | 7 29 | 2.7 |
| 45 | 5 58 | 17 40 | 0 29 | 1 38 | 18 2 | 1.3 | 7 20 | 2.6 |
| 40 | 5 57 | 17 42 | 0 27 | 1 30 | 18 11 | 1.4 | 7 12 | 2.5 |
| 35 | 5 55 | 17 44 | 0 25 | 1 24 | 18 18 | 1.5 | 7 5 | 2.4 |
| 30 | 5 54 | 17 45 | 0 24 | 1 19 | 18 25 | 1.6 | 6 60 | 2.3 |
| 20 | 5 51 | 17 48 | 0 22 | 1 13 | 18 36 | 1.7 | 6 50 | 2.1 |
| 10 | 5 49 | 17 50 | 0 21 | 1 10 | 18 46 | 1.8 | 6 41 | 2.0 |
| 0 | 5 46 | 17 53 | 0 21 | 1 9 | 18 56 | 1.9 | 6 33 | 1.9 |
| 10 | 5 44 | 17 55 | 0 21 | 1 10 | 19 6 | 2.0 | 6 24 | 1.8 |
| 20 | 5 41 | 17 58 | 0 22 | 1 14 | 19 16 | 2.1 | 6 16 | 1.7 |
| 30 | 5 38 | 18 2 | 0 24 | 1 21 | 19 28 | 2.3 | 6 6 | 1.5 |
| 35 | 5 36 | 18 4 | 0 25 | 1 26 | 19 35 | 2.3 | 6 0 | 1.4 |
| 40 | 5 34 | 18 6 | 0 27 | 1 32 | 19 43 | 2.4 | 5 54 | 1.3 |
| 45 | 5 31 | 18 8 | 0 30 | 1 41 | 19 52 | 2.5 | 5 46 | 1.2 |
| 50 | 5 28 | 18 12 | 0 33 | 1 53 | 20 3 | 2.7 | 5 37 | 1.1 |
| 55 | 5 25 | 18 16 | 0 37 | 2 10 | 20 17 | 2.8 | 5 26 | .9 |
| 60 | 5 20 | 18 21 | 0 43 | 2 35 | 20 36 | 3.1 | 5 12 | .7 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|------------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 354 42.3 138 | 10 4.1 | 98 | | 294 51.4 21 55.3 | | 161 57.4 - 9 9.9 | |
| 2 | 23 47.9 138 | 10 23.6 | 97 | | 324 56.2 21 55.3 | | 192 1.7 - 9 10.1 | |
| 4 | 52 53.4 137 | 10 42.9 | 96 | | 355 1.1 21 55.3 | | 222 6.1 - 9 10.3 | |
| 6 | 81 58.9 137 | 11 2.1 | 95 | | 25 6.0 21 55.3 | | 252 10.5 - 9 10.5 | |
| 8 | 111 4.3 137 | 11 21.0 | 93 | | 55 10.8 21 55.3 | | 282 14.9 - 9 10.7 | |
| 10 | 140 9.7 137 | 11 39.7 | 92 | | 85 15.7 21 55.3 | | 312 19.3 - 9 10.9 | |
| 12 | 168 15.0 136 | 11 58.1 | 91 | | 115 20.6 21 55.3 | | 342 23.7 - 9 11.1 | |
| 14 | 198 20.2 136 | 12 16.3 | 90 | | 145 25.5 21 55.3 | | 12 28.0 - 9 11.4 | |
| 16 | 227 25.4 136 | 12 34.3 | 89 | | 175 30.3 21 55.3 | | 42 32.4 - 9 11.6 | |
| 18 | 256 30.5 135 | 12 52.1 | 87 | | 205 35.2 21 55.3 | | 72 36.8 - 9 11.8 | |
| 20 | 285 35.6 135 | 13 9.5 | 86 | | 235 40.1 21 55.3 | | 102 41.2 - 9 12.0 | |
| 22 | 314 40.6 135 | 13 26.8 | 85 | | 265 45.0 21 55.3 | | 132 45.6 - 9 12.2 | |
| Δ | 2 -10 | | -4 -9 | | 24 0 | | 22 -1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 10 17.7 | .8 | 16.0 | T _{m̄} | 0 22 | 1.9 | 55.1 | 15.0 | |
| 12 | 10 27.4 | T _{m̄} | 11 h 49.5 min | Starost | 14.9 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min / | o / | | | h min / | h min / | o / | | | |
| ♀ | 9 18 | .1 | 210 | -3.9 | 4 20 | .0 | 285 | -2.1 | |
| ♂ | 14 51 | .1 | 127 | 1.0 | h | 13 10 | .0 | 152 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|------------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 343 45.5 134 | 13 43.8 | 84 | | 295 49.8 21 55.3 | | 162 50.0 - 9 12.4 | |
| 2 | 12 50.3 134 | 14 -.5 | 82 | | 325 54.7 21 55.3 | | 192 54.3 - 9 12.6 | |
| 4 | 41 55.0 133 | 14 16.9 | 81 | | 355 59.6 21 55.3 | | 222 58.7 - 9 12.8 | |
| 6 | 70 59.7 133 | 14 33.1 | 80 | | 26 4.5 21 55.3 | | 253 3.1 - 9 13.0 | |
| 8 | 100 4.3 133 | 14 49.0 | 78 | | 56 9.4 21 55.3 | | 283 7.5 - 9 13.2 | |
| 10 | 129 8.8 132 | 15 4.6 | 77 | | 86 14.3 21 55.3 | | 313 11.9 - 9 13.4 | |
| 12 | 158 13.3 132 | 15 20.0 | 75 | | 116 19.2 21 55.3 | | 343 16.2 - 9 13.7 | |
| 14 | 187 17.6 131 | 15 35.0 | 74 | | 146 24.1 21 55.3 | | 13 20.6 - 9 13.9 | |
| 16 | 216 21.9 131 | 15 49.7 | 72 | | 176 28.9 21 55.3 | | 43 25.0 - 9 14.1 | |
| 18 | 245 26.1 130 | 16 4.2 | 71 | | 206 33.8 21 55.3 | | 73 29.4 - 9 14.3 | |
| 20 | 274 30.1 130 | 16 18.4 | 69 | | 236 38.7 21 55.3 | | 103 33.8 - 9 14.5 | |
| 22 | 303 34.2 130 | 16 32.2 | 68 | | 266 43.6 21 55.3 | | 133 38.1 - 9 14.7 | |
| Δ | 24 | 0 | | | 22 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 10 37.0 | .8 | 16.0 | T _{m̄} | 1 | 1.9 | 54.7 | 14.9 | |
| 12 | 10 46.5 | T _{m̄} | 11 h 49.2 min | Starost | 15.9 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min / | o / | | | h min / | h min / | o / | | | |
| ♀ | 9 19 | .1 | 209 | -3.9 | 4 16 | .0 | 285 | -2.1 | |
| ♂ | 14 50 | .1 | 126 | 1.0 | h | 13 7 | .0 | 152 | .9 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 43.9 - 4 | 2.0 | 12 5.7 | 220 13.1 11 53.9 | 137 30.7 - 20 | 19.5 | | |
| 2 | 212 44.3 - 4 | 4.0 | 42 10.6 | 250 12.4 11 41.6 | 167 32.0 - 20 | 20.4 | | |
| 4 | 242 44.7 - 4 | 5.9 | 72 15.5 | 280 11.7 11 50.4 | 197 33.3 - 20 | 21.2 | | |
| 6 | 272 45.1 - 4 | 7.8 | 102 20.5 | 310 10.9 11 48.7 | 227 34.6 - 20 | 22.1 | | |
| 8 | 302 45.5 - 4 | 9.8 | 132 25.4 | 340 10.2 11 46.9 | 257 35.9 - 20 | 22.9 | | |
| 10 | 332 45.9 - 4 | 11.7 | 162 30.3 | 10 9.4 11 45.1 | 287 37.2 - 20 | 23.7 | | |
| 12 | 2 46.3 - 4 | 13.6 | 192 35.3 | 40 8.7 11 43.4 | 317 38.5 - 20 | 24.6 | | |
| 14 | 32 46.7 - 4 | 15.5 | 222 40.2 | 70 8.0 11 41.6 | 347 39.8 - 20 | 25.4 | | |
| 16 | 62 47.1 - 4 | 17.5 | 252 45.1 | 100 7.2 11 39.8 | 17 41.1 - 20 | 26.3 | | |
| 18 | 92 47.4 - 4 | 19.4 | 282 50.0 | 130 6.5 11 38.1 | 47 42.3 - 20 | 27.1 | | |
| 20 | 122 47.8 - 4 | 21.3 | 312 55.0 | 160 5.8 11 36.3 | 77 43.6 - 20 | 27.9 | | |
| 22 | 152 48.2 - 4 | 23.3 | 342 59.9 | 190 5.0 11 34.5 | 107 44.9 - 20 | 28.8 | | |
| Δ | 2 | -10 | | -4 | -9 | 6 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 11 | 17 26 | 0 41 | 2 20 | 18 2 | 1 3 | 10 24 | 2 8 | |
| 55 | 6 7 | 17 30 | 0 36 | 2 1 | 18 30 | 1 4 | 9 57 | 2 6 | |
| 50 | 6 4 | 17 33 | 0 32 | 1 48 | 18 51 | 1 6 | 9 37 | 2 5 | |
| 45 | 6 1 | 17 36 | 0 29 | 1 38 | 19 7 | 1 6 | 9 21 | 2 4 | |
| 40 | 5 59 | 17 39 | 0 27 | 1 30 | 19 21 | 1 7 | 9 8 | 2 3 | |
| 35 | 5 57 | 17 41 | 0 25 | 1 24 | 19 32 | 1 7 | 8 57 | 2 2 | |
| 30 | 5 55 | 17 43 | 0 24 | 1 19 | 19 42 | 1 8 | 8 48 | 2 2 | |
| 20 | 5 51 | 17 46 | 0 22 | 1 13 | 19 59 | 1 9 | 8 32 | 2 1 | |
| 10 | 5 49 | 17 49 | 0 21 | 1 10 | 20 14 | 1 9 | 8 17 | 2 0 | |
| 0 | 5 46 | 17 52 | 0 21 | 1 9 | 20 28 | 2 0 | 8 4 | 2 0 | |
| 10 | 5 43 | 17 55 | 0 21 | 1 10 | 20 43 | 2 0 | 7 51 | 1 9 | |
| 20 | 5 39 | 17 59 | 0 22 | 1 14 | 20 58 | 2 1 | 7 37 | 1 8 | |
| 30 | 5 36 | 18 3 | 0 24 | 1 21 | 21 15 | 2 2 | 7 21 | 1 7 | |
| 35 | 5 33 | 18 5 | 0 25 | 1 26 | 21 26 | 2 2 | 7 11 | 1 7 | |
| 40 | 5 31 | 18 8 | 0 27 | 1 33 | 21 37 | 2 2 | 7 1 | 1 6 | |
| 45 | 5 28 | 18 11 | 0 30 | 1 42 | 21 51 | 2 3 | 6 48 | 1 5 | |
| 50 | 5 24 | 18 15 | 0 33 | 1 54 | 22 8 | 2 4 | 6 33 | 1 4 | |
| 55 | 5 20 | 18 20 | 0 37 | 2 11 | 22 30 | 2 5 | 6 14 | 1 3 | |
| 60 | 5 14 | 18 26 | 0 43 | 2 38 | 22 60 | 2 6 | 5 48 | 1 1 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 332 38.1 129 | 16 45.7 | 66 | 296 48.5 21 55.3 | 163 42.5 - 9 | 14.9 | | |
| 2 | 1 41.9 129 | 16 59.0 | 65 | 326 53.4 21 55.3 | 193 46.9 - 9 | 15.1 | | |
| 4 | 30 45.7 128 | 17 11.9 | 63 | 356 58.3 21 55.3 | 223 51.3 - 9 | 15.3 | | |
| 6 | 59 49.3 128 | 17 24.5 | 61 | 27 3.2 21 55.3 | 253 55.6 - 9 | 15.5 | | |
| 8 | 88 52.9 127 | 17 36.7 | 60 | 57 8.1 21 55.3 | 284 0 - 9 | 15.8 | | |
| 10 | 117 56.4 127 | 17 48.7 | 58 | 87 13.1 21 55.3 | 314 4.4 - 9 | 16.0 | | |
| 12 | 146 59.8 127 | 18 .3 | 56 | 117 18.0 21 55.3 | 344 8.8 - 9 | 16.2 | | |
| 14 | 176 3.1 126 | 18 11.6 | 55 | 147 22.9 21 55.3 | 14 13.2 - 9 | 16.4 | | |
| 16 | 205 6.4 126 | 18 22.5 | 53 | 177 27.8 21 55.3 | 44 17.5 - 9 | 16.6 | | |
| 18 | 234 9.5 125 | 18 33.1 | 51 | 207 32.7 21 55.3 | 74 21.9 - 9 | 16.8 | | |
| 20 | 263 12.6 125 | 18 43.3 | 50 | 237 37.6 21 55.3 | 104 26.3 - 9 | 17.0 | | |
| 22 | 292 15.6 125 | 18 53.2 | 48 | 267 42.5 21 55.3 | 134 30.7 - 9 | 17.2 | | |
| Δ | 2 | -10 | | -4 | -9 | 6 | -4 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|---------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 10 55.9 | .8 | 16.0 | T _{m̄} | 1 53 | 2.0 | 54.4 | 14.8 | |
| 12 | 11 5.3 | T _{m̄} | 11 h 48.9 min | Starost | 16.9 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min / | o | / | h min / | o | h min / | o | h min / | o | Vel. |
| ♀ | 9 19 | .1 | 208 | -3.8 | 4 12 | .0 | 285 | -2.1 | |
| ♂ | 14 49 | .1 | 125 | 1.0 | 13 3 | .0 | 152 | .9 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊗ | δ _⊗ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 321 18.5 124 | 19 2.8 | 46 | 297 47.4 21 55.3 | 164 35.0 - 9 | 17.4 | | |
| 2 | 350 21.3 124 | 19 12.0 | 44 | 327 52.4 21 55.3 | 194 39.4 - 9 | 17.6 | | |
| 4 | 19 24.1 123 | 19 20.9 | 42 | 357 57.3 21 55.3 | 224 43.8 - 9 | 17.8 | | |
| 6 | 48 26.7 123 | 19 29.3 | 41 | 28 2.2 21 55.3 | 254 48.2 - 9 | 18.1 | | |
| 8 | 77 29.3 123 | 19 37.5 | 39 | 58 7.1 21 55.3 | 284 52.5 - 9 | 18.3 | | |
| 10 | 106 31.8 122 | 19 45.2 | 37 | 88 12.1 21 55.3 | 314 56.9 - 9 | 18.5 | | |
| 12 | 135 34.3 122 | 19 52.6 | 35 | 118 17.0 21 55.3 | 345 1.3 - 9 | 18.7 | | |
| 14 | 164 36.7 122 | 19 59.7 | 33 | 148 21.9 21 55.3 | 15 5.7 - 9 | 18.9 | | |
| 16 | 193 39.0 121 | 20 6.3 | 31 | 178 26.8 21 55.3 | 45 10.0 - 9 | 19.1 | | |
| 18 | 222 41.2 121 | 20 12.6 | 30 | 208 31.8 21 55.3 | 75 14.4 - 9 | 19.3 | | |
| 20 | 251 43.4 121 | 20 18.6 | 28 | 238 36.7 21 55.2 | 105 18.8 - 9 | 19.5 | | |
| 22 | 280 45.6 120 | 20 24.1 | 26 | 268 41.6 21 55.2 | 135 23.2 - 9 | 19.7 | | |
| Δ | 25 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|---------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 11 14.6 | .8 | 16.0 | T _{m̄} | 2 40 | 2.0 | 54.2 | 14.8 | |
| 12 | 11 23.7 | T _{m̄} | 11 h 48.6 min | Starost | 17.9 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 | Vel. |
| h min / | o | / | h min / | o | h min / | o | h min / | o | Vel. |
| ♀ | 9 20 | .1 | 207 | -3.8 | 4 8 | .0 | 285 | -2.1 | |
| ♂ | 14 48 | .1 | 125 | 1.0 | 12 60 | .0 | 151 | .9 | |

5. OKTOBAR

2012.

PETAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 53.2 - 4 48.3 | 14 4.0 | 219 55.5 11 11.2 | 138 1.6 -20 39.6 | | | | |
| 2 | 212 53.5 - 4 50.2 | 44 8.9 | 249 54.7 11 9.4 | 168 2.8 -20 40.4 | | | | |
| 4 | 242 53.9 - 4 52.1 | 74 13.8 | 279 54.0 11 7.6 | 198 4.1 -20 41.2 | | | | |
| 6 | 272 54.3 - 4 54.0 | 104 18.7 | 309 53.3 11 5.7 | 228 5.4 -20 42.0 | | | | |
| 8 | 302 54.7 - 4 56.0 | 134 23.7 | 339 52.6 11 3.9 | 258 6.6 -20 42.8 | | | | |
| 10 | 332 55.0 - 4 57.9 | 164 28.6 | 9 51.8 11 2.1 | 288 7.9 -20 43.7 | | | | |
| 12 | 2 55.4 - 4 59.8 | 194 33.5 | 39 51.1 11 .3 | 318 9.2 -20 44.5 | | | | |
| 14 | 32 55.8 - 4 58.1 | 224 38.5 | 69 50.4 10 58.5 | 348 10.4 -20 45.3 | | | | |
| 16 | 62 56.1 - 5 3.6 | 254 43.4 | 99 49.6 10 56.6 | 18 11.7 -20 46.1 | | | | |
| 18 | 92 56.5 - 5 5.6 | 284 48.3 | 129 48.9 10 54.8 | 48 12.9 -20 46.9 | | | | |
| 20 | 122 56.9 - 5 7.5 | 314 53.2 | 159 48.2 10 53.0 | 78 14.2 -20 47.7 | | | | |
| 22 | 152 57.3 - 5 9.4 | 344 58.2 | 189 47.5 10 51.1 | 108 15.5 -20 48.5 | | | | |
| Δ | 2 | -10 | | -4 | -9 | 6 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 16 | 17 20 | 0 41 | 2 20 | 19 13 | 2 1 | 12 29 | 2 0 | |
| 55 | 6 11 | 17 25 | 0 36 | 2 1 | 19 47 | 2 1 | 11 55 | 2 0 | |
| 50 | 6 7 | 17 29 | 0 32 | 1 47 | 20 12 | 2 1 | 11 30 | 2 0 | |
| 45 | 6 3 | 17 33 | 0 29 | 1 37 | 20 31 | 2 1 | 11 11 | 2 0 | |
| 40 | 6 1 | 17 35 | 0 27 | 1 30 | 20 46 | 2 1 | 10 58 | 2 0 | |
| 35 | 5 58 | 17 38 | 0 25 | 1 24 | 20 60 | 2 1 | 10 43 | 2 0 | |
| 30 | 5 56 | 17 40 | 0 24 | 1 19 | 21 11 | 2 1 | 10 32 | 2 0 | |
| 25 | 5 52 | 17 44 | 0 22 | 1 13 | 21 31 | 2 0 | 10 12 | 2 0 | |
| 10 | 5 48 | 17 48 | 0 21 | 1 10 | 21 48 | 2 0 | 9 55 | 2 0 | |
| 0 | 5 45 | 17 52 | 0 21 | 1 9 | 22 4 | 2 0 | 9 39 | 2 0 | |
| 10 | 5 42 | 17 55 | 0 21 | 1 10 | 22 20 | 2 0 | 9 23 | 2 0 | |
| 20 | 5 38 | 17 59 | 0 22 | 1 14 | 22 37 | 2 0 | 9 6 | 2 0 | |
| 30 | 5 33 | 18 4 | 0 24 | 1 21 | 22 57 | 2 0 | 8 47 | 2 0 | |
| 35 | 5 31 | 18 7 | 0 26 | 1 26 | 23 9 | 2 0 | 8 35 | 2 0 | |
| 40 | 5 28 | 18 10 | 0 27 | 1 33 | 23 22 | 1 9 | 8 22 | 2 0 | |
| 45 | 5 24 | 18 13 | 0 30 | 1 42 | 23 38 | 1 9 | 8 7 | 2 0 | |
| 50 | 5 20 | 18 18 | 0 33 | 1 55 | 23 57 | 1 9 | 7 48 | 2 0 | |
| 55 | 5 14 | 18 23 | 0 37 | 2 13 | .. | 0 | 7 23 | 1 9 | |
| 60 | 5 8 | 18 31 | 0 43 | 2 41 | 0 3 | 2 2 | 6 49 | 1 9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 309 47.6 120 | 20 29.3 | 24 | 298 46.6 21 55.2 | 165 27.5 - 9 19.9 | | | |
| 2 | 338 49.6 120 | 20 34.1 | 22 | 328 51.5 21 55.2 | 195 31.9 - 9 20.2 | | | |
| 4 | 7 51.6 120 | 20 38.5 | 20 | 358 56.4 21 55.2 | 225 36.3 - 9 20.4 | | | |
| 6 | 36 53.5 119 | 20 42.5 | 18 | 29 1.4 21 55.2 | 255 27.5 - 9 20.6 | | | |
| 8 | 65 55.3 119 | 20 46.1 | 16 | 59 6.3 21 55.2 | 285 45.0 - 9 20.8 | | | |
| 10 | 94 57.1 119 | 20 49.4 | 14 | 89 11.3 21 55.2 | 315 49.4 - 9 21.0 | | | |
| 12 | 123 58.9 119 | 20 52.3 | 12 | 119 16.2 21 55.2 | 345 53.8 - 9 21.2 | | | |
| 14 | 153 .6 118 | 20 54.8 | 11 | 149 21.2 21 55.2 | 158 58.2 - 9 21.4 | | | |
| 16 | 182 2.3 118 | 20 56.9 | 9 | 179 26.1 21 55.2 | 46 2.5 - 9 21.6 | | | |
| 18 | 211 4.0 118 | 20 58.6 | 7 | 209 31.0 21 55.2 | 76 6.9 - 9 21.8 | | | |
| 20 | 240 5.6 118 | 20 59.9 | 5 | 239 36.0 21 55.2 | 106 11.3 - 9 22.1 | | | |
| 22 | 269 7.2 118 | 21 .8 | 3 | 269 41.0 21 55.2 | 136 15.7 - 9 22.3 | | | |
| Δ | 2 | -10 | | -4 | -9 | 6 | -4 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 11 32.8 | .7 | 16.0 | T _{m̄} | 3 28 | 2.0 | 54.1 | 14.7 | |
| 12 | 11 41.8 | T _{m̄} | 11 h 48.3 min | Starost | 18.9 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 9 21 | .1 | 206 | -3.8 | 4 | 4 4 | .0 | 285 | -2.2 |
| φ' | 14 47 | .1 | 123 | 1.0 | h | 12 56 | .0 | 151 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 298 8.7 118 | 21 1.4 | 1 | 299 45.9 21 55.2 | 166 20.0 - 9 22.5 | | | |
| 2 | 327 10.2 118 | 21 1.5 | -1 | 329 50.9 21 55.2 | 196 24.4 - 9 22.7 | | | |
| 4 | 356 11.8 117 | 21 1.3 | -3 | 359 55.8 21 55.2 | 226 28.8 - 9 22.9 | | | |
| 6 | 25 13.2 117 | 21 .6 | -5 | 30 .8 21 55.2 | 256 33.1 - 9 23.1 | | | |
| 8 | 54 14.7 117 | 20 59.6 | -7 | 60 5.7 21 55.2 | 286 37.5 - 9 23.3 | | | |
| 10 | 83 16.2 117 | 20 58.2 | -9 | 90 10.7 21 55.1 | 316 41.9 - 9 23.5 | | | |
| 12 | 112 17.6 117 | 20 56.3 | -11 | 120 15.7 21 55.1 | 346 46.3 - 9 23.7 | | | |
| 14 | 141 19.1 117 | 20 54.1 | -13 | 150 20.6 21 55.1 | 16 50.6 - 9 23.9 | | | |
| 16 | 170 20.5 117 | 20 51.5 | -15 | 180 25.6 21 55.1 | 46 55.0 - 9 24.2 | | | |
| 18 | 199 21.9 117 | 20 48.5 | -17 | 210 30.5 21 55.1 | 76 59.4 - 9 24.4 | | | |
| 20 | 228 23.3 117 | 20 45.1 | -19 | 240 35.5 21 55.1 | 107 3.7 - 9 24.6 | | | |
| 22 | 257 24.8 117 | 20 41.4 | -21 | 270 40.5 21 55.1 | 137 8.1 - 9 24.8 | | | |
| Δ | 25 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 11 50.7 | .7 | 16.0 | T _{m̄} | 4 16 | 2.0 | 54.2 | 14.8 | |
| 12 | 11 59.4 | T _{m̄} | 11 h 48.0 min | Starost | 19.9 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 9 21 | .1 | 205 | -3.8 | 4 | 4 0 | .0 | 285 | -2.2 |
| φ' | 14 46 | .1 | 123 | 1.0 | h | 12 53 | .0 | 151 | .9 |

7. OKTOBAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 2.0 - 5 34.3 | 16 2.2 | 219 38.0 | 10 27.0 | 138 31.7 | -20 59.0 | | |
| 2 | 213 2.3 - 5 36.2 | 46 7.2 | 249 37.3 | 10 25.2 | 168 32.9 | -20 59.8 | | |
| 4 | 243 2.7 - 5 38.1 | 76 12.1 | 279 36.6 | 10 23.3 | 198 34.2 | -21 5.5 | | |
| 6 | 273 3.1 - 5 40.0 | 106 17.0 | 309 35.9 | 10 21.4 | 228 35.4 | -21 1.3 | | |
| 8 | 303 3.4 - 5 41.9 | 136 22.0 | 339 35.2 | 10 19.6 | 258 36.7 | -21 2.1 | | |
| 10 | 333 3.8 - 5 43.8 | 166 26.9 | 9 34.4 | 10 17.7 | 288 37.9 | -21 2.9 | | |
| 12 | 3 4.1 - 5 45.7 | 196 31.8 | 39 33.7 | 10 15.8 | 318 39.1 | -21 3.7 | | |
| 14 | 33 4.5 - 5 47.7 | 226 36.7 | 69 33.0 | 10 13.9 | 348 40.4 | -21 4.5 | | |
| 16 | 63 4.8 - 5 49.6 | 256 41.7 | 99 32.3 | 10 12.0 | 18 41.6 | -21 5.3 | | |
| 18 | 93 5.2 - 5 51.5 | 286 46.6 | 129 31.6 | 10 10.1 | 48 42.8 | -21 6.1 | | |
| 20 | 123 5.5 - 5 53.4 | 316 51.5 | 159 30.8 | 10 8.2 | 78 44.0 | -21 6.8 | | |
| 22 | 153 5.9 - 5 55.3 | 346 56.4 | 189 30.1 | 10 6.4 | 108 45.3 | -21 7.6 | | |
| Δ | 2 | -10 | | | -4 | -9 | 6 | -4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 21 | 17 14 | 0 41 | 2 19 | 21 5 | 2 9 | 13 56 | 1 2 | |
| 55 | 6 15 | 17 20 | 0 36 | 2 1 | 21 36 | 2 7 | 13 25 | 1 4 | |
| 50 | 6 10 | 17 25 | 0 32 | 1 47 | 21 58 | 2 6 | 13 12 | 1 5 | |
| 45 | 6 6 | 17 29 | 0 29 | 1 37 | 22 16 | 2 5 | 12 44 | 1 6 | |
| 40 | 6 3 | 17 32 | 0 27 | 1 30 | 22 30 | 2 4 | 12 29 | 1 7 | |
| 35 | 5 60 | 17 35 | 0 25 | 1 24 | 22 42 | 2 3 | 12 17 | 1 7 | |
| 30 | 5 57 | 17 38 | 0 24 | 1 19 | 22 52 | 2 3 | 12 6 | 1 8 | |
| 20 | 5 53 | 17 43 | 0 22 | 1 13 | 23 11 | 2 2 | 11 47 | 1 9 | |
| 10 | 5 48 | 17 47 | 0 21 | 1 10 | 23 26 | 2 1 | 11 31 | 1 9 | |
| 0 | 5 44 | 17 51 | 0 21 | 1 9 | 23 41 | 2 0 | 11 16 | 2 0 | |
| 10 | 5 40 | 17 55 | 0 21 | 1 10 | 23 55 | 1 9 | 11 1 | 2 1 | |
| 20 | 5 36 | 17 60 | 0 22 | 1 14 | ... | 0 | 10 44 | 2 1 | |
| 30 | 5 31 | 18 5 | 0 24 | 1 21 | ... | 0 | 10 25 | 2 2 | |
| 35 | 5 28 | 18 8 | 0 26 | 1 27 | ... | 0 | 10 14 | 2 3 | |
| 40 | 5 24 | 18 12 | 0 27 | 1 34 | 0 9 | 1 8 | 10 1 | 2 3 | |
| 45 | 5 20 | 18 16 | 0 30 | 1 43 | 0 24 | 1 7 | 9 46 | 2 4 | |
| 50 | 5 15 | 18 21 | 0 33 | 1 56 | 0 43 | 1 7 | 9 28 | 2 5 | |
| 55 | 5 9 | 18 27 | 0 37 | 2 15 | 1 7 | 1 6 | 9 4 | 2 6 | |
| 60 | 5 1 | 18 35 | 0 44 | 2 45 | 1 41 | 1 4 | 8 31 | 2 8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 286 26.2 117 | 20 37.2 | -23 | 300 45.5 | 21 55.1 | 167 12.5 | -9 25.0 | |
| 2 | 315 27.6 117 | 20 32.6 | -25 | 330 50.4 | 21 55.1 | 197 16.9 | -9 25.2 | |
| 4 | 344 29.1 117 | 20 27.7 | -27 | 0 55.4 | 21 55.1 | 227 21.2 | -9 25.4 | |
| 6 | 13 30.5 117 | 20 22.3 | -29 | 31 4.4 | 21 55.1 | 257 25.6 | -9 25.6 | |
| 8 | 42 32.0 117 | 20 16.6 | -31 | 61 5.4 | 21 55.1 | 287 30.0 | -9 25.8 | |
| 10 | 71 33.4 117 | 20 10.5 | -33 | 91 10.3 | 21 55.1 | 317 34.3 | -9 26.0 | |
| 12 | 100 34.9 118 | 20 4.0 | -34 | 121 15.3 | 21 55.1 | 347 38.7 | -9 26.3 | |
| 14 | 129 36.4 118 | 19 51.7 | -36 | 151 20.3 | 21 55.0 | 17 43.1 | -9 26.5 | |
| 16 | 158 38.0 118 | 19 49.8 | -38 | 181 25.3 | 21 55.0 | 47 47.4 | -9 26.7 | |
| 18 | 187 39.5 118 | 19 42.1 | -40 | 211 30.3 | 21 55.0 | 77 51.8 | -9 26.9 | |
| 20 | 216 41.1 118 | 19 34.1 | -42 | 241 35.3 | 21 55.0 | 107 56.2 | -9 27.1 | |
| 22 | 245 42.7 118 | 19 25.7 | -44 | 271 40.2 | 21 55.0 | 138 6. | -9 27.3 | |
| Δ | 2 | -10 | | | -4 | -10 | 6 | -4 |
| | | | | | 25 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-------------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 12 8.1 | .7 | 16.0 | T _{m̄} 5 | 4 | 2.0 | 54.4 | 14.8 | |
| 12 | 12 16.7 | T _{m̄} | 11 h 47.7 min | Starost | 20.9 d | Faza 1 | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 9 22 | .1 | 204 | -3.8 | 7 | 3 56 | .0 | 285 | -2.2 |
| φ' | 14 45 | .1 | 122 | 1.0 | h | 12 49 | .0 | 151 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 274 44.3 118 | 19 16.9 | -46 | 301 45.2 | 21 55.0 | 168 4.9 | -9 27.5 | |
| 2 | 303 45.9 118 | 19 7.7 | -48 | 331 50.2 | 21 55.0 | 198 9.3 | -9 27.7 | |
| 4 | 332 47.6 118 | 18 58.2 | -50 | 1 55.2 | 21 55.0 | 228 13.7 | -9 27.9 | |
| 6 | 1 49.2 119 | 18 48.3 | -51 | 32 2 | 21 55.0 | 258 18.0 | -9 28.2 | |
| 8 | 30 51.0 119 | 18 38.0 | -53 | 62 5.2 | 21 55.0 | 288 22.4 | -9 28.4 | |
| 10 | 59 52.7 119 | 18 27.3 | -55 | 92 10.2 | 21 55.0 | 318 26.8 | -9 28.6 | |
| 12 | 88 54.5 119 | 18 16.3 | -57 | 122 15.2 | 21 54.9 | 348 31.1 | -9 28.8 | |
| 14 | 117 56.3 119 | 18 4.9 | -59 | 152 20.2 | 21 54.9 | 18 35.5 | -9 29.0 | |
| 16 | 146 58.1 119 | 17 53.1 | -61 | 182 25.2 | 21 54.9 | 48 39.9 | -9 29.2 | |
| 18 | 175 59.9 119 | 17 41.0 | -62 | 212 30.2 | 21 54.9 | 78 44.2 | -9 29.4 | |
| 20 | 205 1.8 120 | 17 28.6 | -64 | 242 35.2 | 21 54.9 | 108 48.6 | -9 29.6 | |
| 22 | 234 3.7 120 | 17 15.7 | -66 | 272 40.2 | 21 54.9 | 138 53.0 | -9 29.8 | |
| Δ | 25 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-------------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 12 25.2 | .7 | 16.0 | T _{m̄} 5 | 52 | 2.0 | 54.8 | 14.9 | |
| 12 | 12 33.5 | T _{m̄} | 11 h 47.4 min | Starost | 21.9 d | Faza 1 | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | / |
| φ | 9 22 | .1 | 202 | -3.8 | 7 | 3 52 | .0 | 285 | -2.2 |
| φ' | 14 44 | .1 | 122 | 1.0 | h | 12 46 | .0 | 151 | .9 |

9. OKTOBAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 | 10.4 | - 6 | 20.0 | 18 | .5 | 219 | 20.8 |
| 2 | 213 | 10.7 | - 6 | 21.9 | 48 | 5.4 | 249 | 20.1 |
| 4 | 243 | 11.1 | - 6 | 23.8 | 78 | 10.4 | 279 | 19.4 |
| 6 | 273 | 11.4 | - 6 | 25.7 | 108 | 15.3 | 309 | 18.7 |
| 8 | 303 | 11.7 | - 6 | 27.6 | 138 | 20.2 | 339 | 18.0 |
| 10 | 333 | 12.1 | - 6 | 29.5 | 168 | 25.2 | 9 | 17.3 |
| 12 | 3 | 12.4 | - 6 | 31.4 | 198 | 30.1 | 39 | 16.6 |
| 14 | 33 | 12.8 | - 6 | 33.3 | 228 | 35.0 | 69 | 15.8 |
| 16 | 63 | 13.1 | - 6 | 35.2 | 258 | 39.9 | 99 | 15.1 |
| 18 | 93 | 13.4 | - 6 | 37.1 | 288 | 44.9 | 129 | 14.4 |
| 20 | 123 | 13.8 | - 6 | 39.0 | 318 | 49.8 | 159 | 13.7 |
| 22 | 153 | 14.1 | - 6 | 40.9 | 348 | 54.7 | 189 | 13.0 |
| Δ | 2 | | | | | | -4 | -10 |
| | | | | | | | 6 | -4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 25 | 17 8 | 0 42 | 2 19 | 23 31 | 3 3 | 14 48 | .7 | |
| 55 | 6 18 | 17 15 | 0 36 | 2 1 | 23 51 | 3 1 | 14 27 | 1.0 | |
| 50 | 6 13 | 17 21 | 0 32 | 1 47 | ... | .0 | 14 11 | 1.2 | |
| 45 | 6 8 | 17 25 | 0 29 | 1 37 | ... | .0 | 13 58 | 1.3 | |
| 40 | 6 5 | 17 29 | 0 27 | 1 30 | ... | .0 | 13 47 | 1.4 | |
| 35 | 6 1 | 17 33 | 0 25 | 1 24 | ... | .0 | 13 38 | 1.5 | |
| 30 | 5 58 | 17 36 | 0 24 | 1 19 | ... | .0 | 13 30 | 1.6 | |
| 20 | 5 53 | 17 41 | 0 22 | 1 13 | 0 3 | 2.2 | 13 16 | 1.8 | |
| 10 | 5 48 | 17 46 | 0 21 | 1 10 | 0 16 | 2.1 | 13 4 | 1.9 | |
| 0 | 5 44 | 17 50 | 0 21 | 1 9 | 0 29 | 2.0 | 12 52 | 2.0 | |
| 10 | 5 39 | 17 55 | 0 21 | 1 11 | 0 42 | 1.9 | 12 40 | 2.1 | |
| 20 | 5 34 | 18 0 | 0 22 | 1 14 | 0 55 | 1.8 | 12 28 | 2.2 | |
| 30 | 5 28 | 18 6 | 0 24 | 1 22 | 1 11 | 1.6 | 12 14 | 2.4 | |
| 35 | 5 25 | 18 10 | 0 26 | 1 27 | 1 20 | 1.6 | 12 5 | 2.5 | |
| 40 | 5 21 | 18 14 | 0 28 | 1 34 | 1 30 | 1.5 | 11 56 | 2.6 | |
| 45 | 5 17 | 18 19 | 0 30 | 1 44 | 1 42 | 1.4 | 11 45 | 2.7 | |
| 50 | 5 11 | 18 24 | 0 33 | 1 57 | 1 57 | 1.2 | 11 31 | 2.8 | |
| 55 | 5 4 | 18 31 | 0 38 | 2 17 | 2 15 | 1.1 | 11 14 | 3.0 | |
| 60 | 4 55 | 18 40 | 0 44 | 2 49 | 2 40 | .8 | 10 51 | 3.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 263 | 5.6 | 120 | 17 | 2.6 | -.68 | 302 | 45.2 |
| 2 | 292 | 7.6 | 120 | 16 | 49.0 | -.69 | 332 | 50.2 |
| 4 | 321 | 9.6 | 120 | 16 | 35.2 | -.71 | 2 | 55.2 |
| 6 | 350 | 11.6 | 120 | 16 | 20.9 | -.73 | 33 | 3.3 |
| 8 | 19 | 13.6 | 120 | 16 | 6.4 | -.74 | 63 | 5.3 |
| 10 | 48 | 15.6 | 120 | 15 | 51.5 | -.76 | 93 | 10.3 |
| 12 | 77 | 17.7 | 120 | 15 | 36.3 | -.78 | 123 | 15.3 |
| 14 | 106 | 19.8 | 121 | 15 | 20.7 | -.79 | 153 | 20.3 |
| 16 | 135 | 21.9 | 121 | 15 | 4.8 | -.81 | 183 | 25.3 |
| 18 | 164 | 24.0 | 121 | 14 | 48.6 | -.83 | 213 | 30.4 |
| 20 | 193 | 26.1 | 121 | 14 | 32.1 | -.84 | 243 | 35.4 |
| 22 | 222 | 28.3 | 121 | 14 | 15.2 | -.86 | 273 | 40.4 |
| Δ | 2 | | | | | | 25 | 0 |
| | | | | | | | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | 12 41.8 | .7 | 16.0 | T _{m̄} | 6 41 | 2.0 | 55.4 | 15.1 |
| 12 | 12 49.8 | T _{m̄} | 11 h 47.2 min | Starost | 22 | 9 d | Faza | ● |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | s | / | ° | h min / | ° | s | / |
| 0 | 9 23 | .1 | 201 | -3.8 | 4 | 3 48 | .0 | 285 |
| ο | 14 43 | .1 | 121 | 1.0 | h | 12 42 | .0 | 151 |
| | | | | | | | | .9 |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|------|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 | 14.4 | - 6 | 42.8 | 18 | 59.7 | 219 | 12.3 |
| 2 | 213 | 14.8 | - 6 | 44.7 | 49 | 4.6 | 249 | 11.6 |
| 4 | 243 | 15.1 | - 6 | 46.6 | 79 | 9.5 | 279 | 10.9 |
| 6 | 273 | 15.4 | - 6 | 48.4 | 109 | 14.4 | 309 | 10.2 |
| 8 | 303 | 15.7 | - 6 | 50.3 | 139 | 19.4 | 339 | 9.5 |
| 10 | 333 | 16.1 | - 6 | 52.2 | 169 | 24.3 | 359 | 8.8 |
| 12 | 3 | 16.4 | - 6 | 54.1 | 199 | 29.2 | 379 | 8.1 |
| 14 | 33 | 16.7 | - 6 | 56.0 | 229 | 34.2 | 404 | 7.3 |
| 16 | 63 | 17.0 | - 6 | 57.9 | 259 | 39.1 | 434 | 6.6 |
| 18 | 93 | 17.4 | - 6 | 59.8 | 289 | 44.0 | 464 | 5.9 |
| 20 | 123 | 17.7 | - 7 | 1.7 | 319 | 48.9 | 504 | 5.2 |
| 22 | 153 | 18.0 | - 7 | 3.5 | 349 | 53.9 | 534 | 4.5 |
| Δ | 2 | | | | | | -4 | -10 |
| | | | | | | | 6 | -4 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min | / | h min | / | |
| 00 | 12 57.9 | .7 | 16.0 | T _{m̄} | 7 28 | 2.0 | 56.1 | 15.3 |
| 12 | 13 5.7 | T _{m̄} | 11 h 46.9 min | Starost | 23 | 9 d | Faza | ● |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | s | / | ° | h min / | ° | s | / |
| 0 | 9 23 | .1 | 200 | -3.7 | 4 | 3 44 | .0 | 285 |
| ο | 14 42 | .1 | 120 | 1.0 | h | 12 39 | .0 | 151 |
| | | | | | | | | .9 |

11. OKTOBAR

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | |
|----|-------------------|----------------|-----------------------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 18.3 - 7 5.4 | 19 58.8 | 219 3.8 8 54.8 | 139 29.8 -21 35.7 | | | |
| 2 | 213 18.6 - 7 7.3 | 50 3.7 | 249 3.1 8 52.8 | 169 31.0 -21 36.4 | | | |
| 4 | 243 19.0 - 7 9.2 | 80 8.7 | 279 2.4 8 50.8 | 199 32.2 -21 37.1 | | | |
| 6 | 273 19.3 - 7 11.1 | 110 13.6 | 309 1.7 8 48.9 | 229 33.4 -21 37.9 | | | |
| 8 | 303 19.6 - 7 13.0 | 140 18.5 | 339 1.0 8 46.9 | 259 34.6 -21 38.6 | | | |
| 10 | 333 19.9 - 7 14.8 | 170 23.4 | 9 .3 8 44.9 | 289 35.7 -21 39.3 | | | |
| 12 | 3 20.2 - 7 16.7 | 200 28.4 | 38 59.6 8 42.9 | 319 36.9 -21 40.1 | | | |
| 14 | 33 20.6 - 7 18.6 | 230 33.3 | 68 58.9 8 40.9 | 349 38.1 -21 40.8 | | | |
| 16 | 63 20.9 - 7 20.5 | 260 38.2 | 98 58.2 8 38.9 | 19 39.3 -21 41.5 | | | |
| 18 | 93 21.2 - 7 22.4 | 290 43.1 | 128 57.5 8 36.9 | 49 40.4 -21 42.2 | | | |
| 20 | 123 21.5 - 7 24.2 | 320 48.1 | 158 56.8 8 34.9 | 79 41.6 -21 43.0 | | | |
| 22 | 153 21.8 - 7 26.1 | 350 53.0 | 188 56.1 8 32.9 | 109 42.8 -21 43.7 | | | |
| Δ | 2 | -9 | -4 | -10 | 6 | -4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 30 | 17 2 | 0 42 | 2 19 | 0 52 | 3.5 | 15 21 | .6 | |
| 55 | 6 22 | 17 10 | 0 36 | 2 0 | 1 5 | 3.2 | 15 12 | .8 | |
| 50 | 6 16 | 17 16 | 0 32 | 1 47 | 1 15 | 3.0 | 15 4 | 1.0 | |
| 45 | 6 11 | 17 22 | 0 29 | 1 37 | 1 24 | 2.8 | 14 59 | 1.2 | |
| 40 | 6 7 | 17 26 | 0 27 | 1 30 | 1 30 | 2.7 | 14 54 | 1.3 | |
| 35 | 6 3 | 17 30 | 0 25 | 1 24 | 1 36 | 2.6 | 14 50 | 1.4 | |
| 30 | 5 60 | 17 33 | 0 24 | 1 19 | 1 41 | 2.5 | 14 46 | 1.5 | |
| 20 | 5 54 | 17 39 | 0 22 | 1 13 | 1 50 | 2.3 | 14 39 | 1.7 | |
| 10 | 5 48 | 17 45 | 0 21 | 1 10 | 1 58 | 2.2 | 14 33 | 1.9 | |
| 0 | 5 43 | 17 50 | 0 21 | 1 9 | 2 5 | 2.0 | 14 28 | 2.0 | |
| 10 | 5 38 | 17 55 | 0 21 | 1 11 | 2 12 | 1.9 | 14 22 | 2.2 | |
| 20 | 5 33 | 18 1 | 0 22 | 1 15 | 2 20 | 1.7 | 14 16 | 2.3 | |
| 30 | 5 26 | 18 8 | 0 24 | 1 22 | 2 28 | 1.5 | 14 9 | 2.5 | |
| 35 | 5 22 | 18 12 | 0 26 | 1 28 | 2 33 | 1.4 | 14 5 | 2.6 | |
| 40 | 5 18 | 18 16 | 0 28 | 1 35 | 2 39 | 1.3 | 14 1 | 2.7 | |
| 45 | 5 13 | 18 21 | 0 30 | 1 45 | 2 46 | 1.2 | 13 56 | 2.9 | |
| 50 | 5 7 | 18 27 | 0 33 | 1 58 | 2 54 | 1.0 | 13 49 | 3.1 | |
| 55 | 4 59 | 18 35 | 0 38 | 2 19 | 3 3 | .9 | 13 41 | 3.3 | |
| 60 | 4 49 | 18 45 | 0 44 | 2 54 | 3 16 | .6 | 13 31 | 3.5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 239 55.8 120 | 10 9.1 -104 | 304 45.9 21 54.6 | 170 42.1 -9 35.1 | | | | |
| 2 | 268 57.8 120 | 9 48.2 -106 | 334 50.9 21 54.6 | 200 46.5 -9 35.3 | | | | |
| 4 | 297 59.7 119 | 9 27.1 -107 | 4 55.9 21 54.6 | 230 50.8 -9 35.5 | | | | |
| 6 | 327 1.6 119 | 9 5.7 -108 | 35 1.0 21 54.5 | 260 55.2 -9 35.7 | | | | |
| 8 | 356 3.4 119 | 8 44.1 -109 | 65 6.0 21 54.5 | 290 59.6 -9 35.9 | | | | |
| 10 | 25 5.2 119 | 8 22.3 -110 | 95 11.1 21 54.5 | 321 3.9 -9 36.2 | | | | |
| 12 | 54 7.0 118 | 8 .3 -111 | 125 16.1 21 54.5 | 351 8.3 -9 36.4 | | | | |
| 14 | 83 8.6 118 | 7 38.0 -112 | 155 21.2 21 54.5 | 21 12.6 -9 36.6 | | | | |
| 16 | 112 10.3 118 | 7 15.5 -113 | 185 26.3 21 54.5 | 51 17.0 -9 36.8 | | | | |
| 18 | 141 11.8 117 | 6 52.8 -114 | 215 31.3 21 54.5 | 81 21.4 -9 37.0 | | | | |
| 20 | 170 13.3 117 | 6 29.9 -115 | 245 36.4 21 54.4 | 111 25.7 -9 37.2 | | | | |
| 22 | 199 14.6 116 | 6 6.8 -116 | 275 41.4 21 54.4 | 141 30.1 -9 37.4 | | | | |
| Δ | 2 | -9 | -3 | -10 | 6 | -4 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s / | / | h min min / | h min min / | | | | | |
| 00 | 13 13.5 | .6 | 16.0 | T _{m̄} | 8 16 | 2.0 | 56.9 | 15.5 | |
| 12 | 13 21.1 | T _{m̄} | 11 h 46.7 min | Starost 24.9 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-ω | Vel. | Pl. | T _{m̄} | π | 360-ω | Vel. |
| h min / | o / | / | | h min / | h min / | o / | / | | |
| ♀ | 9 24 | .1 | 199 | -3.7 | 4 | 3 40 | .0 | 285 | -2.2 |
| ♂ | 14 41 | .1 | 120 | 1.0 | h | 12 35 | .0 | 151 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 228 15.9 116 | 5 43.5 -117 | 305 46.5 21 54.4 | 171 34.5 -9 37.6 | | | | |
| 2 | 257 17.1 116 | 5 20.1 -118 | 335 51.6 21 54.4 | 201 38.8 -9 37.8 | | | | |
| 4 | 286 18.3 115 | 4 56.4 -119 | 5 56.6 21 54.4 | 231 43.2 -9 38.1 | | | | |
| 6 | 315 19.3 115 | 4 32.6 -120 | 36 1.7 21 54.4 | 261 47.5 -9 38.3 | | | | |
| 8 | 344 20.2 114 | 4 8.6 -121 | 66 6.8 21 54.4 | 291 51.9 -9 38.5 | | | | |
| 10 | 13 21.0 113 | 3 44.5 -121 | 96 11.8 21 54.3 | 321 56.3 -9 38.7 | | | | |
| 12 | 42 21.6 113 | 3 20.3 -122 | 126 16.9 21 54.3 | 352 .6 -9 38.9 | | | | |
| 14 | 71 22.2 112 | 2 55.9 -123 | 156 22.0 21 54.3 | 22 5.0 -9 39.1 | | | | |
| 16 | 100 22.6 111 | 2 31.3 -123 | 186 27.0 21 54.3 | 52 9.4 -9 39.3 | | | | |
| 18 | 129 22.9 111 | 2 6.7 -124 | 216 32.1 21 54.3 | 82 13.7 9 39.5 | | | | |
| 20 | 158 23.0 110 | 1 41.9 -124 | 246 37.2 21 54.3 | 112 18.1 -9 39.7 | | | | |
| 22 | 187 23.0 109 | 1 17.1 -125 | 276 42.3 21 54.2 | 142 22.4 -9 40.0 | | | | |
| Δ | 25 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | | |
| h min s | s / | / | h min min / | h min min / | | | | | |
| 00 | 13 28.6 | .6 | 16.1 | T _{m̄} | 9 5 | 2.1 | 57.8 | 15.8 | |
| 12 | 13 35.9 | T _{m̄} | 11 h 46.4 min | Starost 25.9 d | Faza 0 | | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-ω | Vel. | Pl. | T _{m̄} | π | 360-ω | Vel. |
| h min / | o / | / | | h min / | h min / | o / | / | | |
| ♀ | 9 25 | .1 | 198 | -3.7 | 4 | 3 36 | .0 | 285 | -2.2 |
| ♂ | 14 41 | .1 | 119 | 1.0 | h | 12 32 | .0 | 151 | .9 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|--------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 25.8 - 7 50.5 | 21 57.1 | 218 47.0 8 6.8 | 139 57.9 - 21 52.9 | | | | |
| 2 | 213 26.1 - 7 52.3 | 52 2.0 | 248 46.3 8 4.8 | 169 59.0 - 21 53.6 | | | | |
| 4 | 243 26.4 - 7 54.2 | 82 6.9 | 278 45.7 8 2.8 | 200 2.2 - 21 54.3 | | | | |
| 6 | 273 26.7 - 7 56.0 | 112 11.9 | 308 45.0 8 .8 | 230 1.3 - 21 55.0 | | | | |
| 8 | 303 27.0 - 7 57.9 | 142 16.8 | 338 44.3 7 58.7 | 260 2.5 - 21 55.7 | | | | |
| 10 | 333 27.2 - 7 59.8 | 172 21.7 | 8 43.6 7 56.7 | 290 3.6 - 21 56.4 | | | | |
| 12 | 3 27.5 - 8 1.6 | 202 26.6 | 38 42.9 7 54.7 | 320 4.7 - 21 57.1 | | | | |
| 14 | 33 27.8 - 8 3.5 | 232 31.6 | 68 42.2 7 52.6 | 350 5.9 - 21 57.8 | | | | |
| 16 | 63 28.1 - 8 5.4 | 262 36.6 | 98 41.5 7 50.6 | 20 7.0 - 21 58.5 | | | | |
| 18 | 93 28.4 - 8 7.2 | 292 41.4 | 128 40.8 7 48.6 | 50 8.2 - 21 59.2 | | | | |
| 20 | 123 28.7 - 8 9.1 | 322 46.4 | 158 40.1 7 46.5 | 80 9.3 - 21 59.9 | | | | |
| 22 | 153 29.0 - 8 10.9 | 352 51.3 | 188 39.4 7 44.5 | 110 10.5 - 22 .6 | | | | |
| Δ | 1 -9 | | -3 -10 | 6 -3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 35 | 16 56 | 0 42 | 2 19 | 3 43 | 3.8 | 15 48 | .6 | |
| 55 | 6 26 | 17 5 | 0 36 | 2 0 | 3 43 | 3.5 | 15 51 | .9 | |
| 50 | 6 19 | 17 12 | 0 32 | 1 47 | 3 43 | 3.2 | 15 54 | 1.1 | |
| 45 | 6 13 | 17 18 | 0 29 | 1 37 | 3 42 | 3.1 | 15 56 | 1.3 | |
| 40 | 6 9 | 17 23 | 0 27 | 1 30 | 3 42 | 2.9 | 15 58 | 1.4 | |
| 35 | 6 5 | 17 27 | 0 25 | 1 24 | 3 42 | 2.8 | 15 59 | 1.5 | |
| 30 | 6 1 | 17 31 | 0 24 | 1 20 | 3 42 | 2.7 | 16 1 | 1.7 | |
| 20 | 5 54 | 17 38 | 0 22 | 1 13 | 3 42 | 2.5 | 16 3 | 1.8 | |
| 10 | 5 48 | 17 44 | 0 21 | 1 10 | 3 42 | 2.3 | 16 5 | 2.0 | |
| 0 | 5 43 | 17 49 | 0 21 | 1 9 | 3 43 | 2.1 | 16 7 | 2.2 | |
| 10 | 5 37 | 17 55 | 0 21 | 1 11 | 3 43 | 2.0 | 16 8 | 2.3 | |
| 20 | 5 31 | 18 2 | 0 22 | 1 15 | 3 43 | 1.8 | 16 10 | 2.5 | |
| 30 | 5 24 | 18 9 | 0 24 | 1 22 | 3 43 | 1.6 | 16 13 | 2.7 | |
| 35 | 5 20 | 18 13 | 0 26 | 1 28 | 3 43 | 1.5 | 16 14 | 2.8 | |
| 40 | 5 15 | 18 18 | 0 28 | 1 35 | 3 43 | 1.4 | 16 15 | 2.9 | |
| 45 | 5 9 | 18 24 | 0 30 | 1 45 | 3 43 | 1.2 | 16 17 | 3.1 | |
| 50 | 5 3 | 18 31 | 0 34 | 1 60 | 3 43 | 1.1 | 16 19 | 3.3 | |
| 55 | 4 54 | 18 39 | 0 38 | 2 21 | 3 44 | .9 | 16 21 | 3.5 | |
| 60 | 4 44 | 18 50 | 0 45 | 2 59 | 3 44 | .6 | 16 24 | 3.8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 216 22.9 108 | 0 52.1 -125 | 306 47.4 21 54.2 | 172 26.8 - 9 40.2 | | | | |
| 2 | 245 22.5 108 | 0 27.1 -126 | 336 52.4 21 54.2 | 202 31.2 - 9 40.4 | | | | |
| 4 | 274 22.1 107 | 0 2.0 -126 | 6 57.5 21 54.2 | 232 35.5 - 9 40.6 | | | | |
| 6 | 303 21.4 106 | - 0 23.2 -126 | 37 2.6 21 54.2 | 262 39.9 - 9 40.8 | | | | |
| 8 | 332 20.6 105 | - 0 48.4 -126 | 67 7.7 21 54.2 | 292 44.2 - 9 41.0 | | | | |
| 10 | 1 19.6 104 | - 1 13.7 -127 | 97 12.8 21 54.1 | 322 48.6 - 9 41.2 | | | | |
| 12 | 30 18.4 103 | - 1 39.0 -127 | 127 17.9 21 54.1 | 352 53.0 - 9 41.4 | | | | |
| 14 | 59 17.1 102 | - 2 4.3 -127 | 157 23.0 21 54.1 | 22 57.3 - 9 41.6 | | | | |
| 16 | 88 15.5 101 | - 2 29.7 -127 | 187 28.1 21 54.1 | 53 1.7 - 9 41.8 | | | | |
| 18 | 117 13.7 100 | - 2 55.0 -127 | 217 33.1 21 54.1 | 83 6.0 - 9 42.1 | | | | |
| 20 | 146 11.7 99 | - 3 20.3 -127 | 247 38.2 21 54.0 | 113 10.4 - 9 42.3 | | | | |
| 22 | 175 9.5 98 | - 3 45.7 -126 | 277 43.3 21 54.0 | 143 14.8 - 9 42.5 | | | | |
| Δ | 1 -9 | | -3 -10 | 22 -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 13 43.2 | .6 | 16.1 | T _{m̄} | 9 55 | 2.1 | 58.7 | 16.0 | |
| 12 | 13 50.3 | T _{m̄} | 11 h 46.2 min | Starost | 26.9 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | o | / | o | Vel. |
| φ | 9 25 | .1 | 197 | -3.7 | 4 | 3 32 | .0 | 285 | -2.2 |
| φ' | 14 40 | .1 | 118 | 1.0 | h | 12 28 | .0 | 150 | -.9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|---------------------------|------------------|-------------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 204 7.1 97 - 4 11.0 -126 | 307 48.4 21 54.0 | 173 19.1 - 9 42.7 | | | | | |
| 2 | 233 4.5 96 - 4 36.2 -126 | 337 53.5 21 54.0 | 203 23.5 - 9 42.9 | | | | | |
| 4 | 262 1.6 95 - 5 1.4 -126 | 7 58.6 21 54.0 | 233 27.8 - 9 43.1 | | | | | |
| 6 | 290 58.6 93 - 5 26.5 -125 | 38 3.7 21 53.9 | 263 32.2 - 9 43.3 | | | | | |
| 8 | 319 55.2 92 - 5 51.6 -125 | 68 8.8 21 53.9 | 293 36.6 - 9 43.5 | | | | | |
| 10 | 348 51.7 91 - 6 16.6 -125 | 98 13.9 21 53.9 | 323 40.9 - 9 43.7 | | | | | |
| 12 | 17 47.9 90 - 6 41.4 -124 | 128 19.1 21 53.9 | 353 45.3 - 9 44.0 | | | | | |
| 14 | 46 43.8 88 - 7 6.2 -123 | 158 24.2 21 53.9 | 23 49.6 - 9 44.2 | | | | | |
| 16 | 75 39.5 87 - 7 30.8 -122 | 188 29.3 21 53.9 | 53 54.0 - 9 44.4 | | | | | |
| 18 | 104 34.9 86 - 7 55.3 -122 | 218 34.4 21 53.8 | 83 58.4 - 9 44.6 | | | | | |
| 20 | 133 30.1 85 - 8 19.6 -121 | 248 39.5 21 53.8 | 114 2.7 - 9 44.8 | | | | | |
| 22 | 162 25.0 83 - 8 43.8 -120 | 278 44.6 21 53.8 | 144 7.1 - 9 45.0 | | | | | |
| Δ | 26 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 13 57.3 | .6 | 16.1 | T _{m̄} | 10 46 | 2.3 | 59.5 | 16.2 | |
| 12 | 14 4.1 | T _{m̄} | 11 h 45.9 min | Starost | 27.9 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | o | / | o | Vel. |
| φ | 9 26 | .1 | 197 | -3.7 | 4 | 3 28 | .0 | 285 | -2.2 |
| φ' | 14 39 | .1 | 117 | 1.0 | h | 12 25 | .0 | 150 | -.8 |

15. OKTOBAR

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-------------------|---------------|-------------------------------|-------------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 32.7 - 8 35.0 | 23 55.3 | 218 30.5 7 17.8 | 140 25.2 -22 9.4 | | | |
| 2 | 213 32.9 - 8 36.9 | 54 .3 | 248 29.8 7 15.7 | 170 26.3 -22 10.1 | | | |
| 4 | 243 33.2 - 8 38.7 | 84 5.2 | 278 29.1 7 13.6 | 200 27.4 -22 10.8 | | | |
| 6 | 273 33.5 - 8 40.6 | 114 10.1 | 308 28.4 7 11.6 | 230 28.5 -22 11.4 | | | |
| 8 | 303 33.8 - 8 42.4 | 144 15.1 | 338 27.7 7 9.5 | 260 29.6 -22 12.1 | | | |
| 10 | 333 34.0 - 8 44.3 | 174 20.0 | 8 27.0 7 7.4 | 290 30.8 -22 12.8 | | | |
| 12 | 3 34.3 - 8 46.1 | 204 24.9 | 38 26.3 7 5.3 | 320 31.9 -22 13.4 | | | |
| 14 | 33 34.6 - 8 48.0 | 234 29.8 | 68 25.7 7 3.3 | 350 33.0 -22 14.2 | | | |
| 16 | 63 34.8 - 8 49.8 | 264 34.8 | 98 25.0 7 1.2 | 20 34.1 -22 14.8 | | | |
| 18 | 93 35.1 - 8 51.6 | 294 39.7 | 128 24.3 6 59.1 | 50 35.2 -22 15.4 | | | |
| 20 | 123 35.4 - 8 53.5 | 324 44.6 | 158 23.6 6 57.0 | 80 36.3 -22 16.1 | | | |
| 22 | 153 35.6 - 8 55.3 | 354 49.6 | 188 22.9 6 54.9 | 110 37.5 -22 16.7 | | | |
| Δ | 1 -9 | | -3 -10 | 6 -3 | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 40 | 16 50 | 0 42 | 2 19 | 6 46 | 3 9 | 16 21 | 1 0 | |
| 55 | 6 30 | 17 0 | 0 37 | 2 1 | 6 31 | 3 6 | 16 38 | 1 3 | |
| 50 | 6 22 | 17 8 | 0 33 | 1 47 | 6 20 | 3 4 | 16 50 | 1 5 | |
| 45 | 6 16 | 17 15 | 0 30 | 1 38 | 6 11 | 3 2 | 17 1 | 1 6 | |
| 40 | 6 11 | 17 20 | 0 27 | 1 30 | 6 4 | 3 1 | 17 9 | 1 8 | |
| 35 | 6 6 | 17 25 | 0 25 | 1 24 | 5 58 | 2 9 | 17 17 | 1 9 | |
| 30 | 6 2 | 17 29 | 0 24 | 1 20 | 5 52 | 2 8 | 17 23 | 2 0 | |
| 20 | 5 55 | 17 36 | 0 22 | 1 13 | 5 43 | 2 7 | 17 35 | 2 1 | |
| 10 | 5 49 | 17 43 | 0 21 | 1 10 | 5 35 | 2 5 | 17 44 | 2 3 | |
| 0 | 5 42 | 17 49 | 0 21 | 1 10 | 5 27 | 2 4 | 17 54 | 2 4 | |
| 10 | 5 36 | 17 55 | 0 21 | 1 11 | 5 20 | 2 2 | 18 3 | 2 5 | |
| 20 | 5 29 | 18 2 | 0 22 | 1 15 | 5 12 | 2 1 | 18 13 | 2 7 | |
| 30 | 5 22 | 18 10 | 0 24 | 1 23 | 5 3 | 1 9 | 18 25 | 2 9 | |
| 35 | 5 17 | 18 15 | 0 26 | 1 28 | 4 58 | 1 8 | 18 33 | 3 0 | |
| 40 | 5 12 | 18 20 | 0 28 | 1 36 | 4 52 | 1 7 | 18 39 | 3 1 | |
| 45 | 5 6 | 18 26 | 0 30 | 1 46 | 4 45 | 1 5 | 18 48 | 3 2 | |
| 50 | 4 59 | 18 34 | 0 34 | 2 1 | 4 37 | 1 4 | 18 58 | 3 4 | |
| 55 | 4 49 | 18 43 | 0 39 | 2 24 | 4 27 | 1 1 | 19 12 | 3 6 | |
| 60 | 4 38 | 18 55 | 0 46 | 3 6 | 4 15 | .8 | 19 29 | 3 9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|----------------------------|------------------|-------------------|-------------------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 191 19.6 82 - 9 7.8 -119 | 308 49.7 21 53.8 | 174 11.4 - 9 45.2 | | | | | |
| 2 | 220 14.0 81 - 9 31.6 -118 | 338 54.8 21 53.8 | 204 15.8 - 9 45.4 | | | | | |
| 4 | 249 8.1 79 - 9 55.2 -117 | 8 60.0 | 21 53.7 | 234 20.1 - 9 45.6 | | | | |
| 6 | 278 1.9 78 - 10 18.6 -116 | 39 5.1 21 53.7 | 264 24.5 - 9 45.8 | | | | | |
| 8 | 306 55.5 76 - 10 41.8 -115 | 69 10.2 21 53.7 | 294 28.9 - 9 46.1 | | | | | |
| 10 | 335 48.8 75 - 11 4.7 -113 | 99 15.3 21 53.7 | 324 33.2 - 9 46.3 | | | | | |
| 12 | 4 41.8 74 - 11 27.4 -112 | 129 20.5 21 53.6 | 354 37.6 - 9 46.5 | | | | | |
| 14 | 33 34.5 72 - 11 49.8 -111 | 159 25.6 21 53.6 | 24 41.9 - 9 46.7 | | | | | |
| 16 | 62 27.0 71 - 12 11.9 -109 | 189 30.7 21 53.6 | 54 46.3 - 9 46.9 | | | | | |
| 18 | 91 19.1 69 - 12 33.7 -108 | 219 35.8 21 53.6 | 84 50.7 - 9 47.1 | | | | | |
| 20 | 120 11.0 68 - 12 55.2 -106 | 249 41.0 21 53.6 | 114 55.0 - 9 47.3 | | | | | |
| 22 | 149 2.6 67 - 13 16.4 -104 | 279 46.1 21 53.5 | 144 59.4 - 9 47.5 | | | | | |
| Δ | 1 -9 | | -3 -10 | 6 -3 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|----|---------|-----------------|---------------|-----------------|--------|------|-------|------|
| | h min | s | s / | h min | min | / | h min | s |
| 00 | 14 10.8 | .5 | 16.1 | T _{m̄} | 11 40 | 2.4 | 60.2 | 16.4 |
| 12 | 14 17.3 | T _{m̄} | 11 h 45.7 min | Starost | 28.9 d | Faza | ● | |

| PLANETE | | | | | | | | | |
|----------|-----------------|-------|-------------|------|---------|-----------------|-------|-------------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h | min | / | o | t | h | min | / | o | t |
| 0 | 9 26 | .1 | 195 | -3.7 | 4 | 3 24 | .0 | 285 | -2.2 |
| δ | 14 38 | .1 | 116 | 1.0 | \hbar | 12 21 | .0 | 150 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|---------------------------|------------------|-------------------|----------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 177 54.0 65 -13 37.3 -103 | 309 51.2 21 53.5 | 175 3.7 - 9 47.7 | | | | | |
| 2 | 206 45.1 64 -13 57.8 -101 | 339 56.4 21 53.5 | 205 8.1 - 9 47.9 | | | | | |
| 4 | 235 35.9 63 -14 17.9 -99 | 10 1.5 21 53.5 | 235 12.4 - 9 48.2 | | | | | |
| 6 | 264 26.4 61 -14 37.7 -97 | 40 6.6 21 53.5 | 265 16.8 - 9 48.4 | | | | | |
| 8 | 293 16.7 60 -14 57.1 -95 | 70 11.8 21 53.4 | 295 21.2 - 9 48.6 | | | | | |
| 10 | 322 6.7 59 -15 16.1 -93 | 100 16.9 21 53.4 | 325 25.5 - 9 48.8 | | | | | |
| 12 | 350 56.4 58 -15 34.7 -91 | 130 22.1 21 53.4 | 355 29.9 - 9 49.0 | | | | | |
| 14 | 19 45.9 56 -15 52.9 -89 | 160 27.2 21 53.4 | 25 34.2 - 9 49.2 | | | | | |
| 16 | 48 35.2 55 -16 10.6 -86 | 190 32.4 21 53.3 | 55 38.6 - 9 49.4 | | | | | |
| 18 | 77 24.2 54 -16 27.9 -84 | 220 37.5 21 53.3 | 85 42.9 - 9 49.6 | | | | | |
| 20 | 106 13.0 53 -16 44.7 -82 | 250 42.7 21 53.3 | 115 47.3 - 9 49.8 | | | | | |
| 22 | 135 1.5 52 -17 1.1 -79 | 280 47.8 21 53.3 | 145 51.6 - 9 50.0 | | | | | |
| Δ | 26 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|----|---------|-----------------|---------------|-----------------|--------|------|-------|------|
| | h min | s | s / | h min | min | / | h min | s |
| 00 | 14 23.8 | .5 | 16.1 | T _{m̄} | 12 38 | 2.5 | 60.6 | 16.5 |
| 12 | 14 30.0 | T _{m̄} | 11 h 45.5 min | Starost | .5 d | Faza | ● | |

| PLANETE | | | | | | | | | |
|----------|-----------------|-------|-------------|------|---------|-----------------|-------|-------------|------|
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h | min | / | o | t | h | min | / | o | t |
| 0 | 9 27 | .1 | 193 | -3.7 | 4 | 3 20 | .0 | 285 | -2.2 |
| δ | 14 37 | .1 | 116 | 1.0 | \hbar | 12 18 | .0 | 150 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 39.0 - 9 19.2 | 25 53.6 | 218 14.0 6 27.7 | 140 51.8 -22 25.2 | | | | |
| 2 | 213 39.2 - 9 21.0 | 55 58.6 | 248 13.4 6 25.6 | 170 52.9 -22 25.8 | | | | |
| 4 | 243 39.5 - 9 22.8 | 86 3.5 | 278 12.7 6 23.4 | 200 54.0 -22 26.4 | | | | |
| 6 | 273 39.7 - 9 24.6 | 116 8.4 | 308 12.0 6 21.3 | 230 55.1 -22 27.1 | | | | |
| 8 | 303 40.0 - 9 26.5 | 146 13.3 | 338 11.3 6 19.2 | 260 56.2 -22 27.7 | | | | |
| 10 | 333 40.2 - 9 28.3 | 176 18.3 | 368 10.6 6 17.1 | 290 57.3 -22 28.3 | | | | |
| 12 | 3 40.5 - 9 30.1 | 206 23.2 | 38 10.0 6 15.0 | 320 58.3 -22 29.0 | | | | |
| 14 | 33 40.7 - 9 31.9 | 236 28.1 | 68 9.3 6 12.9 | 350 59.4 -22 29.6 | | | | |
| 16 | 63 41.0 - 9 33.7 | 266 33.1 | 98 8.6 6 10.8 | 211 .5 -22 30.2 | | | | |
| 18 | 93 41.2 - 9 35.6 | 296 38.0 | 128 7.9 6 8.6 | 51 1.6 -22 30.8 | | | | |
| 20 | 123 41.5 - 9 37.4 | 326 42.9 | 158 7.2 6 6.5 | 81 2.7 -22 31.5 | | | | |
| 22 | 153 41.7 - 9 39.2 | 356 47.8 | 188 6.6 6 4.4 | 111 3.8 -22 32.1 | | | | |
| Δ | 1 -9 | | -3 -11 | 5 -3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 45 | 16 44 | 0 42 | 2 19 | 9 52 | 3.4 | 17 16 | 1.9 | |
| 55 | 6 34 | 16 56 | 0 37 | 2 1 | 9 22 | 3.2 | 17 46 | 2.1 | |
| 50 | 6 26 | 17 4 | 0 33 | 1 47 | 9 1 | 3.1 | 18 9 | 2.2 | |
| 45 | 6 19 | 17 11 | 0 30 | 1 38 | 8 44 | 3.0 | 18 26 | 2.3 | |
| 40 | 6 13 | 17 17 | 0 27 | 1 30 | 8 31 | 2.9 | 18 40 | 2.3 | |
| 35 | 6 8 | 17 22 | 0 26 | 1 24 | 8 19 | 2.8 | 18 52 | 2.4 | |
| 30 | 6 3 | 17 27 | 0 24 | 1 20 | 8 9 | 2.8 | 19 3 | 2.4 | |
| 20 | 5 56 | 17 35 | 0 22 | 1 14 | 7 52 | 2.7 | 19 21 | 2.5 | |
| 10 | 5 49 | 17 42 | 0 21 | 1 10 | 7 37 | 2.6 | 19 37 | 2.5 | |
| 0 | 5 42 | 17 49 | 0 21 | 1 10 | 7 23 | 2.5 | 19 52 | 2.6 | |
| 10 | 5 35 | 17 56 | 0 21 | 1 11 | 7 9 | 2.5 | 20 7 | 2.6 | |
| 20 | 5 28 | 18 3 | 0 22 | 1 15 | 6 55 | 2.4 | 20 23 | 2.7 | |
| 30 | 5 19 | 18 12 | 0 25 | 1 23 | 6 38 | 2.3 | 20 41 | 2.7 | |
| 35 | 5 15 | 18 17 | 0 26 | 1 29 | 6 28 | 2.2 | 20 52 | 2.8 | |
| 40 | 5 9 | 18 22 | 0 28 | 1 37 | 6 17 | 2.2 | 21 4 | 2.8 | |
| 45 | 5 2 | 18 29 | 0 31 | 1 47 | 6 4 | 2.1 | 21 19 | 2.8 | |
| 50 | 4 54 | 18 37 | 0 34 | 2 3 | 5 49 | 2.0 | 21 36 | 2.9 | |
| 55 | 4 45 | 18 47 | 0 39 | 2 26 | 5 29 | 1.8 | 21 59 | 3.0 | |
| 60 | 4 32 | 19 1 | 0 46 | 3 13 | 5 2 | 1.6 | 22 30 | 3.1 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|------------------|-------------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 163 49.8 - 51 17.0 -77 | 310 53.0 21 53.2 | 175 56.0 - 9 50.3 | | | | | |
| 2 | 192 38.0 50 -17 32.4 -75 | 340 58.1 21 53.2 | 206 .4 - 9 50.5 | | | | | |
| 4 | 221 25.9 49 -17 47.3 -72 | 11 3.3 21 53.2 | 236 4.7 - 9 50.7 | | | | | |
| 6 | 250 13.6 48 -18 1.7 -69 | 41 8.4 21 53.2 | 266 9.1 - 9 50.9 | | | | | |
| 8 | 279 1.1 47 -18 15.6 -67 | 71 13.6 21 53.2 | 296 13.4 - 9 51.1 | | | | | |
| 10 | 307 48.5 46 -18 28.9 -64 | 101 18.7 21 53.1 | 326 17.8 - 9 51.3 | | | | | |
| 12 | 336 35.7 45 -18 41.8 -61 | 131 23.9 21 53.1 | 356 22.1 - 9 51.5 | | | | | |
| 14 | 5 22.7 44 -18 54.1 -59 | 161 29.1 21 53.1 | 26 26.5 - 9 51.7 | | | | | |
| 16 | 34 9.6 44 -19 5.8 -56 | 191 34.2 21 53.1 | 56 30.8 - 9 51.9 | | | | | |
| 18 | 62 56.3 43 -19 17.0 -53 | 221 39.4 21 53.0 | 86 35.2 - 9 52.1 | | | | | |
| 20 | 91 43.0 43 -19 27.6 -50 | 251 44.6 21 53.0 | 116 39.6 - 9 52.4 | | | | | |
| 22 | 120 29.5 42 -19 37.6 -47 | 281 49.7 21 53.0 | 146 43.9 - 9 52.6 | | | | | |
| Δ | 26 0 | | 22 -1 | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 14 36.1 | .5 | 16.1 | T _{m̄} | 13 38 | 2.5 | 60.8 | 16.6 |
| 12 | 14 42.0 | T _{m̄} | 11 h 45.3 min | Starost | 1.5 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | min / | o / | |
| 0 | 9 27 | .1 | 192 | -3.7 | 4 |
| ○ | 14 36 | .1 | 115 | 1.0 | h |
| 12 14 | | | | | 0.0 |
| | | | | | 285 -2.2 |
| | | | | | 150 -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|------------------|-------------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _h | δ _h |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 149 15.9 42 -19 47.1 -44 | 311 54.9 21 53.0 | 176 48.3 - 9 52.8 | | | | | |
| 2 | 178 2.2 41 -19 56.0 -42 | 342 .1 21 52.9 | 206 52.6 - 9 53.0 | | | | | |
| 4 | 206 48.5 41 -20 4.3 -39 | 12 5.2 21 52.9 | 236 57.0 - 9 53.2 | | | | | |
| 6 | 235 34.7 41 -20 12.0 -36 | 42 10.4 21 52.9 | 267 1.3 - 9 53.4 | | | | | |
| 8 | 264 20.9 41 -20 19.1 -33 | 72 15.6 21 52.9 | 297 5.7 - 9 53.6 | | | | | |
| 10 | 293 7.0 41 -20 25.7 -33 | 102 20.8 21 52.8 | 327 10.0 - 9 53.8 | | | | | |
| 12 | 321 53.1 41 -20 31.6 -27 | 132 25.9 21 52.8 | 357 14.4 - 9 54.0 | | | | | |
| 14 | 350 39.2 41 -20 36.9 -24 | 162 31.1 21 52.8 | 27 18.8 - 9 54.2 | | | | | |
| 16 | 19 25.3 41 -20 41.6 -21 | 192 36.3 21 52.8 | 57 23.1 - 9 54.5 | | | | | |
| 18 | 48 11.5 41 -20 45.8 -18 | 222 41.5 21 52.7 | 87 27.5 - 9 54.7 | | | | | |
| 20 | 76 57.6 41 -20 49.3 -15 | 252 46.7 21 52.7 | 117 31.8 - 9 54.9 | | | | | |
| 22 | 105 43.9 41 -20 52.2 -12 | 282 51.8 21 52.7 | 147 36.2 - 9 55.1 | | | | | |
| Δ | 26 0 | | 22 -1 | | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 14 47.9 | .5 | 16.1 | T _{m̄} | 14 39 | 2.5 | 60.7 | 16.5 |
| 12 | 14 53.5 | T _{m̄} | 11 h 45.1 min | Starost | 2.5 d | Faza | ● | |

| UT | PLANETE | | | | |
|---------|---------|-----------------|-------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | o / | h min | min / | o / | |
| 0 | 9 28 | .1 | 191 | -3.7 | 4 |
| ○ | 14 35 | .1 | 114 | 1.0 | h |
| 12 11 | | | | | 0.0 |
| | | | | | 285 -2.2 |
| | | | | | 150 -.8 |

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|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 44.7 | -10 2.7 | 27 51.9 | 217 57.8 | 5 36.6 | 141 17.8 | -22 40.1 | |
| 2 | 213 45.0 | -10 4.5 | 57 56.8 | 247 57.1 | 5 34.5 | 171 18.8 | -22 40.7 | |
| 4 | 243 45.2 | -10 6.3 | 88 1.8 | 277 56.4 | 5 32.3 | 201 19.9 | -22 41.3 | |
| 6 | 273 45.4 | -10 8.1 | 118 6.7 | 307 55.7 | 5 30.2 | 231 21.0 | -22 41.9 | |
| 8 | 303 45.6 | -10 9.9 | 148 11.6 | 337 55.1 | 5 28.0 | 261 22.0 | -22 42.5 | |
| 10 | 333 45.8 | -10 11.7 | 178 16.5 | 7 54.4 | 5 25.9 | 291 23.1 | -22 43.1 | |
| 12 | 3 46.1 | -10 13.5 | 208 21.5 | 37 53.7 | 5 23.7 | 321 24.1 | -22 43.7 | |
| 14 | 33 46.3 | -10 15.3 | 238 26.4 | 67 53.1 | 5 21.6 | 351 25.2 | -22 44.3 | |
| 16 | 63 46.5 | -10 17.1 | 268 31.3 | 97 52.4 | 5 19.4 | 21 26.3 | -22 44.9 | |
| 18 | 93 46.7 | -10 18.9 | 298 36.3 | 127 51.7 | 5 17.3 | 51 27.3 | -22 45.5 | |
| 20 | 123 46.9 | -10 20.7 | 328 41.2 | 157 51.0 | 5 15.1 | 81 28.4 | -22 46.0 | |
| 22 | 153 47.2 | -10 22.5 | 358 46.1 | 187 50.4 | 5 13.0 | 111 29.4 | -22 46.6 | |
| Δ | 1 | -9 | | -3 | -11 | 5 | -3 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 50 | 16 39 | 0 43 | 2 19 | 12 20 | 2 0 | 19 2 | 3 1 | |
| 55 | 6 38 | 16 51 | 0 37 | 2 1 | 11 45 | 2 1 | 19 37 | 3 0 | |
| 50 | 6 29 | 17 0 | 0 33 | 1 48 | 11 19 | 2 2 | 20 20 | 2 9 | |
| 45 | 6 21 | 17 8 | 0 30 | 1 38 | 10 60 | 2 3 | 20 21 | 2 8 | |
| 40 | 6 15 | 17 14 | 0 27 | 1 30 | 10 44 | 2 3 | 20 37 | 2 7 | |
| 35 | 6 10 | 17 20 | 0 26 | 1 24 | 10 31 | 2 4 | 20 50 | 2 7 | |
| 30 | 6 5 | 17 25 | 0 24 | 1 20 | 10 19 | 2 4 | 21 2 | 2 6 | |
| 20 | 5 56 | 17 33 | 0 22 | 1 14 | 9 59 | 2 4 | 21 22 | 2 6 | |
| 10 | 5 49 | 17 41 | 0 21 | 1 11 | 9 42 | 2 5 | 21 39 | 2 5 | |
| 0 | 5 42 | 17 48 | 0 21 | 1 10 | 9 26 | 2 5 | 21 55 | 2 4 | |
| 10 | 5 34 | 17 56 | 0 21 | 1 11 | 9 10 | 2 5 | 22 10 | 2 4 | |
| 20 | 5 26 | 18 4 | 0 23 | 1 16 | 8 52 | 2 6 | 22 27 | 2 3 | |
| 30 | 5 17 | 18 13 | 0 25 | 1 24 | 8 33 | 2 6 | 22 47 | 2 3 | |
| 35 | 5 12 | 18 18 | 0 26 | 1 30 | 8 21 | 2 6 | 22 58 | 2 2 | |
| 40 | 5 6 | 18 25 | 0 28 | 1 37 | 8 8 | 2 6 | 23 11 | 2 2 | |
| 45 | 4 59 | 18 32 | 0 31 | 1 48 | 7 52 | 2 7 | 23 26 | 2 1 | |
| 50 | 4 50 | 18 40 | 0 34 | 2 4 | 7 33 | 2 7 | 23 45 | 2 0 | |
| 55 | 4 40 | 18 51 | 0 39 | 2 29 | 7 8 | 2 8 | ... | 0 | |
| 60 | 4 26 | 19 6 | 0 47 | 3 23 | 6 34 | 2 8 | ... | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 134 30.1 | 42 -20 54.5 | -9 | 312 57.0 | 21 52.6 | 177 40.5 | -9 55.3 | |
| 2 | 163 16.5 | 42 -20 56.2 | -6 | 343 2.2 | 21 52.6 | 207 44.9 | -9 55.5 | |
| 4 | 192 3.0 | 43 -20 57.3 | -3 | 13 7.4 | 21 52.6 | 237 49.2 | -9 55.7 | |
| 6 | 220 49.5 | 43 -20 57.8 | 0 | 43 12.6 | 21 52.6 | 267 53.6 | -9 55.9 | |
| 8 | 249 36.2 | 44 -20 57.7 | 3 | 73 17.8 | 21 52.5 | 297 57.9 | -9 56.1 | |
| 10 | 278 23.0 | 45 -20 57.1 | 6 | 103 23.0 | 21 52.5 | 328 2.3 | -9 56.3 | |
| 12 | 307 10.0 | 46 -20 55.8 | 9 | 133 28.2 | 21 52.5 | 358 6.6 | -9 56.6 | |
| 14 | 335 57.1 | 46 -20 53.9 | 12 | 163 33.4 | 21 52.5 | 28 11.0 | -9 56.8 | |
| 16 | 4 44.4 | 47 -20 51.5 | 15 | 193 38.6 | 21 52.4 | 58 15.4 | -9 57.0 | |
| 18 | 33 31.9 | 48 -20 48.5 | 18 | 223 43.8 | 21 52.4 | 88 19.7 | -9 57.2 | |
| 20 | 62 19.6 | 49 -20 44.9 | 21 | 253 49.0 | 21 52.4 | 118 24.1 | -9 57.4 | |
| 22 | 91 7.4 | 50 -20 40.7 | 24 | 283 54.2 | 21 52.3 | 148 28.4 | -9 57.6 | |
| Δ | 1 | -9 | | 26 | 0 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|--------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h | min | s | / | h min | min | / | / | |
| 00 | 14 59.1 | .4 | 16.1 | T _{m̄} | 15 40 | 2.5 | 60.3 | 16.4 |
| 12 | 15 4.4 | T _{m̄} | 11 h 44.9 min | Starost | 3.5 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-ø} | Vel. | Pl. | T _{m̄} | π _{360-ø} | Vel. |
| | h min | / | o | h min | / | o | h min | / |
| ♀ | 9 28 | .1 | 190 | -3.6 | 4 | 3 8 | .0 | 285 |
| ♂ | 14 34 | .1 | 113 | 1.0 | h | 12 8 | .0 | 150 |
| | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 119 55.5 | 52 -20 36.0 | 26 | 313 59.4 | 21 52.3 | 178 32.8 | -9 57.8 | |
| 2 | 148 43.8 | 53 -20 30.7 | 29 | 344 4.6 | 21 52.3 | 208 37.1 | -9 58.0 | |
| 4 | 177 32.4 | 54 -20 24.9 | 32 | 14 9.8 | 21 52.3 | 238 41.5 | -9 58.2 | |
| 6 | 206 21.2 | 55 -20 18.5 | 34 | 44 15.0 | 21 52.2 | 268 45.8 | -9 58.4 | |
| 8 | 235 10.2 | 57 -20 11.6 | 37 | 74 20.2 | 21 52.2 | 298 50.2 | -9 58.6 | |
| 10 | 263 59.6 | 58 -20 4.2 | 40 | 104 25.4 | 21 52.2 | 328 54.5 | -9 58.9 | |
| 12 | 292 49.1 | 59 -19 56.2 | 42 | 134 30.6 | 21 52.1 | 358 58.9 | -9 59.1 | |
| 14 | 321 39.0 | 61 -19 47.8 | 45 | 164 35.9 | 21 52.1 | 29 3.2 | -9 59.3 | |
| 16 | 350 29.2 | 62 -19 38.8 | 47 | 194 41.1 | 21 52.1 | 59 7.6 | -9 59.5 | |
| 18 | 19 19.6 | 64 -19 29.4 | 50 | 224 46.3 | 21 52.1 | 89 11.9 | -9 59.7 | |
| 20 | 48 10.4 | 65 -19 19.4 | 52 | 254 51.5 | 21 52.0 | 119 16.3 | -9 59.9 | |
| 22 | 77 1.4 | 67 -19 9.0 | 54 | 284 56.7 | 21 52.0 | 149 20.7 | -10 .1 | |
| Δ | 1 | -9 | | 26 | 0 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|--------------------|-----------------|--------|-----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h | min | s | / | h min | min | / | / | |
| 00 | 15 9.6 | .4 | 16.1 | T _{m̄} | 16 40 | 2.3 | 59.7 | 16.3 |
| 12 | 15 14.6 | T _{m̄} | 11 h 44.8 min | Starost | 4.5 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π _{360-ø} | Vel. | Pl. | T _{m̄} | π _{360-ø} | Vel. |
| | h min | / | o | h min | / | o | h min | / |
| ♀ | 9 29 | .1 | 189 | -3.6 | 4 | 3 4 | .0 | 285 |
| ♂ | 14 33 | .1 | 113 | 1.0 | h | 12 4 | .0 | 150 |
| | | | | | | | | |

21. OKTOBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA S γ | VENERA | | MARS | |
|----------|-------------------|---------------|-------------------------------|-------------------|-----------------|---------------|-------------------|
| | S \odot | $\delta\odot$ | | S φ | $\delta\varphi$ | S ϑ | $\delta\vartheta$ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 49.8 -10 45.7 | 29 50.2 | 217 41.6 4 44.8 | 141 43.1 -22 54.2 | | | |
| 2 | 213 50.0 -10 47.5 | 59 55.1 | 247 40.9 4 42.6 | 171 44.1 -22 54.7 | | | |
| 4 | 243 50.2 -10 49.3 | 90 .0 | 277 40.3 4 40.4 | 201 45.1 -22 55.3 | | | |
| 6 | 273 50.4 -10 51.0 | 120 5.0 | 307 39.6 4 38.2 | 231 46.2 -22 55.9 | | | |
| 8 | 303 50.6 -10 52.8 | 150 9.9 | 337 38.9 4 36.0 | 261 47.2 -22 56.4 | | | |
| 10 | 333 50.8 -10 54.6 | 180 14.8 | 7 38.3 4 33.8 | 291 48.3 -22 57.0 | | | |
| 12 | 3 51.0 -10 56.3 | 210 19.8 | 37 37.6 4 31.7 | 321 49.3 -22 57.6 | | | |
| 14 | 33 51.2 -10 58.1 | 240 24.7 | 67 36.9 4 29.5 | 351 50.3 -22 58.1 | | | |
| 16 | 63 51.4 -10 59.9 | 270 29.6 | 97 36.3 4 27.3 | 21 51.4 -22 58.7 | | | |
| 18 | 93 51.6 -11 1.7 | 300 34.5 | 127 35.6 4 25.1 | 51 52.4 -22 59.2 | | | |
| 20 | 123 51.8 -11 3.4 | 330 39.5 | 157 34.9 4 22.9 | 81 53.4 -22 59.8 | | | |
| 22 | 153 52.0 -11 5.2 | 0 44.4 | 187 34.2 4 20.7 | 111 54.5 -23 .3 | | | |
| Δ | 1 | -9 | | -3 | -11 | 5 | -3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-----------|-------|---------------------|-------|--------|-------|-------------|-------|-------------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | $\Delta/24$ | ZALAZ | $\Delta/24$ |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 6 55 | 16 33 | 0 43 | 2 19 | 13 41 | 1 0 | 21 39 | 3.5 | |
| 55 | 6 42 | 16 46 | 0 37 | 2 1 | 13 15 | 1.3 | 22 4 | 3.2 | |
| 50 | 6 32 | 16 56 | 0 33 | 1 48 | 12 56 | 1.4 | 22 23 | 3.0 | |
| 45 | 6 24 | 17 5 | 0 30 | 1 38 | 12 40 | 1.6 | 22 27 | 2.9 | |
| 40 | 6 17 | 17 11 | 0 28 | 1 30 | 12 27 | 1.7 | 22 49 | 2.8 | |
| 35 | 6 11 | 17 17 | 0 26 | 1 25 | 12 17 | 1.8 | 22 59 | 2.7 | |
| 30 | 6 6 | 17 23 | 0 24 | 1 20 | 12 7 | 1.9 | 23 8 | 2.6 | |
| 20 | 5 57 | 17 32 | 0 22 | 1 14 | 11 51 | 2.0 | 23 23 | 2.4 | |
| 10 | 5 49 | 17 40 | 0 21 | 1 11 | 11 36 | 2.1 | 23 36 | 2.3 | |
| 0 | 5 41 | 17 48 | 0 21 | 1 10 | 11 23 | 2.2 | 23 49 | 2.2 | |
| 10 | 5 33 | 17 56 | 0 21 | 1 12 | 11 9 | 2.3 | ... | 0 | |
| 20 | 5 25 | 18 4 | 0 23 | 1 16 | 10 55 | 2.5 | ... | 0 | |
| 30 | 5 15 | 18 14 | 0 25 | 1 24 | 10 38 | 2.6 | ... | 0 | |
| 35 | 5 10 | 18 20 | 0 26 | 1 30 | 10 29 | 2.7 | ... | 0 | |
| 40 | 5 3 | 18 27 | 0 28 | 1 38 | 10 18 | 2.8 | 0 3 | 1.8 | |
| 45 | 4 56 | 18 34 | 0 31 | 1 50 | 10 5 | 2.9 | 0 16 | 1.7 | |
| 50 | 4 46 | 18 44 | 0 35 | 2 6 | 9 49 | 3.0 | 0 33 | 1.6 | |
| 55 | 4 35 | 18 55 | 0 40 | 2 33 | 9 28 | 3.2 | 0 54 | 1.4 | |
| 60 | 4 20 | 19 11 | 0 48 | 3 37 | 9 1 | 3.5 | 1 23 | 1.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|----------------------|----------|------------------|------------------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 105 52.8 68 -18 58.1 | 57 | 315 1.9 21 52.0 | 179 25.0 -10 .3 | | | | |
| 2 | 134 44.4 70 -18 46.8 | 59 | 345 7.2 21 51.9 | 209 29.4 -10 .5 | | | | |
| 4 | 163 36.4 72 -18 35.0 | 61 | 15 12.4 21 51.9 | 239 33.7 -10 .7 | | | | |
| 6 | 192 28.7 73 -18 22.7 | 63 | 45 17.6 21 51.9 | 269 38.1 -10 .9 | | | | |
| 8 | 221 21.4 75 -18 10.1 | 65 | 75 22.8 21 51.9 | 299 42.4 -10 1.2 | | | | |
| 10 | 250 14.3 76 -17 57.0 | 68 | 105 28.1 21 51.8 | 329 46.8 -10 1.4 | | | | |
| 12 | 279 7.6 78 -17 43.5 | 70 | 135 33.3 21 51.8 | 359 51.1 -10 1.6 | | | | |
| 14 | 308 1.3 80 -17 29.6 | 71 | 165 38.5 21 51.8 | 29 55.5 -10 1.8 | | | | |
| 16 | 336 55.2 81 -17 15.3 | 73 | 195 43.8 21 51.7 | 59 59.8 -10 2.0 | | | | |
| 18 | 5 49.5 83 -17 .6 | 75 | 225 49.0 21 51.7 | 90 4.2 -10 2.2 | | | | |
| 20 | 34 44.1 85 -16 45.5 | 77 | 255 54.2 21 51.7 | 120 8.5 -10 2.4 | | | | |
| 22 | 63 39.1 86 -16 30.1 | 79 | 285 59.5 21 51.6 | 150 12.9 -10 2.6 | | | | |
| Δ | 26 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|-------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 15 19.6 | .4 | 16.1 | T _{m̄} | 17 36 | 2.2 | 59.1 | 16.1 | |
| 12 | 15 24.2 | T _{m̄} | 11 h 44.6 min | Starost | 5.5 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | o | h min | / | h min | / | o | h min |
| 0 | 9 29 | .1 | 188 | -3.6 | 4 | 2 59 | .0 | 285 | -2.2 |
| δ | 14 33 | .1 | 112 | 1.0 | h | 12 1 | .0 | 150 | -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----------|----------------------|----------|------------------|------------------|-------------|-----------------|----------|--------------|
| | S ζ | Δ | $\delta\zeta$ | Δ | S φ | $\delta\varphi$ | S η | $\delta\eta$ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 92 34.4 88 -16 14.3 | 81 | 316 4.7 21 51.6 | 180 17.2 -10 2.8 | | | | |
| 2 | 121 30.0 90 -15 58.2 | 82 | 346 10.0 21 51.6 | 210 21.6 -10 3.0 | | | | |
| 4 | 150 25.9 91 -15 41.8 | 84 | 16 15.2 21 51.5 | 240 25.9 -10 3.2 | | | | |
| 6 | 179 22.2 93 -15 25.0 | 85 | 46 20.4 21 51.5 | 270 30.3 -10 3.4 | | | | |
| 8 | 208 18.8 95 -15 7.9 | 87 | 76 25.7 21 51.5 | 300 34.6 -10 3.7 | | | | |
| 10 | 237 15.7 96 -14 50.5 | 88 | 106 30.9 21 51.4 | 330 39.0 -10 3.9 | | | | |
| 12 | 266 13.0 98 -14 32.8 | 90 | 136 36.2 21 51.4 | 0 43.3 -10 4.1 | | | | |
| 14 | 295 10.5 99 -14 14.8 | 91 | 166 41.4 21 51.4 | 30 47.7 -10 4.3 | | | | |
| 16 | 324 8.4 101 -13 56.6 | 93 | 196 46.7 21 51.3 | 60 52.1 -10 4.5 | | | | |
| 18 | 353 6.6 102 -13 38.0 | 94 | 226 51.9 21 51.3 | 90 56.4 -10 4.7 | | | | |
| 20 | 22 5.1 104 -13 19.3 | 95 | 256 57.2 21 51.3 | 121 .8 -10 4.9 | | | | |
| 22 | 51 3.9 105 -13 .2 | 96 | 287 2.4 21 51.3 | 151 5.1 -10 5.1 | | | | |
| Δ | 26 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|----------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|-------|-------------|-------|
| | e = T _p - UT | $\Delta/24$ | t | Prolaz | $\Delta/24$ | π_{ζ} | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 15 28.9 | .4 | 16.1 | T _{m̄} | 18 29 | 2.0 | 58.4 | 15.9 | |
| 12 | 15 33.2 | T _{m̄} | 11 h 44.5 min | Starost | 6.5 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | o | h min | / | h min | / | o | h min |
| 0 | 9 30 | .1 | 187 | -3.6 | 4 | 2 55 | .0 | 285 | -2.3 |
| δ | 14 32 | .1 | 111 | 1.0 | h | 11 57 | .0 | 149 | -.8 |

23. OKTOBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-----------------|----------------|-------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 54.3 -11 28.0 | 31 48.5 | 217 25.5 | 3 52.1 | 142 7.8 -23 7.4 | | | |
| 2 | 213 54.5 -11 29.8 | 61 53.4 | 247 24.9 | 3 49.9 | 172 8.8 -23 7.9 | | | |
| 4 | 243 54.7 -11 31.5 | 91 58.3 | 277 24.2 | 3 47.7 | 202 9.8 -23 8.5 | | | |
| 6 | 273 54.8 -11 33.3 | 122 3.2 | 307 23.5 | 3 45.5 | 232 10.8 -23 9.0 | | | |
| 8 | 303 55.0 -11 35.0 | 152 8.2 | 337 22.9 | 3 43.3 | 262 11.8 -23 9.5 | | | |
| 10 | 333 55.2 -11 36.8 | 182 13.1 | 7 22.2 | 3 41.0 | 292 11.8 -23 10.1 | | | |
| 12 | 3 55.3 -11 38.5 | 212 18.0 | 37 21.5 | 3 38.8 | 322 13.8 -23 10.6 | | | |
| 14 | 33 55.5 -11 40.2 | 242 23.0 | 67 20.9 | 3 36.6 | 352 14.9 -23 11.1 | | | |
| 16 | 63 55.7 -11 42.0 | 272 27.9 | 97 20.2 | 3 34.4 | 22 15.9 -23 11.6 | | | |
| 18 | 93 55.8 -11 43.7 | 302 32.8 | 127 19.5 | 3 32.2 | 52 16.9 -23 12.1 | | | |
| 20 | 123 56.0 -11 45.5 | 332 37.7 | 157 18.8 | 3 30.0 | 82 17.9 -23 12.7 | | | |
| 22 | 153 56.2 -11 47.2 | 2 42.7 | 187 18.2 | 3 27.7 | 112 18.9 -23 13.2 | | | |
| Δ | 1 | -9 | -3 | -11 | 5 | -3 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 0 | 16 27 | 0 43 | 2 20 | 14 23 | .6 | ... | 0 | |
| 55 | 6 46 | 16 42 | 0 37 | 2 1 | 14 9 | .8 | ... | 0 | |
| 50 | 6 35 | 16 53 | 0 33 | 1 48 | 13 59 | 1.0 | ... | 0 | |
| 45 | 6 27 | 17 1 | 0 30 | 1 38 | 13 50 | 1.2 | ... | 0 | |
| 40 | 6 19 | 17 9 | 0 28 | 1 31 | 13 43 | 1.3 | ... | 0 | |
| 35 | 6 13 | 17 15 | 0 26 | 1 25 | 13 37 | 1.4 | 0 3 | 2.6 | |
| 30 | 6 8 | 17 21 | 0 24 | 1 20 | 13 32 | 1.5 | 0 10 | 2.5 | |
| 20 | 5 58 | 17 31 | 0 22 | 1 14 | 13 22 | 1.7 | 0 21 | 2.3 | |
| 10 | 5 49 | 17 39 | 0 21 | 1 11 | 13 14 | 1.8 | 0 31 | 2.2 | |
| 0 | 5 41 | 17 48 | 0 21 | 1 10 | 13 6 | 2.0 | 0 41 | 2.0 | |
| 10 | 5 33 | 17 56 | 0 22 | 1 12 | 12 59 | 2.1 | 0 50 | 1.9 | |
| 20 | 5 24 | 18 5 | 0 23 | 1 16 | 12 50 | 2.3 | 0 60 | 1.8 | |
| 30 | 5 13 | 18 16 | 0 25 | 1 24 | 12 41 | 2.4 | 1 11 | 1.6 | |
| 35 | 5 7 | 18 22 | 0 26 | 1 31 | 12 36 | 2.5 | 1 17 | 1.5 | |
| 40 | 5 0 | 18 29 | 0 28 | 1 39 | 12 29 | 2.6 | 1 25 | 1.4 | |
| 45 | 4 52 | 18 37 | 0 31 | 1 51 | 12 22 | 2.8 | 1 33 | 1.3 | |
| 50 | 4 43 | 18 47 | 0 35 | 2 8 | 12 13 | 2.9 | 1 43 | 1.1 | |
| 55 | 4 30 | 18 60 | 0 40 | 2 37 | 12 2 | 3.1 | 1 56 | .9 | |
| 60 | 4 14 | 19 16 | 0 48 | 4 2 | 11 48 | 3.4 | 2 12 | .7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|----------------|---------|------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 80 3.0 107 -12 41.0 | 97 | 317 7.7 | 21 51.2 | 181 9.5 -10 5.3 | | | |
| 2 | 109 2.4 108 -12 21.4 | 99 | 347 12.9 | 21 51.2 | 211 13.8 -10 5.5 | | | |
| 4 | 138 2.1 110 -12 1.7 | 100 | 17 18.2 | 21 51.2 | 241 18.2 -10 5.7 | | | |
| 6 | 167 2.1 111 -11 41.8 | 101 | 47 23.5 | 21 51.1 | 271 22.5 -10 5.9 | | | |
| 8 | 196 2.3 113 -11 21.6 | 102 | 77 28.7 | 21 51.1 | 301 26.9 -10 6.2 | | | |
| 10 | 225 2.8 114 -11 1.3 | 103 | 107 34.0 | 21 51.1 | 331 31.2 -10 6.4 | | | |
| 12 | 254 3.6 115 -10 40.8 | 103 | 137 39.2 | 21 51.0 | 1 35.6 -10 6.6 | | | |
| 14 | 283 4.7 117 -10 20.1 | 104 | 167 44.5 | 21 51.0 | 31 39.9 -10 6.8 | | | |
| 16 | 312 6.0 118 -9 59.2 | 105 | 197 49.8 | 21 51.0 | 61 44.3 -10 7.0 | | | |
| 18 | 341 7.6 119 -9 38.2 | 106 | 227 55.0 | 21 50.9 | 91 48.6 -10 7.2 | | | |
| 20 | 10 9.4 120 -9 17.0 | 107 | 258 .3 | 21 50.9 | 151 53.0 -10 7.4 | | | |
| 22 | 39 11.5 121 -8 55.7 | 107 | 288 5.6 | 21 50.8 | 151 57.3 -10 7.6 | | | |
| Δ | 1 | -9 | -3 | -11 | 22 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | h min | min / | h min | min / | h min | | | |
| 00 | 15 37.5 | .3 | 16.1 | T _{m̄} | 19 18 | 2.0 | 57.6 | 15.7 | | |
| 12 | 15 41.5 | T _{m̄} | 11 h 44.3 min | Starost | 7.5 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 9 31 | .1 | 186 | -3.6 | 4 | 2 51 | .0 | 285 | -2.3 | |
| δ | 14 31 | .1 | 110 | 1.0 | h | 11 54 | .0 | 149 | -.8 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|----------------|---------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 68 13.8 123 -8 34.2 | 108 | 318 10.9 | 21 50.8 | 182 1.7 -10 7.8 | | | |
| 2 | 97 16.3 124 -8 12.6 | 109 | 348 16.1 | 21 50.8 | 212 6.0 -10 8.0 | | | |
| 4 | 126 19.0 125 -7 50.9 | 109 | 18 21.4 | 21 50.7 | 242 10.4 -10 8.2 | | | |
| 6 | 155 22.0 126 -7 29.0 | 110 | 48 26.7 | 21 50.7 | 272 14.7 -10 8.4 | | | |
| 8 | 184 25.1 127 -7 7.1 | 110 | 78 32.0 | 21 50.7 | 302 19.1 -10 8.6 | | | |
| 10 | 213 28.5 128 -6 45.1 | 111 | 108 37.2 | 21 50.6 | 332 23.4 -10 8.9 | | | |
| 12 | 242 32.1 129 -6 22.9 | 111 | 138 42.5 | 21 50.6 | 2 27.8 -10 9.1 | | | |
| 14 | 271 35.8 130 -6 .7 | 111 | 168 47.8 | 21 50.6 | 32 32.1 -10 9.3 | | | |
| 16 | 300 39.8 131 -5 38.4 | 112 | 198 53.1 | 21 50.5 | 62 36.5 -10 9.5 | | | |
| 18 | 329 43.9 131 -5 16.1 | 112 | 228 58.4 | 21 50.5 | 92 40.8 -10 9.7 | | | |
| 20 | 358 48.2 132 -4 53.7 | 112 | 259 3.6 | 21 50.5 | 122 45.2 -10 9.9 | | | |
| 22 | 27 52.6 133 -4 31.2 | 113 | 289 8.9 | 21 50.4 | 152 49.5 -10 10.1 | | | |
| Δ | 26 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | h min | min / | h min | min / | h min | | | |
| 00 | 15 45.5 | .3 | 16.1 | T _{m̄} | 20 | 5 | 1.9 | 57.0 | 15.5 | |
| 12 | 15 49.1 | T _{m̄} | 11 h 44.2 min | Starost | 8.5 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 9 31 | .1 | 184 | -3.6 | 4 | 2 47 | .0 | 285 | -2.3 | |
| δ | 14 30 | .1 | 110 | 1.0 | h | 11 50 | .0 | 149 | -.8 | |

25. OKTOBAR

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ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _θ | δ _θ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 | 58.1 | -12 | 9.7 | 33 | 46.7 | 217 | 9.5 |
| 2 | 213 | 58.3 | -12 | 11.4 | 63 | 51.7 | 247 | 8.8 |
| 4 | 243 | 58.4 | -12 | 13.1 | 93 | 56.6 | 277 | 8.1 |
| 6 | 273 | 58.6 | -12 | 14.8 | 124 | 1.5 | 307 | 7.5 |
| 8 | 303 | 58.7 | -12 | 16.5 | 154 | 6.5 | 337 | 6.8 |
| 10 | 333 | 58.8 | -12 | 18.2 | 184 | 11.4 | 7 | 6.1 |
| 12 | 3 | 59.0 | -12 | 20.0 | 214 | 16.3 | 37 | 5.5 |
| 14 | 33 | 59.1 | -12 | 21.7 | 244 | 21.2 | 67 | 4.8 |
| 16 | 63 | 59.3 | -12 | 23.4 | 274 | 26.2 | 97 | 4.1 |
| 18 | 93 | 59.4 | -12 | 25.1 | 304 | 31.1 | 127 | 3.5 |
| 20 | 123 | 59.5 | -12 | 26.8 | 334 | 36.0 | 157 | 2.8 |
| 22 | 153 | 59.7 | -12 | 28.5 | 4 | 40.9 | 187 | 2.1 |
| Δ | 1 | | | | | | -3 | -11 |
| | | | | | | | 5 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 5 | 16 22 | 0 44 | 2 20 | 14 49 | .5 | 1 48 | 3 3 | |
| 55 | 6 50 | 16 37 | 0 38 | 2 2 | 14 48 | .7 | 1 53 | 3 0 | |
| 50 | 6 39 | 16 49 | 0 33 | 1 48 | 14 46 | .9 | 1 57 | 2 8 | |
| 45 | 6 29 | 16 58 | 0 30 | 1 38 | 14 45 | 1.1 | 2 0 | 2 7 | |
| 40 | 6 22 | 17 6 | 0 28 | 1 31 | 14 44 | 1.2 | 2 3 | 2 6 | |
| 35 | 6 15 | 17 13 | 0 26 | 1 25 | 14 43 | 1.3 | 2 5 | 2 4 | |
| 30 | 6 9 | 17 19 | 0 24 | 1 20 | 14 43 | 1.4 | 2 7 | 2 3 | |
| 20 | 5 59 | 17 29 | 0 22 | 1 14 | 14 42 | 1.6 | 2 10 | 2 2 | |
| 10 | 5 49 | 17 39 | 0 21 | 1 11 | 14 40 | 1.7 | 2 13 | 2 0 | |
| 0 | 5 41 | 17 47 | 0 21 | 1 10 | 14 39 | 1.9 | 2 16 | 1.9 | |
| 10 | 5 32 | 17 56 | 0 22 | 1 12 | 14 38 | 2.0 | 2 19 | 1.7 | |
| 20 | 5 22 | 18 6 | 0 23 | 1 17 | 14 37 | 2.1 | 2 21 | 1.6 | |
| 30 | 5 11 | 18 17 | 0 25 | 1 25 | 14 36 | 2.3 | 2 25 | 1.4 | |
| 35 | 5 5 | 18 24 | 0 27 | 1 31 | 14 36 | 2.4 | 2 26 | 1.3 | |
| 40 | 4 58 | 18 31 | 0 29 | 1 40 | 14 35 | 2.5 | 2 29 | 1.2 | |
| 45 | 4 49 | 18 40 | 0 31 | 1 52 | 14 34 | 2.7 | 2 31 | 1.1 | |
| 50 | 4 39 | 18 50 | 0 35 | 2 10 | 14 33 | 2.8 | 2 34 | .9 | |
| 55 | 4 26 | 19 4 | 0 41 | 2 41 | 14 31 | 3.0 | 2 37 | .7 | |
| 60 | 4 9 | 19 21 | 0 49 | : :: | 14 30 | 3.3 | 2 42 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 56 | 57.2 | 134 | - 4 | 8.7 | 113 | 319 | 14.2 |
| 2 | 86 | 2.0 | 135 | - 3 | 346.1 | 113 | 349 | 19.5 |
| 4 | 115 | 6.9 | 135 | - 3 | 23.5 | 113 | 19 | 24.8 |
| 6 | 144 | 11.9 | 136 | - 3 | .9 | 113 | 49 | 30.1 |
| 8 | 173 | 17.1 | 136 | - 2 | 38.2 | 113 | 79 | 35.4 |
| 10 | 202 | 22.4 | 137 | - 2 | 15.6 | 113 | 109 | 40.7 |
| 12 | 231 | 27.8 | 138 | - 1 | 52.9 | 113 | 139 | 46.0 |
| 14 | 260 | 33.3 | 138 | - 1 | 30.3 | 113 | 169 | 51.3 |
| 16 | 289 | 38.9 | 139 | - 1 | 7.6 | 113 | 199 | 56.6 |
| 18 | 318 | 44.7 | 139 | - 0 | 45.0 | 113 | 230 | 1.9 |
| 20 | 347 | 50.5 | 140 | 0 | 22.3 | 113 | 260 | 7.2 |
| 22 | 16 | 56.4 | 140 | 0 | .3 | 113 | 290 | 12.5 |
| Δ | 1 | | | | | | 26 | 0 |
| | | | | | | | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | h min | min | / | h min | / | | |
| 00 | 15 52.7 | .3 | 16.1 | T _{m̄} | 20 50 | 1.8 | 56.4 | 15.4 | |
| 12 | 15 56.0 | T _{m̄} | 11 h 44.1 min | Starost | 9.5 d | Faza | 0 | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| ♀ | 9 32 | .1 | 183 | -3.6 | 4 | 2 43 | .0 | 285 | -2.3 |
| ♂ | 14 29 | .1 | 109 | 1.0 | h | 11 47 | .0 | 149 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 46 | 2.4 | 140 | 0 | 22.8 | 113 | 320 | 17.8 |
| 2 | 75 | 8.4 | 141 | 0 | 45.4 | 112 | 350 | 23.1 |
| 4 | 104 | 14.6 | 141 | 1 | 7.9 | 112 | 20 | 28.4 |
| 6 | 133 | 20.7 | 141 | 1 | 30.3 | 112 | 50 | 33.7 |
| 8 | 162 | 27.0 | 141 | 1 | 52.7 | 112 | 80 | 39.0 |
| 10 | 191 | 33.3 | 142 | 2 | 15.0 | 111 | 110 | 44.3 |
| 12 | 220 | 39.6 | 142 | 2 | 37.3 | 111 | 140 | 49.6 |
| 14 | 249 | 46.0 | 142 | 2 | 59.4 | 111 | 170 | 55.0 |
| 16 | 278 | 52.4 | 142 | 3 | 21.5 | 110 | 201 | .3 |
| 18 | 307 | 58.9 | 142 | 3 | 43.6 | 110 | 231 | 5.6 |
| 20 | 337 | 5.3 | 142 | 4 | 5.5 | 109 | 261 | 10.9 |
| 22 | 6 | 11.8 | 142 | 4 | 27.3 | 109 | 291 | 16.2 |
| Δ | 1 | | | | | | 27 | 0 |
| | | | | | | | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-----------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | h min | min | / | h min | / | | |
| 00 | 15 59.3 | .2 | 16.1 | T _{m̄} | 21 34 | 1.9 | 55.8 | 15.2 | |
| 12 | 16 | 2.3 | T _{m̄} | 11 h 44.0 min | Starost | 10.5 d | Faza | 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | ° | / | h min | / | h min | / | ° | / |
| ♀ | 9 32 | .1 | 182 | -3.6 | 4 | 2 38 | .0 | 286 | -2.3 |
| ♂ | 14 29 | .1 | 108 | 1.0 | h | 11 43 | .0 | 149 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 184 | 1.2 -12 | 50.5 | 35 45.0 | 216 53.4 | 2 4.9 | 142 55.4 -23 | 31.2 |
| 2 | 214 | 1.4 -12 | 52.2 | 65 49.6 | 246 52.7 | 2 2.6 | 172 56.3 -23 | 31.7 |
| 4 | 244 | 1.5 -12 | 53.9 | 95 54.9 | 276 52.1 | 2 .3 | 202 57.3 -23 | 32.2 |
| 6 | 274 | 1.6 -12 | 55.6 | 125 59.8 | 306 51.4 | 1 58.1 | 232 58.3 -23 | 32.6 |
| 8 | 304 | 1.7 -12 | 57.3 | 156 4.7 | 336 50.7 | 1 55.8 | 262 59.2 -23 | 33.1 |
| 10 | 334 | 1.8 -12 | 59.0 | 186 9.7 | 6 50.0 | 1 53.6 | 293 .2 -23 | 33.5 |
| 12 | 4 | 1.9 -13 | .6 | 216 14.6 | 36 49.4 | 1 51.3 | 323 1.2 -23 | 34.0 |
| 14 | 34 | 2.0 -13 | 2.3 | 246 19.5 | 66 48.7 | 1 49.0 | 353 2.1 -23 | 34.4 |
| 16 | 64 | 2.1 -13 | 4.0 | 276 24.4 | 96 48.0 | 1 46.8 | 23 3.1 -23 | 34.9 |
| 18 | 94 | 2.2 -13 | 5.7 | 306 29.4 | 126 47.4 | 1 44.5 | 53 4.1 -23 | 35.3 |
| 20 | 124 | 2.3 -13 | 7.4 | 336 34.3 | 156 46.7 | 1 42.2 | 83 5.0 -23 | 35.7 |
| 22 | 154 | 2.4 -13 | 9.0 | 6 39.2 | 186 46.0 | 1 40.0 | 113 6.0 -23 | 36.2 |
| Δ | 1 | | -8 | | -3 | -11 | 5 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 10 | 16 16 | 0 44 | 2 21 | 15 14 | .6 | 4 25 | 3.2 | |
| 55 | 6 54 | 16 33 | 0 38 | 2 2 | 15 23 | .8 | 4 18 | 2.9 | |
| 50 | 6 42 | 16 45 | 0 33 | 1 49 | 15 31 | 1.0 | 4 12 | 2.8 | |
| 45 | 6 32 | 16 55 | 0 30 | 1 39 | 15 37 | 1.1 | 4 8 | 2.6 | |
| 40 | 6 24 | 17 3 | 0 28 | 1 31 | 15 42 | 1.3 | 4 4 | 2.5 | |
| 35 | 6 17 | 17 11 | 0 26 | 1 25 | 15 46 | 1.4 | 4 1 | 2.4 | |
| 30 | 6 10 | 17 17 | 0 24 | 1 21 | 15 50 | 1.4 | 3 58 | 2.3 | |
| 20 | 5 59 | 17 28 | 0 23 | 1 14 | 15 56 | 1.6 | 3 53 | 2.1 | |
| 10 | 5 50 | 17 38 | 0 22 | 1 11 | 16 2 | 1.7 | 3 49 | 2.0 | |
| 0 | 5 40 | 17 47 | 0 21 | 1 11 | 16 8 | 1.9 | 3 45 | 1.8 | |
| 10 | 5 31 | 17 57 | 0 22 | 1 12 | 16 14 | 2.0 | 3 41 | 1.7 | |
| 20 | 5 21 | 18 7 | 0 23 | 1 17 | 16 20 | 2.1 | 3 37 | 1.6 | |
| 30 | 5 9 | 18 19 | 0 25 | 1 25 | 16 27 | 2.3 | 3 32 | 1.4 | |
| 35 | 5 3 | 18 26 | 0 27 | 1 32 | 16 31 | 2.4 | 3 29 | 1.3 | |
| 40 | 4 55 | 18 33 | 0 29 | 1 41 | 16 35 | 2.5 | 3 26 | 1.2 | |
| 45 | 4 46 | 18 43 | 0 32 | 1 53 | 16 40 | 2.6 | 3 22 | 1.1 | |
| 50 | 4 35 | 18 54 | 0 36 | 2 12 | 16 47 | 2.7 | 3 18 | 1.0 | |
| 55 | 4 21 | 19 8 | 0 41 | 2 46 | 16 55 | 2.9 | 3 13 | .8 | |
| 60 | 4 3 | 19 27 | 0 50 | : :: | 17 5 | 3.2 | 3 6 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 35 18.3 | 142 | 4 49.0 | 108 | 321 21.5 | 21 49.5 | 184 38.3 -10 | 15.3 |
| 2 | 64 24.8 | 142 | 5 10.6 | 107 | 351 26.9 | 21 49.4 | 214 42.7 -10 | 15.5 |
| 4 | 93 31.3 | 142 | 5 32.1 | 107 | 21 32.2 | 21 49.4 | 244 47.0 -10 | 15.7 |
| 6 | 122 37.8 | 142 | 5 53.5 | 106 | 51 37.5 | 21 49.4 | 274 51.4 -10 | 15.9 |
| 8 | 151 44.2 | 142 | 6 14.8 | 106 | 81 42.8 | 21 49.3 | 304 56.7 -10 | 16.1 |
| 10 | 180 50.7 | 142 | 6 35.9 | 105 | 111 48.2 | 21 49.3 | 335 .1 -10 | 16.3 |
| 12 | 209 57.2 | 142 | 6 56.9 | 104 | 141 53.5 | 21 49.2 | 5 4.4 -10 | 16.5 |
| 14 | 239 3.6 | 142 | 7 17.7 | 103 | 171 58.8 | 21 49.2 | 35 8.8 -10 | 16.7 |
| 16 | 268 10.0 | 142 | 7 38.4 | 103 | 202 4.2 | 21 49.2 | 65 13.1 -10 | 16.9 |
| 18 | 297 16.4 | 142 | 7 58.9 | 102 | 232 9.5 | 21 49.1 | 95 17.5 -10 | 17.1 |
| 20 | 326 22.7 | 141 | 8 19.3 | 101 | 262 14.8 | 21 49.1 | 125 21.8 -10 | 17.3 |
| 22 | 355 29.0 | 141 | 8 39.5 | 100 | 292 20.2 | 21 49.0 | 155 26.2 -10 | 17.5 |
| Δ | 0 | | -8 | | -3 | -11 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 16 5.2 | .2 | 16.1 | T _{m̄} | 22 19 | 1.8 | 55.4 | 15.1 | |
| 12 | 16 7.7 | T _{m̄} | 11 h 43.9 min | Starost | 11.5 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | h min | / | o | | | |
| ♀ | 9 33 | .1 | 181 | -3.6 | 4 | 2 34 | .0 | 286 | -2.3 |
| ♂ | 14 28 | .1 | 107 | 1.0 | h | 11 40 | .0 | 149 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 24 35.2 | 141 | 8 59.6 | 99 | 322 25.5 | 21 49.0 | 185 30.5 -10 | 17.7 |
| 2 | 53 41.4 | 141 | 9 19.4 | 98 | 352 30.8 | 21 49.0 | 215 34.9 -10 | 17.9 |
| 4 | 82 47.6 | 140 | 9 39.1 | 97 | 22 36.2 | 21 48.9 | 245 39.2 -10 | 18.1 |
| 6 | 111 53.7 | 140 | 9 58.6 | 97 | 52 41.5 | 21 48.9 | 275 43.6 -10 | 18.3 |
| 8 | 140 59.7 | 140 | 10 17.9 | 96 | 82 46.9 | 21 48.8 | 305 47.9 -10 | 18.6 |
| 10 | 170 5.7 | 140 | 10 37.0 | 95 | 112 52.2 | 21 48.8 | 335 52.3 -10 | 18.8 |
| 12 | 199 11.6 | 139 | 10 55.9 | 94 | 142 57.5 | 21 48.8 | 5 56.6 -10 | 19.0 |
| 14 | 228 17.4 | 139 | 11 14.6 | 92 | 173 2.9 | 21 48.7 | 36 1.0 -10 | 19.2 |
| 16 | 257 23.2 | 138 | 11 33.1 | 91 | 203 8.2 | 21 48.7 | 66 5.3 -10 | 19.4 |
| 18 | 286 28.9 | 138 | 11 51.4 | 90 | 233 13.6 | 21 48.6 | 96 9.7 -10 | 19.6 |
| 20 | 315 34.5 | 138 | 12 9.4 | 89 | 263 18.9 | 21 48.6 | 126 14.0 -10 | 19.8 |
| 22 | 344 40.0 | 137 | 12 27.2 | 88 | 293 24.3 | 21 48.5 | 156 18.4 -10 | 20.0 |
| Δ | 27 | | 0 | | 22 | | -1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 16 10.3 | .2 | 16.1 | T _{m̄} | 23 | 1.9 | 54.9 | 15.0 | |
| 12 | 16 12.5 | T _{m̄} | 11 h 43.8 min | Starost | 12.5 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | h min | / | o | | | |
| ♀ | 9 33 | .1 | 180 | -3.6 | 4 | 2 30 | .0 | 286 | -2.3 |
| ♂ | 14 27 | .1 | 106 | 1.0 | h | 11 36 | .0 | 149 | .8 |

29. OKTOBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|-----------------|----------------|-------------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 184 3.6 -13 30.6 | 37 43.3 | 216 37.2 | 1 10.4 | 143 18.3 -23 41.8 | | | |
| 2 | 214 3.7 -13 32.3 | 67 48.2 | 246 36.6 | 1 8.2 | 173 19.3 -23 42.2 | | | |
| 4 | 244 3.8 -13 33.9 | 97 53.1 | 276 35.9 | 1 5.9 | 203 20.2 -23 42.6 | | | |
| 6 | 274 3.9 -13 35.6 | 127 58.1 | 306 35.2 | 1 3.6 | 233 21.2 -23 43.0 | | | |
| 8 | 304 3.9 -13 37.2 | 158 3.0 | 336 34.5 | 1 1.3 | 263 22.1 -23 43.5 | | | |
| 10 | 334 4.0 -13 38.9 | 188 7.9 | 6 33.8 | 0 59.0 | 293 23.1 -23 43.9 | | | |
| 12 | 4 4.1 -13 40.5 | 218 12.9 | 36 33.2 | 0 56.8 | 323 24.0 -23 44.3 | | | |
| 14 | 34 4.2 -13 42.2 | 248 17.8 | 66 32.5 | 0 54.5 | 353 24.4 -23 44.7 | | | |
| 16 | 64 4.2 -13 43.8 | 278 22.7 | 96 31.8 | 0 52.2 | 23 25.9 -23 45.1 | | | |
| 18 | 94 4.3 -13 45.5 | 308 27.6 | 126 31.1 | 0 49.9 | 53 26.8 -23 45.5 | | | |
| 20 | 124 4.4 -13 47.1 | 338 32.6 | 156 30.5 | 0 47.6 | 83 27.7 -23 45.9 | | | |
| 22 | 154 4.5 -13 48.7 | 8 37.5 | 186 29.8 | 0 45.4 | 113 28.7 -23 46.3 | | | |
| Δ | 0 -8 | | -3 | -11 | 5 | -2 | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 15 | 16 11 | 0 45 | 2 22 | 15 45 | .9 | 6 57 | 3.0 | |
| 55 | 6 58 | 16 28 | 0 38 | 2 3 | 16 5 | 1.1 | 6 38 | 2.8 | |
| 50 | 6 45 | 16 42 | 0 34 | 1 49 | 16 21 | 1.3 | 6 23 | 2.6 | |
| 45 | 6 35 | 16 52 | 0 30 | 1 39 | 16 34 | 1.4 | 6 12 | 2.5 | |
| 40 | 6 26 | 17 1 | 0 28 | 1 31 | 16 44 | 1.5 | 6 2 | 2.4 | |
| 35 | 6 19 | 17 9 | 0 26 | 1 25 | 16 53 | 1.6 | 5 54 | 2.3 | |
| 30 | 6 12 | 17 15 | 0 25 | 1 21 | 17 1 | 1.6 | 5 47 | 2.2 | |
| 20 | 6 0 | 17 27 | 0 23 | 1 15 | 17 14 | 1.7 | 5 35 | 2.1 | |
| 10 | 5 50 | 17 37 | 0 22 | 1 11 | 17 26 | 1.8 | 5 24 | 2.0 | |
| 0 | 5 40 | 17 47 | 0 21 | 1 11 | 17 38 | 1.9 | 5 14 | 1.9 | |
| 10 | 5 30 | 17 57 | 0 22 | 1 13 | 17 49 | 2.0 | 5 4 | 1.8 | |
| 20 | 5 20 | 18 8 | 0 23 | 1 17 | 18 1 | 2.1 | 4 54 | 1.7 | |
| 30 | 5 8 | 18 20 | 0 25 | 1 26 | 18 15 | 2.2 | 4 41 | 1.6 | |
| 35 | 5 1 | 18 27 | 0 27 | 1 33 | 18 23 | 2.3 | 4 34 | 1.5 | |
| 40 | 4 52 | 18 36 | 0 29 | 1 42 | 18 32 | 2.4 | 4 27 | 1.4 | |
| 45 | 4 43 | 18 45 | 0 32 | 1 55 | 18 43 | 2.5 | 4 17 | 1.3 | |
| 50 | 4 31 | 18 57 | 0 36 | 2 14 | 18 56 | 2.6 | 4 6 | 1.2 | |
| 55 | 4 17 | 19 12 | 0 42 | 2 51 | 19 13 | 2.7 | 3 52 | 1.0 | |
| 60 | 3 57 | 19 32 | 0 51 | : :: | 19 36 | 3.0 | 3 34 | .8 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 13 45.4 137 | 12 44.8 | 87 | 323 29.6 | 21 48.5 | 186 22.7 -10 20.2 | | |
| 2 | 42 50.8 136 | 13 2.2 | 86 | 353 35.0 | 21 48.5 | 216 27.1 -10 20.4 | | |
| 4 | 71 56.1 136 | 13 19.3 | 84 | 23 40.3 | 21 48.4 | 246 31.4 -10 20.6 | | |
| 6 | 101 1.3 135 | 13 36.1 | 83 | 53 45.7 | 21 48.4 | 276 35.8 -10 20.8 | | |
| 8 | 130 6.4 135 | 13 52.7 | 82 | 83 51.1 | 21 48.3 | 306 40.2 -10 21.0 | | |
| 10 | 159 11.4 135 | 14 9.1 | 80 | 113 56.4 | 21 48.3 | 336 44.5 -10 21.2 | | |
| 12 | 188 16.3 134 | 14 25.2 | 79 | 144 1.8 | 21 48.2 | 6 48.9 -10 21.4 | | |
| 14 | 217 21.1 134 | 14 41.0 | 78 | 174 7.1 | 21 48.2 | 36 53.2 -10 21.6 | | |
| 16 | 246 25.8 133 | 14 56.6 | 76 | 204 12.5 | 21 48.2 | 66 57.6 -10 21.8 | | |
| 18 | 275 30.5 133 | 15 11.8 | 75 | 234 17.9 | 21 48.1 | 97 1.9 -10 22.0 | | |
| 20 | 304 35.0 132 | 15 26.8 | 74 | 264 23.2 | 21 48.1 | 127 6.3 -10 22.2 | | |
| 22 | 333 39.4 132 | 15 41.5 | 72 | 294 28.6 | 21 48.0 | 157 10.6 -10 22.4 | | |
| Δ | 0 -8 | | -3 | -11 | 5 | -2 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 16 14.7 | .2 | 16.1 | T _{m̄} | 23 49 | 1.9 | 54.6 | 14.9 |
| 12 | 16 16.5 | T _{m̄} | 11 h 43.7 min | Starost | 13.5 d | Faza ○ | | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 |
| h min | / | ° | | h min | / | h min | / | ° |
| ♀ | 9 34 | .1 | 178 | -3.5 | 4 | 2 26 | .0 | 286 |
| ♂ | 14 26 | .1 | 105 | 1.0 | h | 11 33 | .0 | 149 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|----------|----------------|-------------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 2 43.8 131 | 15 55.9 | 71 | 324 34.0 | 21 48.0 | 187 15.0 -10 22.7 | | |
| 2 | 31 48.0 131 | 16 10.1 | 69 | 354 39.3 | 21 47.9 | 217 19.3 -10 22.9 | | |
| 4 | 60 52.1 130 | 16 23.9 | 68 | 24 44.7 | 21 47.9 | 247 23.7 -10 23.1 | | |
| 6 | 89 56.2 130 | 16 37.4 | 66 | 54 50.1 | 21 47.9 | 277 28.0 -10 23.3 | | |
| 8 | 119 .1 129 | 16 50.6 | 65 | 84 55.4 | 21 47.8 | 307 32.4 -10 23.5 | | |
| 10 | 148 3.9 129 | 17 3.5 | 63 | 115 .8 | 21 47.8 | 337 36.7 -10 23.7 | | |
| 12 | 177 7.7 128 | 17 16.1 | 61 | 145 6.2 | 21 47.7 | 7 41.1 -10 23.9 | | |
| 14 | 206 11.3 128 | 17 28.4 | 60 | 175 11.6 | 21 47.7 | 37 45.4 -10 24.1 | | |
| 16 | 238 14.9 127 | 17 40.4 | 58 | 205 17.0 | 21 47.6 | 67 49.8 -10 24.3 | | |
| 18 | 264 18.3 127 | 17 52.0 | 57 | 235 22.3 | 21 47.6 | 97 54.1 -10 24.5 | | |
| 20 | 293 21.7 126 | 18 3.3 | 55 | 265 27.7 | 21 47.5 | 127 58.5 -10 24.7 | | |
| 22 | 322 24.9 126 | 18 14.3 | 53 | 295 33.1 | 21 47.5 | 158 2.8 -10 24.9 | | |
| Δ | 0 -8 | | -3 | -11 | 5 | -2 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | |
| 00 | 16 18.3 | .1 | 16.1 | T _{m̄} | ... | 1.0 | 54.3 | 14.8 |
| 12 | 16 19.7 | T _{m̄} | 11 h 43.7 min | Starost | 14.5 d | Faza ○ | | |
| PLANETE | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2 | Vel. | Pl. | T _{m̄} | π | 360-2 |
| h min | / | ° | | h min | / | h min | / | ° |
| ♀ | 9 34 | .1 | 178 | -3.5 | 4 | 2 21 | .0 | 286 |
| ♂ | 14 26 | .1 | 105 | 1.0 | h | 11 29 | .0 | 149 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|------------------|----------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 184 5.2 -14 9.9 | 39 41.6 | 216 20.9 0 15.6 | 143 40.8 -23 51.4 | | | | |
| 2 | 214 5.3 -14 11.5 | 69 46.5 | 246 20.2 0 13.3 | 173 41.7 -23 51.8 | | | | |
| 4 | 244 5.3 -14 13.1 | 99 51.4 | 276 19.5 0 11.0 | 203 42.6 -23 52.2 | | | | |
| 6 | 274 5.4 -14 14.7 | 129 56.4 | 306 18.9 0 8.7 | 233 43.5 -23 52.5 | | | | |
| 8 | 304 5.4 -14 16.3 | 160 1.3 | 336 18.2 0 6.4 | 263 44.4 -23 52.9 | | | | |
| 10 | 334 5.5 -14 17.9 | 190 6.2 | 6 17.5 0 4.1 | 293 45.4 -23 53.3 | | | | |
| 12 | 4 5.5 -14 19.5 | 220 11.1 | 36 16.8 0 1.8 | 323 46.3 -23 53.7 | | | | |
| 14 | 34 5.5 -14 21.1 | 250 16.1 | 66 16.1 - 0 .5 | 353 47.2 -23 54.0 | | | | |
| 16 | 64 5.6 -14 22.8 | 280 21.0 | 96 15.4 - 0 2.7 | 23 48.1 -23 54.4 | | | | |
| 18 | 94 5.6 -14 24.4 | 310 25.9 | 126 14.7 - 0 5.0 | 53 49.0 -23 54.8 | | | | |
| 20 | 124 5.7 -14 26.0 | 340 30.9 | 156 14.1 - 0 7.3 | 83 49.9 -23 55.1 | | | | |
| 22 | 154 5.7 -14 27.6 | 10 35.8 | 186 13.4 - 0 9.6 | 113 50.9 -23 55.5 | | | | |
| Δ | 0 | -8 | -3 | -11 | 5 | -2 | | |

| UT | SUNCE | | | TRAJANJE SUMRAKA | | | MJESEC | | |
|----|-------|-------|-------|---------------------|--------|-------|--------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 21 | 16 6 | 0 45 | 2 22 | 16 34 | 1 5 | 9 19 | 2 6 | |
| 55 | 7 2 | 16 24 | 0 38 | 2 3 | 17 51 | 1 6 | 8 49 | 2 4 | |
| 50 | 6 49 | 16 38 | 0 34 | 1 49 | 17 27 | 1 7 | 8 27 | 2 3 | |
| 45 | 6 37 | 16 49 | 0 31 | 1 39 | 17 44 | 1 8 | 8 10 | 2 3 | |
| 40 | 6 28 | 16 58 | 0 28 | 1 31 | 17 59 | 1 8 | 7 56 | 2 2 | |
| 35 | 6 20 | 17 6 | 0 26 | 1 26 | 18 11 | 1 9 | 7 44 | 2 2 | |
| 30 | 6 13 | 17 14 | 0 25 | 1 21 | 18 22 | 1 9 | 7 34 | 2 1 | |
| 20 | 6 1 | 17 26 | 0 23 | 1 15 | 18 40 | 1 9 | 7 16 | 2 1 | |
| 10 | 5 50 | 17 37 | 0 22 | 1 12 | 18 56 | 2 0 | 7 1 | 2 0 | |
| 0 | 5 40 | 17 47 | 0 21 | 1 11 | 19 11 | 2 0 | 6 47 | 2 0 | |
| 10 | 5 30 | 17 58 | 0 22 | 1 13 | 19 26 | 2 0 | 6 32 | 1 9 | |
| 20 | 5 19 | 18 9 | 0 23 | 1 18 | 19 42 | 2 1 | 6 17 | 1 9 | |
| 30 | 5 6 | 18 22 | 0 25 | 1 26 | 20 1 | 2 1 | 5 59 | 1 8 | |
| 35 | 4 58 | 18 29 | 0 27 | 1 33 | 20 12 | 2 1 | 5 49 | 1 8 | |
| 40 | 4 50 | 18 38 | 0 29 | 1 43 | 20 24 | 2 2 | 5 38 | 1 7 | |
| 45 | 4 40 | 18 48 | 0 32 | 1 56 | 20 39 | 2 2 | 5 24 | 1 7 | |
| 50 | 4 28 | 19 1 | 0 36 | 2 17 | 20 57 | 2 2 | 5 7 | 1 6 | |
| 55 | 4 12 | 19 16 | 0 42 | 2 58 | 21 20 | 2 3 | 4 46 | 1 5 | |
| 60 | 3 52 | 19 37 | 0 52 | : :: | 21 53 | 2 4 | 4 17 | 1 3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | | | SATURN | | | |
|----|----------------|---------|----------------|-----|------------------|-------------------|----------------|----------------|----------------|-----|----------------|-----|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | S _Ω | Δ | δ _Ω | Δ |
| h | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 351 28.1 125 | 18 24.9 | 51 | | 325 38.5 21 47.4 | 188 7.2 -10 25.1 | | | | | | |
| 2 | 20 31.2 125 | 18 35.2 | 50 | | 355 43.9 21 47.4 | 218 11.5 -10 25.3 | | | | | | |
| 4 | 49 34.2 125 | 18 45.1 | 48 | | 25 49.2 21 47.4 | 248 15.9 -10 25.5 | | | | | | |
| 6 | 78 37.1 124 | 18 54.7 | 46 | | 55 54.6 21 47.4 | 278 20.2 -10 25.7 | | | | | | |
| 8 | 107 39.9 124 | 19 4.0 | 45 | | 86 .0 21 47.3 | 308 24.6 -10 25.9 | | | | | | |
| 10 | 136 42.6 123 | 19 12.9 | 43 | | 116 5.4 21 47.2 | 338 28.9 -10 26.1 | | | | | | |
| 12 | 165 45.3 123 | 19 21.4 | 41 | | 146 10.8 21 47.2 | 8 33.3 -10 26.3 | | | | | | |
| 14 | 194 47.9 123 | 19 29.6 | 39 | | 176 16.2 21 47.1 | 38 37.6 -10 26.5 | | | | | | |
| 16 | 223 50.4 122 | 19 37.4 | 37 | | 206 21.6 21 47.1 | 68 42.0 -10 26.7 | | | | | | |
| 18 | 252 52.8 122 | 19 44.9 | 36 | | 236 27.0 21 47.0 | 98 46.3 -10 26.9 | | | | | | |
| 20 | 281 55.1 121 | 19 52.0 | 34 | | 266 32.4 21 47.0 | 128 50.7 -10 27.1 | | | | | | |
| 22 | 310 57.4 121 | 19 58.7 | 32 | | 296 37.8 21 46.9 | 158 55.0 -10 27.3 | | | | | | |
| Δ | 0 | -8 | | | 27 | 0 | 22 | -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------|--|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 16 21.1 | .1 | 16.1 | T _{m̄} | 0 35 | 2.0 | 54.1 14.8 | |
| 12 | 16 22.1 | T _{m̄} | 11 h 43.6 min | Starost | 15.5 d | Faza | ○ | |

| UT | PLANETE | | | | | | |
|---------|---------|-----------------|------|---------|-------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | |
| h min / | o / | h min / | o / | h min / | o / | | |
| 0 | 9 35 | .1 | 177 | -3.5 | 4 | 2 17 | .0 |
| 30 | 14 25 | .1 | 104 | 1.0 | h | 11 26 | .0 |
| 35 | 4 57 | 18 30 | 0.27 | 1 34 | 21 3 | 2.0 | 6 32 1.9 |
| 40 | 4 49 | 18 39 | 0.29 | 1 43 | 21 16 | 2.0 | 6 19 1.9 |
| 45 | 4 38 | 18 50 | 0.32 | 1 57 | 21 32 | 2.0 | 6 4 1.9 |
| 50 | 4 26 | 19 2 | 0.36 | 2 18 | 21 51 | 2.0 | 5 46 1.9 |
| 55 | 4 10 | 19 18 | 0.43 | 3 1 | 22 16 | 2.0 | 5 22 1.8 |
| 60 | 3 49 | 19 40 | 0.53 | : :: | 22 50 | 2.0 | 4 49 1.7 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------|--|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _Ω | r | |
| h min s | s | / | h min | min | / | / | / | |
| 00 | 16 23.1 | .1 | 16.1 | T _{m̄} | 1 23 | 2.0 | 54.0 14.7 | |
| 12 | 16 23.7 | T _{m̄} | 11 h 43.6 min | Starost | 16.5 d | Faza | ○ | |

| UT | PLANETE | | | | | | |
|---------|---------|-----------------|------|---------|-------|-------|----------|
| | Pl. | T _{m̄} | π | 360-π | Vel. | | |
| h min / | o / | h min / | o / | h min / | o / | | |
| 0 | 9 35 | .1 | 176 | -3.5 | 4 | 2 13 | .0 |
| 30 | 14 24 | .1 | 103 | 1.0 | h | 11 22 | .0 |
| 35 | 4 57 | 18 30 | 0.27 | 1 34 | 21 3 | 2.0 | 6 32 1.9 |
| 40 | 4 49 | 18 39 | 0.29 | 1 43 | 21 16 | 2.0 | 6 19 1.9 |
| 45 | 4 38 | 18 50 | 0.32 | 1 57 | 21 32 | 2.0 | 6 4 1.9 |
| 50 | 4 26 | 19 2 | 0.36 | 2 18 | 21 51 | 2.0 | 5 46 1.9 |
| 55 | 4 10 | 19 18 | 0.43 | 3 1 | 22 16 | 2.0 | 5 22 1.8 |
| 60 | 3 49 | 19 40 | 0.53 | : :: | 22 50 | 2.0 | 4 49 1.7 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|------------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 184 | 6.0 -14 | 48.2 | 41 39.8 | 216 | 4.4 - 0 | 39.5 | 144 2.6 -24 .1 |
| 2 | 214 | 6.1 -14 | 49.8 | 71 44.8 | 246 | 3.7 - 0 | 41.9 | 174 3.5 -24 .4 |
| 4 | 244 | 6.1 -14 | 51.4 | 101 49.7 | 276 | 3.0 - 0 | 44.2 | 204 4.5 -24 .8 |
| 6 | 274 | 6.1 -14 | 52.9 | 131 54.6 | 306 | 2.3 - 0 | 46.5 | 234 5.4 -24 1.1 |
| 8 | 304 | 6.1 -14 | 54.5 | 161 59.6 | 336 | 1.6 - 0 | 48.8 | 264 6.2 -24 1.4 |
| 10 | 334 | 6.1 -14 | 56.1 | 192 4.5 | 6 | .9 - 0 | 51.1 | 294 7.1 -24 1.8 |
| 12 | 4 | 6.1 -14 | 57.6 | 222 9.4 | 36 | .2 - 0 | 53.4 | 324 8.0 -24 2.1 |
| 14 | 34 | 6.1 -14 | 59.2 | 252 14.3 | 65 | 59.5 - 0 | 55.7 | 354 8.9 -24 2.4 |
| 16 | 64 | 6.1 -15 | .8 | 282 19.3 | 95 | 58.8 - 0 | 58.0 | 24 9.6 -24 2.7 |
| 18 | 94 | 6.1 -15 | 2.3 | 312 24.2 | 125 | 58.1 - 1 | .3 | 54 10.7 -24 3.1 |
| 20 | 124 | 6.1 -15 | 3.9 | 342 29.1 | 155 | 57.4 - 1 | 2.6 | 84 11.6 -24 3.4 |
| 22 | 154 | 6.1 -15 | 5.5 | 12 34.1 | 185 | 56.7 - 1 | 4.9 | 114 12.5 -24 3.7 |
| Δ | 0 | -8 | | | -3 | -12 | 4 | -2 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 26 | 16 1 | 0 45 | 2 23 | 17 57 | 2 4 | 11 13 | 1 7 | |
| 55 | 7 6 | 16 20 | 0 39 | 2 4 | 18 32 | 2 3 | 10 39 | 1 8 | |
| 50 | 6 52 | 16 35 | 0 34 | 1 50 | 18 56 | 2 2 | 10 14 | 1 9 | |
| 45 | 6 40 | 16 46 | 0 31 | 1 40 | 19 15 | 2 2 | 9 55 | 1 9 | |
| 40 | 6 31 | 16 56 | 0 28 | 1 32 | 19 31 | 2 2 | 9 40 | 1 9 | |
| 35 | 6 22 | 17 5 | 0 26 | 1 26 | 19 44 | 2 1 | 9 26 | 1 9 | |
| 30 | 6 15 | 17 12 | 0 25 | 1 21 | 19 55 | 2 1 | 9 15 | 1 9 | |
| 20 | 6 2 | 17 25 | 0 23 | 1 15 | 20 14 | 2 1 | 8 55 | 2 0 | |
| 10 | 5 51 | 17 36 | 0 22 | 1 12 | 20 31 | 2 0 | 8 38 | 2 0 | |
| 0 | 5 40 | 17 47 | 0 21 | 1 11 | 20 47 | 2 0 | 8 22 | 2 0 | |
| 10 | 5 29 | 17 58 | 0 22 | 1 13 | 21 31 | 3 0 | 8 6 | 2 0 | |
| 20 | 5 18 | 18 10 | 0 23 | 1 18 | 21 20 | 1 9 | 7 49 | 2 0 | |
| 30 | 5 4 | 18 23 | 0 25 | 1 27 | 21 40 | 1 9 | 7 30 | 2 1 | |
| 35 | 4 56 | 18 31 | 0 27 | 1 34 | 21 51 | 1 9 | 7 18 | 2 1 | |
| 40 | 4 47 | 18 40 | 0 29 | 1 43 | 22 4 | 1 8 | 7 5 | 2 1 | |
| 45 | 4 37 | 18 51 | 0 32 | 1 57 | 22 20 | 1 8 | 6 49 | 2 1 | |
| 50 | 4 24 | 19 4 | 0 37 | 2 20 | 22 39 | 1 7 | 6 30 | 2 1 | |
| 55 | 4 8 | 19 21 | 0 43 | 3 6 | 23 3 | 1 6 | 6 5 | 2 1 | |
| 60 | 3 46 | 19 43 | 0 53 | : :: | 23 37 | 1 5 | 5 30 | 2 2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---------|----------------|--------------------|-------------------|-------------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 328 | 22.6 | 118 | 20 52.0 | 7 | 327 48.0 | 21 46.3 | 189 51.6 -10 30.0 |
| 2 | 357 | 24.3 | 118 | 20 53.4 | 5 | 357 53.4 | 21 46.3 | 219 56.0 -10 30.2 |
| 4 | 26 | 26.0 | 118 | 20 54.4 | 3 | 27 58.9 | 21 46.2 | 250 .3 -10 30.4 |
| 6 | 55 | 27.6 | 118 | 20 55.0 | 1 | 58 4.3 - 21 46.2 | 280 4.7 -10 30.6 | |
| 8 | 84 | 29.3 | 118 | 20 55.3 | -1 | 88 9.7 - 21 46.1 | 310 9.0 -10 30.8 | |
| 10 | 113 | 31.0 | 118 | 20 55.1 | -3 | 118 15.1 - 21 46.1 | 340 13.4 -10 31.0 | |
| 12 | 142 | 32.6 | 118 | 20 54.6 | -5 | 148 20.5 - 21 46.0 | 10 17.7 -10 31.2 | |
| 14 | 171 | 34.3 | 118 | 20 53.7 | -7 | 178 25.9 - 21 46.0 | 40 22.1 -10 31.4 | |
| 16 | 200 | 35.9 | 118 | 20 52.4 | -8 | 208 31.4 - 21 45.9 | 70 26.4 -10 31.6 | |
| 18 | 229 | 37.6 | 118 | 20 50.7 | -10 | 238 36.8 - 21 45.9 | 100 30.8 -10 31.8 | |
| 20 | 258 | 39.3 | 118 | 20 48.6 | -12 | 268 42.2 - 21 45.8 | 130 35.1 -10 32.0 | |
| 22 | 287 | 41.0 | 119 | 20 46.1 | -14 | 298 47.6 - 21 45.8 | 160 39.5 -10 32.2 | |
| Δ | 0 | -8 | | | -4 | -12 | 4 | -2 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _⊖ | r | | | |
| h min s | s | / | h min min / | T _{m̄} | 2 11 | 2.0 | 54.0 | 14.7 | | |
| 00 | 16 24.3 | .0 | 16.1 | T _{m̄} | 2 11 | 2.0 | 54.0 | 14.7 | | |
| 12 | 16 24.5 | T _{m̄} | 11 h 43.6 min | Starost | 17.5 d | Faza | ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 9 36 | .1 | 174 | -3.5 | 4 | 2 8 | .0 | 286 | -2.3 | |
| φ' | 14 23 | .1 | 102 | 1.0 | h | 11 19 | .0 | 148 | -.8 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|-------------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 316 | 42.7 | 119 | 20 43.3 | -16 | 328 53.1 | 21 45.7 | 190 43.8 -10 32.4 |
| 2 | 345 | 44.5 | 119 | 20 40.0 | -18 | 358 58.5 | 21 45.6 | 220 48.2 -10 32.6 |
| 4 | 14 | 46.2 | 119 | 20 36.4 | -20 | 29 3.9 | 21 45.6 | 250 52.5 -10 32.8 |
| 6 | 43 | 48.0 | 119 | 20 32.4 | -22 | 59 9.3 | 21 45.6 | 280 56.9 -10 33.0 |
| 8 | 72 | 49.8 | 119 | 20 28.0 | -24 | 89 14.8 | 21 45.8 | 311 1.2 -10 33.2 |
| 10 | 101 | 51.7 | 119 | 20 23.2 | -26 | 119 20.2 | 21 45.8 | 341 5.6 -10 33.4 |
| 12 | 130 | 53.6 | 120 | 20 18.0 | -28 | 149 25.6 | 21 45.4 | 11 9.9 -10 33.6 |
| 14 | 159 | 55.5 | 120 | 20 12.5 | -30 | 179 31.1 | 21 45.4 | 41 14.3 -10 33.8 |
| 16 | 188 | 57.5 | 120 | 20 6.6 | -31 | 209 36.5 | 21 45.3 | 71 18.6 -10 34.0 |
| 18 | 217 | 59.5 | 120 | 20 3.3 | -33 | 239 42.0 | 21 45.3 | 101 23.0 -10 34.2 |
| 20 | 247 | 1.6 | 121 | 19 53.6 | -35 | 269 47.4 | 21 45.2 | 131 27.3 -10 34.4 |
| 22 | 276 | 3.7 | 121 | 19 46.6 | -37 | 299 52.8 | 21 45.2 | 161 31.7 -10 34.6 |
| Δ | 0 | | | | 27 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | r | Prolaz | Δ/24 | π _⊖ | r | | | |
| h min s | s | / | h min min / | T _{m̄} | 2 59 | 2.0 | 54.1 | 14.7 | | |
| 00 | 16 24.7 | .0 | 16.1 | T _{m̄} | 2 59 | 2.0 | 54.1 | 14.7 | | |
| 12 | 16 24.5 | T _{m̄} | 11 h 43.6 min | Starost | 18.5 d | Faza | ○ | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| φ | 9 36 | .1 | 173 | -3.5 | 4 | 2 4 | .0 | 286 | -2.3 | |
| φ' | 14 23 | .1 | 102 | 1.0 | h | 11 15 | .0 | 148 | -.8 | |

4. NOVEMBAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|-------------------|-------------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 184 | 6.0 -15 25.6 | 43 38.1 | 215 47.6 - 1 34.9 | 144 24.0 -24 7.8 | | | |
| 2 | 214 | 6.0 -15 27.1 | 73 43.1 | 245 46.9 - 1 37.2 | 174 24.9 -24 8.1 | | | |
| 4 | 244 | 6.0 -15 28.6 | 103 48.0 | 275 46.2 - 1 39.3 | 204 25.8 -24 8.4 | | | |
| 6 | 274 | 6.0 -15 30.2 | 133 52.9 | 305 45.5 - 1 41.9 | 234 26.7 -24 8.7 | | | |
| 8 | 304 | 5.9 -15 31.7 | 163 57.8 | 335 44.8 - 1 44.2 | 264 27.6 -24 9.0 | | | |
| 10 | 334 | 5.9 -15 33.2 | 194 2.8 | 5 44.0 - 1 46.5 | 294 28.4 -24 9.2 | | | |
| 12 | 4 | 5.9 -15 34.8 | 224 7.7 | 35 43.3 - 1 48.8 | 324 29.3 -24 9.5 | | | |
| 14 | 34 | 5.9 -15 36.3 | 254 12.6 | 65 42.6 - 1 51.1 | 354 30.2 -24 9.8 | | | |
| 16 | 64 | 5.8 -15 37.8 | 284 17.6 | 95 41.9 - 1 53.3 | 24 31.1 -24 10.1 | | | |
| 18 | 94 | 5.8 -15 39.3 | 314 22.5 | 125 41.2 - 1 55.7 | 54 31.9 -24 10.4 | | | |
| 20 | 124 | 5.8 -15 40.9 | 344 27.4 | 155 40.5 - 1 58.0 | 84 32.8 -24 10.7 | | | |
| 22 | 154 | 5.7 -15 42.4 | 14 32.3 | 185 39.8 - 2 .4 | 114 33.7 -24 11.0 | | | |
| Δ | | | | -4 | -12 | 4 | | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 31 | 15 56 | 0 46 | 2 24 | 20 1 | 3.0 | 12 27 | 1.0 | |
| 55 | 7 11 | 16 16 | 0 39 | 2 4 | 20 29 | 2.8 | 11 58 | 1.2 | |
| 50 | 6 55 | 16 31 | 0 34 | 1 50 | 20 49 | 2.6 | 11 37 | 1.4 | |
| 45 | 6 43 | 16 44 | 0 31 | 1 40 | 21 5 | 2.5 | 11 21 | 1.5 | |
| 40 | 6 33 | 16 54 | 0 28 | 1 32 | 21 18 | 2.4 | 11 7 | 1.6 | |
| 35 | 6 24 | 17 3 | 0 26 | 1 26 | 21 29 | 2.3 | 10 56 | 1.6 | |
| 30 | 6 16 | 17 10 | 0 25 | 1 21 | 21 38 | 2.3 | 10 45 | 1.7 | |
| 20 | 6 3 | 17 24 | 0 23 | 1 15 | 21 55 | 2.1 | 10 28 | 1.8 | |
| 10 | 5 51 | 17 36 | 0 22 | 1 12 | 22 9 | 2.0 | 10 13 | 1.9 | |
| 0 | 5 40 | 17 47 | 0 21 | 1 11 | 22 23 | 2.0 | 9 58 | 2.0 | |
| 10 | 5 29 | 17 58 | 0 22 | 1 13 | 22 36 | 1.9 | 9 44 | 2.0 | |
| 20 | 5 17 | 18 11 | 0 23 | 1 18 | 22 51 | 1.8 | 9 29 | 2.1 | |
| 30 | 5 3 | 18 25 | 0 25 | 1 27 | 23 7 | 1.6 | 9 11 | 2.2 | |
| 35 | 4 55 | 18 33 | 0 27 | 1 35 | 23 17 | 1.6 | 9 1 | 2.3 | |
| 40 | 4 45 | 18 43 | 0 30 | 1 44 | 23 27 | 1.5 | 8 49 | 2.4 | |
| 45 | 4 34 | 18 54 | 0 33 | 1 59 | 23 40 | 1.4 | 8 35 | 2.4 | |
| 50 | 4 21 | 19 7 | 0 37 | 2 22 | 23 56 | 1.3 | 8 18 | 2.5 | |
| 55 | 4 4 | 19 25 | 0 44 | 3 15 | .. . | 0 | 7 56 | 2.7 | |
| 60 | 3 41 | 19 48 | 0 55 | : : : | 0 14 | 1.2 | 7 25 | 2.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|-------------------|-------------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 305 | 5.9 121 | 19 39.2 -39 | 329 58.3 | 21 45.1 | 191 36.0 -10 34.8 | | |
| 2 | 334 | 8.1 121 | 19 31.4 -41 | 0 3.7 | 21 45.1 | 221 40.4 -10 35.0 | | |
| 4 | 3 10.3 122 | 19 23.2 -43 | 30 9.2 | 21 45.0 | 251 44.8 -10 35.2 | | | |
| 6 | 32 12.7 122 | 19 14.7 -44 | 60 14.6 | 21 45.0 | 281 49.1 -10 35.4 | | | |
| 8 | 61 15.0 122 | 19 5.9 -44 | 90 20.0 | 21 44.9 | 311 53.5 -10 35.6 | | | |
| 10 | 90 17.5 122 | 18 56.6 -48 | 120 25.5 | 21 44.9 | 341 57.8 -10 35.8 | | | |
| 12 | 118 20.0 123 | 18 47.0 -50 | 150 30.9 | 21 44.8 | 12 2.2 -10 36.0 | | | |
| 14 | 148 22.5 123 | 18 37.1 -51 | 180 36.4 | 21 44.8 | 42 6.5 -10 36.2 | | | |
| 16 | 177 25.1 123 | 18 26.8 -53 | 210 41.8 | 21 44.7 | 72 10.9 -10 36.4 | | | |
| 18 | 206 27.8 124 | 18 16.2 -55 | 240 47.3 | 21 44.6 | 102 15.2 -10 36.6 | | | |
| 20 | 235 30.5 124 | 18 5.2 -57 | 270 52.7 | 21 44.6 | 132 19.6 -10 36.8 | | | |
| 22 | 264 33.3 124 | 17 53.8 -58 | 300 58.2 | 21 44.5 | 162 23.9 -10 37.0 | | | |
| Δ | | | | 27 | 0 | 22 | | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 16 24.3 | - .1 | 16.2 | T _{m̄} | 3 47 | 2.0 | 54.3 | 14.8 | |
| 12 | 16 23.6 | T _{m̄} | 11 h 43.6 min | Starost | 19.5 d | Faza ① | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2) | Vel. | Pl. | T _{m̄} | π | 360-2) | Vel. |
| h min | / | o | | h min | / | h min | / | o | |
| ♀ | 9 37 | .1 | 172 | -3.5 | 4 | 1 60 | .0 | 286 | -2.3 |
| ♂ | 14 22 | .1 | 101 | 1.0 | h | 11 12 | .0 | 148 | -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|----------|-------------------|-------------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 293 | 36.1 124 | 17 42.1 -60 | 331 3.6 | 21 44.5 | 192 28.3 -10 37.2 | | |
| 2 | 322 | 39.0 125 | 17 30.1 -62 | 1 9.1 | 21 44.5 | 222 32.6 -10 37.4 | | |
| 4 | 351 | 42.0 125 | 17 17.7 -63 | 31 14.6 | 21 44.4 | 252 37.0 -10 37.6 | | |
| 6 | 20 45.0 125 | 17 5.1 -65 | 61 20.0 | 21 44.3 | 282 41.3 -10 37.8 | | | |
| 8 | 49 48.1 126 | 16 52.0 -67 | 91 25.5 | 21 44.3 | 312 45.7 -10 38.0 | | | |
| 10 | 78 51.2 126 | 16 38.7 -68 | 121 30.9 | 21 44.2 | 342 50.1 -10 38.2 | | | |
| 12 | 107 54.4 126 | 16 25.0 -70 | 151 36.4 | 21 44.2 | 12 54.4 -10 38.4 | | | |
| 14 | 136 57.6 126 | 16 11.0 -72 | 181 41.9 | 21 44.1 | 42 58.8 -10 38.6 | | | |
| 16 | 166 | .9 127 | 15 56.7 -73 | 211 47.3 | 21 44.1 | 73 3.1 -10 38.8 | | |
| 18 | 195 | 4.2 127 | 15 42.0 -75 | 241 52.8 | 21 44.0 | 103 7.5 -10 39.0 | | |
| 20 | 224 | 7.6 127 | 15 27.1 -76 | 271 58.2 | 21 44.0 | 133 11.8 -10 39.2 | | |
| 22 | 253 | 11.0 127 | 15 11.9 -78 | 302 3.7 | 21 43.9 | 163 16.2 -10 39.4 | | |
| Δ | | | | 27 | 0 | 22 | | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | h min | min / | h min | min / | h min | | |
| 00 | 16 23.0 | - .1 | 16.2 | T _{m̄} | 4 34 | 2.0 | 54.7 | 14.9 | |
| 12 | 16 22.0 | T _{m̄} | 11 h 43.6 min | Starost | 20.5 d | Faza ① | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-2) | Vel. | Pl. | T _{m̄} | π | 360-2) | Vel. |
| h min | / | o | | h min | / | h min | / | o | |
| ♀ | 9 38 | .1 | 171 | -3.5 | 4 | 1 55 | .0 | 286 | -2.3 |
| ♂ | 14 21 | .1 | 100 | 1.1 | h | 11 8 | .0 | 148 | -.8 |

6. NOVEMBAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 184 | 5.2 -16 | 1.9 | 45 36.4 | 215 30.5 - 2 | 30.4 | 144 45.0 -24 | 14.5 |
| 2 | 214 | 5.1 -16 | 3.4 | 75 41.3 | 245 29.7 - 2 | 32.7 | 174 45.8 -24 | 14.7 |
| 4 | 244 | 5.1 -16 | 4.9 | 105 46.3 | 275 29.0 - 2 | 35.1 | 204 46.7 -24 | 15.0 |
| 6 | 274 | 5.0 -16 | 6.4 | 135 51.2 | 305 28.3 - 2 | 37.4 | 234 47.6 -24 | 15.2 |
| 8 | 304 | 5.0 -16 | 7.9 | 165 56.1 | 335 27.6 - 2 | 39.7 | 264 48.4 -24 | 15.5 |
| 10 | 334 | 4.9 -16 | 9.4 | 196 1.0 | 5 26.8 - 2 | 42.0 | 294 49.3 -24 | 15.7 |
| 12 | 4 | 4.8 -16 | 10.9 | 226 6.0 | 35 26.1 - 2 | 44.3 | 324 50.1 -24 | 16.0 |
| 14 | 34 | 4.8 -16 | 12.4 | 256 10.9 | 65 25.4 - 2 | 46.6 | 354 51.0 -24 | 16.2 |
| 16 | 64 | 4.7 -16 | 13.8 | 286 15.8 | 95 24.7 - 2 | 48.9 | 24 51.8 -24 | 16.5 |
| 18 | 94 | 4.6 -16 | 15.3 | 316 20.8 | 125 23.9 - 2 | 51.2 | 54 52.7 -24 | 16.7 |
| 20 | 124 | 4.6 -16 | 16.8 | 346 25.7 | 155 23.2 - 2 | 53.6 | 84 53.6 -24 | 17.0 |
| 22 | 154 | 4.5 -16 | 18.3 | 16 30.6 | 185 22.5 - 2 | 55.9 | 114 54.4 -24 | 17.2 |
| Δ | 0 | -7 | | | -4 | -12 | 4 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 36 | 15 51 | 0 46 | 2 25 | 22 30 | 3.3 | 13 10 | .7 | |
| 55 | 7 15 | 16 12 | 0 39 | 2 5 | 22 46 | 3.1 | 12 52 | .9 | |
| 50 | 6 59 | 16 28 | 0 35 | 1 51 | 22 58 | 2.9 | 12 39 | 1.1 | |
| 45 | 6 46 | 16 41 | 0 31 | 1 40 | 23 8 | 2.7 | 12 28 | 1.2 | |
| 40 | 6 38 | 16 52 | 0 28 | 1 32 | 23 16 | 2.6 | 12 19 | 1.3 | |
| 35 | 6 26 | 17 1 | 0 26 | 1 26 | 23 22 | 2.5 | 12 11 | 1.4 | |
| 30 | 6 18 | 17 9 | 0 25 | 1 22 | 23 29 | 2.4 | 12 5 | 1.5 | |
| 20 | 6 4 | 17 23 | 0 23 | 1 15 | 23 39 | 2.2 | 11 53 | 1.7 | |
| 10 | 5 52 | 17 35 | 0 22 | 1 12 | 23 48 | 2.1 | 11 42 | 1.8 | |
| 0 | 5 40 | 17 47 | 0 22 | 1 12 | 23 56 | 1.9 | 11 32 | 1.9 | |
| 10 | 5 28 | 17 59 | 0 22 | 1 14 | ... . | 0 | 11 22 | 2.1 | |
| 20 | 5 16 | 18 12 | 0 23 | 1 19 | ... . | 0 | 11 12 | 2.2 | |
| 30 | 5 1 | 18 27 | 0 26 | 1 28 | ... . | 0 | 10 60 | 2.3 | |
| 35 | 4 53 | 18 35 | 0 27 | 1 35 | ... . | 0 | 10 52 | 2.4 | |
| 40 | 4 43 | 18 45 | 0 30 | 1 45 | 0 3 | 1.4 | 10 44 | 2.5 | |
| 45 | 4 31 | 18 57 | 0 33 | 2 1 | 0 14 | 1.3 | 10 35 | 2.7 | |
| 50 | 4 17 | 19 11 | 0 37 | 2 25 | 0 27 | 1.1 | 10 23 | 2.8 | |
| 55 | 3 60 | 19 29 | 0 44 | 3 28 | 0 42 | 1.0 | 10 9 | 3.0 | |
| 60 | 3 36 | 19 53 | 0 56 | : :: | 1 3 | .7 | 9 50 | 3.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-------------|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 282 | 14.5 | 128 | 14 56.3 -79 | 332 9.2 | 21 43.8 | 193 20.5 -10 | 39.6 |
| 2 | 311 | 18.0 | 128 | 14 40.4 -81 | 2 14.6 | 21 43.8 | 223 24.9 -10 | 39.8 |
| 4 | 340 | 21.6 | 128 | 14 24.3 -82 | 32 20.1 | 21 43.7 | 253 29.2 -10 | 40.0 |
| 6 | 9 | 25.2 | 128 | 14 7.8 -84 | 62 25.6 | 21 43.7 | 283 33.6 -10 | 40.2 |
| 8 | 38 | 28.8 | 128 | 13 51.1 -85 | 92 31.1 | 21 43.6 | 313 37.9 -10 | 40.4 |
| 10 | 67 | 32.5 | 128 | 13 34.1 -87 | 122 36.5 | 21 43.6 | 343 42.3 -10 | 40.6 |
| 12 | 96 | 36.1 | 129 | 13 16.8 -88 | 152 42.0 | 21 43.5 | 13 46.7 -10 | 40.8 |
| 14 | 125 | 39.9 | 129 | 12 59.2 -89 | 182 47.5 | 21 43.5 | 45 51.0 -10 | 41.0 |
| 16 | 154 | 43.6 | 129 | 12 41.3 -91 | 212 53.0 | 21 43.4 | 73 55.4 -10 | 41.2 |
| 18 | 183 | 47.3 | 129 | 12 23.2 -92 | 242 58.4 | 21 43.3 | 103 59.7 -10 | 41.4 |
| 20 | 212 | 51.1 | 129 | 12 4.8 -93 | 273 3.9 | 21 43.3 | 134 4.1 -10 | 41.6 |
| 22 | 241 | 54.8 | 129 | 11 46.1 -95 | 303 9.4 | 21 43.2 | 164 8.4 -10 | 41.8 |
| Δ | 0 | -7 | | | -4 | -12 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 16 20.9 | -.1 | 16.2 | T _{m̄} | 5 21 | 2.0 | 55.2 | 15.1 | |
| 12 | 16 19.4 | T _{m̄} | 11 h 43.7 min | Starost | 21.5 d | Faza ① | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | h min | / | h min | / | o | h min | / |
| ø | 9 38 | .1 | 170 | -3.5 | 4 | 1 51 | .0 | 287 | -2.3 |
| ɔ̄ | 14 21 | .1 | 99 | 1.1 | h | 11 5 | .0 | 148 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|--------------|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 270 | 58.6 | 129 | 11 27.2 -96 | 333 14.9 | 21 43.2 | 194 12.8 -10 | 42.0 |
| 2 | 300 | 2.4 | 129 | 11 8.0 -97 | 3 20.4 | 21 43.1 | 224 17.1 -10 | 42.2 |
| 4 | 329 | 6.1 | 129 | 10 48.6 -98 | 33 25.8 | 21 43.1 | 254 21.5 -10 | 42.4 |
| 6 | 358 | 9.9 | 129 | 10 28.9 -100 | 63 31.3 | 21 43.0 | 284 25.8 -10 | 42.6 |
| 8 | 27 | 13.6 | 129 | 10 9.0 -101 | 93 36.8 | 21 43.0 | 314 30.2 -10 | 42.8 |
| 10 | 55 | 17.3 | 128 | 9 48.8 -102 | 123 42.3 | 21 42.9 | 344 34.6 -10 | 43.0 |
| 12 | 85 | 21.0 | 128 | 9 28.5 -103 | 153 47.8 | 21 42.8 | 14 38.9 -10 | 43.2 |
| 14 | 114 | 24.7 | 128 | 9 7.8 -104 | 183 53.3 | 21 42.8 | 44 43.3 -10 | 43.4 |
| 16 | 143 | 28.3 | 128 | 8 47.0 -105 | 213 58.8 | 21 42.7 | 74 47.6 -10 | 43.6 |
| 18 | 172 | 31.9 | 128 | 8 26.0 -106 | 244 4.2 | 21 42.7 | 104 52.0 -10 | 43.8 |
| 20 | 201 | 35.5 | 127 | 8 4.7 -107 | 274 9.7 | 21 42.6 | 134 56.3 -10 | 44.0 |
| 22 | 230 | 39.0 | 127 | 7 43.2 -108 | 304 15.2 | 21 42.6 | 165 .7 -10 | 44.2 |
| Δ | 0 | -7 | | | 27 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t | | |
| h min s | s | / | h min | min / | h min | min / | h min | / | |
| 00 | 16 17.9 | -.2 | 16.2 | T _{m̄} | 6 | 1.9 | 55.9 | 15.2 | |
| 12 | 16 16.0 | T _{m̄} | 11 h 43.7 min | Starost | 22.5 d | Faza ① | | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | h min | / | h min | / | o | h min | / |
| ø | 9 39 | .1 | 169 | -3.5 | 4 | 1 47 | .0 | 287 | -2.3 |
| ɔ̄ | 14 20 | .1 | 98 | 1.1 | h | 11 2 | .0 | 148 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 184 | 3.5 -16 | 37.2 | 47 34.7 | 215 12.9 - 3 | 26.0 | 145 5.5 -24 | 20.2 |
| 2 | 214 | 3.4 -16 | 38.7 | 77 39.6 | 245 12.2 - 3 | 28.3 | 175 6.3 -24 | 20.4 |
| 4 | 244 | 3.3 -16 | 40.1 | 107 44.5 | 275 11.5 - 3 | 30.6 | 205 7.1 -24 | 20.6 |
| 6 | 274 | 3.2 -16 | 41.6 | 137 49.5 | 305 10.7 - 3 | 32.9 | 235 8.0 -24 | 20.8 |
| 8 | 304 | 3.1 -16 | 43.0 | 167 54.4 | 335 10.0 - 3 | 35.2 | 265 8.8 -24 | 21.0 |
| 10 | 334 | 3.0 -16 | 44.5 | 197 59.3 | 5 9.2 - 3 | 37.5 | 295 9.7 -24 | 21.2 |
| 12 | 4 | 2.9 -16 | 45.9 | 228 4.3 | 35 8.5 - 3 | 39.8 | 325 10.5 -24 | 21.4 |
| 14 | 34 | 2.8 -16 | 47.3 | 258 9.2 | 65 7.7 - 3 | 42.1 | 355 11.3 -24 | 21.6 |
| 16 | 64 | 2.7 -16 | 48.8 | 288 14.1 | 95 7.0 - 3 | 44.5 | 25 12.2 -24 | 21.8 |
| 18 | 94 | 2.6 -16 | 50.2 | 318 19.0 | 125 6.2 - 3 | 46.8 | 55 13.0 -24 | 22.1 |
| 20 | 124 | 2.5 -16 | 51.6 | 348 24.0 | 155 5.5 - 3 | 49.1 | 85 13.9 -24 | 22.2 |
| 22 | 154 | 2.4 -16 | 53.1 | 18 28.9 | 185 4.8 - 3 | 51.4 | 115 14.7 -24 | 22.4 |
| Δ | 0 | -7 | | | -4 | -12 | 4 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 41 | 15 46 | 0 47 | 2 26 | ... | 0 | 13 40 | .6 | |
| 55 | 7 19 | 16 8 | 0 40 | 2 6 | ... | 0 | 13 34 | .8 | |
| 50 | 7 2 | 16 25 | 0 35 | 1 51 | 0 7 | 3.0 | 13 29 | 1.0 | |
| 45 | 6 48 | 16 39 | 0 31 | 1 41 | 0 13 | 2.8 | 13 25 | 1.2 | |
| 40 | 6 37 | 16 50 | 0 29 | 1 33 | 0 18 | 2.7 | 13 22 | 1.3 | |
| 35 | 6 28 | 16 59 | 0 27 | 1 27 | 0 22 | 2.6 | 13 20 | 1.4 | |
| 30 | 6 20 | 17 8 | 0 25 | 1 22 | 0 26 | 2.4 | 13 17 | 1.5 | |
| 20 | 6 5 | 17 22 | 0 23 | 1 16 | 0 32 | 2.3 | 13 13 | 1.7 | |
| 10 | 5 52 | 17 35 | 0 22 | 1 12 | 0 38 | 2.1 | 13 9 | 1.8 | |
| 0 | 5 40 | 17 47 | 0 22 | 1 12 | 0 43 | 2.0 | 13 5 | 2.0 | |
| 10 | 5 28 | 17 60 | 0 22 | 1 14 | 0 48 | 1.8 | 13 2 | 2.1 | |
| 20 | 5 15 | 18 13 | 0 23 | 1 19 | 0 54 | 1.7 | 12 58 | 2.3 | |
| 30 | 4 60 | 18 28 | 0 26 | 1 29 | 1 0 | 1.5 | 12 54 | 2.5 | |
| 35 | 4 51 | 18 37 | 0 28 | 1 36 | 1 4 | 1.4 | 12 51 | 2.6 | |
| 40 | 4 41 | 18 47 | 0 30 | 1 47 | 1 8 | 1.3 | 12 48 | 2.7 | |
| 45 | 4 29 | 18 60 | 0 33 | 2 2 | 1 13 | 1.2 | 12 45 | 2.9 | |
| 50 | 4 14 | 19 14 | 0 38 | 2 29 | 1 19 | 1.0 | 12 40 | 3.0 | |
| 55 | 3 56 | 19 33 | 0 45 | 3 53 | 1 26 | .8 | 12 35 | 3.2 | |
| 60 | 3 31 | 19 59 | 0 57 | : :: | 1 35 | .6 | 12 29 | 3.5 | |
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| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-------------|----------------|----------------|----------------|-------------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 259 | 42.4 | 127 | 7 21.5 -109 | 334 | 20.7 | 21 42.5 | 195 5.0 -10 44.4 |
| 2 | 288 | 45.8 | 127 | 6 59.7 -110 | 4 | 26.2 | 21 42.4 | 225 9.4 -10 44.6 |
| 4 | 317 | 49.1 | 126 | 6 37.6 -111 | 34 | 31.7 | 21 42.4 | 255 13.8 -10 44.8 |
| 6 | 346 | 52.3 | 126 | 6 15.3 -112 | 66 | 37.2 | 21 42.3 | 285 18.1 -10 45.0 |
| 8 | 15 | 55.5 | 125 | 5 52.9 -113 | 94 | 42.7 | 21 42.3 | 315 22.5 -10 45.2 |
| 10 | 44 | 58.5 | 125 | 5 30.3 -114 | 124 | 48.2 | 21 42.2 | 345 26.8 -10 45.4 |
| 12 | 74 | 1.5 | 124 | 5 7.5 -115 | 154 | 53.7 | 21 42.1 | 15 31.2 -10 45.6 |
| 14 | 103 | 4.4 | 124 | 4 44.6 -115 | 184 | 59.2 | 21 42.1 | 45 35.5 -10 45.8 |
| 16 | 132 | 7.2 | 123 | 4 21.5 -116 | 215 | 4.7 | 21 42.0 | 75 39.9 -10 45.9 |
| 18 | 161 | 9.8 | 123 | 3 58.2 -117 | 245 | 10.2 | 21 42.0 | 105 44.2 -10 46.1 |
| 20 | 190 | 12.4 | 122 | 3 34.8 -118 | 275 | 15.7 | 21 41.9 | 135 48.6 -10 46.3 |
| 22 | 219 | 14.8 | 121 | 3 11.3 -118 | 305 | 21.2 | 21 41.9 | 165 53.0 -10 46.5 |
| Δ | -1 | -7 | | | -4 | -12 | 4 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|-----|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 16 14.1 | -.2 | 16.2 | T _{m̄} | 6 54 | 2.0 | 56.7 15.5 | | | |
| 12 | 16 11.8 | T _{m̄} | 11 h 43.8 min | Starost | 23.5 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | | h min | / | o | | |
| ♀ | 9 39 | .1 | 168 | -3.4 | 4 | 1 42 | .0 | 287 | -2.3 | |
| ♂ | 14 19 | .1 | 98 | 1.1 | h | 10 58 | .0 | 147 | .8 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---------------|----------------|----------------|----------------|-------------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 248 | 17.1 | 121 | 2 47.7 -119 | 335 | 26.7 | 21 41.8 | 195 57.3 -10 46.7 |
| 2 | 277 | 19.2 | 120 | 2 23.9 -120 | 5 | 32.2 | 21 41.7 | 226 1.7 -10 46.9 |
| 4 | 306 | 21.2 | 119 | 2 0 -120 | 35 | 37.7 | 21 41.7 | 256 6.0 -10 47.1 |
| 6 | 335 | 23.1 | 118 | 1 36.0 -121 | 65 | 43.2 | 21 41.6 | 286 10.4 -10 47.3 |
| 8 | 4 | 24.7 | 118 | 1 11.8 -121 | 95 | 48.8 | 21 41.6 | 316 14.7 -10 47.5 |
| 10 | 33 | 26.3 | 117 | 0 47.6 -121 | 125 | 54.3 | 21 41.5 | 346 19.1 -10 47.7 |
| 12 | 62 | 27.6 | 116 | 0 23.3 -122 | 155 | 59.8 | 21 41.4 | 16 23.5 -10 47.9 |
| 14 | 91 | 28.8 | 115 | - 0 1.0 -122 | 186 | 5.3 | 21 41.4 | 46 27.8 -10 48.1 |
| 16 | 120 | 29.8 | 114 | - 0 25.5 -123 | 216 | 10.8 | 21 41.3 | 76 32.2 -10 48.3 |
| 18 | 149 | 30.5 | 113 | - 0 50.0 -123 | 246 | 16.3 | 21 41.3 | 106 36.5 -10 48.5 |
| 20 | 178 | 31.1 | 112 | - 1 14.6 -123 | 276 | 21.8 | 21 41.2 | 136 40.9 -10 48.7 |
| 22 | 207 | 31.5 | 111 | - 1 39.2 -123 | 306 | 27.4 | 21 41.1 | 166 45.2 -10 48.9 |
| Δ | 28 | 0 | | | 22 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|-----|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | | | |
| h min s | s | / | | | h min | min | / | | | |
| 00 | 16 9.4 | -.2 | 16.2 | T _{m̄} | 7 42 | 2.0 | 57.7 15.7 | | | |
| 12 | 16 6.6 | T _{m̄} | 11 h 43.9 min | Starost | 24.5 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | | h min | / | o | | |
| ♀ | 9 40 | .1 | 166 | -3.4 | 4 | 1 38 | .0 | 287 | -2.3 | |
| ♂ | 14 19 | .1 | 97 | 1.1 | h | 10 55 | .0 | 147 | .8 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | ' | o | ' | o | ' | o | ' |
| 0 | 184 | .9 -17 | 11.4 | 49 33.0 | 214 55.0 - 4 | 21.4 | 145 25.5 -24 | 24.9 |
| 2 | 214 | .8 -17 | 12.8 | 79 37.9 | 244 54.2 - 4 | 23.7 | 175 26.3 -24 | 25.0 |
| 4 | 244 | .7 -17 | 14.2 | 109 42.8 | 274 53.4 - 4 | 26.0 | 205 27.2 -24 | 25.4 |
| 6 | 274 | .5 -17 | 15.6 | 139 47.7 | 304 52.7 - 4 | 28.3 | 235 28.0 -24 | 25.4 |
| 8 | 304 | .4 -17 | 17.0 | 169 52.7 | 334 51.9 - 4 | 30.6 | 265 28.8 -24 | 25.5 |
| 10 | 334 | .3 -17 | 18.4 | 199 57.6 | 4 51.2 - 4 | 32.9 | 295 29.6 -24 | 25.7 |
| 12 | 4 | .1 -17 | 19.8 | 230 2.5 | 34 50.4 - 4 | 35.3 | 325 30.5 -24 | 25.9 |
| 14 | 34 | 0 -17 | 21.2 | 260 7.5 | 64 49.6 - 4 | 37.6 | 355 31.3 -24 | 26.0 |
| 16 | 63 | 59.9 -17 | 22.6 | 290 12.4 | 94 48.9 - 4 | 39.9 | 23 32.1 -24 | 26.2 |
| 18 | 93 | 59.7 -17 | 23.9 | 320 17.3 | 124 48.1 - 4 | 42.2 | 55 32.9 -24 | 26.3 |
| 20 | 123 | 59.6 -17 | 25.3 | 350 22.2 | 154 47.3 - 4 | 44.5 | 85 33.8 -24 | 26.5 |
| 22 | 153 | 59.5 -17 | 26.7 | 20 27.2 | 184 46.6 - 4 | 46.8 | 115 34.6 -24 | 26.7 |
| Δ | -1 | -7 | | | -4 | -12 | 4 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 46 | 15 41 | 0 48 | 2 27 | 2 39 | 3.7 | 14 | 7 | .7 |
| 55 | 7 23 | 16 5 | 0 40 | 2 6 | 2 35 | 3.4 | 14 | 13 | .9 |
| 50 | 7 5 | 16 22 | 0 35 | 1 52 | 2 32 | 3.2 | 14 | 18 | 1.1 |
| 45 | 6 51 | 16 36 | 0 31 | 1 41 | 2 30 | 3.0 | 14 | 22 | 1.3 |
| 40 | 6 40 | 16 48 | 0 29 | 1 33 | 2 28 | 2.9 | 14 | 25 | 1.5 |
| 35 | 6 30 | 16 58 | 0 27 | 1 27 | 2 27 | 2.8 | 14 | 28 | 1.6 |
| 30 | 6 21 | 17 6 | 0 25 | 1 22 | 2 25 | 2.7 | 14 | 31 | 1.7 |
| 20 | 6 6 | 17 22 | 0 23 | 1 16 | 2 23 | 2.5 | 14 | 35 | 1.9 |
| 10 | 5 53 | 17 35 | 0 22 | 1 13 | 2 21 | 2.3 | 14 | 39 | 2.0 |
| 0 | 5 40 | 17 48 | 0 22 | 1 12 | 2 19 | 2.1 | 14 | 43 | 2.2 |
| 10 | 5 28 | 18 0 | 0 22 | 1 14 | 2 17 | 2.0 | 14 | 47 | 2.4 |
| 20 | 5 14 | 18 14 | 0 23 | 1 19 | 2 15 | 1.8 | 14 | 51 | 2.5 |
| 30 | 4 59 | 18 30 | 0 26 | 1 29 | 2 13 | 1.6 | 14 | 55 | 2.7 |
| 35 | 4 49 | 18 39 | 0 28 | 1 37 | 2 12 | 1.5 | 14 | 58 | 2.8 |
| 40 | 4 39 | 18 50 | 0 30 | 1 48 | 2 11 | 1.4 | 15 | 1 | 2.9 |
| 45 | 4 26 | 19 2 | 0 33 | 2 4 | 2 9 | 1.3 | 15 | 4 | 3.1 |
| 50 | 4 11 | 19 18 | 0 38 | 2 32 | 2 7 | 1.1 | 15 | 8 | 3.3 |
| 55 | 3 52 | 19 37 | 0 46 | ::: | 2 5 | .9 | 15 | 14 | 3.5 |
| 60 | 3 26 | 20 4 | 0 59 | ::: | 2 2 | .6 | 15 | 20 | 3.8 |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|-----------|----------------|----------------|-------------------|-------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | ' | o | ' | o | ' | o | ' |
| 0 | 236 | 31.7 | 110 - 2 | 3.8 -123 | 336 | 32.9 | 21 41.1 | 196 49.6 -10 49.1 |
| 2 | 265 | 31.6 | 109 - 2 | 28.5 -123 | 6 38.4 | 21 40.8 | 226 54.0 -10 49.3 | |
| 4 | 294 | 31.3 | 107 - 2 | 53.2 -124 | 36 43.9 | 21 41.0 | 256 58.3 -10 49.5 | |
| 6 | 323 | 30.8 | 106 - 3 | 17.9 -123 | 66 49.4 | 21 40.9 | 287 2.7 -10 49.7 | |
| 8 | 352 | 30.0 | 105 - 3 | 42.6 -123 | 96 55.0 | 21 40.8 | 317 7.0 -10 49.9 | |
| 10 | 21 | 29.0 | 104 - 4 | 7.3 -123 | 127 | .5 | 21 40.8 | 347 11.4 -10 50.1 |
| 12 | 50 | 27.7 | 102 - 4 | 31.9 -123 | 157 | 6.0 | 21 40.7 | 17 15.8 -10 50.3 |
| 14 | 79 | 26.2 | 101 - 4 | 56.6 -123 | 187 | 11.5 | 21 40.7 | 47 20.1 -10 50.5 |
| 16 | 108 | 24.4 | 100 - 5 | 21.2 -123 | 217 | 17.0 | 21 40.6 | 77 24.5 -10 50.6 |
| 18 | 137 | 22.3 | 98 - 5 | 45.7 -122 | 247 | 22.6 | 21 40.5 | 107 28.8 -10 50.8 |
| 20 | 166 | 19.9 | 97 - 6 | 10.2 -122 | 277 | 28.1 | 21 40.5 | 137 33.2 -10 51.0 |
| 22 | 195 | 17.3 | 95 - 6 | 34.6 -122 | 307 | 33.6 | 21 40.4 | 167 37.5 -10 51.2 |
| Δ | -1 | -7 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-----------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 16 3.9 | -.3 | 16.2 | T _{m̄} | 8 31 | 2.2 | 58.6 | 16.0 |
| 12 | 16 | .7 | T _{m̄} | 11 h 44.0 min | Starost | 25.5 d | Faza | ● |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min | / | o | h min | / | Vel. | h min | / | o |
| ♀ | 9 41 | .1 | 165 | -3.4 | + | 1 34 | .0 | 287 |
| ♂ | 14 18 | .1 | 96 | 1.1 | h | 10 51 | .0 | 147 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----------|----------------|----------------|-------------------|-------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | ' | o | ' | o | ' | o | ' |
| 0 | 224 | 14.3 | 94 - 6 | 58.9 -121 | 337 | 39.2 | 21 40.3 | 197 41.9 -10 51.4 |
| 2 | 253 | 11.1 | 92 - 7 | 23.1 -121 | 7 44.7 | 21 40.3 | 227 46.3 -10 51.6 | |
| 4 | 282 | 7.5 | 91 - 7 | 47.2 -120 | 37 50.2 | 21 40.2 | 257 50.6 -10 51.8 | |
| 6 | 311 | 3.7 | 89 - 8 | 11.2 -119 | 67 55.8 | 21 40.2 | 287 55.0 -10 52.0 | |
| 8 | 339 | 59.5 | 88 - 8 | 35.1 -119 | 98 | 1.3 | 21 40.3 | 317 59.3 -10 52.2 |
| 10 | 8 55.0 | 86 - 8 | 58.8 -118 | 128 | 6.8 | 21 40.0 | 348 | 3.7 -10 52.4 |
| 12 | 37 50.2 | 84 - 9 | 22.3 -117 | 158 | 12.4 | 21 40.0 | 18 8.1 | -10 52.6 |
| 14 | 66 45.0 | 83 - 9 | 45.7 -116 | 188 | 17.9 | 21 39.9 | 48 12.4 | -10 52.8 |
| 16 | 95 39.6 | 81 - 10 | 8.9 -115 | 218 | 23.4 | 21 39.8 | 78 16.8 | -10 53.0 |
| 18 | 124 33.8 | 79 - 10 | 31.9 -114 | 248 | 29.0 | 21 39.8 | 108 21.1 | -10 53.2 |
| 20 | 153 27.6 | 78 - 10 | 54.7 -113 | 278 | 34.5 | 21 39.7 | 138 25.5 | -10 53.4 |
| 22 | 182 21.1 | 76 - 11 | 17.2 -112 | 308 | 40.0 | 21 39.7 | 168 29.9 | -10 53.6 |
| Δ | -1 | -7 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|-----------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min | min / | h min | min / | h min | / |
| 00 | 15 57.5 | -.3 | 16.2 | T _{m̄} | 9 23 | 2.3 | 59.6 | 16.2 |
| 12 | 15 53.8 | .7 | T _{m̄} | 11 h 44.1 min | Starost | 26.5 d | Faza | ● |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π |
| h min | / | o | h min | / | Vel. | h min | / | o |
| ♀ | 9 41 | .1 | 164 | -3.4 | + | 1 29 | .0 | 287 |
| ♂ | 14 17 | .1 | 95 | 1.1 | h | 10 48 | .0 | 147 |
| S | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 57.5 -17 44.4 | 51 31.2 | 214 36.5 - 5 16.7 | 145 45.2 -24 28.5 | | | | |
| 2 | 213 57.3 -17 45.8 | 81 36.2 | 244 35.7 - 5 19.0 | 175 46.0 -24 28.6 | | | | |
| 4 | 243 57.2 -17 47.1 | 111 41.1 | 274 34.9 - 5 21.3 | 205 46.8 -24 28.8 | | | | |
| 6 | 273 57.0 -17 48.5 | 141 46.0 | 304 34.1 - 5 23.6 | 235 47.6 -24 28.9 | | | | |
| 8 | 303 56.8 -17 49.8 | 171 50.9 | 334 33.3 - 5 25.9 | 265 48.4 -24 29.0 | | | | |
| 10 | 333 56.7 -17 51.2 | 201 55.9 | 4 32.6 - 5 28.2 | 295 49.2 -24 29.1 | | | | |
| 12 | 3 56.5 -17 52.5 | 232 .8 | 34 31.8 - 5 30.5 | 325 50.0 -24 29.2 | | | | |
| 14 | 33 56.3 -17 53.8 | 262 5.7 | 64 31.0 - 5 32.8 | 355 50.8 -24 29.4 | | | | |
| 16 | 63 56.2 -17 55.2 | 292 10.7 | 94 30.2 - 5 35.1 | 25 51.7 -24 29.5 | | | | |
| 18 | 93 56.0 -17 56.5 | 322 15.6 | 124 29.4 - 5 37.4 | 55 52.5 -24 29.6 | | | | |
| 20 | 123 55.8 -17 57.8 | 352 20.5 | 154 28.6 - 5 39.7 | 85 53.3 -24 29.7 | | | | |
| 22 | 153 55.6 -17 59.2 | 22 25.4 | 184 27.8 - 5 41.9 | 115 54.1 -24 29.8 | | | | |
| Δ | -1 | -7 | | | -4 | -11 | 4 | -1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 51 | 15 36 | 0 48 | 2 28 | 5 41 | 3.9 | 14 43 | 1.1 |
| 55 | 7 27 | 16 1 | 0 40 | 2 7 | 5 23 | 3.6 | 15 3 | 1.4 |
| 57 | 8 | 16 19 | 0 35 | 1 52 | 5 10 | 3.4 | 15 18 | 1.6 |
| 45 | 6 54 | 16 34 | 0 32 | 1 41 | 4 59 | 3.2 | 15 30 | 1.8 |
| 40 | 6 42 | 16 46 | 0 29 | 1 33 | 4 50 | 3.1 | 15 40 | 1.9 |
| 35 | 6 32 | 16 56 | 0 27 | 1 27 | 4 42 | 3.0 | 15 49 | 2.0 |
| 30 | 6 23 | 17 5 | 0 25 | 1 22 | 4 36 | 2.9 | 15 56 | 2.1 |
| 20 | 6 7 | 17 21 | 0 23 | 1 16 | 4 24 | 2.7 | 16 10 | 2.2 |
| 10 | 5 54 | 17 35 | 0 22 | 1 13 | 4 14 | 2.6 | 16 21 | 2.4 |
| 0 | 5 41 | 17 48 | 0 22 | 1 12 | 4 5 | 2.4 | 16 32 | 2.5 |
| 10 | 5 28 | 18 1 | 0 22 | 1 14 | 3 56 | 2.3 | 16 43 | 2.6 |
| 20 | 5 14 | 18 15 | 0 23 | 1 20 | 3 46 | 2.1 | 16 55 | 2.7 |
| 30 | 4 57 | 18 32 | 0 26 | 1 30 | 3 35 | 2.0 | 17 8 | 2.9 |
| 35 | 4 48 | 18 41 | 0 28 | 1 38 | 3 29 | 1.9 | 17 16 | 3.0 |
| 40 | 4 37 | 18 52 | 0 30 | 1 49 | 3 21 | 1.8 | 17 25 | 3.1 |
| 45 | 4 24 | 19 5 | 0 34 | 2 6 | 3 13 | 1.6 | 17 35 | 3.2 |
| 50 | 4 8 | 19 21 | 0 39 | 2 36 | 3 3 | 1.5 | 17 48 | 3.4 |
| 55 | 3 48 | 19 42 | 0 46 | 3 :: | 2 51 | 1.3 | 18 4 | 3.6 |
| 60 | 3 21 | 20 10 | 1 0 | 3 :: | 2 35 | 1.0 | 18 25 | 3.8 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 211 14.3 | 74 -11 39.5 | -110 | | 338 45.6 | 21 39.6 | 198 34.2 -10 53.8 | |
| 2 | 240 7.1 | 72 -12 1.6 | -109 | | 8 51.1 | 21 39.5 | 228 38.6 -10 53.9 | |
| 4 | 268 59.6 | 71 -12 23.4 | -108 | | 38 56.7 | 21 39.5 | 258 42.9 -10 54.1 | |
| 6 | 297 51.7 | 69 -12 44.9 | -10.6 | | 69 2.2 | 21 39.4 | 288 47.3 -10 54.3 | |
| 8 | 326 43.5 | 67 -13 6.2 | -105 | | 99 7.7 | 21 39.3 | 318 51.7 -10 54.5 | |
| 10 | 355 35.0 | 65 -13 27.1 | -103 | | 129 13.3 | 21 39.3 | 348 56.0 -10 54.7 | |
| 12 | 24 26.0 | 64 -13 47.7 | -101 | | 158 18.8 | 21 39.2 | 19 .4 -10 54.9 | |
| 14 | 53 16.8 | 62 -14 8.0 | -100 | | 189 24.4 | 21 39.2 | 49 4.7 -10 55.1 | |
| 16 | 82 7.2 | 60 -14 27.9 | -98 | | 219 29.9 | 21 39.1 | 79 9.1 -10 55.3 | |
| 18 | 110 57.2 | 59 -14 47.5 | -96 | | 249 35.5 | 21 39.0 | 109 13.5 -10 55.5 | |
| 20 | 139 46.9 | 57 -15 6.7 | -94 | | 279 41.0 | 21 39.0 | 139 17.8 -10 55.7 | |
| 22 | 168 36.3 | 55 -15 25.5 | -92 | | 309 46.6 | 21 38.9 | 169 22.2 -10 55.9 | |
| Δ | -1 | -7 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | T _{m̄} | 10 18 | 2.5 | 60.4 | 16.5 |
| 00 | 15 50.2 | -3 | 16.2 | T _{m̄} | | | | |
| 12 | 15 46.1 | T _{m̄} | 11 h 44.2 min | Starost | 27.5 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| | h min / | o | / | h min min / | Vel. | | | |
| ♀ | 9 42 | .1 | 163 | -3.4 | 4 | 1 25 | .0 | 287 |
| ♂ | 14 17 | .1 | 94 | 1.1 | h | 10 44 | .0 | 147 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 197 25.4 | 54 -15 43.9 | -90 | | 339 52.1 | 21 38.8 | 199 26.5 -10 56.1 | |
| 2 | 226 14.1 | 52 -16 1.9 | -88 | | 9 57.7 | 21 38.8 | 229 30.9 -10 56.3 | |
| 4 | 255 2.5 | 50 -16 19.5 | -86 | | 40 3.2 | 21 38.7 | 259 35.3 -10 56.5 | |
| 6 | 283 50.5 | 49 -16 36.6 | -83 | | 70 8.8 | 21 38.6 | 289 39.6 -10 56.6 | |
| 8 | 312 38.3 | 47 -16 53.3 | -81 | | 100 14.3 | 21 38.6 | 319 44.0 -10 56.8 | |
| 10 | 341 25.8 | 46 -17 9.5 | -79 | | 130 19.9 | 21 38.5 | 349 48.4 -10 57.0 | |
| 12 | 10 12.9 | 44 -17 25.2 | -76 | | 160 25.5 | 21 38.4 | 19 52.7 -10 57.2 | |
| 14 | 38 59.8 | 43 -17 40.4 | -74 | | 190 31.0 | 21 38.4 | 49 57.1 -10 57.4 | |
| 16 | 67 46.4 | 42 -17 55.2 | -71 | | 220 36.6 | 21 38.3 | 80 1.4 -10 57.6 | |
| 18 | 96 32.7 | 40 -18 9.4 | -68 | | 250 42.1 | 21 38.2 | 110 5.8 -10 57.8 | |
| 20 | 125 18.8 | 39 -18 23.1 | -66 | | 280 47.7 | 21 38.2 | 140 10.2 -10 58.0 | |
| 22 | 154 4.6 | 38 -18 36.2 | -63 | | 310 53.2 | 21 38.1 | 170 14.5 -10 58.2 | |
| Δ | -1 | -7 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | h min min / | T _{m̄} | 11 17 | 2.6 | 61.0 | 16.6 |
| 00 | 15 42.0 | -.4 | 16.2 | T _{m̄} | | | | |
| 12 | 15 37.5 | T _{m̄} | 11 h 44.4 min | Starost | 28.5 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| | h min / | o | / | h min min / | Vel. | | | |
| ♀ | 9 42 | .1 | 162 | -3.4 | 4 | 1 20 | .0 | 287 |
| ♂ | 14 16 | .1 | 93 | 1.1 | h | 10 41 | .0 | 147 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 53.2 -18 16.2 | 53 29.5 | 214 17.4 - 6 11.7 | 146 4.5 -24 31.1 | | | | |
| 2 | 213 53.0 -18 17.5 | 83 34.4 | 244 16.6 - 6 14.0 | 176 5.3 -24 31.2 | | | | |
| 4 | 243 52.8 -18 18.8 | 113 39.4 | 274 15.8 - 6 16.3 | 206 6.1 -24 31.3 | | | | |
| 6 | 273 52.6 -18 20.1 | 143 44.3 | 304 15.0 - 6 18.6 | 236 6.9 -24 31.3 | | | | |
| 8 | 303 52.4 -18 21.4 | 173 49.2 | 334 14.2 - 6 20.8 | 266 7.7 -24 31.4 | | | | |
| 10 | 333 52.2 -18 22.7 | 203 54.2 | 4 13.4 - 6 23.1 | 296 8.5 -24 31.5 | | | | |
| 12 | 3 52.0 -18 24.0 | 233 59.1 | 34 12.6 - 6 25.4 | 326 9.3 -24 31.6 | | | | |
| 14 | 33 51.8 -18 25.2 | 264 4.0 | 64 11.7 - 6 27.7 | 356 10.1 -24 31.7 | | | | |
| 16 | 63 51.6 -18 26.5 | 294 8.9 | 94 10.9 - 6 30.0 | 26 10.8 -24 31.7 | | | | |
| 18 | 93 51.4 -18 27.8 | 324 13.9 | 124 10.1 - 6 32.2 | 56 11.6 -24 31.8 | | | | |
| 20 | 123 51.2 -18 29.1 | 354 18.8 | 154 9.3 - 6 34.5 | 86 12.4 -24 31.9 | | | | |
| 22 | 153 51.0 -18 30.4 | 24 23.7 | 184 8.5 - 6 36.8 | 116 13.2 -24 31.9 | | | | |
| Δ | -1 | -6 | | | -4 | -11 | 4 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 7 56 | 15 32 | 0 49 | 2 29 | 8 45 | 3.2 | 15 49 | 2.3 |
| 55 | 7 31 | 15 58 | 0 41 | 2 8 | 8 13 | 3.1 | 16 22 | 2.4 |
| 50 | 7 12 | 16 17 | 0 35 | 1 53 | 7 50 | 3.0 | 16 45 | 2.5 |
| 45 | 6 57 | 16 32 | 0 32 | 1 42 | 7 32 | 2.9 | 17 4 | 2.5 |
| 40 | 6 44 | 16 44 | 0 29 | 1 34 | 7 17 | 2.9 | 17 19 | 2.5 |
| 35 | 6 34 | 16 55 | 0 27 | 1 27 | 7 5 | 2.8 | 17 32 | 2.6 |
| 30 | 6 25 | 17 4 | 0 25 | 1 23 | 6 54 | 2.8 | 17 43 | 2.6 |
| 20 | 6 8 | 17 20 | 0 23 | 1 16 | 6 35 | 2.7 | 18 2 | 2.6 |
| 10 | 5 54 | 17 35 | 0 22 | 1 13 | 6 19 | 2.7 | 18 19 | 2.6 |
| 0 | 5 41 | 17 48 | 0 22 | 1 13 | 6 5 | 2.6 | 18 35 | 2.6 |
| 10 | 5 28 | 18 2 | 0 22 | 1 15 | 5 50 | 2.6 | 18 50 | 2.7 |
| 20 | 5 13 | 18 16 | 0 24 | 1 20 | 5 34 | 2.5 | 19 7 | 2.7 |
| 30 | 4 56 | 18 33 | 0 26 | 1 30 | 5 16 | 2.5 | 19 26 | 2.7 |
| 35 | 4 46 | 18 43 | 0 28 | 1 38 | 5 6 | 2.4 | 19 37 | 2.7 |
| 40 | 4 35 | 18 54 | 0 31 | 1 50 | 4 54 | 2.4 | 19 50 | 2.7 |
| 45 | 4 22 | 19 8 | 0 34 | 2 7 | 4 40 | 2.3 | 20 5 | 2.8 |
| 50 | 4 6 | 19 24 | 0 39 | 2 40 | 4 23 | 2.2 | 20 24 | 2.8 |
| 55 | 3 45 | 19 46 | 0 47 | 2 :: | 4 1 | 2.1 | 20 48 | 2.8 |
| 60 | 3 16 | 20 15 | 1 2 | 2 :: | 3 31 | 1.9 | 21 21 | 2.8 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|---------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 50.1 -37 -18 48.8 -60 | 340 58.8 | 21 38.0 | 200 18.9 -10 58.4 | | | | |
| 2 | 211 35.5 36 -19 .9 -57 | 11 4.4 | 21 38.0 | 230 23.3 -10 58.6 | | | | |
| 4 | 240 20.6 35 -19 12.4 -55 | 41 9.9 | 21 37.9 | 260 27.6 -10 58.7 | | | | |
| 6 | 269 5.6 34 -19 23.3 -52 | 71 15.5 | 21 37.8 | 290 32.0 -10 58.9 | | | | |
| 8 | 297 50.3 33 -19 33.6 -49 | 101 21.1 | 21 37.8 | 320 36.3 -10 59.1 | | | | |
| 10 | 326 34.9 32 -19 43.4 -46 | 131 26.6 | 21 37.7 | 350 40.7 -10 59.3 | | | | |
| 12 | 355 19.3 31 -19 52.5 -43 | 161 32.2 | 21 37.6 | 20 45.1 -10 59.5 | | | | |
| 14 | 24 3.6 31 30 -20 1.0 -40 | 191 37.8 | 21 37.6 | 50 49.4 -10 59.7 | | | | |
| 16 | 52 47.7 30 -20 9.0 -37 | 221 43.3 | 21 37.5 | 80 53.8 -10 59.9 | | | | |
| 18 | 81 31.8 30 -20 16.3 -33 | 251 48.9 | 21 37.4 | 110 58.2 -11 .1 | | | | |
| 20 | 110 15.7 29 -20 23.0 -30 | 281 54.5 | 21 37.4 | 141 2.5 -11 .3 | | | | |
| 22 | 138 59.6 29 -20 29.0 -27 | 312 .0 | 21 37.3 | 171 6.9 -11 .5 | | | | |
| Δ | -1 | -6 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 15 33.0 | .4 | 16.2 | T _{m̄} | 12 20 | 2.6 | 61.3 | 16.7 | |
| 12 | 15 28.1 | T _{m̄} | 11 h 44.5 min | Starost | 1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | Vel. |
| ♀ | 9 43 | .1 | 161 | -3.4 | 7 | 1 16 | .0 | 287 | -2.3 |
| ♂ | 14 15 | .1 | 93 | 1.1 | h | 10 37 | .0 | 147 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|--------------------------|----------|----------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | Δ | δ _⊕ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 167 43.4 29 -20 34.4 -24 | 342 5.6 | 21 37.2 | 201 11.3 -11 .7 | | | | |
| 2 | 196 27.2 29 -20 39.2 -21 | 12 11.2 | 21 37.2 | 231 15.6 -11 .8 | | | | |
| 4 | 225 10.9 29 -20 43.4 -18 | 42 16.7 | 21 37.1 | 261 20.0 -11 1.0 | | | | |
| 6 | 253 54.7 29 -20 46.9 -14 | 72 22.3 | 21 37.0 | 291 24.4 -11 1.2 | | | | |
| 8 | 282 38.4 29 -20 49.8 -11 | 102 27.9 | 21 37.0 | 321 28.7 -11 1.4 | | | | |
| 10 | 311 22.2 29 -20 52.1 -8 | 132 33.5 | 21 36.9 | 351 33.1 -11 1.6 | | | | |
| 12 | 340 6.0 29 -20 53.7 -5 | 162 39.0 | 21 36.8 | 21 37.4 -11 1.8 | | | | |
| 14 | 8 49.9 30 -20 54.6 -2 | 192 44.6 | 21 36.8 | 51 41.8 -11 2.0 | | | | |
| 16 | 37 33.9 30 -20 55.0 1 | 222 50.2 | 21 36.7 | 81 46.2 -11 2.2 | | | | |
| 18 | 66 17.9 31 -20 54.7 5 | 252 55.8 | 21 36.6 | 111 50.5 -11 2.4 | | | | |
| 20 | 95 2.1 32 -20 53.7 8 | 283 1.3 | 21 36.6 | 141 54.9 -11 2.6 | | | | |
| 22 | 123 46.4 32 -20 52.2 11 | 313 6.9 | 21 36.5 | 171 59.3 -11 2.7 | | | | |
| Δ | - | - | - | - | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊕ | t | | |
| h min s | s | / | h min | min | / | / | / | | |
| 00 | 15 23.2 | .4 | 16.2 | T _{m̄} | 13 23 | 2.6 | 61.3 | 16.7 | |
| 12 | 15 17.8 | T _{m̄} | 11 h 44.7 min | Starost | 1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | / | h min | / | h min | / | o | Vel. |
| ♀ | 9 44 | .1 | 160 | -3.4 | 7 | 1 11 | .0 | 288 | -2.3 |
| ♂ | 14 15 | .1 | 92 | 1.1 | h | 10 34 | .0 | 147 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 48.1 -18 46.7 | 55 27.8 | 213 57.7 - 7 6.3 | 146 23.5 -24 32.6 | | | | |
| 2 | 213 47.8 -18 48.0 | 85 32.7 | 243 56.9 - 7 8.6 | 176 24.2 -24 32.7 | | | | |
| 4 | 243 47.6 -18 49.2 | 115 37.6 | 273 56.1 - 7 10.9 | 206 25.0 -24 32.7 | | | | |
| 6 | 273 47.4 -18 50.4 | 145 42.6 | 303 55.2 - 7 13.1 | 236 25.8 -24 32.8 | | | | |
| 8 | 303 47.1 -18 51.7 | 175 47.5 | 333 54.4 - 7 15.4 | 266 26.6 -24 32.8 | | | | |
| 10 | 333 46.9 -18 52.9 | 205 52.4 | 3 53.5 - 7 17.7 | 296 27.4 -24 32.8 | | | | |
| 12 | 3 46.7 -18 54.1 | 235 57.4 | 33 52.7 - 7 19.9 | 326 28.2 -24 32.9 | | | | |
| 14 | 33 46.4 -18 55.4 | 266 2.3 | 63 51.9 - 7 22.2 | 356 28.9 -24 32.9 | | | | |
| 16 | 63 46.2 -18 56.6 | 296 7.2 | 93 51.0 - 7 24.4 | 26 29.7 -24 32.9 | | | | |
| 18 | 93 45.9 -18 57.8 | 326 12.1 | 123 50.2 - 7 26.7 | 56 30.5 -24 32.9 | | | | |
| 20 | 123 45.7 -18 59.0 | 356 17.1 | 153 49.3 - 7 29.0 | 86 31.3 -24 33.0 | | | | |
| 22 | 153 45.4 -19 .3 | 26 22.0 | 183 48.5 - 7 31.2 | 116 32.1 -24 33.0 | | | | |
| Δ | -1 | -6 | | | -4 | -11 | 4 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 1 | 15 28 | 0 49 | 2 31 | 11 0 | 1.7 | 17 56 | 3.5 |
| 55 | 7 35 | 15 55 | 0 41 | 2 9 | 10 26 | 1.9 | 18 29 | 3.2 |
| 50 | 7 15 | 16 14 | 0 36 | 1 53 | 10 21 | 2.0 | 18 53 | 3.1 |
| 45 | 6 59 | 16 30 | 0 32 | 1 42 | 9 43 | 2.1 | 19 11 | 3.0 |
| 40 | 6 47 | 16 43 | 0 29 | 1 34 | 9 28 | 2.2 | 19 26 | 2.9 |
| 35 | 6 36 | 16 54 | 0 27 | 1 28 | 9 15 | 2.3 | 19 39 | 2.8 |
| 30 | 6 26 | 17 3 | 0 25 | 1 23 | 9 3 | 2.3 | 19 50 | 2.7 |
| 20 | 6 10 | 17 20 | 0 23 | 1 16 | 8 44 | 2.4 | 20 9 | 2.6 |
| 10 | 5 55 | 17 35 | 0 22 | 1 13 | 8 27 | 2.5 | 20 25 | 2.5 |
| 0 | 5 41 | 17 48 | 0 22 | 1 13 | 8 11 | 2.5 | 20 40 | 2.5 |
| 10 | 5 27 | 18 2 | 0 22 | 1 15 | 7 55 | 2.6 | 20 56 | 2.4 |
| 20 | 5 13 | 18 17 | 0 24 | 1 20 | 7 38 | 2.7 | 21 12 | 2.3 |
| 30 | 4 55 | 18 35 | 0 26 | 1 31 | 7 19 | 2.7 | 21 30 | 2.2 |
| 35 | 4 45 | 18 45 | 0 28 | 1 39 | 7 8 | 2.8 | 21 41 | 2.1 |
| 40 | 4 34 | 18 57 | 0 31 | 1 51 | 6 55 | 2.8 | 21 53 | 2.0 |
| 45 | 4 20 | 19 11 | 0 34 | 2 9 | 6 39 | 2.9 | 22 8 | 1.9 |
| 50 | 4 3 | 19 28 | 0 40 | 2 44 | 6 20 | 3.0 | 22 25 | 1.8 |
| 55 | 3 41 | 19 50 | 0 48 | 2 :: | 5 56 | 3.1 | 22 48 | 1.7 |
| 60 | 3 11 | 20 20 | 1 4 | 2 :: | 5 22 | 3.3 | 23 19 | 1.4 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 152 30.8 33 -20 50.0 | 14 | 343 12.5 21 36.4 | 202 3.6 -11 2.9 | | | | |
| 2 | 181 15.5 34 -20 47.2 | 17 | 13 18.1 21 36.4 | 232 8.0 -11 3.1 | | | | |
| 4 | 210 .2 35 -20 43.7 | 20 | 43 23.7 21 36.3 | 262 12.4 -11 3.3 | | | | |
| 6 | 238 45.2 36 -20 39.7 | 23 | 73 29.2 21 36.2 | 292 16.7 -11 3.5 | | | | |
| 8 | 267 30.4 37 -20 35.0 | 26 | 103 34.8 21 36.2 | 322 21.1 -11 3.7 | | | | |
| 10 | 296 15.8 38 -20 29.8 | 29 | 133 40.4 21 36.1 | 352 25.5 -11 3.9 | | | | |
| 12 | 325 1.5 40 -20 24.0 | 32 | 163 46.0 21 36.0 | 22 29.8 -11 4.1 | | | | |
| 14 | 353 47.4 41 -20 17.5 | 35 | 193 51.6 21 36.0 | 52 34.2 -11 4.3 | | | | |
| 16 | 22 33.5 42 -20 10.6 | 38 | 223 57.2 21 35.9 | 82 38.6 -11 4.4 | | | | |
| 18 | 51 20.0 44 -20 3.0 | 41 | 254 2.8 21 35.8 | 112 42.9 -11 4.6 | | | | |
| 20 | 80 6.7 45 -19 54.9 | 43 | 284 8.3 21 35.7 | 142 47.3 -11 4.8 | | | | |
| 22 | 108 53.7 47 -19 46.2 | 46 | 314 13.9 21 35.7 | 172 51.7 -11 5.0 | | | | |
| Δ | -1 | -6 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|--------------------|----------------|--------|----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 15 12.5 | .5 | 16.2 | T _⊖ | 14 26 | 2.5 | 61.0 | 16.6 |
| 12 | 15 6.7 | T _⊖ | 11 h 44.9 min | Starost | 2.1 d | Faza | ● | |
| PLANETE | Pl. | T _⊖ | π _{360-⊖} | Vel. | Pl. | T _⊕ | π _{360-⊕} | Vel. |
| | h min | / | o | | h min | / | o | |
| ♀ | 9 44 | .1 | 158 | -3.4 | 7 | 1 7 | .0 | 288 |
| ♂ | 14 14 | .1 | 91 | 1.1 | h | 10 30 | .0 | 147 |
| | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|----|------------------|------------------|----------------|----------------|----------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊖ | δ _⊖ |
| h | o | / | o | / | o | / | o | / |
| 0 | 137 41.1 48 -19 37.0 | 49 | 344 19.5 21 35.6 | 202 56.0 -11 5.2 | | | | |
| 2 | 166 28.7 50 -19 27.2 | 51 | 14 25.1 21 35.5 | 233 .4 -11 5.4 | | | | |
| 4 | 195 16.7 52 -19 17.0 | 54 | 44 30.7 21 35.5 | 263 4.8 -11 5.6 | | | | |
| 6 | 224 5.0 53 -19 6.2 | 56 | 74 36.3 21 35.4 | 293 9.2 -11 5.8 | | | | |
| 8 | 252 53.7 55 -18 54.9 | 59 | 104 41.9 21 35.3 | 323 13.5 -11 5.9 | | | | |
| 10 | 281 42.7 57 -18 43.1 | 61 | 134 47.5 21 35.3 | 353 17.9 -11 6.1 | | | | |
| 12 | 310 32.0 59 -18 30.9 | 64 | 164 53.1 21 35.2 | 23 22.3 -11 6.3 | | | | |
| 14 | 330 21.7 60 -18 18.2 | 66 | 194 58.7 21 35.1 | 53 26.6 -11 6.5 | | | | |
| 16 | 8 11.8 62 -18 5.0 | 68 | 225 4.2 21 35.0 | 83 31.0 -11 6.7 | | | | |
| 18 | 37 2.3 64 -17 51.4 | 70 | 255 9.8 21 35.0 | 113 35.4 -11 6.9 | | | | |
| 20 | 65 53.1 66 -17 37.3 | 72 | 285 15.4 21 34.9 | 143 39.7 -11 7.1 | | | | |
| 22 | 94 44.3 68 -17 22.8 | 74 | 315 21.0 21 34.8 | 173 44.1 -11 7.3 | | | | |
| Δ | - | - | 28 | 0 | 22 | -1 | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|----------------|--------------------|----------------|--------|----------------|--------------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 15 .9 | .5 | 16.2 | T _⊖ | 15 26 | 2.3 | 60.3 | 16.4 |
| 12 | 14 54.8 | T _⊖ | 11 h 45.1 min | Starost | 3.1 d | Faza | ● | |
| PLANETE | Pl. | T _⊖ | π _{360-⊖} | Vel. | Pl. | T _⊕ | π _{360-⊕} | Vel. |
| | h min | / | o | | h min | / | o | |
| ♀ | 9 45 | .1 | 157 | -3.4 | 7 | 1 3 | .0 | 288 |
| ♂ | 14 13 | .1 | 90 | 1.1 | h | 10 27 | .0 | 146 |
| | | | | | | | | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|----------------|-------------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 42.1 -19 15.9 | 57 26.1 | 213 37.4 - 8 .5 | | 146 42.1 -24 33.1 | | | |
| 2 | 213 41.8 -19 17.1 | 87 31.0 | 243 36.5 - 8 .2 | | 176 42.9 -24 33.1 | | | |
| 4 | 243 41.6 -19 18.3 | 117 35.9 | 273 35.6 - 8 5.0 | | 206 43.7 -24 33.1 | | | |
| 6 | 273 41.3 -19 19.4 | 147 40.9 | 303 34.8 - 8 7.2 | | 236 44.5 -24 33.1 | | | |
| 8 | 303 41.0 -19 20.6 | 177 45.8 | 333 33.9 - 8 9.5 | | 266 45.2 -24 33.1 | | | |
| 10 | 333 40.8 -19 21.8 | 207 50.7 | 333 30.0 - 8 11.7 | | 296 46.0 -24 33.1 | | | |
| 12 | 3 40.5 -19 23.0 | 237 55.6 | 33 32.2 - 8 13.9 | | 326 46.8 -24 33.1 | | | |
| 14 | 33 40.2 -19 24.1 | 268 6 | 63 31.3 - 8 16.2 | | 356 47.6 -24 33.1 | | | |
| 16 | 63 39.9 -19 25.3 | 298 5.5 | 93 30.4 - 8 18.4 | | 26 48.3 -24 33.0 | | | |
| 18 | 93 39.7 -19 26.5 | 328 10.4 | 123 29.5 - 8 20.7 | | 56 49.1 -24 33.0 | | | |
| 20 | 123 39.4 -19 27.6 | 358 15.4 | 153 28.7 - 8 22.9 | | 86 49.9 -24 33.0 | | | |
| 22 | 153 39.1 -19 28.8 | 28 20.3 | 183 27.8 - 8 25.1 | | 116 50.6 -24 33.0 | | | |
| Δ | -1 | -6 | | | -4 | -11 | 4 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 6 | 15 24 | 0 50 | 2 32 | 12 9 | .8 | 20 46 | 3.6 | |
| 55 | 7 39 | 15 51 | 0 42 | 2 9 | 11 47 | 1.1 | 21 6 | 3.3 | |
| 50 | 7 18 | 16 12 | 0 36 | 1 54 | 11 30 | 1.3 | 21 22 | 3.1 | |
| 45 | 7 2 | 16 28 | 0 32 | 1 43 | 11 17 | 1.5 | 21 34 | 2.9 | |
| 40 | 6 49 | 16 41 | 0 29 | 1 34 | 11 6 | 1.6 | 21 44 | 2.8 | |
| 35 | 6 38 | 16 53 | 0 27 | 1 28 | 10 56 | 1.7 | 21 53 | 2.7 | |
| 30 | 6 28 | 17 3 | 0 25 | 1 23 | 10 48 | 1.8 | 22 0 | 2.6 | |
| 20 | 6 11 | 17 20 | 0 23 | 1 17 | 10 33 | 1.9 | 22 13 | 2.4 | |
| 10 | 5 56 | 17 35 | 0 22 | 1 13 | 10 21 | 2.1 | 22 24 | 2.3 | |
| 0 | 5 42 | 17 49 | 0 22 | 1 13 | 10 9 | 2.2 | 22 35 | 2.1 | |
| 10 | 5 27 | 18 3 | 0 22 | 1 15 | 9 57 | 2.3 | 22 45 | 2.0 | |
| 20 | 5 12 | 18 19 | 0 24 | 1 21 | 9 44 | 2.5 | 22 56 | 1.9 | |
| 30 | 4 54 | 18 37 | 0 26 | 1 31 | 9 30 | 2.6 | 23 8 | 1.7 | |
| 35 | 4 44 | 18 47 | 0 28 | 1 40 | 9 21 | 2.7 | 23 16 | 1.6 | |
| 40 | 4 32 | 18 59 | 0 31 | 1 52 | 9 12 | 2.8 | 23 24 | 1.5 | |
| 45 | 4 18 | 19 13 | 0 35 | 2 11 | 9 0 | 3.0 | 23 33 | 1.4 | |
| 50 | 4 0 | 19 31 | 0 40 | 2 49 | 8 47 | 3.1 | 23 44 | 1.2 | |
| 55 | 3 38 | 19 54 | 0 49 | 3 :: | 8 29 | 3.3 | 23 58 | 1.0 | |
| 60 | 3 7 | 20 25 | 1 6 | 3 :: | 8 6 | 3.6 | ... | 0 | |
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| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 123 35.9 | 70 | -17 7.9 | 76 | 345 26.6 | 21 34.8 | 203 48.5 | -11 7.4 |
| 2 | 152 27.9 | 72 | -16 52.7 | 78 | 15 32.2 | 21 34.7 | 233 52.8 | -11 7.6 |
| 4 | 181 20.3 | 74 | -16 37.0 | 80 | 45 37.8 | 21 34.6 | 263 57.2 | -11 7.8 |
| 6 | 210 13.0 | 76 | -16 20.9 | 82 | 75 43.4 | 21 34.6 | 294 58.1 | -11 8.0 |
| 8 | 239 6.2 | 78 | -16 4.5 | 84 | 105 49.0 | 21 34.5 | 324 6.0 | -11 8.2 |
| 10 | 267 59.7 | 80 | -15 47.7 | 86 | 135 54.6 | 21 34.4 | 354 10.3 | -11 8.4 |
| 12 | 296 53.6 | 81 | -15 30.6 | 87 | 166 .2 | 21 34.3 | 24 14.7 | -11 8.6 |
| 14 | 325 47.9 | 83 | -15 13.2 | 89 | 196 5.8 | 21 34.3 | 54 19.1 | -11 8.7 |
| 16 | 354 42.6 | 85 | -14 55.4 | 90 | 226 11.4 | 21 34.2 | 84 23.4 | -11 8.9 |
| 18 | 23 37.6 | 87 | -14 37.3 | 92 | 256 17.0 | 21 34.1 | 114 27.8 | -11 9.1 |
| 20 | 52 33.0 | 89 | -14 19.0 | 93 | 286 22.6 | 21 34.1 | 144 32.2 | -11 9.3 |
| 22 | 81 28.9 | 91 | -14 .3 | 95 | 316 28.2 | 21 34.0 | 174 36.6 | -11 9.5 |
| Δ | -1 | -6 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|----------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t | |
| h min s | s | / | | h min | min / | / | | |
| 00 | 14 48.6 | -.5 | 16.2 | T _{m̄} | 16 22 | 2.2 | 59.5 | 16.2 |
| 12 | 14 42.0 | T _{m̄} | 11 h 45.3 min | Starost | 4.1 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min / | o | | h min / | o | h min / | o | Vel. |
| ø | 9 46 .1 | 156 | -3.4 | 7 | 0 58 .0 | 288 | -2.4 | |
| ø' | 14 13 .1 | 89 | 1.1 | h | 10 23 .0 | 146 | -.8 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 110 25.0 | 93 | -13 41.4 | 96 | 346 33.8 | 21 33.9 | 204 40.9 | -11 9.7 |
| 2 | 139 21.6 | 95 | -13 22.2 | 97 | 16 39.4 | 21 33.8 | 234 45.3 | -11 9.9 |
| 4 | 168 18.5 | 96 | -13 2.8 | 98 | 46 45.0 | 21 33.8 | 264 49.7 | -11 10.0 |
| 6 | 197 15.8 | 98 | -12 43.1 | 100 | 76 50.7 | 21 33.7 | 294 54.0 | -11 10.2 |
| 8 | 226 13.4 | 100 | -12 23.2 | 101 | 106 56.3 | 21 33.6 | 324 58.4 | -11 10.4 |
| 10 | 255 11.4 | 102 | -12 3.0 | 102 | 137 1.9 | 21 33.5 | 355 2.8 | -11 10.6 |
| 12 | 284 9.7 | 103 | -11 42.7 | 103 | 167 7.5 | 21 33.5 | 25 7.2 | -11 10.8 |
| 14 | 313 8.4 | 105 | -11 22.1 | 104 | 197 13.1 | 21 33.4 | 55 11.5 | -11 11.0 |
| 16 | 342 7.4 | 107 | -11 1.4 | 105 | 227 18.7 | 21 33.3 | 85 15.9 | -11 11.1 |
| 18 | 11 6.7 | 108 | -10 40.5 | 105 | 257 24.3 | 21 33.3 | 115 20.3 | -11 11.3 |
| 20 | 40 6.3 | 110 | -10 19.4 | 106 | 287 29.9 | 21 33.2 | 145 24.7 | -11 11.5 |
| 22 | 69 6.3 | 111 | -9 58.1 | 107 | 317 35.5 | 21 33.1 | 175 29.0 | -11 11.7 |
| Δ | -1 | -6 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|----------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t | |
| h min s | s | / | | h min | min / | / | | |
| 00 | 14 35.4 | -.6 | 16.2 | T _{m̄} | 17 14 | 2.0 | 58.7 | 16.0 |
| 12 | 14 28.5 | T _{m̄} | 11 h 45.5 min | Starost | 5.1 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | h min / | o | | h min / | o | h min / | o | Vel. |
| ø | 9 46 .1 | 155 | -3.4 | 7 | 0 54 .0 | 288 | -2.4 | |
| ø' | 14 12 .1 | 88 | 1.1 | h | 10 20 .0 | 146 | -.8 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 183 | 35.3 -19 43.7 | 59 | 24.3 | 213 | 16.3 - 8 54.1 | 147 | .6 -24 32.5 |
| 2 | 213 | 35.0 -19 44.8 | 89 | 29.3 | 243 | 15.4 - 8 56.3 | 177 | 1.4 -24 32.5 |
| 4 | 243 | 34.7 -19 45.9 | 119 | 34.2 | 273 | 14.5 - 8 58.5 | 207 | 2.1 -24 32.4 |
| 6 | 273 | 34.4 -19 47.0 | 149 | 39.1 | 303 | 13.6 - 9 .7 | 237 | 2.9 -24 32.4 |
| 8 | 303 | 34.1 -19 48.2 | 179 | 44.1 | 333 | 12.7 - 9 2.9 | 267 | 3.7 -24 32.3 |
| 10 | 333 | 33.8 -19 49.3 | 209 | 49.0 | 3 | 11.8 - 9 5.1 | 297 | 4.4 -24 32.3 |
| 12 | 333 | 33.5 -19 50.4 | 239 | 53.9 | 33 | 10.9 - 9 7.3 | 327 | 5.2 -24 32.2 |
| 14 | 333 | 33.2 -19 51.5 | 269 | 58.8 | 63 | 10.0 - 9 9.6 | 357 | 5.9 -24 32.1 |
| 16 | 63 | 32.9 -19 52.6 | 300 | 3.8 | 93 | 9.0 - 9 11.8 | 27 | 6.7 -24 32.1 |
| 18 | 93 | 32.6 -19 53.7 | 330 | 8.1 | 123 | 8.1 - 9 14.0 | 57 | 7.5 -24 32.0 |
| 20 | 123 | 32.3 -19 54.8 | 0 | 13.6 | 153 | 7.2 - 9 16.2 | 87 | 8.2 -24 31.9 |
| 22 | 153 | 32.0 -19 55.9 | 30 | 18.6 | 183 | 6.3 - 9 18.4 | 117 | 9.0 -24 31.9 |
| Δ | -2 | -6 | | | -5 | -11 | 4 | 0 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 11 | 15 20 | 0 51 | 2 33 | 12 45 | .5 | 23 35 | 3.3 | |
| 55 | 7 42 | 15 49 | 0 42 | 2 10 | 12 35 | .8 | 23 42 | 3.1 | |
| 50 | 7 21 | 16 10 | 0 36 | 1 54 | 12 28 | 1.0 | 23 47 | 2.9 | |
| 45 | 7 5 | 16 26 | 0 32 | 1 43 | 12 22 | 1.1 | 23 52 | 2.7 | |
| 40 | 6 51 | 16 40 | 0 29 | 1 38 | 12 17 | 1.3 | 23 55 | 2.6 | |
| 35 | 6 40 | 16 52 | 0 27 | 1 28 | 12 13 | 1.4 | 23 59 | 2.5 | |
| 30 | 6 29 | 17 2 | 0 26 | 1 23 | 12 9 | 1.5 | ... | 0 | |
| 20 | 6 12 | 17 19 | 0 23 | 1 17 | 12 3 | 1.6 | ... | 0 | |
| 10 | 5 57 | 17 35 | 0 22 | 1 14 | 11 57 | 1.8 | ... | 0 | |
| 0 | 5 42 | 17 49 | 0 22 | 1 13 | 11 51 | 1.9 | ... | 0 | |
| 10 | 5 28 | 18 4 | 0 22 | 1 15 | 11 46 | 2.1 | ... | 0 | |
| 20 | 5 12 | 18 20 | 0 24 | 1 21 | 11 40 | 2.2 | ... | 0 | |
| 30 | 4 54 | 18 38 | 0 26 | 1 32 | 11 33 | 2.4 | ... | 0 | |
| 35 | 4 43 | 18 49 | 0 28 | 1 40 | 11 30 | 2.5 | ... | 0 | |
| 40 | 4 31 | 19 1 | 0 31 | 1 53 | 11 25 | 2.6 | ... | 0 | |
| 45 | 4 16 | 19 16 | 0 35 | 2 13 | 11 20 | 2.8 | 0 6 | 1.2 | |
| 50 | 3 58 | 19 34 | 0 40 | 2 54 | 11 14 | 2.9 | 0 14 | 1.0 | |
| 55 | 3 35 | 19 58 | 0 50 | ... | 11 6 | 3.1 | 0 23 | .9 | |
| 60 | 3 3 | 20 31 | 1 8 | ... | 10 57 | 3.4 | 0 35 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 98 | 6.6 113 - 9 36.7 | 108 | 347 | 41.1 | 21 33.0 | 205 | 33.4 -11 11.9 |
| 2 | 127 | 7.2 114 - 9 15.1 | 108 | 17 | 46.7 | 21 33.0 | 235 | 37.8 -11 12.1 |
| 4 | 156 | 8.0 116 - 8 53.4 | 109 | 47 | 52.4 | 21 32.9 | 265 | 42.2 -11 12.3 |
| 6 | 185 | 9.2 117 - 8 31.6 | 110 | 77 | 58.0 | 21 32.8 | 295 | 46.5 -11 12.4 |
| 8 | 214 | 10.6 119 - 8 9.7 | 110 | 108 | 3.6 | 21 32.7 | 325 | 50.9 -11 12.6 |
| 10 | 243 | 12.4 120 - 7 47.7 | 111 | 138 | 9.2 | 21 32.7 | 355 | 55.3 -11 12.8 |
| 12 | 273 | 14.4 121 - 7 25.5 | 111 | 168 | 14.8 | 21 32.6 | 25 | 59.7 -11 13.0 |
| 14 | 301 | 16.6 123 - 7 3.3 | 112 | 198 | 20.4 | 21 32.5 | 56 | 4.0 -11 13.2 |
| 16 | 330 | 19.1 124 - 6 41.0 | 112 | 228 | 26.0 | 21 32.5 | 86 | 8.4 -11 13.4 |
| 18 | 359 | 21.9 125 - 6 18.6 | 112 | 258 | 31.7 | 21 32.4 | 116 | 12.8 -11 13.5 |
| 20 | 28 | 24.8 126 - 5 56.1 | 113 | 288 | 37.3 | 21 32.3 | 146 | 17.2 -11 13.7 |
| 22 | 57 | 28.1 127 - 5 33.6 | 113 | 318 | 42.9 | 21 32.2 | 176 | 21.5 -11 13.9 |
| Δ | -2 | -5 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|-----------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | | |
| 00 | 14 21.5 | -.6 | 16.2 | T _{m̄} | 18 | 3 | 1.9 | 57.8 15.7 | | |
| 12 | 14 14.1 | T _{m̄} | 11 h 45.8 min | Starost | 6.1 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| Pl. | h min / | o | / | h min / | o | h min / | o | / | h min / | o |
| ♀ | 9 47 | .1 | 154 | -3.3 | 4 | 0 49 | .0 | 288 | -2.4 | .8 |
| ♂ | 14 12 | .1 | 88 | 1.1 | h | 10 16 | .0 | 146 | -1 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------------|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 86 | 31.5 128 - 5 11.0 | 113 | 348 | 48.5 | 21 32.2 | 206 | 25.9 -11 14.1 |
| 2 | 115 | 35.2 129 - 4 48.4 | 113 | 18 | 54.1 | 21 32.1 | 236 | 30.3 -11 14.3 |
| 4 | 144 | 39.0 130 - 4 25.7 | 113 | 48 | 59.7 | 21 32.0 | 266 | 34.7 -11 14.5 |
| 6 | 173 | 43.1 131 - 4 3.0 | 114 | 79 | 5.4 | 21 31.9 | 296 | 39.0 -11 14.6 |
| 8 | 202 | 47.4 132 - 3 40.3 | 114 | 109 | 11.0 | 21 31.9 | 326 | 43.4 -11 14.8 |
| 10 | 231 | 51.8 133 - 3 17.6 | 114 | 139 | 16.6 | 21 31.8 | 356 | 47.8 -11 15.0 |
| 12 | 260 | 56.4 134 - 2 54.8 | 114 | 169 | 22.2 | 21 31.7 | 26 | 52.2 -11 15.2 |
| 14 | 290 | 1.2 135 - 2 32.1 | 114 | 199 | 27.9 | 21 31.6 | 56 | 56.5 -11 15.4 |
| 16 | 319 | 6.2 136 - 2 9.3 | 114 | 229 | 33.5 | 21 31.6 | 87 | .9 -11 15.5 |
| 18 | 348 | 11.3 136 - 1 46.6 | 114 | 259 | 39.1 | 21 31.5 | 117 | 5.3 -11 15.7 |
| 20 | 17 | 16.6 137 - 1 23.9 | 114 | 289 | 44.7 | 21 31.4 | 147 | 9.7 -11 15.9 |
| 22 | 46 | 22.0 138 - 1 1.2 | 113 | 319 | 50.3 | 21 31.3 | 177 | 14.1 -11 16.1 |
| Δ | -2 | -5 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h min s | s | / | h min min / | h min min / | h min min / | h min min / | h min min / | | | |
| 00 | 14 6.8 | -.6 | 16.2 | T _{m̄} | 18 49 | 1.8 | 56.9 | 15.5 | | |
| 12 | 13 59.0 | T _{m̄} | 11 h 46.0 min | Starost | 7.1 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| Pl. | h min / | o | / | h min / | o | h min / | o | / | h min / | o |
| ♀ | 9 48 | .1 | 153 | -3.3 | 4 | 0 45 | .0 | 288 | -2.4 | .8 |
| ♂ | 14 11 | .1 | 87 | 1.1 | h | 10 13 | .0 | 146 | -1 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 27.8 -20 10.0 | 61 22.6 | 212 54.3 -9 46.9 | 147 18.8 -24 30.8 | | | | |
| 2 | 213 27.4 -20 11.1 | 91 27.6 | 242 53.4 -9 49.1 | 177 19.6 -24 30.7 | | | | |
| 4 | 243 27.1 -20 12.1 | 121 32.5 | 272 52.5 -9 51.3 | 207 20.4 -24 30.6 | | | | |
| 6 | 273 26.8 -20 13.2 | 151 37.4 | 302 51.5 -9 53.5 | 237 21.1 -24 30.6 | | | | |
| 8 | 303 26.4 -20 14.3 | 181 42.3 | 332 50.6 -9 55.7 | 267 21.9 -24 30.5 | | | | |
| 10 | 333 26.1 -20 15.3 | 211 47.3 | 2 49.7 -9 57.9 | 297 22.6 -24 30.4 | | | | |
| 12 | 3 25.8 -20 16.4 | 241 52.2 | 32 48.7 -10 .0 | 327 23.4 -24 30.2 | | | | |
| 14 | 33 25.4 -20 17.4 | 271 57.1 | 62 47.8 -10 2.2 | 357 24.1 -24 30.1 | | | | |
| 16 | 63 25.1 -20 18.5 | 302 2.1 | 92 46.9 -10 4.4 | 27 24.9 -24 30.0 | | | | |
| 18 | 93 24.7 -20 19.5 | 332 7.0 | 122 45.9 -10 6.6 | 57 25.6 -24 29.9 | | | | |
| 20 | 123 24.4 -20 20.5 | 2 11.9 | 152 45.0 -10 8.7 | 87 26.4 -24 29.8 | | | | |
| 22 | 153 24.0 -20 21.6 | 32 16.8 | 182 44.0 -10 10.9 | 117 27.1 -24 29.7 | | | | |
| Δ | -2 -5 | | -5 -11 | 4 1 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 16 | 15 16 | 0 51 | 2 34 | 13 10 | .5 | 0 56 | 3.2 | |
| 55 | 7 46 | 15 46 | 0 42 | 2 11 | 13 12 | .7 | 0 57 | 3.0 | |
| 50 | 7 24 | 16 8 | 0 36 | 1 55 | 13 14 | .9 | 0 57 | 2.8 | |
| 45 | 7 7 | 16 25 | 0 32 | 1 43 | 13 15 | 1.1 | 0 58 | 2.6 | |
| 40 | 6 53 | 16 39 | 0 29 | 1 38 | 13 16 | 1.2 | 0 58 | 2.5 | |
| 35 | 6 42 | 16 51 | 0 27 | 1 28 | 13 17 | 1.3 | 0 58 | 2.4 | |
| 30 | 6 31 | 17 1 | 0 26 | 1 24 | 13 18 | 1.4 | 0 58 | 2.3 | |
| 20 | 6 13 | 17 19 | 0 23 | 1 17 | 13 20 | 1.6 | 0 59 | 2.1 | |
| 10 | 5 57 | 17 35 | 0 22 | 1 14 | 13 21 | 1.7 | 0 59 | 2.0 | |
| 0 | 5 43 | 17 50 | 0 22 | 1 13 | 13 23 | 1.8 | 0 60 | 1.8 | |
| 10 | 5 28 | 18 5 | 0 23 | 1 16 | 13 24 | 2.0 | 0 60 | 1.7 | |
| 20 | 5 12 | 18 21 | 0 24 | 1 21 | 13 26 | 2.1 | 0 1 | 1.6 | |
| 30 | 4 53 | 18 40 | 0 27 | 1 32 | 13 27 | 2.3 | 1 1 | 1.4 | |
| 35 | 4 42 | 18 51 | 0 29 | 1 41 | 13 28 | 2.4 | 1 1 | 1.3 | |
| 40 | 4 29 | 19 4 | 0 31 | 1 54 | 13 29 | 2.5 | 1 1 | 1.2 | |
| 45 | 4 14 | 19 19 | 0 35 | 2 15 | 13 31 | 2.6 | 1 1 | 1.1 | |
| 50 | 3 56 | 19 37 | 0 41 | 3 0 | 13 32 | 2.8 | 1 2 | .9 | |
| 55 | 3 32 | 20 2 | 0 50 | ::: | 13 34 | 3.0 | 1 2 | .7 | |
| 60 | 2 59 | 20 36 | 1 11 | ::: | 13 37 | 3.2 | 1 3 | .5 | |
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| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|-----------------------|--------|-------------------|-------------------|-------------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 75 27.5 138 - 0 38.5 | 113 | 349 56.0 -21 31.3 | 207 18.4 -11 16.3 | | | | |
| 2 | 104 33.2 139 - 0 15.8 | 113 | 20 1.6 21 31.2 | 237 22.8 -11 16.5 | | | | |
| 4 | 133 39.0 139 | 0 6.8 | 113 | 50 7.2 21 31.1 | 267 27.2 -11 16.6 | | | |
| 6 | 162 44.9 140 | 0 29.3 | 113 | 80 12.8 -21 31.0 | 297 31.6 -11 16.8 | | | |
| 8 | 191 50.9 140 | 0 51.8 | 112 | 110 18.5 -21 31.0 | 327 36.0 -11 17.0 | | | |
| 10 | 220 57.0 141 | 1 14.3 | 112 | 140 24.1 -21 30.9 | 357 40.3 -11 17.2 | | | |
| 12 | 250 3.1 141 | 1 36.7 | 112 | 170 29.7 -21 30.8 | 27 44.7 -11 17.4 | | | |
| 14 | 279 9.4 142 | 1 59.0 | 111 | 200 35.3 -21 30.7 | 57 49.1 -11 17.5 | | | |
| 16 | 308 15.8 142 | 2 21.2 | 111 | 230 41.0 -21 30.7 | 87 53.5 -11 17.7 | | | |
| 18 | 337 22.2 142 | 2 43.4 | 110 | 260 46.6 -21 30.6 | 117 57.9 -11 17.9 | | | |
| 20 | 6 28.7 143 | 3 5.5 | 110 | 290 52.2 -21 30.5 | 148 2.2 -11 18.1 | | | |
| 22 | 35 35.2 143 | 3 27.5 | 109 | 320 57.9 -21 30.4 | 178 6.6 -11 18.3 | | | |
| Δ | -2 -5 | | | 28 0 | 22 -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|-------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | | h min min / | h min | | | | |
| 00 | 13 51.3 | .7 | 16.2 | T _{m̄} | 19 33 | 1.8 | 56.2 | 15.3 | |
| 12 | 13 43.1 | | | T _{m̄} | 11 h 46.3 min | Starost | 8.1 d | Faza ☽ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 9 49 | .1 | 152 | -3.3 | ♀ | 0 40 | .0 | 289 | -2.4 |
| ♂ | 14 10 | .1 | 86 | 1.1 | ♂ | 10 9 | .0 | 146 | -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 64 41.8 143 | 3 49.4 | 109 | 351 3.5 21 30.4 | 208 11.0 -11 18.4 | | | |
| 2 | 93 48.4 143 | 4 11.2 | 108 | 21 9.1 21 30.3 | 238 15.4 -11 18.6 | | | |
| 4 | 122 55.1 144 | 4 32.9 | 108 | 51 14.8 21 30.2 | 268 19.8 -11 18.8 | | | |
| 6 | 152 1.8 144 | 4 54.4 | 107 | 81 20.4 21 30.1 | 298 24.1 -11 19.0 | | | |
| 8 | 181 8.5 144 | 5 15.9 | 107 | 111 26.0 21 30.1 | 328 28.5 -11 19.2 | | | |
| 10 | 210 15.3 144 | 5 37.3 | 106 | 141 31.6 21 30.0 | 358 32.9 -11 19.3 | | | |
| 12 | 239 22.0 144 | 5 58.5 | 105 | 171 37.3 21 29.9 | 28 37.3 -11 19.5 | | | |
| 14 | 268 28.8 144 | 6 19.6 | 105 | 201 42.9 21 29.8 | 58 41.7 -11 19.7 | | | |
| 16 | 297 35.5 144 | 6 40.5 | 105 | 231 48.5 21 29.7 | 88 46.0 -11 19.9 | | | |
| 18 | 326 42.3 144 | 7 1.3 | 103 | 261 54.2 21 29.7 | 118 50.4 -11 20.1 | | | |
| 20 | 355 49.1 144 | 7 22.0 | 103 | 291 59.8 21 29.6 | 148 54.8 -11 20.2 | | | |
| 22 | 24 55.8 144 | 7 42.5 | 102 | 322 5.4 21 29.5 | 178 59.2 -11 20.4 | | | |
| Δ | -28 | 0 | | 22 | -1 | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|-------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | | |
| h min s | s | / | | h min min / | h min | | | | |
| 00 | 13 35.0 | .7 | 16.2 | T _{m̄} | 20 17 | 1.8 | 55.5 | 15.1 | |
| 12 | 13 26.5 | | | T _{m̄} | 11 h 46.6 min | Starost | 9.1 d | Faza ☽ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 9 49 | .1 | 150 | -3.3 | ♀ | 0 36 | .0 | 289 | -2.4 |
| ♂ | 14 10 | .1 | 85 | 1.1 | ♂ | 10 6 | .0 | 146 | -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 19.4 -20 34.9 | 63 20.9 | 212 31.6 -10 39.0 | 147 36.9 -24 28.1 | | | | |
| 2 | 213 19.1 -20 35.9 | 93 25.8 | 242 30.6 -10 41.2 | 177 37.7 -24 27.9 | | | | |
| 4 | 243 18.7 -20 36.9 | 123 30.8 | 272 29.6 -10 43.3 | 207 38.4 -24 27.8 | | | | |
| 6 | 273 18.3 -20 37.9 | 153 35.7 | 302 28.7 -10 45.5 | 237 39.2 -24 27.6 | | | | |
| 8 | 303 18.0 -20 38.9 | 183 40.6 | 332 27.7 -10 47.6 | 267 39.9 -24 27.5 | | | | |
| 10 | 333 17.6 -20 39.9 | 213 45.5 | 26 7 -10 49.8 | 297 40.7 -24 27.4 | | | | |
| 12 | 3 17.2 -20 40.8 | 243 50.5 | 32 25.7 -10 51.9 | 327 41.4 -24 27.2 | | | | |
| 14 | 33 16.9 -20 41.8 | 273 55.4 | 62 24.8 -10 54.1 | 357 42.2 -24 27.1 | | | | |
| 16 | 63 16.5 -20 42.8 | 304 .3 | 92 23.8 -10 56.2 | 27 42.9 -24 26.9 | | | | |
| 18 | 93 16.1 -20 43.8 | 334 5.3 | 122 22.8 -10 58.3 | 57 43.6 -24 26.8 | | | | |
| 20 | 123 15.7 -20 44.8 | 4 10.2 | 152 21.8 -11 .5 | 87 44.4 -24 26.6 | | | | |
| 22 | 153 15.4 -20 45.8 | 34 15.1 | 182 20.8 -11 2.6 | 117 45.1 -24 26.4 | | | | |
| Δ | -2 | -5 | | -5 | -11 | 4 | 1 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 21 | 15 13 | 0 52 | 2 36 | 13 36 | .7 | 3 30 | 3.1 | |
| 55 | 7 50 | 15 43 | 0 43 | 2 12 | 13 49 | .9 | 3 19 | 2.9 | |
| 50 | 7 27 | 16 6 | 0 37 | 1 55 | 13 59 | 1.1 | 3 10 | 2.7 | |
| 45 | 7 10 | 16 23 | 0 33 | 1 44 | 14 7 | 1.2 | 3 3 | 2.6 | |
| 40 | 6 56 | 16 38 | 0 30 | 1 35 | 14 14 | 1.3 | 2 55 | 2.4 | |
| 35 | 6 43 | 16 50 | 0 27 | 1 29 | 14 20 | 1.4 | 2 53 | 2.3 | |
| 30 | 6 33 | 17 1 | 0 26 | 1 24 | 14 26 | 1.5 | 2 48 | 2.2 | |
| 20 | 6 14 | 17 19 | 0 24 | 1 17 | 14 35 | 1.6 | 2 41 | 2.1 | |
| 10 | 5 58 | 17 35 | 0 22 | 1 14 | 14 43 | 1.7 | 2 34 | 2.0 | |
| 0 | 5 43 | 17 50 | 0 22 | 1 14 | 14 51 | 1.9 | 2 28 | 1.8 | |
| 10 | 5 28 | 18 6 | 0 23 | 1 16 | 14 58 | 2.0 | 2 22 | 1.7 | |
| 20 | 5 11 | 18 22 | 0 24 | 1 22 | 15 7 | 2.1 | 2 15 | 1.6 | |
| 30 | 4 52 | 18 42 | 0 27 | 1 33 | 15 16 | 2.2 | 2 8 | 1.4 | |
| 35 | 4 41 | 18 53 | 0 29 | 1 42 | 15 22 | 2.3 | 2 3 | 1.4 | |
| 40 | 4 28 | 19 6 | 0 31 | 1 55 | 15 28 | 2.4 | 1 58 | 1.3 | |
| 45 | 4 13 | 19 21 | 0 35 | 2 17 | 15 35 | 2.5 | 1 53 | 1.1 | |
| 50 | 3 54 | 19 41 | 0 41 | 3 7 | 15 44 | 2.7 | 1 46 | 1.0 | |
| 55 | 3 29 | 20 5 | 0 51 | ::: | 15 55 | 2.9 | 1 38 | .8 | |
| 60 | 2 55 | 20 41 | 1 13 | ::: | 16 10 | 3.1 | 1 27 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 54 2.5 143 | 8 2.8 101 | 352 11.1 21 29.4 | 209 3.6 -11 20.6 | | | | |
| 2 | 83 9.2 143 | 8 23.0 100 | 22 16.7 21 29.4 | 239 8.0 -11 20.8 | | | | |
| 4 | 112 15.9 143 | 8 43.0 99 | 52 22.3 21 29.3 | 269 12.3 -11 20.9 | | | | |
| 6 | 141 22.5 143 | 9 2.9 98 | 82 28.0 21 29.2 | 299 16.7 -11 21.1 | | | | |
| 8 | 170 29.1 143 | 9 22.6 97 | 112 33.6 21 29.1 | 329 21.1 -11 21.3 | | | | |
| 10 | 199 35.6 142 | 9 42.1 97 | 142 39.3 21 29.1 | 359 25.5 -11 21.5 | | | | |
| 12 | 228 42.1 142 | 10 1.4 96 | 172 44.9 21 29.0 | 29 29.9 -11 21.7 | | | | |
| 14 | 257 48.5 142 | 10 20.5 95 | 202 50.5 21 28.9 | 59 34.3 -11 21.8 | | | | |
| 16 | 286 54.9 142 | 10 39.4 94 | 232 56.2 21 28.8 | 89 38.7 -11 22.0 | | | | |
| 18 | 316 1.2 141 | 10 58.1 93 | 263 1.8 21 28.7 | 119 43.0 -11 22.2 | | | | |
| 20 | 345 7.5 141 | 11 16.7 92 | 293 7.4 21 28.7 | 149 47.4 -11 22.4 | | | | |
| 22 | 14 13.7 141 | 11 35.0 90 | 323 13.1 21 28.6 | 179 51.8 -11 22.5 | | | | |
| Δ | -2 | -5 | | -5 | -11 | 4 | 1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|--------|-----------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 13 17.9 | .7 | 16.2 | T _{m̄} | 21 | 1 | 1.9 | 55.0 15.0 | |
| 12 | 13 9.0 | | | T _{m̄} | 11 h 46.8 min | Starost | 10.1 d | Faza C | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 9 50 | .1 | 149 | -3.3 | 4 | 0 31 | .0 | 289 | -2.4 |
| ♂ | 14 9 | .1 | 84 | 1.1 | h | 10 2 | .0 | 146 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------|------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 43 19.8 140 | 11 53.1 89 | 353 18.7 21 28.5 | 209 56.2 -11 22.7 | | | | |
| 2 | 72 25.8 140 | 12 10.9 88 | 23 24.4 21 28.4 | 240 .6 -11 22.9 | | | | |
| 4 | 101 31.7 139 | 12 28.6 87 | 53 30.0 21 28.4 | 270 5.0 -11 23.1 | | | | |
| 6 | 130 37.6 139 | 12 46.0 86 | 83 35.6 21 28.3 | 300 9.4 -11 23.3 | | | | |
| 8 | 159 43.4 138 | 13 3.2 85 | 113 41.3 21 28.2 | 330 13.7 -11 23.4 | | | | |
| 10 | 188 49.1 138 | 13 20.2 88 | 143 46.9 21 28.1 | 0 18.1 -11 23.6 | | | | |
| 12 | 217 54.7 138 | 13 36.9 82 | 173 52.6 21 28.0 | 30 22.5 -11 23.8 | | | | |
| 14 | 247 .2 137 | 13 53.3 81 | 203 58.2 21 28.0 | 60 26.9 -11 24.0 | | | | |
| 16 | 276 5.6 137 | 14 9.6 80 | 234 3.8 21 27.9 | 90 31.3 -11 24.1 | | | | |
| 18 | 305 10.9 136 | 14 25.5 79 | 264 9.5 21 27.8 | 120 35.7 -11 24.3 | | | | |
| 20 | 334 16.1 136 | 14 41.2 77 | 294 15.1 21 27.7 | 150 40.1 -11 24.5 | | | | |
| 22 | 3 21.2 135 | 14 56.6 76 | 324 20.8 21 27.6 | 180 44.5 -11 24.7 | | | | |
| Δ | -2 | -5 | | 28 | 0 | 22 | -1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|--------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 13 .1 | -.8 | 16.2 | T _{m̄} | 21 46 | 1.9 | 54.6 | 14.9 | |
| 12 | 12 50.9 | | | T _{m̄} | 11 h 47.2 min | Starost | 11.1 d | Faza C | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 9 51 | .1 | 148 | -3.3 | 4 | 0 27 | .0 | 289 | -2.4 |
| ♂ | 14 9 | .1 | 83 | 1.1 | h | 9 59 | .0 | 146 | .8 |

26. NOVEMBAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA S _γ | VENERA | | MARS | |
|----|----------------|----------------|-----------------------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / |
| 0 | 183 10.4 -20 | 58.2 | 65 19.2 | 212 7.9 -11 | 30.2 | 147 54.8 -24 | 24.2 |
| 2 | 213 10.0 -20 | 59.1 | 95 24.1 | 242 6.9 -11 | 32.3 | 177 55.6 -24 | 24.0 |
| 4 | 243 9.6 -21 | .1 | 125 29.0 | 272 5.9 -11 | 34.8 | 207 56.3 -24 | 23.8 |
| 6 | 273 9.2 -21 | 1.0 | 155 34.0 | 302 4.8 -11 | 36.6 | 237 57.1 -24 | 23.7 |
| 8 | 303 8.8 -21 | 1.9 | 185 38.9 | 332 3.8 -11 | 38.7 | 267 57.8 -24 | 23.5 |
| 10 | 333 8.4 -21 | 2.9 | 215 43.8 | 2 2.8 -11 | 40.8 | 297 58.6 -24 | 23.3 |
| 12 | 3 8.0 -21 | 3.8 | 245 48.7 | 32 1.8 -11 | 42.9 | 327 59.3 -24 | 23.1 |
| 14 | 33 7.6 -21 | 4.7 | 275 53.7 | 62 8.8 -11 | 45.0 | 358 1.1 -24 | 22.9 |
| 16 | 63 7.2 -21 | 5.6 | 305 58.6 | 91 59.8 -11 | 47.1 | 28 .8 -24 | 22.7 |
| 18 | 93 6.8 -21 | 6.6 | 336 3.5 | 121 58.7 -11 | 49.2 | 58 1.5 -24 | 22.5 |
| 20 | 123 6.4 -21 | 7.5 | 6 8.5 | 151 57.7 -11 | 51.3 | 88 2.3 -24 | 22.3 |
| 22 | 153 5.9 -21 | 8.4 | 36 13.4 | 181 56.7 -11 | 53.4 | 118 3.0 -24 | 22.1 |
| Δ | -2 | -5 | | -5 | -11 | 4 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 25 | 15 9 | 0 53 | 2 37 | 14 11 | 1.1 | 5 59 | 2.9 |
| 55 | 7 53 | 15 41 | 0 43 | 2 12 | 14 35 | 1.3 | 5 36 | 2.7 |
| 50 | 7 30 | 16 4 | 0 37 | 1 56 | 14 53 | 1.4 | 5 19 | 2.6 |
| 45 | 7 12 | 16 22 | 0 33 | 1 44 | 15 8 | 1.5 | 5 5 | 2.4 |
| 40 | 6 58 | 16 37 | 0 30 | 1 36 | 15 20 | 1.6 | 4 54 | 2.4 |
| 35 | 6 45 | 16 49 | 0 28 | 1 29 | 15 30 | 1.6 | 4 44 | 2.3 |
| 30 | 6 34 | 17 0 | 0 26 | 1 24 | 15 39 | 1.7 | 4 36 | 2.2 |
| 20 | 6 16 | 17 19 | 0 24 | 1 17 | 15 54 | 1.8 | 4 21 | 2.1 |
| 10 | 5 59 | 17 36 | 0 22 | 1 14 | 16 8 | 1.9 | 4 9 | 2.0 |
| 0 | 5 44 | 17 51 | 0 22 | 1 14 | 16 21 | 1.9 | 3 57 | 1.9 |
| 10 | 5 28 | 18 7 | 0 23 | 1 16 | 16 34 | 2.0 | 3 45 | 1.8 |
| 20 | 5 11 | 18 24 | 0 24 | 1 22 | 16 48 | 2.1 | 3 33 | 1.7 |
| 30 | 4 52 | 18 43 | 0 27 | 1 33 | 17 3 | 2.2 | 3 19 | 1.6 |
| 35 | 4 40 | 18 55 | 0 29 | 1 43 | 17 13 | 2.2 | 3 11 | 1.6 |
| 40 | 4 27 | 19 8 | 0 32 | 1 56 | 17 23 | 2.3 | 3 1 | 1.5 |
| 45 | 4 12 | 19 24 | 0 36 | 2 19 | 17 36 | 2.4 | 2 50 | 1.4 |
| 50 | 3 52 | 19 44 | 0 42 | 3 14 | 17 51 | 2.5 | 2 37 | 1.3 |
| 55 | 3 27 | 20 9 | 0 52 | ::: | 18 10 | 2.6 | 2 21 | 1.1 |
| 60 | 2 51 | 20 45 | 1 16 | ::: | 18 36 | 2.8 | 1 59 | .9 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 32 26.2 | 134 | 15 11.8 | 74 | 354 26.4 | 21 27.6 | 210 48.8 | -11 24.8 |
| 2 | 61 31.1 | 134 | 15 26.7 | 73 | 24 32.1 | 21 27.5 | 240 53.2 | -11 25.0 |
| 4 | 90 35.8 | 133 | 15 41.3 | 72 | 54 37.7 | 21 27.4 | 270 57.6 | -11 25.2 |
| 6 | 119 40.5 | 133 | 15 55.6 | 70 | 84 43.3 | 21 27.3 | 301 2.0 | -11 25.4 |
| 8 | 148 45.1 | 132 | 16 9.7 | 69 | 114 49.0 | 21 27.3 | 331 6.4 | -11 25.5 |
| 10 | 177 49.5 | 132 | 16 23.4 | 67 | 144 54.6 | 21 27.2 | 1 10.8 | -11 25.7 |
| 12 | 206 53.9 | 131 | 16 36.9 | 66 | 175 .3 | 21 27.1 | 31 15.2 | -11 25.9 |
| 14 | 236 58.1 | 131 | 16 50.1 | 64 | 205 .5 | 21 27.0 | 61 19.6 | -11 26.1 |
| 16 | 265 2.3 | 130 | 17 2.9 | 63 | 235 11.6 | 21 26.9 | 91 24.0 | -11 26.2 |
| 18 | 294 6.3 | 130 | 17 15.5 | 61 | 265 17.2 | 21 26.9 | 121 28.4 | -11 26.4 |
| 20 | 323 10.2 | 129 | 17 27.7 | 60 | 295 22.9 | 21 26.8 | 151 32.7 | -11 26.6 |
| 22 | 352 14.0 | 128 | 17 39.6 | 58 | 325 28.5 | 21 26.7 | 181 37.1 | -11 26.8 |
| Δ | -2 | -4 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | min | / | | | |
| 00 | 12 41.6 | -.8 | 16.2 | T _{m̄} | 22 32 | 2.0 | 54.3 | 14.8 | |
| 12 | 12 32.0 | T _{m̄} | 11 h 47.5 min | Starost | 12.1 | d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 9 52 | .1 | 147 | -3.3 | 4 | 0 22 | .0 | 289 | -2.4 |
| ♂ | 14 8 | .1 | 83 | 1.1 | h | 9 55 | .0 | 145 | .8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-----|----------------|-----|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 21 17.6 | 128 | 17 51.2 | 56 | 355 34.1 | 21 26.6 | 211 41.5 | -11 26.9 |
| 2 | 50 21.2 | 127 | 18 2.5 | 55 | 25 39.8 | 21 26.5 | 241 45.9 | -11 27.1 |
| 4 | 79 24.7 | 127 | 18 13.4 | 53 | 55 45.4 | 21 26.5 | 271 50.3 | -11 27.3 |
| 6 | 108 28.1 | 126 | 18 24.1 | 51 | 85 51.1 | 21 26.4 | 301 54.7 | -11 27.5 |
| 8 | 137 31.3 | 126 | 18 34.4 | 50 | 115 56.7 | 21 26.3 | 331 59.1 | -11 27.6 |
| 10 | 166 34.5 | 125 | 18 44.3 | 48 | 146 2.4 | 21 26.2 | 2 3.5 | -11 27.8 |
| 12 | 195 37.5 | 125 | 18 53.9 | 46 | 176 8.0 | 21 26.1 | 32 7.9 | -11 28.0 |
| 14 | 224 40.5 | 124 | 19 3.2 | 45 | 206 13.7 | 21 26.1 | 62 12.3 | -11 28.2 |
| 16 | 253 43.3 | 124 | 19 12.1 | 43 | 236 19.3 | 21 26.0 | 92 16.7 | -11 28.3 |
| 18 | 282 46.1 | 123 | 19 20.7 | 41 | 266 25.0 | 21 25.9 | 122 21.1 | -11 28.5 |
| 20 | 311 48.7 | 123 | 19 28.9 | 39 | 296 30.6 | 21 25.8 | 152 25.4 | -11 28.7 |
| 22 | 340 51.3 | 122 | 19 36.7 | 38 | 326 36.3 | 21 25.7 | 182 29.8 | -11 28.8 |
| Δ | -2 | -4 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | min | / | | | |
| 00 | 12 22.3 | -.8 | 16.2 | T _{m̄} | 23 19 | 2.0 | 54.1 | 14.7 | |
| 12 | 12 12.3 | T _{m̄} | 11 h 47.8 min | Starost | 13.1 | d | Faza | ○ | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 9 53 | .1 | 146 | -3.3 | 4 | 0 18 | .0 | 289 | -2.4 |
| ♂ | 14 7 | .1 | 82 | 1.1 | h | 9 52 | .0 | 145 | .8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | ' | o | ' | o | ' | o | ' |
| 0 | 183 | .5 | -21 | 20.0 | 67 | 17.5 | 211 | 43.2 -12 20.4 |
| 2 | 213 | .1 | -21 | 20.8 | 97 | 22.4 | 241 | 42.1 -12 22.6 |
| 4 | 242 | 59.7 | -21 | 21.7 | 127 | 27.3 | 271 | 41.1 -12 18.8 |
| 6 | 272 | 59.3 | -21 | 22.6 | 157 | 32.2 | 301 | 40.0 -12 26.6 |
| 8 | 302 | 58.8 | -21 | 23.4 | 187 | 37.2 | 331 | 39.0 -12 28.7 |
| 10 | 332 | 58.4 | -21 | 24.3 | 217 | 42.1 | 371 | 39.9 -12 30.8 |
| 12 | 2 | 58.0 | -21 | 25.2 | 247 | 47.0 | 31 | 36.9 -12 32.8 |
| 14 | 32 | 57.6 | -21 | 26.0 | 277 | 52.0 | 61 | 35.8 -12 34.9 |
| 16 | 62 | 57.1 | -21 | 26.9 | 307 | 56.9 | 93 | 34.7 -12 36.9 |
| 18 | 92 | 56.7 | -21 | 27.7 | 338 | 1.8 | 121 | 33.7 -12 39.0 |
| 20 | 122 | 56.2 | -21 | 28.6 | 8 | 6.7 | 151 | 32.6 -12 41.0 |
| 22 | 152 | 55.8 | -21 | 29.4 | 38 | 11.7 | 181 | 31.5 -12 43.1 |
| Δ | -2 | -4 | | | | | -5 | -10 |
| | | | | | | | 4 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------------|---------|-----------------|-----------------|-----------------|---------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 29 | 15 6 | 0 53 | 2 38 | 15 9 | 1 8 | 8 14 | 2 3 | |
| 55 | 7 57 | 15 39 | 0 43 | 2 13 | 15 42 | 1 9 | 7 41 | 2 2 | |
| 50 | 7 33 | 16 3 | 0 37 | 1 56 | 16 6 | 1 9 | 7 17 | 2 2 | |
| 45 | 7 15 | 16 21 | 0 33 | 1 45 | 16 25 | 1 9 | 6 59 | 2 2 | |
| 40 | 6 60 | 16 36 | 0 30 | 1 36 | 16 40 | 1 9 | 6 44 | 2 1 | |
| 35 | 6 47 | 16 49 | 0 28 | 1 29 | 16 53 | 2 0 | 6 32 | 2 1 | |
| 30 | 6 36 | 16 60 | 0 26 | 1 24 | 17 4 | 2 0 | 6 21 | 2 1 | |
| 25 | 6 17 | 17 19 | 0 24 | 1 18 | 17 23 | 2 0 | 6 2 | 2 1 | |
| 20 | 6 0 | 17 36 | 0 23 | 1 14 | 17 40 | 2 0 | 5 46 | 2 0 | |
| 15 | 5 44 | 17 52 | 0 22 | 1 14 | 17 55 | 2 0 | 5 31 | 2 0 | |
| 10 | 5 29 | 18 8 | 0 23 | 1 16 | 18 11 | 2 0 | 5 15 | 2 0 | |
| 5 | 5 11 | 18 25 | 0 24 | 1 22 | 18 28 | 2 0 | 4 59 | 1 9 | |
| 0 | 4 52 | 18 45 | 0 27 | 1 34 | 18 47 | 2 0 | 4 40 | 1 9 | |
| 35 | 4 40 | 18 57 | 0 29 | 1 43 | 18 59 | 2 1 | 4 30 | 1 9 | |
| 40 | 4 26 | 19 10 | 0 32 | 1 57 | 19 12 | 2 1 | 4 17 | 1 9 | |
| 45 | 4 10 | 19 26 | 0 36 | 2 21 | 19 27 | 2 1 | 4 2 | 1 8 | |
| 50 | 3 51 | 19 46 | 0 42 | 3 24 | 19 46 | 2 1 | 3 44 | 1 8 | |
| 55 | 3 25 | 20 13 | 0 53 | 3 :: | 20 10 | 2 1 | 3 21 | 1 7 | |
| 60 | 2 48 | 20 50 | 1 18 | 3 :: | 20 45 | 2 1 | 2 50 | 1 6 | |
| S | | | | | | | | | |
| SUNCE | | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | | Δ/24 | π _{ll} | t' | |
| h | min | s | / | h | min | min | / | / | |
| 00 | 12 | 2.4 | - .9 | 16.2 | T _{m̄} |0 | 54.0 | 14.7 | |
| 12 | 11 52.0 | T _{m̄} | 11 h 48.1 min | Starost | 14.1 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 9 53 | .1 | 144 | -3.3 | 7 | 0 13 | .0 | 289 | -2.4 |
| ♂ | 14 7 | .1 | 81 | 1.1 | h | 9 48 | .0 | 145 | .9 |

29. NOVEMBAR

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | ' | o | ' | o | ' | o | ' |
| 0 | 182 | 55.4 | -21 | 30.3 | 68 | 16.6 | 211 | 30.5 -12 45.1 |
| 2 | 212 | 54.9 | -21 | 31.1 | 98 | 21.5 | 241 | 29.4 -12 47.2 |
| 4 | 242 | 54.5 | -21 | 31.9 | 128 | 26.5 | 271 | 28.3 -12 49.2 |
| 6 | 272 | 54.1 | -21 | 32.8 | 158 | 31.4 | 301 | 27.2 -12 51.3 |
| 8 | 302 | 53.6 | -21 | 33.6 | 188 | 36.3 | 331 | 26.2 -12 53.3 |
| 10 | 332 | 53.2 | -21 | 34.4 | 218 | 41.2 | 31 | 25.1 -12 55.3 |
| 12 | 2 | 52.7 | -21 | 35.2 | 248 | 46.2 | 314 | 24.0 -12 57.4 |
| 14 | 32 | 52.3 | -21 | 36.1 | 278 | 51.1 | 361 | 22.9 -12 59.4 |
| 16 | 62 | 51.8 | -21 | 36.9 | 308 | 56.0 | 91 | 21.8 -13 1.4 |
| 18 | 92 | 51.4 | -21 | 37.7 | 339 | 1.0 | 121 | 20.8 -13 3.5 |
| 20 | 122 | 50.9 | -21 | 38.5 | 9 | 5.9 | 151 | 19.7 -13 5.5 |
| 22 | 152 | 50.5 | -21 | 39.3 | 39 | 10.8 | 181 | 18.6 -13 7.5 |
| Δ | -2 | -4 | | | | | -5 | -10 |
| | | | | | | | 4 | 1 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------------|-----------------|--------|-----------------|-----------------|---------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 32 | 15 5 | 0 54 | 2 39 | 15 53 | 2.3 | 9 9 | 1 9 | |
| 55 | 7 58 | 15 38 | 0 43 | 2 13 | 16 27 | 2.2 | 8 35 | 1 9 | |
| 50 | 7 34 | 16 2 | 0 37 | 1 57 | 16 52 | 2.2 | 8 10 | 2 0 | |
| 45 | 7 16 | 16 21 | 0 33 | 1 45 | 17 11 | 2.1 | 7 51 | 2 0 | |
| 40 | 7 1 | 16 36 | 0 30 | 1 36 | 17 26 | 2.1 | 7 36 | 2 0 | |
| 35 | 6 48 | 16 49 | 0 28 | 1 29 | 17 40 | 2.1 | 7 23 | 2 0 | |
| 30 | 6 37 | 16 60 | 0 26 | 1 24 | 17 51 | 2.1 | 7 11 | 2 0 | |
| 25 | 6 18 | 17 19 | 0 24 | 1 18 | 18 11 | 2.1 | 6 52 | 2 0 | |
| 20 | 6 1 | 17 36 | 0 23 | 1 14 | 18 28 | 2.0 | 6 35 | 2 0 | |
| 15 | 5 45 | 17 52 | 0 22 | 1 14 | 18 44 | 2.0 | 6 19 | 2 0 | |
| 10 | 5 29 | 18 8 | 0 23 | 1 17 | 18 60 | 2.0 | 6 3 | 2 0 | |
| 5 | 5 11 | 18 26 | 0 24 | 1 22 | 19 17 | 2.0 | 5 46 | 2 0 | |
| 0 | 4 51 | 18 46 | 0 27 | 1 34 | 19 36 | 1.9 | 5 26 | 2 0 | |
| 35 | 4 40 | 18 58 | 0 29 | 1 44 | 19 48 | 1.9 | 5 15 | 2 0 | |
| 40 | 4 26 | 19 11 | 0 32 | 1 58 | 20 1 | 1.9 | 5 1 | 2 0 | |
| 45 | 4 10 | 19 28 | 0 36 | 2 22 | 20 17 | 1.9 | 4 46 | 2 0 | |
| 50 | 3 50 | 19 48 | 0 42 | 3 29 | 20 36 | 1.8 | 4 27 | 2 0 | |
| 55 | 3 24 | 20 14 | 0 53 | 3 :: | 21 1 | 1.8 | 4 2 | 2 0 | |
| 60 | 2 46 | 20 52 | 1 20 | 3 :: | 21 35 | 1.7 | 3 28 | 2 0 | |
| S | | | | | | | | | |
| SUNCE | | | | MJESEC | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | | Δ/24 | π _{ll} | t' | |
| h | min | s | / | h | min | min | / | / | |
| 00 | 11 41.7 | - .9 | 16.2 | T _{m̄} | 0 | 7 | 2.0 | 54.0 | 14.7 |
| 12 | 11 31.0 | T _{m̄} | 11 h 48.5 min | Starost | 15.1 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | ° | / | Vel. | h min | / | ° | / | Vel. |
| ♀ | 9 54 | .1 | 143 | -3.3 | 7 | 0 9 | .0 | 290 | -2.4 |
| ♂ | 14 6 | .1 | 80 | 1.1 | h | 9 45 | .0 | 145 | .9 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _⊕ | δ _⊕ | S _γ | δ _γ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 50.0 -21 40.1 | 69 15.7 | 211 17.5 -13 9.5 | 148 30.4 -24 13.2 | | | | |
| 2 | 212 49.6 -21 40.9 | 99 20.7 | 241 16.4 -13 11.6 | 178 31.2 -24 12.9 | | | | |
| 4 | 242 49.1 -21 41.7 | 279 25.6 | 271 15.3 -13 13.6 | 208 31.9 -24 12.7 | | | | |
| 6 | 272 48.7 -21 42.5 | 159 30.5 | 301 14.2 -13 15.6 | 238 32.6 -24 12.4 | | | | |
| 8 | 302 48.2 -21 43.3 | 189 35.4 | 331 13.1 -13 17.6 | 268 33.4 -24 12.1 | | | | |
| 10 | 332 47.8 -21 44.1 | 219 40.4 | 1 12.0 -13 19.6 | 298 34.1 -24 11.8 | | | | |
| 12 | 2 47.3 -21 44.9 | 249 45.3 | 31 10.9 -13 21.6 | 328 34.9 -24 11.5 | | | | |
| 14 | 32 46.8 -21 45.7 | 279 50.2 | 61 9.8 -13 23.6 | 358 35.6 -24 11.2 | | | | |
| 16 | 62 46.4 -21 46.5 | 309 55.2 | 91 8.7 -13 25.6 | 28 36.3 -24 11.0 | | | | |
| 18 | 92 45.9 -21 47.3 | 340 .1 | 121 7.6 -13 27.6 | 58 37.1 -24 10.7 | | | | |
| 20 | 122 45.5 -21 48.0 | 10 5.0 | 151 6.5 -13 29.6 | 88 37.8 -24 10.4 | | | | |
| 22 | 152 45.0 -21 48.8 | 40 9.9 | 181 5.3 -13 31.6 | 118 38.5 -24 10.1 | | | | |
| Δ | -2 | -4 | | -6 | -10 | 4 | 1 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 34 | 15 4 | 0 54 | 2 39 | 16 47 | 2 7 | 9 55 | 1.5 | |
| 55 | 7 60 | 15 37 | 0 44 | 2 14 | 17 20 | 2.5 | 9 21 | 1.6 | |
| 57 | 7 36 | 16 2 | 0 37 | 1 57 | 17 44 | 2.4 | 8 57 | 1.7 | |
| 45 | 7 17 | 16 20 | 0 33 | 1 45 | 18 2 | 2.3 | 8 38 | 1.7 | |
| 40 | 7 2 | 16 36 | 0 30 | 1 36 | 18 17 | 2.3 | 8 23 | 1.8 | |
| 35 | 6 49 | 16 48 | 0 28 | 1 29 | 18 30 | 2.2 | 8 10 | 1.8 | |
| 30 | 6 38 | 16 60 | 0 26 | 1 24 | 18 41 | 2.2 | 7 59 | 1.9 | |
| 20 | 6 18 | 17 19 | 0 24 | 1 18 | 19 0 | 2.1 | 7 40 | 1.9 | |
| 10 | 6 1 | 17 36 | 0 23 | 1 15 | 19 17 | 2.0 | 7 23 | 2.0 | |
| 0 | 5 45 | 17 53 | 0 22 | 1 14 | 19 32 | 2.0 | 7 7 | 2.0 | |
| 10 | 5 29 | 18 9 | 0 23 | 1 17 | 19 47 | 1.9 | 6 51 | 2.0 | |
| 20 | 5 12 | 18 26 | 0 24 | 1 23 | 20 4 | 1.9 | 6 34 | 2.1 | |
| 30 | 4 51 | 18 47 | 0 27 | 1 34 | 20 23 | 1.8 | 6 15 | 2.1 | |
| S | | | | | | | | | |
| | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 346 36.4 118 | 20 51.2 | -10 | | 358 57.5 | 21 23.7 | 214 19.8 -11 33.1 | |
| 2 | 15 38.0 118 | 20 49.2 | -12 | | 29 3.2 | 21 23.6 | 244 24.2 -11 33.3 | |
| 4 | 44 39.5 118 | 20 46.7 | -14 | | 59 8.9 | 21 23.6 | 274 28.6 -11 33.5 | |
| 6 | 73 41.0 118 | 20 43.9 | -16 | | 89 14.5 | 21 23.5 | 304 33.0 -11 33.6 | |
| 8 | 102 42.6 118 | 20 40.7 | -18 | | 119 20.2 | 21 23.4 | 334 37.4 -11 33.8 | |
| 10 | 131 44.2 118 | 20 37.1 | -20 | | 149 25.8 | 21 23.3 | 4 41.8 -11 34.0 | |
| 12 | 160 45.8 118 | 20 33.1 | -22 | | 179 31.5 | 21 23.2 | 34 46.2 -11 34.1 | |
| 14 | 189 47.5 119 | 20 28.8 | -24 | | 209 37.1 | 21 23.2 | 64 50.6 -11 34.3 | |
| 16 | 218 49.2 119 | 20 24.0 | -26 | | 239 42.8 | 21 23.1 | 94 55.0 -11 34.5 | |
| 18 | 247 51.0 119 | 20 18.9 | -28 | | 269 48.4 | 21 23.0 | 124 59.4 -11 34.6 | |
| 20 | 276 52.8 119 | 20 13.4 | -29 | | 299 54.1 | 21 22.9 | 155 3.8 -11 34.8 | |
| 22 | 305 54.6 120 | 20 7.5 | -31 | | 329 59.7 | 21 22.8 | 185 8.2 -11 35.0 | |
| Δ | -2 | -4 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 11 20.3 | - .9 | 16.2 | T _{m̄} | 0 55 | 2.0 | 54.0 | 14.7 | | |
| 12 | 11 9.3 | T _{m̄} | 11 h 48.8 min | Starost | 16.1 d | Faza | ○ | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | ° | | Vel. | Pl. | T _{m̄} | / | ° | Vel. |
| ♀ | 9 55 | .1 | 142 | -3.3 | 7 | 0 4 | .0 | 290 | -2.4 | |
| ♂ | 14 6 | .1 | 79 | 1.1 | h | 9 41 | .0 | 145 | .9 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _⊖ | Δ | δ _⊖ | Δ | S _⊕ | δ _⊕ | S _⊕ | δ _⊕ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 334 56.5 120 | 20 1.2 | -33 | | 0 5.4 | 21 22.8 | 215 12.6 -11 35.2 | |
| 2 | 3 58.5 120 | 19 54.6 | -35 | | 30 11.0 | 21 22.7 | 245 17.0 -11 35.3 | |
| 4 | 33 .5 120 | 19 47.6 | -37 | | 60 16.7 | 21 22.6 | 275 21.4 -11 35.5 | |
| 6 | 62 2.6 121 | 19 40.2 | -39 | | 90 22.4 | 21 22.5 | 305 25.8 -11 35.7 | |
| 8 | 91 4.8 121 | 19 32.5 | -41 | | 120 28.0 | 21 22.4 | 335 30.2 -11 35.8 | |
| 10 | 120 7.0 121 | 19 24.4 | -42 | | 150 33.7 | 21 22.3 | 5 34.6 -11 36.0 | |
| 12 | 149 9.3 122 | 19 15.9 | -44 | | 180 39.3 | 21 22.3 | 35 39.0 -11 36.2 | |
| 14 | 178 11.7 122 | 19 7.1 | -46 | | 210 45.0 | 21 22.2 | 65 43.4 -11 36.3 | |
| 16 | 207 14.1 123 | 18 57.9 | -48 | | 240 50.6 | 21 22.1 | 95 47.8 -11 36.5 | |
| 18 | 236 16.6 123 | 18 48.4 | -49 | | 270 56.3 | 21 22.0 | 125 52.2 -11 36.7 | |
| 20 | 265 19.2 123 | 18 38.5 | -51 | | 301 1.9 | 21 21.9 | 155 56.6 -11 36.8 | |
| 22 | 294 21.9 124 | 18 28.2 | -53 | | 331 7.6 | 21 21.9 | 186 1.0 -11 37.0 | |
| Δ | -2 | -4 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _⊖ | t | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 10 58.3 | - .9 | 16.2 | T _{m̄} | 1 44 | 2.0 | 54.2 | 14.8 | | |
| 12 | 10 46.9 | T _{m̄} | 11 h 49.2 min | Starost | 17.1 d | Faza | ○ | | | |
| | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | ° | | Vel. | Pl. | T _{m̄} | / | ° | Vel. |
| ♀ | 9 56 | .1 | 141 | -3.3 | 7 | 23 55 | .0 | 290 | -2.4 | |
| ♂ | 14 5 | .1 | 78 | 1.1 | h | 9 38 | .0 | 145 | .9 | |

2. DECEMBAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 38.9 -21 58.6 | 71 14.0 | 210 50.7 -13 57.4 | 148 48.1 -24 6.1 | | | | |
| 2 | 212 38.4 -21 59.4 | 101 18.9 | 240 49.6 -13 59.4 | 178 48.9 -24 5.8 | | | | |
| 4 | 242 37.9 -22 .1 | 131 23.9 | 270 48.4 -14 1.4 | 208 49.6 -24 5.4 | | | | |
| 6 | 272 37.4 -22 .8 | 161 28.8 | 300 47.3 -14 3.3 | 238 50.4 -24 5.1 | | | | |
| 8 | 302 36.9 -22 5.8 | 191 33.7 | 330 46.1 -14 5.3 | 268 51.1 -24 4.8 | | | | |
| 10 | 332 36.4 -22 2.3 | 221 38.7 | o 45.0 -14 7.2 | 298 51.8 -24 4.4 | | | | |
| 12 | 2 36.0 -22 3.0 | 251 43.6 | 30 43.8 -14 9.2 | 328 52.6 -24 4.1 | | | | |
| 14 | 32 35.5 -22 3.7 | 281 48.5 | 60 42.7 -14 11.1 | 358 53.3 -24 3.8 | | | | |
| 16 | 62 35.0 -22 4.4 | 311 53.4 | 90 41.5 -14 13.1 | 28 54.0 -24 3.5 | | | | |
| 18 | 92 34.5 -22 5.1 | 341 58.4 | 120 40.4 -14 15.0 | 58 54.8 -24 3.1 | | | | |
| 20 | 122 34.0 -22 5.8 | 12 3.3 | 150 39.2 -14 17.0 | 88 55.5 -24 2.8 | | | | |
| 22 | 152 33.5 -22 6.5 | 42 8.2 | 180 38.1 -14 18.9 | 118 56.3 -24 2.4 | | | | |
| Δ | -2 | -4 | | -6 | -10 | 4 | 2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | |
|----|-------|-------|---------------------|--------|--------|------|-------|------|
| | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 38 | 15 1 | 0 55 | 2 40 | 19 1 | 3.1 | 10 56 | .9 |
| 55 | 8 3 | 15 36 | 0 44 | 2 14 | 19 25 | 2.9 | 10 31 | 1.1 |
| 50 | 7 38 | 16 0 | 0 38 | 1 57 | 19 43 | 2.7 | 10 12 | 1.2 |
| 45 | 7 19 | 16 20 | 0 33 | 1 45 | 19 57 | 2.5 | 9 57 | 1.4 |
| 40 | 7 4 | 16 35 | 0 30 | 1 36 | 20 8 | 2.4 | 9 45 | 1.5 |
| 35 | 6 51 | 16 48 | 0 28 | 1 30 | 20 18 | 2.4 | 9 35 | 1.5 |
| 30 | 6 39 | 16 60 | 0 26 | 1 25 | 20 27 | 2.3 | 9 25 | 1.6 |
| 20 | 6 20 | 17 20 | 0 24 | 1 18 | 20 42 | 2.1 | 9 10 | 1.7 |
| 10 | 6 2 | 17 37 | 0 23 | 1 15 | 20 55 | 2.0 | 8 56 | 1.8 |
| 0 | 5 46 | 17 53 | 0 22 | 1 14 | 21 7 | 1.9 | 8 43 | 1.9 |
| 10 | 5 29 | 18 10 | 0 23 | 1 17 | 21 19 | 1.8 | 8 29 | 2.0 |
| 20 | 5 12 | 18 28 | 0 24 | 1 23 | 21 32 | 1.7 | 8 15 | 2.1 |
| 30 | 4 51 | 18 48 | 0 27 | 1 35 | 21 46 | 1.6 | 7 59 | 2.3 |
| 35 | 4 39 | 19 0 | 0 29 | 1 44 | 21 55 | 1.5 | 7 50 | 2.3 |
| 40 | 4 25 | 19 14 | 0 32 | 1 59 | 22 4 | 1.4 | 7 39 | 2.4 |
| 45 | 4 9 | 19 31 | 0 36 | 2 24 | 22 15 | 1.3 | 7 26 | 2.5 |
| 50 | 3 48 | 19 52 | 0 43 | ::: | 22 29 | 1.2 | 7 10 | 2.6 |
| 55 | 3 21 | 20 19 | 0 54 | ::: | 22 46 | 1.0 | 6 51 | 2.8 |
| 60 | 2 42 | 20 59 | 1 24 | ::: | 23 9 | .8 | 6 23 | 3.0 |
| S | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 323 24.7 124 | 18 17.7 | -55 | | 1 13.2 | 21 21.8 | 216 5.4 -11 37.2 | |
| 2 | 352 27.5 125 | 18 6.7 | -56 | | 31 18.9 | 21 21.7 | 246 9.8 -11 37.3 | |
| 4 | 21 30.4 125 | 17 55.5 | -58 | | 61 24.6 | 21 21.6 | 276 14.2 -11 37.5 | |
| 6 | 50 33.4 125 | 17 43.9 | -60 | | 91 30.2 | 21 21.5 | 306 18.7 -11 37.7 | |
| 8 | 79 36.5 126 | 17 31.9 | -61 | | 121 35.9 | 21 21.4 | 336 23.1 -11 37.8 | |
| 10 | 108 39.7 126 | 17 19.7 | -63 | | 151 41.5 | 21 21.4 | 6 27.5 -11 38.0 | |
| 12 | 137 43.0 127 | 17 7.1 | -65 | | 181 47.2 | 21 21.3 | 36 31.9 -11 38.2 | |
| 14 | 166 46.3 127 | 16 54.2 | -66 | | 211 52.8 | 21 21.2 | 66 36.3 -11 38.3 | |
| 16 | 195 49.8 128 | 16 41.0 | -68 | | 241 58.5 | 21 21.1 | 96 40.7 -11 38.5 | |
| 18 | 224 53.3 128 | 16 27.4 | -69 | | 272 4.1 | 21 21.0 | 126 45.1 -11 38.7 | |
| 20 | 253 56.9 128 | 16 13.6 | -71 | | 302 9.8 | 21 20.9 | 156 49.5 -11 38.8 | |
| 22 | 283 .6 129 | 15 59.4 | -72 | | 332 15.5 | 21 20.9 | 186 53.9 -11 39.0 | |
| Δ | -2 | -3 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|--------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 10 35.6 | -1.0 | 16.2 | T _{m̄} | 2 31 | 2.0 | 54.4 | 14.8 | |
| 12 | 10 23.9 | | | T _{m̄} | 11 h 49.6 min | Starost | 18.1 d | Faza 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 9 57 | .1 | 140 | -3.3 | ♀ | 23 51 | .0 | 290 | -2.4 |
| ♂ | 14 4 | .1 | 78 | 1.1 | ♂ | 9 34 | .0 | 145 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 312 4.3 129 | 15 44.9 | -74 | | 2 21.1 | 21 20.8 | 216 58.3 -11 39.1 | |
| 2 | 341 8.2 130 | 15 30.2 | -75 | | 32 26.8 | 21 20.7 | 247 2.7 -11 39.3 | |
| 4 | 10 12.1 130 | 15 15.1 | -77 | | 62 32.4 | 21 20.6 | 277 7.1 -11 39.5 | |
| 6 | 39 16.1 130 | 14 59.8 | -78 | | 92 38.1 | 21 20.5 | 307 11.6 -11 39.6 | |
| 8 | 68 20.2 131 | 14 44.1 | -80 | | 122 43.7 | 21 20.5 | 337 16.0 -11 39.8 | |
| 10 | 97 24.4 131 | 14 28.2 | -81 | | 152 49.4 | 21 20.4 | 7 20.4 -11 40.0 | |
| 12 | 126 28.6 131 | 14 12.0 | -82 | | 182 55.0 | 21 20.3 | 37 24.8 -11 40.1 | |
| 14 | 155 32.9 132 | 13 55.6 | -84 | | 213 .7 | 21 20.2 | 67 29.2 -11 40.3 | |
| 16 | 184 37.3 132 | 13 38.8 | -85 | | 243 6.3 | 21 20.1 | 97 33.6 -11 40.5 | |
| 18 | 213 41.7 132 | 13 21.8 | -86 | | 273 12.0 | 21 20.0 | 127 38.0 -11 40.6 | |
| 20 | 242 46.2 133 | 13 4.5 | -88 | | 303 17.7 | 21 20.0 | 157 42.4 -11 40.8 | |
| 22 | 271 50.7 133 | 12 47.0 | -89 | | 333 23.3 | 21 19.9 | 187 46.9 -11 41.0 | |
| Δ | -2 | -3 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|------|-------|-----------------|---------------|-----------------|--------|--------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | 10 12.3 | -1.0 | 16.3 | T _{m̄} | 3 18 | 1.9 | 54.8 | 14.9 | |
| 12 | 10 .3 | | | T _{m̄} | 11 h 50.0 min | Starost | 19.1 d | Faza 0 | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 9 58 | .1 | 138 | -3.2 | ♀ | 23 46 | .0 | 290 | -2.4 |
| ♂ | 14 4 | .1 | 77 | 1.1 | ♂ | 9 31 | .0 | 145 | .9 |

4. DECEMBAR

2012.

UTORAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 27.0 -22 15.4 | 73 12.3 | 210 22.8 -14 44.0 | 149 5.8 -23 57.8 | | | | |
| 2 | 212 26.5 -22 16.1 | 103 17.2 | 240 21.6 -14 45.9 | 179 6.6 -23 57.5 | | | | |
| 4 | 242 26.0 -22 16.8 | 133 22.1 | 270 20.4 -14 47.8 | 209 7.3 -23 57.1 | | | | |
| 6 | 272 25.5 -22 17.4 | 163 27.1 | 300 19.2 -14 49.7 | 239 8.1 -23 56.7 | | | | |
| 8 | 302 25.0 -22 18.1 | 193 32.0 | 330 18.0 -14 51.6 | 269 8.8 -23 56.4 | | | | |
| 10 | 332 24.5 -22 18.7 | 223 36.9 | o 16.8 -14 53.5 | 299 9.5 -23 56.0 | | | | |
| 12 | 2 24.0 -22 19.4 | 253 41.9 | 30 15.6 -14 55.4 | 329 10.3 -23 55.6 | | | | |
| 14 | 32 23.5 -22 20.0 | 283 46.8 | 60 14.5 -14 57.3 | 359 11.0 -23 55.2 | | | | |
| 16 | 62 23.0 -22 20.7 | 313 51.7 | 90 13.2 -14 59.2 | 29 11.8 -23 54.9 | | | | |
| 18 | 92 22.5 -22 21.3 | 343 56.6 | 120 12.0 -15 1.1 | 59 12.5 -23 54.5 | | | | |
| 20 | 122 21.9 -22 21.9 | 14 1.6 | 150 10.8 -15 3.0 | 89 13.2 -23 54.1 | | | | |
| 22 | 152 21.4 -22 22.6 | 44 6.5 | 180 9.6 -15 4.9 | 119 14.0 -23 53.7 | | | | |
| Δ | -3 | -3 | | -6 | -9 | 4 | 2 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 41 | 14 59 | 0 55 | 2 41 | 21 33 | 3.3 | 11 33 | .6 | |
| 55 | 8 6 | 15 34 | 0 44 | 2 15 | 21 44 | 3.0 | 11 19 | .8 | |
| 50 | 7 41 | 15 60 | 0 38 | 1 58 | 21 54 | 2.8 | 11 9 | 1.0 | |
| 45 | 7 22 | 16 19 | 0 33 | 1 46 | 22 1 | 2.7 | 10 60 | 1.1 | |
| 40 | 7 6 | 16 35 | 0 30 | 1 37 | 22 7 | 2.6 | 10 53 | 1.3 | |
| 35 | 6 52 | 16 48 | 0 28 | 1 30 | 22 12 | 2.4 | 10 46 | 1.4 | |
| 30 | 6 41 | 16 60 | 0 26 | 1 25 | 22 17 | 2.3 | 10 41 | 1.5 | |
| 20 | 6 21 | 17 20 | 0 24 | 1 18 | 22 25 | 2.2 | 10 31 | 1.6 | |
| 10 | 6 3 | 17 38 | 0 23 | 1 15 | 22 32 | 2.0 | 10 23 | 1.8 | |
| 0 | 5 47 | 17 54 | 0 22 | 1 14 | 22 38 | 1.9 | 10 15 | 1.9 | |
| 10 | 5 30 | 18 11 | 0 23 | 1 17 | 22 45 | 1.8 | 10 7 | 2.0 | |
| 20 | 5 12 | 18 29 | 0 24 | 1 23 | 22 52 | 1.6 | 9 58 | 2.2 | |
| 30 | 4 51 | 18 50 | 0 27 | 1 35 | 22 60 | 1.5 | 9 48 | 2.3 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 300 55.3 133 | 12 29.2 | -90 | | 3 29.0 | 21 19.8 | 217 51.3 -11 41.1 | |
| 2 | 330 0 134 | 12 11.2 | -91 | | 33 34.6 | 21 19.7 | 247 55.7 -11 41.3 | |
| 4 | 359 4.7 134 | 11 52.9 | -93 | | 63 40.3 | 21 19.6 | 278 .1 -11 41.4 | |
| 6 | 28 9.4 134 | 11 34.4 | -94 | | 93 45.9 | 21 19.5 | 308 4.5 -11 41.6 | |
| 8 | 57 14.2 134 | 11 15.7 | -95 | | 123 51.6 | 21 19.5 | 338 8.9 -11 41.8 | |
| 10 | 86 19.1 134 | 10 56.7 | -96 | | 153 57.2 | 21 19.4 | 8 13.3 -11 41.9 | |
| 12 | 115 23.9 134 | 10 37.5 | -97 | | 184 2.9 | 21 19.3 | 38 17.7 -11 42.1 | |
| 14 | 144 28.8 135 | 10 18.0 | -98 | | 214 8.5 | 21 19.2 | 68 22.2 -11 42.3 | |
| 16 | 173 33.7 135 | 9 58.4 | -99 | | 244 14.2 | 21 19.1 | 98 26.6 -11 42.4 | |
| 18 | 202 38.6 135 | 9 38.5 | -100 | | 274 19.9 | 21 19.0 | 128 31.0 -11 42.6 | |
| 20 | 231 43.5 135 | 9 18.4 | -101 | | 304 25.5 | 21 19.0 | 158 35.4 -11 42.7 | |
| 22 | 260 48.5 135 | 8 58.2 | -102 | | 334 31.2 | 21 18.9 | 188 39.8 -11 42.9 | |
| Δ | -3 | -3 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|------|-----------------|---------------|----------------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 9 48.4 | -1.0 | 16.3 | T _{m̄} | 4 | 1.9 | 55.2 | 15.1 | | |
| 12 | 9 36.1 | | | T _{m̄} | 11 h 50.4 min | | | | | |
| | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| | h min | / | o | | | h min | / | o | | |
| ♀ | 9 59 | .1 | 137 | -3.2 | + | 23 42 | .0 | 290 | -2.4 | |
| ♂ | 14 3 | .1 | 76 | 1.1 | h | 9 27 | .0 | 145 | .9 | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|--------|----------------|-----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 289 53.4 135 | 8 37.7 | -103 | | 4 36.8 | 21 18.8 | 218 44.2 -11 43.1 | |
| 2 | 318 58.4 135 | 8 17.0 | -104 | | 34 42.5 | 21 18.7 | 248 48.7 -11 43.2 | |
| 4 | 348 3.3 135 | 7 56.2 | -105 | | 64 48.1 | 21 18.6 | 278 53.1 -11 43.4 | |
| 6 | 17 8.2 134 | 7 35.2 | -106 | | 94 53.8 | 21 18.5 | 308 57.5 -11 43.5 | |
| 8 | 46 13.1 134 | 7 13.9 | -107 | | 124 59.4 | 21 18.3 | 339 1.9 -11 43.7 | |
| 10 | 75 18.0 134 | 6 52.6 | -108 | | 155 5.1 | 21 18.4 | 9 6.3 -11 43.9 | |
| 12 | 104 22.8 134 | 6 31.0 | -109 | | 185 10.7 | 21 18.3 | 39 10.7 -11 44.0 | |
| 14 | 133 27.6 134 | 6 9.3 | -109 | | 215 16.4 | 21 18.2 | 69 15.2 -11 44.2 | |
| 16 | 162 32.4 134 | 5 47.4 | -110 | | 245 22.0 | 21 18.1 | 99 19.6 -11 44.4 | |
| 18 | 191 37.1 133 | 5 25.4 | -111 | | 275 27.7 | 21 18.1 | 129 24.0 -11 44.5 | |
| 20 | 220 41.8 133 | 5 3.2 | -112 | | 305 33.4 | 21 18.0 | 159 28.4 -11 44.7 | |
| 22 | 249 46.4 133 | 4 40.9 | -112 | | 335 39.0 | 21 17.9 | 189 32.8 -11 44.8 | |
| Δ | -3 | -3 | | | 28 | 0 | 22 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|------|-----------------|---------------|----------------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 9 23.8 | -1.0 | 16.3 | T _{m̄} | 4 49 | 1.9 | 55.8 | 15.2 | | |
| 12 | 9 11.3 | | | T _{m̄} | 11 h 50.8 min | | | | | |
| | | | | | | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| | h min | / | o | | | h min | / | o | | |
| ♀ | 9 60 | .1 | 136 | -3.2 | + | 23 37 | .0 | 290 | -2.4 | |
| ♂ | 14 3 | .1 | 75 | 1.1 | h | 9 24 | .0 | 145 | .9 | |

6. DECEMBAR

2012.

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 14.6 -22 30.5 | 75 10.6 | 209 53.8 -15 29.1 | 149 23.6 -23 48.5 | | | | |
| 2 | 212 14.1 -22 31.1 | 105 15.5 | 239 52.5 -15 31.0 | 179 24.3 -23 48.1 | | | | |
| 4 | 242 13.6 -22 31.7 | 135 20.4 | 269 51.3 -15 32.8 | 209 25.1 -23 47.7 | | | | |
| 6 | 272 13.1 -22 32.3 | 165 25.4 | 299 50.0 -15 34.7 | 239 25.8 -23 47.3 | | | | |
| 8 | 302 12.5 -22 32.9 | 195 30.3 | 329 48.8 -15 36.5 | 269 26.5 -23 46.9 | | | | |
| 10 | 332 12.0 -22 33.5 | 225 35.2 | 359 47.6 -15 38.4 | 299 27.3 -23 46.4 | | | | |
| 12 | 2 11.5 -22 34.0 | 255 40.1 | 29 46.3 -15 40.2 | 329 28.0 -23 46.0 | | | | |
| 14 | 32 10.9 -22 34.6 | 285 45.1 | 59 45.1 -15 42.0 | 359 28.0 -23 45.6 | | | | |
| 16 | 62 10.4 -22 35.2 | 315 50.0 | 89 43.8 -15 43.9 | 29 29.5 -23 45.2 | | | | |
| 18 | 92 9.9 -22 35.7 | 345 54.9 | 119 42.6 -15 45.7 | 59 30.2 -23 44.7 | | | | |
| 20 | 122 9.3 -22 36.3 | 15 59.9 | 149 41.3 -15 47.5 | 89 31.0 -23 44.3 | | | | |
| 22 | 152 8.8 -22 36.9 | 46 4.8 | 179 40.1 -15 49.3 | 119 31.7 -23 43.9 | | | | |
| Δ | -3 -3 | | -6 -9 | 4 2 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 45 | 14 57 | 0 56 | 2 42 | ... | ... | 0 | 11 60 | .5 |
| 55 | 8 9 | 15 33 | 0 45 | 2 16 | ... | ... | 0 | 11 58 | .8 |
| 50 | 7 43 | 15 59 | 0 38 | 1 58 | ... | ... | 0 | 11 56 | 1.0 |
| 45 | 7 24 | 16 19 | 0 33 | 1 46 | ... | ... | 0 | 11 54 | 1.1 |
| 40 | 7 8 | 16 35 | 0 30 | 1 37 | ... | ... | 0 | 11 53 | 1.3 |
| 35 | 6 54 | 16 48 | 0 28 | 1 30 | ... | ... | 0 | 11 52 | 1.4 |
| 30 | 6 42 | 17 0 | 0 26 | 1 25 | ... | ... | 0 | 11 51 | 1.5 |
| 20 | 6 22 | 17 20 | 0 24 | 1 18 | ... | ... | 0 | 11 49 | 1.7 |
| 10 | 6 4 | 17 38 | 0 23 | 1 15 | ... | ... | 0 | 11 48 | 1.8 |
| 0 | 5 48 | 17 55 | 0 22 | 1 15 | ... | ... | 0 | 11 46 | 2.0 |
| 10 | 5 31 | 18 12 | 0 23 | 1 17 | ... | ... | 0 | 11 44 | 2.1 |
| 20 | 5 12 | 18 30 | 0 24 | 1 23 | ... | ... | 0 | 11 43 | 2.3 |
| 30 | 4 51 | 18 51 | 0 27 | 1 35 | ... | ... | 0 | 11 41 | 2.4 |
| 35 | 4 39 | 19 4 | 0 29 | 1 45 | ... | ... | 0 | 11 40 | 2.6 |
| 40 | 4 25 | 19 18 | 0 32 | 2 1 | ... | ... | 0 | 11 39 | 2.7 |
| 45 | 4 7 | 19 35 | 0 37 | 2 27 | ... | ... | 0 | 11 37 | 2.8 |
| 50 | 3 46 | 19 57 | 0 44 | 3 :: | ... | ... | 0 | 11 35 | 3.0 |
| 55 | 3 18 | 20 25 | 0 56 | 3 :: | ... | ... | 0 | 11 33 | 3.2 |
| 60 | 2 37 | 21 7 | 1 31 | 3 :: | ... | ... | 0 | 11 30 | 3.4 |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|-------------|----------------|---------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 278 50.9 132 | 4 18.4 -113 | 5 44.7 | 21 17.8 | 219 37.3 -11 45.0 | | | |
| 2 | 307 55.3 132 | 3 55.9 -114 | 35 50.3 | 21 17.7 | 249 41.7 -11 45.2 | | | |
| 4 | 336 59.7 131 | 3 33.1 -114 | 65 56.0 | 21 17.6 | 279 46.1 -11 45.3 | | | |
| 6 | 6 4.0 131 | 3 10.3 -115 | 96 1.6 | 21 17.6 | 309 50.5 -11 45.5 | | | |
| 8 | 35 8.1 130 | 2 47.4 -115 | 126 7.3 | 21 17.5 | 339 54.9 -11 45.6 | | | |
| 10 | 64 12.2 130 | 2 24.3 -116 | 156 12.9 | 21 17.4 | 9 59.4 -11 45.8 | | | |
| 12 | 93 16.2 129 | 2 1.2 -116 | 186 18.6 | 21 17.3 | 40 3.8 -11 45.9 | | | |
| 14 | 122 20.0 129 | 1 38.0 -117 | 216 24.2 | 21 17.2 | 70 8.2 -11 46.1 | | | |
| 16 | 151 23.7 128 | 1 14.6 -117 | 246 29.9 | 21 17.1 | 100 12.6 -11 46.3 | | | |
| 18 | 180 27.3 127 | 0 51.2 -117 | 276 35.5 | 21 17.1 | 130 17.0 -11 46.4 | | | |
| 20 | 209 30.8 126 | 0 27.7 -118 | 306 41.2 | 21 17.0 | 160 21.5 -11 46.6 | | | |
| 22 | 238 34.1 126 | 0 4.2 -118 | 336 46.8 | 21 16.9 | 190 25.9 -11 46.7 | | | |
| Δ | -3 -3 | | -6 -9 | 4 2 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 8 58.8 | -1.1 | 16.3 | T _{m̄} | 5 35 | 2.0 | 56.6 | 15.4 |
| 12 | 8 45.9 | T _{m̄} | 11 h 51.2 min | Starost | 22.1 d | Faza | 1 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | | | | h min / | ° | | |
| 0 | 10 1 | .1 | 135 | -3.2 | 4 | 23 33 | .0 | 291 |
| Δ | 14 2 | .1 | 74 | 1.1 | h | 9 20 | .0 | 144 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------------|----------------|---------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 267 37.2 125 | - 0 19.4 -118 | 6 52.5 | 21 16.8 | 220 30.3 -11 46.9 | | | |
| 2 | 296 40.2 124 | - 0 43.1 -119 | 36 58.1 | 21 16.7 | 250 34.7 -11 47.1 | | | |
| 4 | 325 43.0 123 | - 1 6.8 -119 | 67 3.8 | 21 16.6 | 280 39.2 -11 47.2 | | | |
| 6 | 354 45.6 122 | - 1 30.5 -119 | 97 9.4 | 21 16.6 | 310 43.6 -11 47.4 | | | |
| 8 | 23 48.1 121 | - 1 54.3 -119 | 127 15.1 | 21 16.7 | 340 48.0 -11 47.5 | | | |
| 10 | 53 50.3 120 | - 2 18.1 -119 | 157 20.7 | 21 16.4 | 10 52.4 -11 47.7 | | | |
| 12 | 81 52.4 119 | - 2 42.0 -119 | 187 26.4 | 21 16.3 | 40 56.9 -11 47.8 | | | |
| 14 | 110 54.2 118 | - 3 5.8 -119 | 217 32.0 | 21 16.2 | 71 1.3 -11 48.0 | | | |
| 16 | 139 55.8 117 | - 3 29.6 -119 | 247 37.7 | 21 16.1 | 101 5.7 -11 48.2 | | | |
| 18 | 168 57.2 116 | - 3 53.5 -119 | 277 43.3 | 21 16.1 | 131 10.1 -11 48.3 | | | |
| 20 | 197 58.4 115 | - 4 17.3 -119 | 307 49.0 | 21 16.0 | 161 14.6 -11 48.5 | | | |
| 22 | 226 59.3 113 | - 4 41.1 -119 | 337 54.6 | 21 15.9 | 191 19.0 -11 48.6 | | | |
| Δ | -3 -3 | | -6 -9 | 28 0 | 22 -1 | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | | | h min | min | / | |
| 00 | 8 33.1 | -1.1 | 16.3 | T _{m̄} | 6 22 | 2.0 | 57.4 | 15.6 |
| 12 | 8 20.0 | T _{m̄} | 11 h 51.7 min | Starost | 23.1 d | Faza | 1 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| h min / | ° | | | | h min / | ° | | |
| 0 | 10 2 | .1 | 133 | -3.2 | 4 | 23 28 | .0 | 291 |
| Δ | 14 1 | .1 | 73 | 1.1 | h | 9 17 | .0 | 144 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 182 1.7 -22 43.9 | 77 8.8 | 209 23.6 -16 12.8 | 149 41.4 -23 38.1 | | | | |
| 2 | 212 1.2 -22 44.4 | 107 13.8 | 239 22.3 -16 14.6 | 179 42.1 -23 37.7 | | | | |
| 4 | 242 .6 -22 44.9 | 137 18.7 | 269 21.0 -16 16.3 | 209 42.8 -23 37.2 | | | | |
| 6 | 272 .1 -22 45.4 | 167 23.6 | 299 19.7 -16 18.1 | 239 43.6 -23 36.7 | | | | |
| 8 | 301 59.5 -22 45.9 | 197 28.6 | 329 18.4 -16 19.9 | 269 44.3 -23 36.3 | | | | |
| 10 | 331 58.9 -22 46.4 | 227 33.1 | 359 17.1 -16 21.7 | 299 45.1 -23 35.8 | | | | |
| 12 | 1 58.4 -22 46.9 | 257 38.4 | 29 15.8 -16 23.4 | 329 45.8 -23 35.3 | | | | |
| 14 | 31 57.8 -22 47.4 | 287 43.3 | 59 14.5 -16 25.2 | 359 46.6 -23 34.9 | | | | |
| 16 | 61 57.3 -22 47.9 | 317 48.3 | 89 13.2 -16 26.9 | 29 47.3 -23 34.4 | | | | |
| 18 | 91 56.7 -22 48.4 | 347 53.2 | 119 11.9 -16 28.7 | 59 48.0 -23 33.9 | | | | |
| 20 | 121 56.2 -22 48.9 | 17 58.1 | 149 10.6 -16 30.5 | 89 48.8 -23 33.5 | | | | |
| 22 | 151 55.6 -22 49.4 | 48 3.1 | 179 9.3 -16 32.2 | 119 49.5 -23 33.0 | | | | |
| Δ | -3 -2 | | -6 -9 | 4 2 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 48 | 14 56 | 0 56 | 2 43 | 1 38 | 3.7 | 12 27 | .7 | |
| 55 | 8 12 | 15 32 | 0 45 | 2 16 | 1 31 | 3.4 | 12 37 | 1.0 | |
| 50 | 7 46 | 15 58 | 0 38 | 1 59 | 1 26 | 3.2 | 12 44 | 1.2 | |
| 45 | 7 26 | 16 18 | 0 34 | 1 46 | 1 21 | 3.0 | 12 50 | 1.4 | |
| 40 | 7 9 | 16 35 | 0 30 | 1 37 | 1 17 | 2.8 | 12 55 | 1.5 | |
| 35 | 6 56 | 16 48 | 0 28 | 1 30 | 1 14 | 2.7 | 12 60 | 1.6 | |
| 30 | 6 44 | 17 0 | 0 26 | 1 25 | 1 11 | 2.6 | 13 4 | 1.7 | |
| 20 | 6 23 | 17 21 | 0 24 | 1 18 | 1 7 | 2.4 | 13 11 | 1.9 | |
| 10 | 6 5 | 17 39 | 0 23 | 1 15 | 1 2 | 2.3 | 13 17 | 2.0 | |
| 0 | 5 48 | 17 56 | 0 22 | 1 15 | 0 58 | 2.1 | 13 22 | 2.2 | |
| 10 | 5 31 | 18 13 | 0 23 | 1 17 | 0 55 | 2.0 | 13 28 | 2.3 | |
| 20 | 5 13 | 18 31 | 0 24 | 1 24 | 0 51 | 1.8 | 13 34 | 2.5 | |
| 30 | 4 52 | 18 53 | 0 27 | 1 36 | 0 46 | 1.6 | 13 41 | 2.7 | |
| 35 | 4 39 | 19 5 | 0 29 | 1 46 | 0 44 | 1.5 | 13 45 | 2.8 | |
| 40 | 4 24 | 19 20 | 0 33 | 2 1 | 0 41 | 1.4 | 13 49 | 2.9 | |
| 45 | 4 7 | 19 37 | 0 37 | 2 29 | 0 37 | 1.3 | 13 55 | 3.0 | |
| 50 | 3 45 | 19 59 | 0 44 | ::: | 0 33 | 1.1 | 14 1 | 3.2 | |
| 55 | 3 17 | 20 28 | 0 56 | ::: | 0 28 | .9 | 14 9 | 3.4 | |
| 60 | 2 35 | 21 10 | 1 34 | ::: | 0 22 | .6 | 14 19 | 3.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 256 .0 112 - 5 4.8 -119 | 8 .3 | 21 15.8 | 221 23.4 -11 48.8 | | | | |
| 2 | 285 .5 111 - 5 28.5 -118 | 38 5.9 | 21 15.7 | 251 27.9 -11 48.9 | | | | |
| 4 | 314 .6 109 - 5 52.2 -118 | 68 11.6 | 21 15.6 | 281 32.3 -11 49.1 | | | | |
| 6 | 343 .5 108 - 6 15.8 -118 | 98 17.2 | 21 15.6 | 311 36.7 -11 49.2 | | | | |
| 8 | 12 .1 107 - 6 39.4 -117 | 128 22.8 | 21 15.5 | 341 41.1 -11 49.4 | | | | |
| 10 | 40 59.5 105 - 7 2.8 -117 | 158 28.5 | 21 15.4 | 11 45.6 -11 49.6 | | | | |
| 12 | 68 58.5 104 - 7 26.2 -116 | 188 34.1 | 21 15.3 | 41 50.0 -11 49.7 | | | | |
| 14 | 98 57.3 102 - 7 49.5 -116 | 218 39.8 | 21 15.2 | 71 54.4 -11 49.9 | | | | |
| 16 | 127 55.7 101 - 8 12.6 -115 | 248 45.4 | 21 15.1 | 101 58.9 -11 50.0 | | | | |
| 18 | 156 53.9 99 - 8 35.7 -115 | 278 51.1 | 21 15.1 | 132 3.3 -11 50.2 | | | | |
| 20 | 185 51.7 97 - 8 58.6 -114 | 308 56.7 | 21 15.0 | 162 7.7 -11 50.3 | | | | |
| 22 | 214 49.2 96 - 9 21.3 -113 | 339 2.4 | 21 14.9 | 192 12.1 -11 50.5 | | | | |
| Δ | -3 -2 | | -7 -9 | 4 2 | | | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | | | | | |
| 00 | 8 7.0 | -1.1 | 16.3 | T _{m̄} | 7 10 | 2.2 | 58.3 | 15.9 | |
| 12 | 7 53.7 | T _{m̄} | 11 h 52.1 min | Starost | 24.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 10 3 | .1 | 132 | -3.2 | 4 | 23 24 | .0 | 291 | -2.4 |
| ♂ | 14 1 | .1 | 73 | 1.1 | h | 9 13 | .0 | 144 | .9 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------------|----------|----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 243 46.3 94 - 9 44.0 -112 | 9 8.0 | 21 14.8 | 222 16.6 -11 50.6 | | | | |
| 2 | 272 43.2 92 - 10 6.4 -111 | 39 13.7 | 21 14.7 | 252 21.0 -11 50.8 | | | | |
| 4 | 301 39.7 91 - 10 28.7 -110 | 69 19.3 | 21 14.6 | 282 25.4 -11 51.0 | | | | |
| 6 | 330 35.8 89 - 10 50.8 -110 | 99 24.9 | 21 14.6 | 312 29.9 -11 51.1 | | | | |
| 8 | 359 31.6 87 - 11 12.7 -108 | 129 30.6 | 21 14.5 | 342 34.3 -11 51.3 | | | | |
| 10 | 28 27.0 85 - 11 34.4 -107 | 159 36.2 | 21 14.4 | 12 38.7 -11 51.4 | | | | |
| 12 | 57 22.1 84 - 11 55.9 -106 | 189 41.9 | 21 14.3 | 42 43.2 -11 51.6 | | | | |
| 14 | 86 16.8 82 - 12 17.1 -105 | 219 47.5 | 21 14.2 | 72 47.6 -11 51.7 | | | | |
| 16 | 115 11.2 80 - 12 38.1 -105 | 249 53.2 | 21 14.1 | 102 52.0 -11 51.9 | | | | |
| 18 | 144 5.2 78 - 12 58.8 -102 | 279 58.8 | 21 14.1 | 132 56.5 -11 52.0 | | | | |
| 20 | 172 58.8 76 - 13 19.3 -101 | 310 4.4 | 21 14.0 | 163 .9 -11 52.2 | | | | |
| 22 | 201 52.0 74 - 13 39.5 -99 | 340 10.1 | 21 13.9 | 193 5.3 -11 52.3 | | | | |
| Δ | -3 -2 | | -7 -9 | 28 0 | | 22 -1 | | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | | | | | |
| 00 | 7 40.4 | -1.1 | 16.3 | T _{m̄} | 8 2 | 2.3 | 59.2 | 16.1 | |
| 12 | 7 26.8 | T _{m̄} | 11 h 52.6 min | Starost | 25.1 d | Faza | ● | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | / | ° | | h min / | ° | / | ° | |
| ♀ | 10 4 | .1 | 131 | -3.2 | 4 | 23 19 | .0 | 291 | -2.4 |
| ♂ | 14 0 | .1 | 72 | 1.1 | h | 9 10 | .0 | 144 | .9 |

10. DECEMBAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 48.3 | -22 | 55.4 | 79 | 7.1 | 208 | 52.2 |
| 2 | 211 | 47.7 | -22 | 55.9 | 109 | 12.1 | 238 | 50.8 |
| 4 | 241 | 47.1 | -22 | 56.3 | 139 | 17.0 | 268 | 49.5 |
| 6 | 271 | 46.6 | -22 | 56.7 | 169 | 21.9 | 298 | 48.1 |
| 8 | 301 | 46.0 | -22 | 57.2 | 199 | 26.8 | 328 | 46.8 |
| 10 | 331 | 45.4 | -22 | 57.6 | 229 | 31.8 | 358 | 45.5 |
| 12 | 1 | 44.8 | -22 | 58.0 | 259 | 36.7 | 28 | 44.1 |
| 14 | 31 | 44.3 | -22 | 58.4 | 289 | 41.6 | 58 | 42.8 |
| 16 | 61 | 43.7 | -22 | 58.9 | 319 | 46.6 | 84 | 41.4 |
| 18 | 91 | 43.1 | -22 | 59.3 | 349 | 51.5 | 118 | 40.1 |
| 20 | 121 | 42.5 | -22 | 59.7 | 19 | 56.4 | 148 | 38.7 |
| 22 | 151 | 42.0 | -23 | .1 | 50 | 1.3 | 178 | 37.4 |
| Δ | -3 | -2 | | | | | -7 | -8 |
| | | | | | | | 4 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | ø | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 51 | 14 54 | 0 57 | 2 44 | 4 38 | 3 8 | 13 6 | 1 3 | |
| 55 | 8 14 | 15 32 | 0 45 | 2 17 | 4 16 | 3 5 | 13 29 | 1 6 | |
| 50 | 7 48 | 15 58 | 0 38 | 1 59 | 3 60 | 3 3 | 13 47 | 1 8 | |
| 45 | 7 28 | 16 18 | 0 34 | 1 46 | 3 47 | 3 1 | 14 1 | 1 9 | |
| 40 | 7 11 | 16 35 | 0 30 | 1 37 | 3 36 | 3 0 | 14 12 | 2 0 | |
| 35 | 6 57 | 16 49 | 0 28 | 1 30 | 3 28 | 2 9 | 14 22 | 2 1 | |
| 30 | 6 45 | 17 1 | 0 26 | 1 25 | 3 20 | 2 8 | 14 31 | 2 2 | |
| 20 | 6 24 | 17 21 | 0 24 | 1 18 | 3 6 | 2 7 | 14 46 | 2 3 | |
| 10 | 6 6 | 17 40 | 0 23 | 1 15 | 2 55 | 2 6 | 14 59 | 2 4 | |
| 0 | 5 49 | 17 57 | 0 22 | 1 15 | 2 44 | 2 4 | 15 11 | 2 5 | |
| 10 | 5 32 | 18 14 | 0 23 | 1 17 | 2 33 | 2 3 | 15 23 | 2 6 | |
| 20 | 5 14 | 18 33 | 0 24 | 1 24 | 2 22 | 2 2 | 15 37 | 2 7 | |
| 30 | 4 52 | 18 54 | 0 27 | 1 36 | 2 9 | 2 0 | 15 52 | 2 8 | |
| 35 | 4 39 | 19 7 | 0 30 | 1 46 | 2 1 | 2 0 | 16 1 | 2 9 | |
| 40 | 4 25 | 19 22 | 0 33 | 2 2 | 1 53 | 1 9 | 16 11 | 3 0 | |
| 45 | 4 7 | 19 39 | 0 37 | 2 30 | 1 43 | 1 7 | 16 22 | 3 1 | |
| 50 | 3 45 | 20 1 | 0 44 | ::: | 1 31 | 1 6 | 16 37 | 3 2 | |
| 55 | 3 16 | 20 30 | 0 57 | ::: | 1 17 | 1 4 | 16 55 | 3 4 | |
| 60 | 2 33 | 21 13 | 1 37 | ::: | 0 57 | 1 1 | 17 20 | 3 7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|------|------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η | | |
| h | o | / | o | / | o | / | o | / | | |
| 0 | 230 | 44.9 | 72 | -13 59.3 | -98 | 10 15.7 | 21 13.8 | 223 | 9.8 | |
| 2 | 259 | 37.4 | 70 | -14 18.9 | -96 | 40 21.4 | 21 13.7 | 253 | 14.2 | |
| 4 | 288 | 29.5 | 69 | -14 38.2 | -95 | 70 27.0 | 21 13.6 | 283 | 18.6 | |
| 6 | 317 | 21.2 | 67 | -14 57.1 | -93 | 100 32.6 | 21 13.6 | 313 | 23.1 | |
| 8 | 346 | 12.5 | 65 | -15 15.6 | -91 | 130 38.3 | 21 13.5 | 343 | 27.5 | |
| 10 | 15 | 3.5 | 63 | -15 33.9 | -89 | 160 43.9 | 21 13.4 | 13 | 32.0 | |
| 12 | 43 | 54.1 | 61 | -15 51.7 | -87 | 190 49.6 | 21 13.3 | 43 | 36.4 | |
| 14 | 72 | 44.3 | 59 | -16 9.1 | -85 | 220 55.2 | 21 13.2 | 73 | 40.8 | |
| 16 | 101 | 34.1 | 57 | -16 26.2 | -83 | 251 | .8 | 103 | 45.3 | |
| 18 | 130 | 23.6 | 56 | -16 42.8 | -81 | 281 | 6.5 | 21 13.1 | 133 | 49.7 |
| 20 | 159 | 12.7 | 54 | -16 59.0 | -79 | 311 | 12.1 | 21 13.0 | 163 | 54.1 |
| 22 | 188 | 1.4 | 52 | -17 14.8 | -77 | 341 | 17.7 | 21 12.9 | 193 | 58.6 |
| Δ | -3 | -2 | | | | | 28 | 0 | 22 | |
| | | | | | | | | | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 7 13.3 | -1.1 | 16.3 | T _{m̄} | 8 57 | 2.5 | 60.1 | 16.4 |
| 12 | 6 59.5 | T _{m̄} | 11 h 53.0 min | Starost | 26.1 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| | h min | / | ° | | | h min | / | ° |
| ø | 10 5 | .1 | 130 | -3.2 | 4 | 23 15 | .0 | 291 |
| ɔ̄ | 13 60 | .1 | 71 | 1.1 | h | 9 6 | .0 | 144 |

| UT | MJESEC | | | | JUPITER | | SATURN | | | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|----------------|------|------|
| | S _ø | Δ | δ _ø | Δ | S _ø | δ _ø | S _η | δ _η | | |
| h | o | / | o | / | o | / | o | / | | |
| 0 | 216 | 49.8 | 50 | -17 30.1 | -74 | 11 23.4 | 21 12.8 | 224 | 3.0 | |
| 2 | 245 | 37.8 | 48 | -17 45.0 | -72 | 41 29.0 | 21 12.7 | 254 | 7.5 | |
| 4 | 274 | 25.5 | 47 | -17 59.4 | -69 | 71 34.7 | 21 12.7 | 284 | 11.9 | |
| 6 | 303 | 12.9 | 45 | -18 13.3 | -67 | 101 40.3 | 21 12.6 | 314 | 16.3 | |
| 8 | 331 | 59.9 | 44 | -18 26.6 | -66 | 131 45.9 | 21 12.5 | 344 | 20.8 | |
| 10 | 0 | 46.6 | 42 | -18 39.5 | -62 | 161 51.6 | 21 12.4 | 14 | 25.2 | |
| 12 | 29 | 33.0 | 40 | -18 51.9 | -59 | 191 57.2 | 21 12.3 | 44 | 29.7 | |
| 14 | 58 | 19.1 | 39 | -19 3.7 | -56 | 222 | 2.8 | 21 12.2 | 74 | 34.1 |
| 16 | 87 | 4.9 | 38 | -19 15.0 | -54 | 252 | 8.5 | 21 12.2 | 104 | 38.5 |
| 18 | 115 | 50.4 | 36 | -19 25.7 | -51 | 282 | 14.1 | 21 12.1 | 134 | 43.0 |
| 20 | 144 | 35.7 | 35 | -19 35.9 | -48 | 312 | 19.7 | 21 12.0 | 164 | 47.4 |
| 22 | 173 | 20.7 | 34 | -19 45.5 | -45 | 342 | 25.4 | 21 11.9 | 194 | 51.9 |
| Δ | -3 | -2 | | | | | 28 | 0 | -1 | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|----------------|-----------------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _ø | t' | |
| h min s | s | / | | | h min | min | / | |
| 00 | 6 45.8 | -1.2 | 16.3 | T _{m̄} | 9 57 | 2.6 | 60.8 | 16.6 |
| 12 | 6 31.8 | T _{m̄} | 11 h 53.5 min | Starost | 27.1 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| | h min | / | ° | | | h min | / | ° |
| ø | 10 6 | .1 | 128 | -3.2 | 4 | 23 10 | .0 | 291 |
| ɔ̄ | 13 59 | .1 | 70 | 1.1 | h | 9 2 | .0 | 144 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 34.4 | -23 | 5.2 | 81 | 5.4 | 208 | 19.6 -17 35.0 |
| 2 | 211 | 33.8 | -23 | 5.5 | 111 | 10.3 | 238 | 18.2 -17 36.6 |
| 4 | 241 | 33.2 | -23 | 5.9 | 141 | 15.3 | 268 | 16.8 -17 38.3 |
| 6 | 271 | 32.7 | -23 | 6.2 | 171 | 20.2 | 298 | 15.4 -17 39.9 |
| 8 | 301 | 32.1 | -23 | 6.6 | 201 | 25.1 | 328 | 14.0 -17 41.5 |
| 10 | 331 | 31.5 | -23 | 7.0 | 231 | 30.0 | 358 | 12.6 -17 43.2 |
| 12 | 1 | 30.9 | -23 | 7.3 | 261 | 35.0 | 28 | 11.2 -17 44.8 |
| 14 | 31 | 30.3 | -23 | 7.7 | 291 | 39.9 | 58 | 9.8 -17 46.4 |
| 16 | 61 | 29.7 | -23 | 8.0 | 321 | 44.8 | 88 | 8.4 -17 48.0 |
| 18 | 91 | 29.1 | -23 | 8.3 | 351 | 49.8 | 118 | 7.0 -17 49.6 |
| 20 | 121 | 28.5 | -23 | 8.7 | 21 | 54.7 | 148 | 5.6 -17 51.2 |
| 22 | 151 | 27.9 | -23 | 9.0 | 51 | 59.6 | 178 | 4.2 -17 52.8 |
| Δ | -3 | -2 | | | | | -7 | -8 |
| | | | | | | | 4 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | | | |
|---------|-------------------------|-----------------|---------------------|-----------------|--------|----------------|-----------------|-------|-------------------------|------|------|--|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | | | |
| 60 | 8 54 | 14 54 | 0 57 | 2 45 | 7 33 | 2 9 | 14 23 | 2 6 | | | | |
| 55 | 8 16 | 15 31 | 0 45 | 2 17 | 6 59 | 2 9 | 14 57 | 2 7 | | | | |
| 50 | 7 50 | 15 58 | 0 38 | 1 59 | 6 34 | 2 8 | 15 22 | 2 7 | | | | |
| 45 | 7 29 | 16 18 | 0 34 | 1 47 | 6 15 | 2 8 | 15 41 | 2 7 | | | | |
| 40 | 7 13 | 16 35 | 0 30 | 1 37 | 6 0 | 2 8 | 15 57 | 2 7 | | | | |
| 35 | 6 59 | 16 49 | 0 28 | 1 31 | 5 47 | 2 8 | 16 10 | 2 7 | | | | |
| 30 | 6 47 | 17 1 | 0 26 | 1 25 | 5 36 | 2 7 | 16 22 | 2 7 | | | | |
| 20 | 6 26 | 17 22 | 0 24 | 1 19 | 5 17 | 2 7 | 16 41 | 2 7 | | | | |
| 10 | 6 7 | 17 40 | 0 23 | 1 15 | 4 60 | 2 7 | 16 59 | 2 7 | | | | |
| 0 | 5 50 | 17 58 | 0 22 | 1 15 | 4 44 | 2.7 | 17 15 | 2.7 | | | | |
| 10 | 5 33 | 18 15 | 0 23 | 1 18 | 4 29 | 2.6 | 17 31 | 2.7 | | | | |
| 20 | 5 14 | 18 34 | 0 25 | 1 24 | 4 12 | 2.6 | 17 48 | 2.7 | | | | |
| 30 | 4 52 | 18 56 | 0 27 | 1 36 | 3 53 | 2.6 | 18 7 | 2.6 | | | | |
| 35 | 4 40 | 19 8 | 0 30 | 1 47 | 3 42 | 2.6 | 18 19 | 2.6 | | | | |
| 40 | 4 25 | 19 23 | 0 33 | 2 2 | 3 30 | 2.5 | 18 32 | 2.6 | | | | |
| 45 | 4 7 | 19 41 | 0 37 | 2 31 | 3 15 | 2.5 | 18 48 | 2.6 | | | | |
| 50 | 3 45 | 20 3 | 0 44 | 3 :: | 2 57 | 2.4 | 19 7 | 2.6 | | | | |
| 55 | 3 16 | 20 33 | 0 57 | 3 :: | 2 34 | 2.4 | 19 31 | 2.6 | | | | |
| 60 | 2 32 | 21 16 | 1 40 | 3 :: | 2 2 | 2.3 | 20 6 | 2.5 | | | | |
| S | | | | | | | | | | | | |
| UT | SUNCE | | MJESEC | | | | MJESEC | | MJESEC | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | UT | e = T _p - UT | Δ/24 | t | |
| h | min | s | / | h min | min | / | / | h | min | s | / | |
| 00 | 6 17.8 | -1.2 | 16.3 | T _{m̄} | 10 59 | 2.7 | 61.2 | 16.7 | | | | |
| 12 | 6 3.7 | T _{m̄} | 11 h 53.9 min | Starost | 28.1 d | Faza | ● | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | |
| Pl. | T _{m̄} | h min | / | ° | Vel. | Pl. | T _{m̄} | h min | / | ° | Vel. | |
| Q | 10 7 | .1 | 127 | -3.2 | 4 | 23 6 | .0 | 291 | -2.4 | .9 | | |
| Q' | 13 59 | .1 | 69 | 1.1 | h | 8 59 | .0 | 144 | -2.4 | .9 | | |

13. DECEMBAR

ČETVRTAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 27.3 | -23 | 9.3 | 82 | 4.5 | 208 | 2.8 -17 54.4 |
| 2 | 211 | 26.8 | -23 | 9.7 | 112 | 9.5 | 238 | 1.4 -17 56.0 |
| 4 | 241 | 26.2 | -23 | 10.0 | 142 | 14.4 | 268 | 0 -17 57.6 |
| 6 | 271 | 25.6 | -23 | 10.3 | 172 | 19.3 | 297 | 58.6 -17 59.2 |
| 8 | 301 | 25.0 | -23 | 10.6 | 202 | 24.3 | 327 | 57.2 -18 5.6 |
| 10 | 331 | 24.4 | -23 | 10.9 | 232 | 29.2 | 357 | 55.8 -18 2.4 |
| 12 | 1 | 23.8 | -23 | 11.3 | 262 | 34.1 | 27 | 54.3 -18 4.0 |
| 14 | 31 | 23.2 | -23 | 11.6 | 292 | 39.0 | 330 | 30.8 -23 4.0 |
| 16 | 61 | 22.6 | -23 | 11.9 | 322 | 44.0 | 57 | 51.8 -18 7.1 |
| 18 | 91 | 22.0 | -23 | 12.2 | 352 | 48.9 | 117 | 50.1 -18 8.7 |
| 20 | 121 | 21.4 | -23 | 12.5 | 22 | 53.8 | 147 | 48.7 -18 10.3 |
| 22 | 151 | 20.8 | -23 | 12.8 | 52 | 58.8 | 177 | 47.2 -18 11.8 |
| Δ | -3 | -2 | | | | | -7 | -8 |
| | | | | | | | 4 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | | |
|---------|-------------------------|-----------------|---------------------|-----------------|--------|----------------|-----------------|-------|-------------------------|------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | | |
| 60 | 8 55 | 14 53 | 0 57 | 2 45 | 8 43 | 2.1 | 15 26 | 3.3 | | | |
| 55 | 8 17 | 15 31 | 0 45 | 2 17 | 8 7 | 2.3 | 16 1 | 3.2 | | | |
| 50 | 7 51 | 15 58 | 0 38 | 1 59 | 7 42 | 2.4 | 16 26 | 3.0 | | | |
| 45 | 7 30 | 16 19 | 0 34 | 1 47 | 7 23 | 2.4 | 16 46 | 3.0 | | | |
| 40 | 7 13 | 16 35 | 0 30 | 1 37 | 7 7 | 2.5 | 17 1 | 2.9 | | | |
| 35 | 6 59 | 16 49 | 0 28 | 1 31 | 6 53 | 2.5 | 17 15 | 2.9 | | | |
| 30 | 6 47 | 17 2 | 0 26 | 1 25 | 6 42 | 2.5 | 17 26 | 2.8 | | | |
| 20 | 6 26 | 17 23 | 0 24 | 1 19 | 6 22 | 2.6 | 17 46 | 2.7 | | | |
| 10 | 6 8 | 17 41 | 0 23 | 1 15 | 6 4 | 2.6 | 18 3 | 2.7 | | | |
| 0 | 5 51 | 17 58 | 0 23 | 1 15 | 5 48 | 2.7 | 18 19 | 2.6 | | | |
| 10 | 5 33 | 18 16 | 0 23 | 1 18 | 5 32 | 2.7 | 18 35 | 2.5 | | | |
| 20 | 5 15 | 18 34 | 0 25 | 1 24 | 5 15 | 2.7 | 18 52 | 2.5 | | | |
| 30 | 4 53 | 18 56 | 0 27 | 1 36 | 4 55 | 2.8 | 19 11 | 2.4 | | | |
| 35 | 4 40 | 19 9 | 0 30 | 1 47 | 4 44 | 2.8 | 19 22 | 2.3 | | | |
| 40 | 4 25 | 19 24 | 0 33 | 2 3 | 4 30 | 2.8 | 19 35 | 2.3 | | | |
| 45 | 4 7 | 19 42 | 0 37 | 2 32 | 4 15 | 2.8 | 19 50 | 2.2 | | | |
| 50 | 3 45 | 20 4 | 0 44 | 3 :: | 3 56 | 2.9 | 20 9 | 2.1 | | | |
| 55 | 3 15 | 20 34 | 0 58 | 3 :: | 3 31 | 2.9 | 20 33 | 2.0 | | | |
| 60 | 2 32 | 21 18 | 1 41 | 3 :: | 2 56 | 3.0 | 21 6 | 1.8 | | | |
| S | | | | | | | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | UT | e = T _p - UT | Δ/24 | t |
| h | min | s | / | h min | min | / | / | h | min | s | / |
| 00 | 5 49.6 | -1.2 | 16.3 | T _{m̄} | 12 | 4 | 2.6 | 61.4 | 16.7 | | |
| 12 | 5 35.2 | T _{m̄} | 11 h 54.4 min | Starost | 29.1 d | Faza | ● | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. |
| Pl. | T _{m̄} | h min | / | ° | Vel. | Pl. | T _{m̄} | h min | / | ° | Vel. |
| Q | 10 8 | .1 | 126 | -3.2 | 4 | 23 1 | .0 | 292 | -2.4 | .9 | |
| Q' | 13 58 | .1 | 68 | 1.1 | h | 8 55 | .0 | 144 | -2.4 | .9 | |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 181 20.2 -23 13.1 | 83 3.7 | 207 45.8 -18 13.4 | 150 35.3 -23 .4 | | | | |
| 2 | 211 19.6 -23 13.4 | 113 8.6 | 237 44.4 -18 15.0 | 180 36.1 -22 59.9 | | | | |
| 4 | 241 19.0 -23 13.6 | 143 13.5 | 267 42.9 -18 16.5 | 210 36.8 -22 59.3 | | | | |
| 6 | 271 18.4 -23 13.9 | 173 18.5 | 297 41.5 -18 18.1 | 240 37.6 -22 58.7 | | | | |
| 8 | 301 17.8 -23 14.2 | 203 23.4 | 327 40.1 -18 19.6 | 270 38.3 -22 58.1 | | | | |
| 10 | 331 17.2 -23 14.5 | 233 28.3 | 357 38.6 -18 21.2 | 300 39.1 -22 57.5 | | | | |
| 12 | 1 16.6 -23 14.8 | 263 33.2 | 27 37.2 -18 22.7 | 330 39.9 -22 56.9 | | | | |
| 14 | 31 16.0 -23 15.0 | 293 38.2 | 57 35.7 -18 24.2 | 0 40.6 -22 56.3 | | | | |
| 16 | 61 15.4 -23 15.3 | 323 43.1 | 87 34.3 -18 25.8 | 30 41.4 -22 55.7 | | | | |
| 18 | 91 14.8 -23 15.6 | 353 48.0 | 117 32.8 -18 27.3 | 60 42.2 -22 55.1 | | | | |
| 20 | 121 14.2 -23 15.8 | 23 53.0 | 147 31.4 -18 28.8 | 90 42.9 -22 54.5 | | | | |
| 22 | 151 13.6 -23 16.1 | 53 57.9 | 177 29.9 -18 30.4 | 120 43.7 -22 53.9 | | | | |
| Δ | -3 -1 | | -7 -8 | 4 3 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 56 | 14 53 | 0 57 | 2 45 | 9 34 | 1 5 | 16 46 | 3.7 | |
| 55 | 8 18 | 15 31 | 0 45 | 2 17 | 9 21 | 1.7 | 17 17 | 3.4 | |
| 50 | 7 51 | 15 58 | 0 38 | 1 59 | 8 39 | 1.9 | 17 39 | 3.2 | |
| 45 | 7 31 | 16 19 | 0 34 | 1 47 | 8 21 | 2.0 | 17 57 | 3.1 | |
| 40 | 7 14 | 16 35 | 0 31 | 1 38 | 8 6 | 2.1 | 18 11 | 3.0 | |
| 35 | 7 0 | 16 50 | 0 28 | 1 31 | 7 53 | 2.2 | 18 23 | 2.9 | |
| 30 | 6 48 | 17 2 | 0 26 | 1 25 | 7 42 | 2.3 | 18 34 | 2.8 | |
| 20 | 6 27 | 17 23 | 0 24 | 1 19 | 7 24 | 2.4 | 18 51 | 2.7 | |
| 10 | 6 8 | 17 41 | 0 23 | 1 15 | 7 7 | 2.5 | 19 19 | 2.6 | |
| 0 | 5 51 | 17 59 | 0 23 | 1 15 | 6 52 | 2.5 | 19 21 | 2.5 | |
| 10 | 5 34 | 18 16 | 0 23 | 1 15 | 6 37 | 2.6 | 19 36 | 2.4 | |
| 20 | 5 15 | 18 35 | 0 25 | 1 24 | 6 20 | 2.7 | 19 51 | 2.2 | |
| 30 | 4 53 | 18 57 | 0 27 | 1 36 | 6 1 | 2.8 | 20 8 | 2.1 | |
| 35 | 4 40 | 19 10 | 0 30 | 1 47 | 5 50 | 2.9 | 20 19 | 2.0 | |
| 40 | 4 25 | 19 25 | 0 33 | 2 3 | 5 38 | 3.0 | 20 30 | 1.9 | |
| 45 | 4 7 | 19 43 | 0 37 | 2 32 | 5 23 | 3.1 | 20 44 | 1.8 | |
| 50 | 3 45 | 20 5 | 0 44 | 3 :: | 5 5 | 3.2 | 21 0 | 1.7 | |
| 55 | 3 15 | 20 35 | 0 58 | 3 :: | 4 41 | 3.3 | 21 21 | 1.5 | |
| 60 | 2 32 | 21 19 | 1 42 | 3 :: | 4 9 | 3.5 | 21 49 | 1.2 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 171 31.0 31 -20 22.7 | 34 | 14 46.0 21 9.9 | 226 43.1 -11 59.6 | | | | |
| 2 | 200 15.3 32 -20 15.9 | 37 | 44 51.6 21 9.8 | 256 47.5 -11 59.8 | | | | |
| 4 | 228 59.8 34 -20 8.5 | 40 | 74 57.2 21 9.7 | 286 52.0 -11 59.9 | | | | |
| 6 | 257 44.6 35 -20 .6 | 43 | 105 2.8 21 9.6 | 316 56.4 -12 .1 | | | | |
| 8 | 286 29.5 36 -19 52.0 | 46 | 135 8.5 21 9.5 | 347 .9 -12 .2 | | | | |
| 10 | 315 14.7 37 -19 42.9 | 48 | 165 14.1 21 9.5 | 17 5.3 -12 .4 | | | | |
| 12 | 344 .2 39 -19 33.2 | 51 | 195 19.7 21 9.4 | 47 9.8 -12 .5 | | | | |
| 14 | 12 46.0 40 -19 22.9 | 54 | 225 25.3 21 9.3 | 77 14.2 -12 .6 | | | | |
| 16 | 41 32.0 42 -19 12.1 | 57 | 255 30.9 21 9.2 | 107 18.7 -12 .8 | | | | |
| 18 | 70 18.4 43 -19 .7 | 59 | 285 36.5 21 9.1 | 137 23.1 -12 .9 | | | | |
| 20 | 99 5.0 45 -18 48.9 | 62 | 315 42.2 21 9.0 | 167 27.6 -12 .1 | | | | |
| 22 | 127 52.0 47 -18 36.4 | 65 | 345 47.8 21 9.0 | 197 32.0 -12 .2 | | | | |
| Δ | -3 -1 | | 28 0 | 22 -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | 5 21.0 | -1.2 | 16.3 | T _{m̄} | 13 7 | 2.5 | 61.2 | 16.7 |
| 12 | 5 6.5 | T _{m̄} | 11 h 54.9 min | Starost | 1.6 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o | | | h min / | o | | h min / | |
| ♀ | 10 9 .1 | 125 | -3.2 | 7 22 57 | .0 | 292 | -2.3 | |
| ♂ | 13 57 .1 | 68 | 1.1 | 8 52 | .0 | 144 | -.9 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------------|-----|-----------------|------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 156 39.3 48 -18 23.5 | 67 | 15 53.4 21 8.9 | 227 36.5 -12 1.4 | | | | |
| 2 | 185 27.0 50 -18 10.1 | 69 | 45 59.0 21 8.8 | 257 41.0 -12 1.5 | | | | |
| 4 | 214 15.0 52 -17 56.2 | 72 | 76 4.6 21 8.7 | 287 45.4 -12 1.6 | | | | |
| 6 | 243 3.4 54 -17 41.8 | 74 | 106 10.2 21 8.6 | 317 49.9 -12 1.8 | | | | |
| 8 | 271 52.1 56 -17 27.0 | 76 | 136 15.8 21 8.6 | 347 54.3 -12 1.9 | | | | |
| 10 | 300 41.2 57 -17 11.7 | 79 | 166 21.4 21 8.5 | 17 58.8 -12 2.1 | | | | |
| 12 | 329 30.7 59 -16 56.0 | 81 | 196 27.0 21 8.4 | 48 3.2 -12 2.2 | | | | |
| 14 | 358 20.5 61 -16 39.9 | 83 | 226 32.7 21 8.3 | 78 7.7 -12 2.4 | | | | |
| 16 | 27 10.8 63 -16 23.3 | 85 | 256 38.3 21 8.2 | 108 12.2 -12 2.5 | | | | |
| 18 | 56 1.4 65 -16 6.4 | 87 | 286 43.9 21 8.2 | 138 16.6 -12 2.6 | | | | |
| 20 | 84 52.4 67 -15 49.0 | 88 | 316 49.5 21 8.1 | 168 21.1 -12 2.8 | | | | |
| 22 | 113 43.8 69 -15 31.3 | 90 | 346 55.1 21 8.0 | 198 25.5 -12 2.9 | | | | |
| Δ | -3 -1 | | 28 0 | 22 -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | |
| h min s | s | / | | h min | min | / | | |
| 00 | 4 52.1 | -1.2 | 16.3 | T _{m̄} | 14 7 | 2.3 | 60.7 | 16.5 |
| 12 | 4 37.5 | T _{m̄} | 11 h 55.4 min | Starost | 1.6 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| h min / | o | | | h min / | o | | h min / | |
| ♀ | 10 11 .1 | 123 | -3.2 | 22 52 | .0 | 292 | -2.3 | |
| ♂ | 13 57 .1 | 67 | 1.1 | 8 48 | .0 | 144 | -.9 | |

16. DECEMBAR

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 181 | 5.7 -23 | 19.1 | 85 2.0 | 207 10.9 -18 | 49.9 | 150 53.6 -22 | 45.8 |
| 2 | 211 | 5.1 -23 | 19.3 | 115 6.9 | 237 9.4 -18 | 51.3 | 180 54.4 -22 | 45.1 |
| 4 | 241 | 4.5 -23 | 19.5 | 145 11.8 | 267 7.9 -18 | 52.8 | 210 55.1 -22 | 44.5 |
| 6 | 271 | 3.9 -23 | 19.8 | 175 16.7 | 297 6.4 -18 | 54.3 | 240 55.9 -22 | 43.9 |
| 8 | 301 | 3.3 -23 | 20.0 | 205 21.7 | 327 4.9 -18 | 55.7 | 270 56.7 -22 | 43.2 |
| 10 | 331 | 2.6 -23 | 20.2 | 235 26.6 | 357 3.4 -18 | 57.2 | 300 57.4 -22 | 42.6 |
| 12 | 1 | 2.0 -23 | 20.3 | 265 31.5 | 27 1.9 -18 | 58.7 | 330 58.2 -22 | 42.0 |
| 14 | 31 | 1.4 -23 | 20.5 | 295 36.5 | 57 .4 -19 | .1 | 0 59.0 -22 | 41.3 |
| 16 | 61 | .8 -23 | 20.7 | 325 41.4 | 86 59.0 -19 | 1.6 | 30 59.6 -22 | 40.7 |
| 18 | 91 | .2 -23 | 20.9 | 355 46.3 | 116 57.5 -19 | 3.0 | 61 .5 -22 | 40.0 |
| 20 | 120 | 59.6 -23 | 21.1 | 146 56.0 -19 | 4.5 | 91 1.3 -22 | 39.4 | |
| 22 | 150 | 59.0 -23 | 21.3 | 55 56.2 | 176 54.5 -19 | 5.9 | 121 2.1 -22 | 38.7 |
| Δ | -3 | -1 | | | -7 | -7 | 4 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 8 59 | 14 53 | 0 58 | 2 46 | 10 33 | .8 | 19 45 | 3.7 | |
| 55 | 8 20 | 15 32 | 0 45 | 2 18 | 10 15 | 1.0 | 20 2 | 3.4 | |
| 50 | 7 53 | 15 59 | 0 38 | 1 59 | 10 0 | 1.2 | 20 15 | 3.1 | |
| 45 | 7 32 | 16 19 | 0 34 | 1 47 | 9 49 | 1.4 | 20 25 | 3.0 | |
| 40 | 7 16 | 16 36 | 0 31 | 1 38 | 9 39 | 1.5 | 20 33 | 2.8 | |
| 35 | 7 1 | 16 50 | 0 28 | 1 31 | 9 31 | 1.6 | 20 41 | 2.7 | |
| 30 | 6 49 | 17 3 | 0 26 | 1 25 | 9 24 | 1.7 | 20 47 | 2.6 | |
| 20 | 6 28 | 17 24 | 0 24 | 1 19 | 9 11 | 1.9 | 20 58 | 2.4 | |
| 10 | 6 9 | 17 42 | 0 23 | 1 15 | 9 0 | 2.1 | 21 7 | 2.3 | |
| 0 | 5 52 | 17 60 | 0 23 | 1 15 | 8 50 | 2.2 | 21 16 | 2.1 | |
| 10 | 5 35 | 18 17 | 0 23 | 1 18 | 8 40 | 2.3 | 21 24 | 2.0 | |
| 20 | 5 16 | 18 36 | 0 25 | 1 24 | 8 29 | 2.5 | 21 33 | 1.8 | |
| 30 | 4 54 | 18 58 | 0 27 | 1 37 | 8 16 | 2.7 | 21 44 | 1.7 | |
| 35 | 4 41 | 19 11 | 0 30 | 1 47 | 8 9 | 2.8 | 21 50 | 1.6 | |
| 40 | 4 26 | 19 26 | 0 33 | 2 3 | 8 0 | 2.9 | 21 56 | 1.4 | |
| 45 | 4 8 | 19 44 | 0 37 | 2 33 | 7 51 | 3.0 | 22 4 | 1.3 | |
| 50 | 3 45 | 20 7 | 0 45 | ::: | 7 39 | 3.2 | 22 14 | 1.2 | |
| 55 | 3 16 | 20 36 | 0 58 | ::: | 7 24 | 3.4 | 22 25 | .9 | |
| 60 | 2 31 | 21 21 | 1 45 | ::: | 7 4 | 3.7 | 22 40 | .7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 142 | 35.6 | 71 -15 | 13.3 | 92 | 17 .7 | 21 | 7.9 |
| 2 | 171 | 27.8 | 73 -14 | 54.9 | 94 | 47 6.3 | 21 | 7.8 |
| 4 | 200 | 20.4 | 75 -14 | 36.1 | 95 | 77 11.9 | 21 | 7.8 |
| 6 | 229 | 13.3 | 77 -14 | 17.1 | 97 | 107 17.5 | 21 | 7.7 |
| 8 | 258 | 6.7 | 79 -13 | 57.7 | 98 | 137 23.1 | 21 | 7.6 |
| 10 | 287 | .5 | 81 -13 | 38.1 | 100 | 167 28.7 | 21 | 7.5 |
| 12 | 315 | 54.6 | 83 -13 | 18.1 | 101 | 197 34.3 | 21 | 7.4 |
| 14 | 344 | 49.1 | 85 -12 | 57.9 | 102 | 227 39.9 | 21 | 7.4 |
| 16 | 13 | 44.1 | 86 -12 | 37.4 | 104 | 257 45.5 | 21 | 7.3 |
| 18 | 42 | 39.4 | 88 -12 | 16.7 | 105 | 287 51.1 | 21 | 7.2 |
| 20 | 71 | 35.0 | 90 -11 | 55.8 | 106 | 317 56.7 | 21 | 7.1 |
| 22 | 100 | 31.1 | 92 -11 | 34.6 | 107 | 348 2.3 | 21 | 7.0 |
| Δ | -3 | -1 | | | | 28 | 0 | 22 -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|-----------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 4 23.0 | -1.2 | 16.3 | T _{m̄} | 15 | 3 | 2.2 | 60.0 16.3 | | |
| 12 | 4 8.3 | T _{m̄} | 11 h 55.9 min | Starost | 2.6 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| Q | 10 12 | .1 | 122 | -3.2 | 4 | 22 48 | .0 | 292 | -2.3 | |
| Q' | 13 56 | .1 | 66 | 1.1 | h | 8 45 | .0 | 143 | .9 | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 129 | 27.5 | 94 -11 | 13.2 | 108 | 18 7.9 | 21 | 7.0 |
| 2 | 158 | 24.3 | 96 -10 | 51.7 | 109 | 48 13.5 | 21 | 6.9 |
| 4 | 187 | 21.4 | 97 -10 | 29.9 | 110 | 78 19.1 | 21 | 6.8 |
| 6 | 216 | 18.9 | 99 -10 | 8.0 | 110 | 108 24.7 | 21 | 6.7 |
| 8 | 245 | 16.8 | 101 -9 | 45.9 | 111 | 138 30.3 | 21 | 6.6 |
| 10 | 274 | 14.9 | 103 -9 | 23.6 | 112 | 168 35.9 | 21 | 6.6 |
| 12 | 303 | 13.5 | 104 -9 | 1.2 | 113 | 198 41.5 | 21 | 6.5 |
| 14 | 332 | 12.3 | 106 -8 | 38.7 | 113 | 228 47.1 | 21 | 6.4 |
| 16 | 1 | 11.5 | 107 -8 | 16.1 | 114 | 258 52.7 | 21 | 6.3 |
| 18 | 30 | 11.0 | 109 -7 | 53.3 | 114 | 288 58.3 | 21 | 6.3 |
| 20 | 59 | 10.8 | 111 -7 | 30.4 | 115 | 319 3.9 | 21 | 6.2 |
| 22 | 88 | 10.9 | 112 -7 | 7.5 | 115 | 349 9.5 | 21 | 6.1 |
| Δ | -3 | -1 | | | | 28 | 0 | 22 -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|---------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min | min | / | | | | |
| 00 | 3 53.6 | -1.2 | 16.3 | T _{m̄} | 15 55 | 2.0 | 59.1 | 16.1 | | |
| 12 | 3 38.9 | T _{m̄} | 11 h 56.4 min | Starost | 3.6 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. | |
| Q | 10 13 | .1 | 121 | -3.2 | 4 | 22 43 | .0 | 292 | -2.3 | |
| Q' | 13 55 | .1 | 65 | 1.1 | h | 8 41 | .0 | 143 | .9 | |

18. DECEMBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _γ | δ _γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 51.0 | -23 | 23.3 | 87 | -2 | 206 | 34.8 -19 24.3 |
| 2 | 210 | 50.4 | -23 | 23.5 | 117 | 5.2 | 236 | 33.2 -19 25.7 |
| 4 | 240 | 49.8 | -23 | 23.6 | 147 | 10.1 | 266 | 31.7 -19 27.1 |
| 6 | 270 | 49.1 | -23 | 23.7 | 177 | 15.0 | 296 | 30.2 -19 28.4 |
| 8 | 300 | 48.5 | -23 | 23.8 | 207 | 19.9 | 326 | 28.6 -19 29.8 |
| 10 | 330 | 47.9 | -23 | 24.0 | 237 | 24.9 | 356 | 27.1 -19 31.2 |
| | | | | | | | 301 | 16.0 -22 26.7 |
| 12 | 0 | 47.3 | -23 | 24.1 | 267 | 29.8 | 26 | 25.6 -19 32.6 |
| 14 | 30 | 46.7 | -23 | 24.2 | 297 | 34.7 | 56 | 24.0 -19 33.9 |
| 16 | 60 | 46.1 | -23 | 24.3 | 327 | 39.7 | 86 | 22.5 -19 35.3 |
| 18 | 90 | 45.4 | -23 | 24.4 | 357 | 44.6 | 116 | 20.9 -19 36.6 |
| 20 | 120 | 44.8 | -23 | 24.5 | 27 | 49.5 | 146 | 19.4 -19 38.0 |
| 22 | 150 | 44.2 | -23 | 24.6 | 57 | 54.4 | 176 | 17.9 -19 39.4 |
| Δ | -3 | -1 | | | | | -8 | -7 |
| | | | | | | | 4 | 3 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 0 | 14 53 | 0 58 | 2 46 | 11 6 | .5 | 22 37 | 3.4 | |
| 55 | 8 21 | 15 32 | 0 46 | 2 18 | 11 0 | .8 | 22 40 | 3.1 | |
| 50 | 7 54 | 15 59 | 0 39 | 1 60 | 10 56 | 1.0 | 22 43 | 2.9 | |
| 45 | 7 34 | 16 20 | 0 34 | 1 47 | 10 52 | 1.1 | 22 45 | 2.7 | |
| 40 | 7 17 | 16 37 | 0 31 | 1 38 | 10 49 | 1.3 | 22 47 | 2.6 | |
| 35 | 7 3 | 16 51 | 0 28 | 1 31 | 10 46 | 1.4 | 22 48 | 2.5 | |
| 30 | 6 50 | 17 3 | 0 26 | 1 26 | 10 44 | 1.5 | 22 49 | 2.4 | |
| 20 | 6 29 | 17 25 | 0 24 | 1 19 | 10 40 | 1.6 | 22 51 | 2.2 | |
| 10 | 6 11 | 17 43 | 0 23 | 1 15 | 10 36 | 1.8 | 22 53 | 2.1 | |
| 0 | 5 53 | 18 1 | 0 23 | 1 15 | 10 32 | 1.9 | 22 55 | 1.9 | |
| 10 | 5 36 | 18 18 | 0 23 | 1 18 | 10 29 | 2.1 | 22 57 | 1.8 | |
| 20 | 5 17 | 18 37 | 0 25 | 1 24 | 10 25 | 2.3 | 22 58 | 1.6 | |
| 30 | 4 55 | 18 59 | 0 27 | 1 37 | 10 21 | 2.4 | 23 0 | 1.4 | |
| 35 | 4 41 | 19 12 | 0 30 | 1 47 | 10 19 | 2.5 | 23 1 | 1.3 | |
| 40 | 4 26 | 19 27 | 0 33 | 2 3 | 10 16 | 2.7 | 23 3 | 1.2 | |
| 45 | 4 8 | 19 45 | 0 37 | 2 33 | 10 13 | 2.8 | 23 4 | 1.1 | |
| 50 | 3 46 | 20 8 | 0 45 | ::: | 10 9 | 3.0 | 23 6 | 1.0 | |
| 55 | 3 16 | 20 38 | 0 58 | ::: | 10 4 | 3.2 | 23 8 | .8 | |
| 60 | 2 31 | 21 23 | 1 46 | ::: | 9 58 | 3.4 | 23 10 | .5 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 117 | 11.3 | 114 | - 6 44.5 | 116 | 19 15.0 | 21 6.0 | 230 17.2 -12 6.4 |
| 2 | 146 | 12.0 | 115 | - 6 21.4 | 116 | 49 20.6 | 21 5.9 | 260 21.7 -12 6.5 |
| 4 | 175 | 13.0 | 116 | - 5 58.2 | 116 | 79 26.2 | 21 5.9 | 290 26.1 -12 6.7 |
| 6 | 204 | 14.3 | 118 | - 5 35.0 | 116 | 109 31.8 | 21 5.8 | 320 30.6 -12 6.8 |
| 8 | 233 | 15.8 | 119 | - 5 11.7 | 117 | 139 37.4 | 21 5.7 | 350 35.1 -12 7.0 |
| 10 | 262 | 17.6 | 120 | - 4 48.4 | 117 | 169 43.0 | 21 5.6 | 20 39.6 -12 7.1 |
| 12 | 291 | 19.6 | 121 | - 4 25.1 | 117 | 199 48.6 | 21 5.5 | 50 44.0 -12 7.2 |
| 14 | 320 | 21.9 | 123 | - 4 1.7 | 117 | 229 54.2 | 21 5.5 | 80 48.5 -12 7.4 |
| 16 | 349 | 24.5 | 124 | - 3 38.4 | 117 | 259 59.7 | 21 5.4 | 110 53.0 -12 7.5 |
| 18 | 18 | 27.2 | 125 | - 3 15.0 | 117 | 290 5.3 | 21 5.3 | 140 57.4 -12 7.6 |
| 20 | 47 | 30.2 | 126 | - 2 51.6 | 117 | 320 10.9 | 21 5.2 | 171 1.9 -12 7.8 |
| 22 | 76 | 33.4 | 127 | - 2 28.3 | 117 | 350 16.5 | 21 5.2 | 201 6.4 -12 7.9 |
| Δ | -3 | 0 | | | | 28 | 0 | 22 -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min min / | h min min / | | | | | |
| 00 | 3 24.1 | -1.2 | 16.3 | T _{m̄} | 16 44 | 1.9 | 58.1 | 15.8 | | |
| 12 | 3 9.3 | T _{m̄} | 11 h 56.8 min | Starost | 4.6 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | o | | | h min | / | o | | |
| ♀ | 10 14 | .1 | 120 | -3.2 | 4 | 22 39 | .0 | 292 | -2.3 | |
| ♂ | 13 55 | .1 | 64 | 1.1 | h | 8 38 | .0 | 143 | .9 | |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|----------|----------------|----------------|----------------|------------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 105 | 36.8 | 128 | - 2 4.9 | 117 | 20 22.1 | 21 5.1 | 231 10.9 -12 8.0 |
| 2 | 134 | 40.4 | 129 | - 1 41.6 | 116 | 50 27.7 | 21 5.0 | 261 15.3 -12 8.2 |
| 4 | 163 | 44.2 | 130 | - 1 18.3 | 116 | 80 33.2 | 21 4.9 | 291 19.8 -12 8.3 |
| 6 | 192 | 48.2 | 131 | - 0 55.1 | 116 | 110 38.8 | 21 4.9 | 321 24.3 -12 8.4 |
| 8 | 221 | 52.3 | 132 | - 0 31.9 | 116 | 140 44.4 | 21 4.8 | 351 28.8 -12 8.6 |
| 10 | 250 | 56.6 | 132 | - 0 8.7 | 115 | 170 50.0 | 21 4.7 | 21 33.3 -12 8.7 |
| 12 | 280 | 1.1 | 133 | 0 14.3 | 115 | 200 55.5 | 21 4.6 | 51 37.7 -12 8.8 |
| 14 | 309 | 5.8 | 134 | 0 37.4 | 115 | 231 1.1 | 21 4.5 | 81 42.2 -12 9.0 |
| 16 | 338 | 10.5 | 135 | 1 .3 | 114 | 261 6.7 | 21 4.5 | 111 46.7 -12 9.1 |
| 18 | 7 | 15.5 | 135 | 1 23.2 | 114 | 291 12.3 | 21 4.4 | 141 51.2 -12 9.2 |
| 20 | 36 | 20.5 | 136 | 1 46.0 | 114 | 321 17.8 | 21 4.3 | 171 55.6 -12 9.4 |
| 22 | 65 | 25.7 | 136 | 2 8.7 | 113 | 351 23.4 | 21 4.2 | 202 .1 -12 9.5 |
| Δ | -3 | 0 | | | | 28 | 0 | 22 -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|----------------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | | |
| h min s | s | / | | h min min / | h min min / | | | | | |
| 00 | 2 54.5 | -1.2 | 16.3 | T _{m̄} | 17 30 | 1.9 | 57.1 | 15.6 | | |
| 12 | 2 39.6 | T _{m̄} | 11 h 57.3 min | Starost | 5.6 d | Faza | ● | | | |
| PLANETE | Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| | h min | / | o | | | h min | / | o | | |
| ♀ | 10 15 | .1 | 118 | -3.1 | 4 | 22 34 | .0 | 292 | -2.3 | |
| ♂ | 13 54 | .1 | 63 | 1.1 | h | 8 34 | .0 | 143 | .9 | |

20. DECEMBAR

2012.

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| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 180 36.2 -23 25.6 | 88 58.5 | 205 57.6 -19 56.6 | 151 30.9 -22 13.4 | | | | |
| 2 | 210 35.5 -23 25.7 | 119 3.4 | 235 56.0 -19 57.9 | 181 31.7 -22 12.6 | | | | |
| 4 | 240 34.9 -23 25.7 | 149 8.4 | 265 54.4 -19 59.2 | 211 32.5 -22 11.9 | | | | |
| 6 | 270 34.3 -23 25.8 | 179 13.3 | 295 52.8 -20 .5 | 241 33.2 -22 11.2 | | | | |
| 8 | 300 33.7 -23 25.8 | 209 18.2 | 325 51.3 -20 1.7 | 271 34.0 -22 10.5 | | | | |
| 10 | 330 33.1 -23 25.9 | 239 23.2 | 355 49.7 -20 3.0 | 301 34.8 -22 9.7 | | | | |
| 12 | 0 32.4 -23 25.9 | 269 28.1 | 25 48.1 -20 4.3 | 331 35.6 -22 9.0 | | | | |
| 14 | 30 31.8 -23 26.0 | 299 33.0 | 55 46.5 -20 5.6 | 1 36.4 -22 8.3 | | | | |
| 16 | 60 31.2 -23 26.0 | 329 37.9 | 85 44.9 -20 6.8 | 31 37.2 -22 7.6 | | | | |
| 18 | 90 30.6 -23 26.0 | 359 42.9 | 115 43.3 -20 8.1 | 61 38.0 -22 6.8 | | | | |
| 20 | 120 30.0 -23 26.1 | 29 47.8 | 145 41.7 -20 9.4 | 91 38.8 -22 6.1 | | | | |
| 22 | 150 29.3 -23 26.1 | 59 52.7 | 175 40.2 -20 10.6 | 121 39.6 -22 5.4 | | | | |
| Δ | -3 0 | | -8 -6 | 4 4 | | | | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|-------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 2 | 14 54 | 0 58 | 2 46 | 11 31 | .5 | ... | 0 | |
| 55 | 8 23 | 15 33 | 0 46 | 2 18 | 11 37 | .8 | ... | 0 | |
| 50 | 7 56 | 16 0 | 0 39 | 1 60 | 11 41 | 1.0 | ... | 0 | |
| 45 | 7 35 | 16 21 | 0 34 | 1 47 | 11 45 | 1.1 | ... | 0 | |
| 40 | 7 18 | 16 38 | 0 31 | 1 38 | 11 48 | 1.2 | ... | 0 | |
| 35 | 7 4 | 16 52 | 0 28 | 1 31 | 11 51 | 1.3 | ... | 0 | |
| 30 | 6 51 | 17 4 | 0 26 | 1 26 | 11 53 | 1.4 | ... | 0 | |
| 20 | 6 30 | 17 26 | 0 24 | 1 19 | 11 57 | 1.6 | ... | 0 | |
| 10 | 6 12 | 17 44 | 0 23 | 1 15 | 12 1 | 1.7 | ... | 0 | |
| 0 | 5 54 | 18 2 | 0 23 | 1 15 | 12 4 | 1.8 | ... | 0 | |
| 10 | 5 36 | 18 19 | 0 23 | 1 18 | 12 8 | 2.0 | ... | 0 | |
| 20 | 5 17 | 18 38 | 0 25 | 1 24 | 12 11 | 2.1 | ... | 0 | |
| 30 | 4 55 | 19 0 | 0 27 | 1 37 | 12 16 | 2.3 | ... | 0 | |
| 35 | 4 42 | 19 13 | 0 30 | 1 47 | 12 18 | 2.4 | ... | 0 | |
| 40 | 4 27 | 19 28 | 0 33 | 2 3 | 12 21 | 2.5 | ... | 0 | |
| 45 | 4 9 | 19 46 | 0 37 | 2 33 | 12 24 | 2.6 | 23 57 | 1.1 | |
| 50 | 3 47 | 20 9 | 0 45 | ::: | 12 28 | 2.8 | 23 51 | 1.0 | |
| 55 | 3 17 | 20 39 | 0 58 | ::: | 12 33 | 3.0 | 23 44 | .8 | |
| 60 | 2 32 | 21 24 | 1 47 | ::: | 12 40 | 3.2 | 23 35 | .6 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 94 31.0 137 | 2 31.3 113 | 21 29.0 21 4.2 | 232 4.6 -12 9.6 | | | | |
| 2 | 123 36.4 138 | 2 53.8 112 | 51 34.6 21 4.0 | 262 9.1 -12 9.8 | | | | |
| 4 | 152 41.9 138 | 3 16.2 111 | 81 40.1 21 4.0 | 292 13.6 -12 9.9 | | | | |
| 6 | 181 47.5 138 | 3 38.5 111 | 111 45.7 21 3.9 | 322 18.1 -12 10.0 | | | | |
| 8 | 210 53.2 139 | 4 7 110 | 141 51.3 21 3.9 | 352 22.5 -12 10.2 | | | | |
| 10 | 239 58.9 139 | 4 22.8 110 | 171 56.8 21 3.8 | 22 27.0 -12 10.3 | | | | |
| 12 | 268 44.4 140 | 4 44.7 109 | 202 2.4 21 3.7 | 52 31.5 -12 10.4 | | | | |
| 14 | 298 10.7 140 | 5 6.5 108 | 322 8.0 21 3.6 | 82 36.0 -12 10.6 | | | | |
| 16 | 327 16.7 140 | 5 28.2 108 | 262 13.5 21 3.5 | 112 40.5 -12 10.7 | | | | |
| 18 | 356 22.7 140 | 5 49.7 107 | 292 19.1 21 3.5 | 142 45.0 -12 10.8 | | | | |
| 20 | 25 28.8 141 | 6 11.1 106 | 322 24.7 21 3.4 | 172 49.4 -12 11.0 | | | | |
| 22 | 54 34.9 141 | 6 32.3 105 | 352 30.2 21 3.3 | 202 53.9 -12 11.1 | | | | |
| Δ | -3 0 | | 28 0 | 22 -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|-----------|----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 18 15 | 1.8 | 56.3 15.3 | |
| 00 | 2 24.8 | -1.2 | 16.3 | | | | | |
| 12 | 2 9.9 | T _{m̄} | 11 h 57.8 min | Starost | 6.6 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| | h min / | ° | h min / | ° | h min / | ° | h min / | ° |
| ♀ | 10 17 | .1 | 117 | -3.1 | 4 | 22 30 | .0 | 292 -2.3 |
| ♂ | 13 54 | .1 | 63 | 1.1 | h | 8 30 | .0 | 143 -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------------|-----------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 83 41.0 141 | 6 53.4 105 | 22 35.8 21 3.2 | 232 58.4 -12 11.2 | | | | |
| 2 | 112 47.2 141 | 7 14.3 104 | 52 41.4 21 3.2 | 263 2.9 -12 11.4 | | | | |
| 4 | 141 53.4 141 | 7 35.0 103 | 82 46.9 21 3.1 | 293 7.4 -12 11.5 | | | | |
| 6 | 170 59.6 141 | 7 55.6 102 | 112 52.5 21 3.0 | 323 11.9 -12 11.6 | | | | |
| 8 | 200 5.8 141 | 8 16.0 101 | 142 58.0 21 2.9 | 353 16.4 -12 11.7 | | | | |
| 10 | 229 12.0 141 | 8 36.2 100 | 173 3.6 21 2.9 | 23 20.8 -12 11.9 | | | | |
| 12 | 258 18.3 141 | 8 56.2 99 | 203 9.2 21 2.8 | 53 25.3 -12 12.0 | | | | |
| 14 | 287 24.5 141 | 9 16.1 98 | 233 14.7 21 2.7 | 83 29.8 -12 12.1 | | | | |
| 16 | 316 30.7 141 | 9 35.8 97 | 263 20.3 21 2.6 | 113 34.3 -12 12.3 | | | | |
| 18 | 345 36.9 141 | 9 55.2 96 | 293 25.8 21 2.6 | 143 38.8 -12 12.4 | | | | |
| 20 | 14 43.0 141 | 10 14.5 95 | 323 31.4 21 2.5 | 173 43.3 -12 12.5 | | | | |
| 22 | 43 49.2 141 | 10 33.5 94 | 353 36.9 21 2.4 | 203 47.8 -12 12.7 | | | | |
| Δ | -3 0 | | 28 0 | 22 -1 | | | | |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|---------|-----------------|-----------|----------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | |
| h min s | s | / | h min min / | T _{m̄} | 18 59 | 1.9 | 55.5 15.1 | |
| 00 | 1 55.0 | -1.2 | 16.3 | | | | | |
| 12 | 1 40.1 | T _{m̄} | 11 h 58.3 min | Starost | 7.6 d | Faza | ● | |
| PLANETE | Pl. | T _{m̄} | π 360-ω | Vel. | Pl. | T _{m̄} | π 360-ω | Vel. |
| | h min / | ° | h min / | ° | h min / | ° | h min / | ° |
| ♀ | 10 18 | .1 | 116 | -3.1 | 4 | 22 25 | .0 | 293 -2.3 |
| ♂ | 13 53 | .1 | 62 | 1.1 | h | 8 27 | .0 | 143 -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ø | δ _Ø | S _γ | δ _γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 21.3 | -23 | 26.1 | 90 | 56.8 | 205 | 19.3 |
| 2 | 210 | 20.6 | -23 | 26.1 | 121 | 1.7 | 235 | 17.7 |
| 4 | 240 | 20.0 | -23 | 26.0 | 151 | 6.6 | 265 | 16.0 |
| 6 | 270 | 19.4 | -23 | 26.0 | 181 | 11.6 | 295 | 14.4 |
| 8 | 300 | 18.8 | -23 | 26.0 | 211 | 16.5 | 325 | 12.8 |
| 10 | 330 | 18.1 | -23 | 25.9 | 241 | 21.4 | 355 | 11.2 |
| 12 | 0 | 17.5 | -23 | 25.9 | 271 | 26.4 | 25 | 9.5 |
| 14 | 30 | 16.9 | -23 | 25.9 | 301 | 31.3 | 55 | 7.9 |
| 16 | 60 | 16.3 | -23 | 25.8 | 331 | 36.2 | 85 | 6.3 |
| 18 | 90 | 15.7 | -23 | 25.8 | 1 | 41.1 | 115 | 4.7 |
| 20 | 120 | 15.0 | -23 | 25.7 | 31 | 46.1 | 145 | 3.0 |
| 22 | 150 | 14.4 | -23 | 25.7 | 61 | 51.0 | 175 | 1.4 |
| Δ | -3 | 0 | | | | | -8 | -6 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 3 | 14 55 | 0 58 | 2 46 | 11 59 | .7 | 2 33 | 3 1 | |
| 55 | 8 24 | 15 34 | 0 46 | 2 18 | 12 16 | 1.0 | 2 18 | 2 8 | |
| 50 | 7 57 | 16 1 | 0 39 | 1 60 | 12 29 | 1.1 | 2 6 | 2 7 | |
| 45 | 7 36 | 16 22 | 0 34 | 1 47 | 12 39 | 1.3 | 1 57 | 2 5 | |
| 40 | 7 19 | 16 39 | 0 31 | 1 38 | 12 48 | 1.4 | 1 49 | 2 4 | |
| 35 | 7 5 | 16 53 | 0 28 | 1 31 | 12 55 | 1.5 | 1 43 | 2 3 | |
| 30 | 6 52 | 17 5 | 0 26 | 1 26 | 13 2 | 1.5 | 1 37 | 2 2 | |
| 20 | 6 31 | 17 27 | 0 24 | 1 19 | 13 14 | 1.7 | 1 27 | 2 1 | |
| 10 | 6 13 | 17 45 | 0 23 | 1 15 | 13 24 | 1.8 | 1 18 | 2 0 | |
| 0 | 5 55 | 18 3 | 0 23 | 1 15 | 13 33 | 1.9 | 1 10 | 1 9 | |
| 10 | 5 37 | 18 20 | 0 23 | 1 18 | 13 43 | 2.0 | 1 2 | 1 8 | |
| 20 | 5 18 | 18 39 | 0 25 | 1 24 | 13 53 | 2.1 | 0 53 | 1 6 | |
| 30 | 4 56 | 19 1 | 0 27 | 1 37 | 14 5 | 2.2 | 0 43 | 1 5 | |
| 35 | 4 43 | 19 14 | 0 30 | 1 47 | 14 12 | 2.3 | 0 38 | 1 4 | |
| 40 | 4 28 | 19 29 | 0 33 | 2 3 | 14 19 | 2.4 | 0 31 | 1 3 | |
| 45 | 4 10 | 19 47 | 0 37 | 2 33 | 14 29 | 2.5 | 0 24 | 1 2 | |
| 50 | 3 48 | 20 10 | 0 45 | ::: | 14 40 | 2.6 | 0 15 | 1 1 | |
| 55 | 3 17 | 20 40 | 0 58 | ::: | 14 53 | 2.8 | 0 4 | 1 9 | |
| 60 | 2 33 | 21 25 | 1 46 | ::: | 15 12 | 3.0 | ... | 0 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|------|----------------|---------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 72 | 55.3 | 140 | 10 52.4 | 93 | 23 42.5 | 21 | 2.1 |
| 2 | 102 | 1.3 | 140 | 11 11.0 | 92 | 53 48.0 | 21 | 2.3 |
| 4 | 131 | 7.4 | 140 | 11 29.4 | 91 | 83 53.6 | 21 | 2.2 |
| 6 | 160 | 13.3 | 140 | 11 47.6 | 90 | 113 59.1 | 21 | 2.1 |
| 8 | 189 | 19.3 | 139 | 12 5.6 | 89 | 144 4.7 | 21 | 2.0 |
| 10 | 218 | 25.1 | 139 | 12 23.3 | 88 | 174 10.2 | 21 | 2.0 |
| 12 | 247 | 31.0 | 139 | 12 40.8 | 86 | 204 15.8 | 21 | 1.9 |
| 14 | 276 | 36.7 | 138 | 12 58.1 | 85 | 234 21.3 | 21 | 1.8 |
| 16 | 305 | 42.4 | 138 | 13 15.1 | 84 | 264 26.9 | 21 | 1.8 |
| 18 | 334 | 48.0 | 138 | 13 31.9 | 83 | 294 32.4 | 21 | 1.7 |
| 20 | 3 | 53.5 | 137 | 13 48.4 | 81 | 324 38.0 | 21 | 1.6 |
| 22 | 32 | 59.0 | 137 | 14 4.7 | 80 | 354 43.5 | 21 | 1.5 |
| Δ | -3 | 0 | | | | 28 | 0 | 22 |
| | | | | | | | | -1 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 1 25.2 | -1.2 | 16.3 | T _{m̄} | 19 44 | 1.9 | 54.9 | 15.0 |
| 12 | 1 10.3 | T _{m̄} | 11 h 58.8 min | Starost | 8.6 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| Q | 10 19 | .1 | 114 | -3.1 | 4 | 22 21 | .0 | 293 |
| Ø | 13 52 | .1 | 61 | 1.1 | h | 8 23 | .0 | 143 |

| UT | SUNCE | | | | VENERA | | MARS | |
|----|----------------|------|----------------|------|----------------|----------------|----------------|----------------|
| | S _Ø | Δ | δ _Ø | Δ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 13.8 | -23 | 25.6 | 91 | 55.9 | 204 | 59.7 |
| 2 | 210 | 13.2 | -23 | 25.5 | 122 | 9.9 | 234 | 58.1 |
| 4 | 240 | 12.6 | -23 | 25.5 | 152 | 5.8 | 264 | 56.5 |
| 6 | 270 | 11.9 | -23 | 25.4 | 182 | 10.7 | 294 | 54.8 |
| 8 | 300 | 11.3 | -23 | 25.3 | 212 | 15.6 | 324 | 53.2 |
| 10 | 330 | 10.7 | -23 | 25.3 | 242 | 20.6 | 354 | 51.5 |
| 12 | 0 | 10.1 | -23 | 25.2 | 272 | 25.5 | 249 | 49.9 |
| 14 | 30 | 9.5 | -23 | 25.1 | 302 | 30.4 | 54 48.2 | -20 48.8 |
| 16 | 60 | 8.8 | -23 | 25.0 | 332 | 35.4 | 86 46.6 | -20 49.9 |
| 18 | 90 | 8.2 | -23 | 24.9 | 114 | 44.9 | 62 6.8 | -21 39.3 |
| 20 | 120 | 7.6 | -23 | 24.8 | 144 | 43.3 | 92 7.6 | -21 38.5 |
| 22 | 150 | 7.0 | -23 | 24.7 | 174 | 41.6 | 122 8.4 | -21 37.7 |
| Δ | -3 | 0 | | | | -8 | 4 | 4 |

| UT | SUNCE | | | | MJESEC | | | |
|---------|-------------------------|-----------------|---------------|-----------------|--------|-----------------|-----------------|-------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ø | t' | |
| h min s | s | / | | h min | min | / | | |
| 00 | 0 55.4 | -1.2 | 16.3 | T _{m̄} | 20 29 | 2.0 | 54.5 | 14.8 |
| 12 | 0 40.5 | T _{m̄} | 11 h 59.3 min | Starost | 9.6 d | Faza | 0 | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π |
| Q | 10 21 | .1 | 113 | -3.1 | 4 | 22 17 | .0 | 293 |
| Ø | 13 52 | .1 | 60 | 1.1 | h | 8 20 | .0 | 143 |

24. DECEMBAR

2012.

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|-------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _σ | δ _σ |
| h | o | / | o | / | o | / | o | / |
| 0 | 180 | 6.4 -23 24.6 | 92 55.1 | 204 40.0 -20 54.4 | 152 9.2 -21 36.9 | | | |
| 2 | 210 | 5.7 -23 24.5 | 123 .0 | 234 38.3 -20 55.5 | 182 10.0 -21 36.1 | | | |
| 4 | 240 | 5.1 -23 24.4 | 153 4.9 | 264 36.6 -20 56.6 | 212 10.8 -21 35.3 | | | |
| 6 | 270 | 4.5 -23 24.3 | 183 9.9 | 294 35.0 -20 57.7 | 242 11.7 -21 34.5 | | | |
| 8 | 300 | 3.9 -23 24.2 | 213 14.8 | 324 33.3 -20 58.8 | 272 12.5 -21 33.7 | | | |
| 10 | 330 | 3.3 -23 24.1 | 243 19.7 | 354 31.6 -20 59.9 | 302 13.3 -21 32.9 | | | |
| 12 | 0 | 2.6 -23 24.0 | 273 24.6 | 24 30.0 -21 .9 | 332 14.1 -21 32.1 | | | |
| 14 | 30 | 2.0 -23 23.9 | 303 29.6 | 54 28.3 -21 2.0 | 2 14.9 -21 31.3 | | | |
| 16 | 60 | 1.4 -23 23.7 | 333 34.5 | 84 26.3 -21 3.1 | 32 15.7 -21 30.5 | | | |
| 18 | 90 | .8 -23 23.6 | 3 39.4 | 114 24.9 -21 4.2 | 62 16.5 -21 29.6 | | | |
| 20 | 120 | .2 -23 23.5 | 33 44.4 | 144 23.3 -21 5.2 | 92 17.4 -21 28.8 | | | |
| 22 | 149 | 59.5 -23 23.4 | 63 49.3 | 174 21.6 -21 6.3 | 122 18.2 -21 28.0 | | | |
| Δ | -3 | 1 | | -8 | -5 | 4 | 4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 3 | 14 56 | 0 58 | 2 46 | 12 40 | 1.3 | 4 58 | 2 8 | |
| 55 | 8 25 | 15 35 | 0 46 | 2 18 | 13 7 | 1.4 | 4 32 | 2 6 | |
| 50 | 7 57 | 16 2 | 0 39 | 1 60 | 13 28 | 1.5 | 4 12 | 2.5 | |
| 45 | 7 37 | 16 23 | 0 34 | 1 47 | 13 44 | 1.6 | 3 57 | 2.4 | |
| 40 | 7 20 | 16 40 | 0 31 | 1 38 | 13 57 | 1.7 | 3 44 | 2.3 | |
| 35 | 7 6 | 16 54 | 0 28 | 1 31 | 14 9 | 1.7 | 3 33 | 2.2 | |
| 30 | 6 53 | 17 6 | 0 26 | 1 26 | 14 18 | 1.8 | 3 24 | 2.2 | |
| 20 | 6 32 | 17 28 | 0 24 | 1 19 | 14 36 | 1.9 | 3 8 | 2.1 | |
| 10 | 6 14 | 17 46 | 0 23 | 1 15 | 14 50 | 1.9 | 2 54 | 2.0 | |
| 0 | 5 56 | 18 4 | 0 23 | 1 15 | 15 5 | 2.0 | 2 40 | 1.9 | |
| 10 | 5 38 | 18 21 | 0 23 | 1 18 | 15 19 | 2.0 | 2 27 | 1.9 | |
| 20 | 5 20 | 18 40 | 0 25 | 1 24 | 15 34 | 2.1 | 2 13 | 1.8 | |
| 30 | 4 57 | 19 2 | 0 27 | 1 37 | 15 51 | 2.2 | 1 57 | 1.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|----------|----------------|----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 51 | 1.7 131 | 17 11.3 | 61 | 25 55.5 | 21 .6 | 235 40.2 -12 15.8 | |
| 2 | 80 | 5.9 130 | 17 23.6 | 60 | 56 1.0 | 21 .5 | 265 44.7 -12 15.9 | |
| 4 | 109 | 9.9 130 | 17 35.6 | 58 | 86 6.5 | 21 .4 | 295 49.2 -12 16.1 | |
| 6 | 138 | 13.8 129 | 17 47.2 | 57 | 116 12.1 | 21 .4 | 325 53.7 -12 16.2 | |
| 8 | 167 | 17.6 129 | 17 58.6 | 55 | 146 17.6 | 21 .3 | 355 58.2 -12 16.3 | |
| 10 | 196 | 21.3 128 | 18 9.6 | 54 | 176 23.1 | 21 .2 | 26 2.7 -12 16.4 | |
| 12 | 225 | 24.9 127 | 18 20.3 | 52 | 206 28.7 | 21 .2 | 56 7.2 -12 16.6 | |
| 14 | 254 | 28.4 127 | 18 30.7 | 50 | 236 34.2 | 21 .1 | 86 11.7 -12 16.7 | |
| 16 | 283 | 31.8 126 | 18 40.7 | 49 | 266 39.7 | 21 .0 | 116 16.2 -12 16.8 | |
| 18 | 312 | 35.1 126 | 18 50.4 | 47 | 296 45.2 | 20 60.0 | 146 20.7 -12 16.9 | |
| 20 | 341 | 38.2 125 | 18 59.8 | 45 | 326 50.7 | 20 59.9 | 176 25.2 -12 17.1 | |
| 22 | 10 41.3 | 125 | 19 8.8 | 43 | 356 56.3 | 20 59.8 | 206 29.7 -12 17.2 | |
| Δ | -3 | 1 | | | 28 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|---------------|-----------------|-------------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | h min min / | | | | |
| 00 | 0 25.6 | -1.2 | 16.3 | T _{m̄} | 21 16 | 2.0 | 54.2 | 14.8 | |
| 12 | 0 10.7 | T _{m̄} | 11 h 59.8 min | Starost | 10.6 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | o | / | | h min / | ° | / | o | |
| 0 | 10 22 | .1 | 112 | -3.1 | 7 | 22 12 | .0 | 293 | -2.3 |
| δ | 13 51 | .1 | 59 | 1.1 | h | 8 16 | .0 | 143 | -.8 |

| UT | SUNCE | | | | JUPITER | | SATURN | |
|----|----------------|----------|----------------|----|----------------|----------------|-------------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o | / | o | / | o | / | o | / |
| 0 | 39 44.3 | 124 | 19 17.5 | 42 | 27 1.8 | 20 59.7 | 236 34.2 -12 17.3 | |
| 2 | 68 47.2 | 124 | 19 25.8 | 40 | 57 7.3 | 20 59.7 | 266 38.7 -12 17.4 | |
| 4 | 97 49.9 | 123 | 19 33.8 | 38 | 87 12.8 | 20 59.6 | 296 43.2 -12 17.5 | |
| 6 | 126 | 52.6 123 | 19 41.4 | 36 | 117 18.3 | 20 59.5 | 326 47.7 -12 17.7 | |
| 8 | 155 | 55.2 122 | 19 48.6 | 35 | 147 23.9 | 20 59.8 | 356 52.2 -12 17.8 | |
| 10 | 184 | 57.7 122 | 19 55.5 | 33 | 177 29.4 | 20 59.4 | 26 56.8 -12 17.9 | |
| 12 | 214 | .1 122 | 20 2.1 | 31 | 207 34.9 | 20 59.3 | 57 1.3 -12 18.0 | |
| 14 | 243 | 2.4 121 | 20 8.3 | 29 | 237 40.4 | 20 59.3 | 87 5.8 -12 18.2 | |
| 16 | 272 | 4.7 121 | 20 14.1 | 27 | 267 45.9 | 20 59.2 | 117 10.3 -12 18.3 | |
| 18 | 301 | 6.8 120 | 20 19.5 | 25 | 297 51.4 | 20 59.1 | 147 14.8 -12 18.4 | |
| 20 | 330 | 8.9 120 | 20 24.6 | 23 | 327 56.9 | 20 59.0 | 177 19.3 -12 18.5 | |
| 22 | 359 | 10.9 120 | 20 29.2 | 22 | 358 2.4 | 20 59.0 | 207 23.8 -12 18.6 | |
| Δ | -3 | 1 | | | 28 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|-------------|-----------------|------|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t' | | |
| h min s | s | / | | h min min / | h min min / | | | | |
| 00 | - 0 4.1 | -1.2 | 16.3 | T _{m̄} | 22 3 | 2.0 | 54.0 | 14.7 | |
| 12 | - 0 18.9 | T _{m̄} | 12 h .3 min | Starost | 11.6 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| h min / | ° | o | / | | h min / | ° | / | o | |
| 0 | 10 23 | .1 | 110 | -3.1 | 7 | 22 8 | .0 | 293 | -2.3 |
| δ | 13 50 | .1 | 58 | 1.1 | h | 8 12 | .0 | 143 | -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|-----|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 179 | 51.5 -23 | 21.3 | 94 | 53.3 | 203 | 59.6 -21 | 19.7 | |
| 2 | 209 | 50.9 -23 | 21.1 | 124 | 58.3 | 233 | 57.9 -21 | 20.7 | |
| 4 | 239 | 50.3 -23 | 21.0 | 155 | 3.2 | 263 | 56.2 -21 | 21.7 | |
| 6 | 269 | 49.7 -23 | 20.8 | 185 | 8.1 | 293 | 54.5 -21 | 22.7 | |
| 8 | 299 | 49.1 -23 | 20.6 | 215 | 13.1 | 323 | 52.8 -21 | 23.7 | |
| 10 | 329 | 48.4 -23 | 20.4 | 245 | 18.0 | 354 | 51.1 -21 | 24.7 | |
| 12 | 359 | 47.8 -23 | 20.2 | 275 | 22.9 | 333 | 49.4 -21 | 25.7 | |
| 14 | 29 | 47.2 -23 | 20.0 | 305 | 27.8 | 53 | 47.7 -21 | 26.7 | |
| 16 | 59 | 46.6 -23 | 19.8 | 335 | 32.8 | 83 | 46.0 -21 | 27.6 | |
| 18 | 89 | 46.0 -23 | 19.6 | 113 | 44.3 -21 | 28.6 | 62 | 36.3 -21 | 9.6 |
| 20 | 119 | 45.4 -23 | 19.4 | 143 | 42.6 -21 | 29.6 | 92 | 37.1 -21 | 8.7 |
| 22 | 149 | 44.8 -23 | 19.2 | 65 | 47.6 | 173 | 40.8 -21 | 30.5 | |
| Δ | -3 | 1 | | | | -9 | -5 | 4 | |
| | | | | | | | | 4 | |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 4 | 14 58 | 0 58 | 2 46 | 13 50 | 2.1 | 7 4 | 2.1 | |
| 55 | 8 25 | 15 37 | 0 45 | 2 18 | 14 24 | 2.1 | 6 30 | 2.1 | |
| 50 | 7 58 | 16 4 | 0 38 | 1 59 | 14 48 | 2.1 | 6 6 | 2.0 | |
| 45 | 7 37 | 16 24 | 0 34 | 1 47 | 15 7 | 2.1 | 5 47 | 2.0 | |
| 40 | 7 21 | 16 41 | 0 31 | 1 38 | 15 23 | 2.1 | 5 31 | 2.0 | |
| 35 | 7 6 | 16 55 | 0 28 | 1 31 | 15 36 | 2.1 | 5 18 | 2.0 | |
| 30 | 6 54 | 17 8 | 0 26 | 1 25 | 15 47 | 2.1 | 5 7 | 2.0 | |
| 20 | 6 33 | 17 29 | 0 24 | 1 19 | 16 7 | 2.0 | 4 48 | 2.0 | |
| 10 | 6 14 | 17 47 | 0 23 | 1 15 | 16 24 | 2.0 | 4 31 | 2.0 | |
| 0 | 5 57 | 18 5 | 0 23 | 1 15 | 16 40 | 2.0 | 4 15 | 2.0 | |
| 10 | 5 40 | 18 22 | 0 23 | 1 18 | 16 56 | 2.0 | 3 59 | 2.0 | |
| 20 | 5 21 | 18 41 | 0 25 | 1 24 | 17 13 | 2.0 | 3 42 | 2.0 | |
| 30 | 4 59 | 19 3 | 0 27 | 1 36 | 17 33 | 2.0 | 3 23 | 2.0 | |
| 35 | 4 46 | 19 16 | 0 30 | 1 47 | 17 44 | 2.0 | 3 12 | 2.0 | |
| 40 | 4 31 | 19 31 | 0 33 | 2 3 | 17 57 | 2.0 | 2 59 | 2.0 | |
| 45 | 4 13 | 19 49 | 0 37 | 2 33 | 18 13 | 1.9 | 2 43 | 2.0 | |
| 50 | 3 50 | 20 11 | 0 44 | 2 :: | 18 32 | 1.9 | 2 24 | 1.9 | |
| 55 | 3 20 | 20 41 | 0 58 | 2 :: | 18 57 | 1.9 | 2 0 | 1.9 | |
| 60 | 2 36 | 21 25 | 1 43 | 2 :: | 19 32 | 1.8 | 1 26 | 1.9 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 28 | 12.9 | 119 | 20 | 33.6 | 20 | 28.3 | -12 | 18.8 |
| 2 | 57 | 14.7 | 119 | 20 | 37.5 | 18 | 58.13 | -12 | 18.9 |
| 4 | 86 | 16.5 | 119 | 20 | 41.1 | 16 | 88.19 | -20 | 58.8 |
| 6 | 115 | 18.3 | 118 | 20 | 44.2 | 14 | 118.24 | -20 | 58.7 |
| 8 | 144 | 19.9 | 118 | 20 | 47.0 | 12 | 148.30 | -20 | 58.6 |
| 10 | 173 | 21.6 | 118 | 20 | 49.4 | 10 | 178.35 | -20 | 58.6 |
| 12 | 202 | 23.1 | 118 | 20 | 51.4 | 8 | 208.41 | -20 | 58.5 |
| 14 | 231 | 24.7 | 117 | 20 | 53.1 | 6 | 238.46 | -20 | 58.4 |
| 16 | 260 | 26.2 | 117 | 20 | 54.3 | 4 | 268.52 | -20 | 58.4 |
| 18 | 289 | 27.6 | 117 | 20 | 55.2 | 2 | 298.57 | -20 | 58.3 |
| 20 | 318 | 29.0 | 117 | 20 | 55.6 | 0 | 329.30 | -20 | 58.2 |
| 22 | 347 | 30.4 | 117 | 20 | 55.7 | -2 | 359.8.5 | -20 | 58.2 |
| Δ | -3 | 1 | | | | | 28 | 0 | 23 |
| | | | | | | | | | -1 |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|-------------|-----------------|--------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | | h min | min | / | | | |
| 00 | - 0 33.7 | -1.2 | 16.3 | T _{m̄} | 22 52 | 2.0 | 54.0 | 14.7 | |
| 12 | - 0 48.5 | T _{m̄} | 12 h .8 min | Starost | 12.6 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 10 25 | .1 | 109 | -3.1 | ♀ | 22 3 | .0 | 293 | -2.3 |
| ♂ | 13 50 | .1 | 58 | 1.1 | ♂ | 8 9 | .0 | 143 | -.8 |

| UT | MJESEC | | | | JUPITER | | SATURN | | |
|----|----------------|------|----------------|----|----------------|----------------|----------------|----------------|------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η | |
| h | o | / | o | / | o | / | o | / | |
| 0 | 16 | 31.8 | 117 | 20 | 55.4 | -4 | 29 14.0 | 20 | 58.1 |
| 2 | 45 | 33.2 | 117 | 20 | 54.7 | -5 | 59 19.5 | 20 | 58.0 |
| 4 | 74 | 34.5 | 117 | 20 | 53.6 | -7 | 89 25.0 | 20 | 58.0 |
| 6 | 103 | 35.8 | 117 | 20 | 52.1 | -9 | 119 30.5 | 20 | 57.9 |
| 8 | 137 | 37.1 | 117 | 20 | 50.2 | -11 | 149 35.9 | 20 | 57.8 |
| 10 | 161 | 38.4 | 117 | 20 | 48.0 | -13 | 179 41.4 | 20 | 57.8 |
| 12 | 190 | 39.8 | 117 | 20 | 45.3 | -15 | 209 46.9 | 20 | 57.7 |
| 14 | 219 | 41.1 | 117 | 20 | 42.3 | -17 | 239 52.4 | 20 | 57.6 |
| 16 | 248 | 42.4 | 117 | 20 | 38.8 | -19 | 269 57.9 | 20 | 57.6 |
| 18 | 277 | 43.8 | 117 | 20 | 35.0 | -21 | 300 3.4 | 20 | 57.5 |
| 20 | 306 | 45.1 | 117 | 20 | 30.8 | -23 | 330 8.9 | 20 | 57.4 |
| 22 | 335 | 46.5 | 117 | 20 | 26.2 | -25 | 0 14.4 | 20 | 57.4 |
| Δ | - | | | | 27 | 0 | 23 | -1 | |

| UT | SUNCE | | | | MJESEC | | | | |
|---------|-------------------------|-----------------|--------------|-----------------|--------|-----------------|------|---------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | |
| h min s | s | / | | | h min | min | / | | |
| 00 | - 1 3.2 | -1.2 | 16.3 | T _{m̄} | 23 40 | 2.0 | 54.0 | 14.7 | |
| 12 | - 1 17.9 | T _{m̄} | 12 h 1.3 min | Starost | 13.6 d | Faza | ○ | | |
| PLANETE | | | | | | | | | |
| Pl. | T _{m̄} | π | 360 - π | Vel. | Pl. | T _{m̄} | π | 360 - π | Vel. |
| h min | / | o | | | h min | / | o | | |
| ♀ | 10 26 | .1 | 108 | -3.1 | ♀ | 21 59 | .0 | 293 | -2.3 |
| ♂ | 13 49 | .1 | 57 | 1.1 | ♂ | 8 5 | .0 | 142 | -.8 |

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|-------------------|----------------|-------------------|-------------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 179 36.8 -23 16.1 | 96 51.6 | 203 18.4 -21 42.6 | 152 48.8 -20 56.6 | | | | |
| 2 | 209 36.2 -23 15.9 | 126 56.6 | 233 16.6 -21 43.5 | 182 49.7 -20 55.7 | | | | |
| 4 | 239 35.6 -23 15.6 | 157 1.5 | 263 14.9 -21 44.4 | 212 50.5 -20 54.8 | | | | |
| 6 | 269 35.0 -23 15.3 | 187 6.4 | 293 13.2 -21 45.3 | 242 51.3 -20 53.9 | | | | |
| 8 | 299 34.4 -23 15.1 | 217 11.3 | 323 11.4 -21 46.2 | 272 52.2 -20 53.0 | | | | |
| 10 | 329 33.8 -23 14.8 | 247 16.3 | 352 9.7 -21 47.1 | 302 53.0 -20 52.1 | | | | |
| 12 | 359 33.2 -23 14.5 | 277 21.2 | 23 7.9 -21 47.9 | 332 53.9 -20 51.3 | | | | |
| 14 | 29 32.6 -23 14.3 | 307 26.1 | 53 6.2 -21 48.8 | 2 54.7 -20 50.4 | | | | |
| 16 | 59 31.9 -23 14.0 | 337 31.0 | 83 4.4 -21 49.7 | 32 55.6 -20 49.5 | | | | |
| 18 | 89 31.3 -23 13.7 | 7 36.0 | 113 2.7 -21 50.5 | 62 56.4 -20 48.6 | | | | |
| 20 | 119 30.7 -23 13.4 | 37 40.9 | 143 .9 -21 51.4 | 92 57.2 -20 47.7 | | | | |
| 22 | 149 30.1 -23 13.1 | 67 45.8 | 172 59.2 -21 52.3 | 122 58.1 -20 46.8 | | | | |
| Δ | -3 | 1 | | | -9 | -4 | 4 | 4 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | |
|----|-------|-------|---------------------|-------|--------|-------|------|-------|------|
| | φ | IZLAZ | ZALAZ | GRAD. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 |
| N | h min | h min | h min | h min | h min | h min | min | h min | min |
| 60 | 9 3 | 15 0 | 0 57 | 2 45 | 15 41 | 2.9 | 8 32 | 1.2 | |
| 55 | 8 25 | 15 39 | 0 45 | 2 17 | 16 12 | 2.7 | 8 1 | 1.4 | |
| 50 | 7 58 | 16 5 | 0 38 | 1 59 | 16 34 | 2.5 | 7 38 | 1.5 | |
| 45 | 7 38 | 16 26 | 0 34 | 1 47 | 16 52 | 2.4 | 7 20 | 1.6 | |
| 40 | 7 21 | 16 42 | 0 31 | 1 38 | 17 6 | 2.4 | 7 5 | 1.7 | |
| 35 | 7 7 | 16 57 | 0 28 | 1 31 | 17 18 | 2.3 | 6 53 | 1.7 | |
| 30 | 6 55 | 17 9 | 0 26 | 1 25 | 17 28 | 2.2 | 6 42 | 1.8 | |
| 20 | 6 34 | 17 30 | 0 24 | 1 19 | 17 46 | 2.1 | 6 23 | 1.9 | |
| 10 | 6 15 | 17 48 | 0 23 | 1 15 | 18 2 | 2.1 | 6 7 | 1.9 | |
| 0 | 5 58 | 18 6 | 0 23 | 1 15 | 18 17 | 2.0 | 5 52 | 2.0 | |
| 10 | 5 41 | 18 23 | 0 23 | 1 18 | 18 31 | 1.9 | 5 37 | 2.1 | |
| 20 | 5 22 | 18 42 | 0 25 | 1 24 | 18 47 | 1.8 | 5 20 | 2.1 | |
| 30 | 4 60 | 19 4 | 0 27 | 1 36 | 19 5 | 1.7 | 5 1 | 2.2 | |
| 35 | 4 47 | 19 17 | 0 30 | 1 47 | 19 15 | 1.7 | 4 50 | 2.2 | |
| 40 | 4 32 | 19 31 | 0 33 | 2 3 | 19 27 | 1.6 | 4 38 | 2.3 | |
| 45 | 4 14 | 19 49 | 0 37 | 2 32 | 19 41 | 1.5 | 4 23 | 2.4 | |
| 50 | 3 52 | 20 12 | 0 44 | 3 :: | 19 58 | 1.4 | 4 4 | 2.4 | |
| 55 | 3 22 | 20 41 | 0 58 | 3 :: | 20 20 | 1.3 | 3 41 | 2.6 | |
| 60 | 2 38 | 21 25 | 1 41 | 3 :: | 20 50 | 1.1 | 3 7 | 2.7 | |
| S | | | | | | | | | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 4 48.0 117 | 20 21.2 | -27 | 30 19.8 20 57.3 | 239 16.8 -12 21.6 | | | |
| 2 | 33 49.4 117 | 20 15.8 | -29 | 60 25.3 20 57.2 | 269 21.3 -12 21.7 | | | |
| 4 | 62 50.9 118 | 20 10.0 | -31 | 90 30.8 20 57.2 | 299 25.8 -12 21.8 | | | |
| 6 | 91 52.4 118 | 20 3.9 | -33 | 120 36.3 20 57.1 | 329 20.2 -12 21.9 | | | |
| 8 | 120 54.0 118 | 19 57.4 | -34 | 150 41.8 20 57.0 | 359 34.9 -12 22.0 | | | |
| 10 | 149 55.6 118 | 19 50.5 | -36 | 180 47.2 20 57.0 | 29 39.4 -12 22.2 | | | |
| 12 | 178 57.3 119 | 19 43.2 | -38 | 210 52.7 20 56.9 | 59 43.9 -12 22.3 | | | |
| 14 | 207 59.1 119 | 19 35.6 | -40 | 240 58.2 20 56.8 | 89 48.4 -12 22.4 | | | |
| 16 | 237 .8 119 | 19 27.6 | -42 | 271 3.7 20 56.8 | 119 53.0 -12 22.5 | | | |
| 18 | 266 2.7 120 | 19 19.2 | -44 | 301 9.1 20 56.7 | 149 57.5 -12 22.6 | | | |
| 20 | 295 4.6 120 | 19 10.4 | -46 | 331 14.6 20 56.6 | 180 2.0 -12 22.7 | | | |
| 22 | 324 6.6 120 | 19 1.3 | -47 | 1 20.1 20 56.6 | 210 6.5 -12 22.8 | | | |
| Δ | -3 | 2 | | | 27 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|----------------------|---------|---------------------|--------|----------------|-----------------|-----|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h min s | s | / | | h min min / | | | | | | |
| 00 | - 1 32.6 | -1.2 | 16.3 | T _{m̄} ... | 1.0 | 54.2 | 14.8 | | | |
| 12 | - 1 47.2 | T _{m̄} 12 h | 1.8 min | Starost 14.6 d | Faza ○ | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| Pl. | h min / | o | | | | h min / | o | | | |
| ♀ | 10 27 | .1 | 106 | -3.1 | 4 | 21 55 | .0 | 293 | -2.3 | |
| ♂ | 13 48 | .1 | 56 | 1.1 | 5 | 8 2 | .0 | 142 | -.8 | |

| UT | MJESEC | | | | JUPITER | | SATURN | |
|----|----------------|---------|----------------|------------------|-------------------|----------------|----------------|----------------|
| | S _Ω | Δ | δ _Ω | Δ | S _φ | δ _φ | S _η | δ _η |
| h | o / | o / | o / | o / | o / | o / | o / | o / |
| 0 | 353 8.6 121 | 18 51.9 | -49 | 31 25.6 20 56.5 | 240 11.1 -12 23.0 | | | |
| 2 | 22 10.8 121 | 18 42.0 | -51 | 61 31.0 20 56.5 | 270 15.6 -12 23.1 | | | |
| 4 | 51 13.0 121 | 18 31.8 | -53 | 91 36.5 20 56.4 | 300 20.1 -12 23.2 | | | |
| 6 | 80 15.2 122 | 18 21.3 | -54 | 121 42.0 20 56.3 | 330 24.7 -12 23.3 | | | |
| 8 | 109 17.6 122 | 18 10.4 | -56 | 151 47.4 20 56.3 | 0 29.2 -12 23.4 | | | |
| 10 | 138 20.0 123 | 17 59.2 | -58 | 181 52.9 20 56.2 | 30 33.7 -12 23.5 | | | |
| 12 | 167 22.5 123 | 17 47.6 | -60 | 211 58.4 20 56.1 | 60 38.3 -12 23.6 | | | |
| 14 | 196 25.2 123 | 17 35.7 | -61 | 242 3.8 20 56.1 | 90 42.8 -12 23.8 | | | |
| 16 | 225 27.8 124 | 17 23.5 | -63 | 272 9.3 20 56.0 | 120 47.3 -12 23.9 | | | |
| 18 | 254 30.6 124 | 17 10.9 | -64 | 302 14.7 20 55.9 | 150 51.9 -12 24.0 | | | |
| 20 | 283 33.5 125 | 16 58.0 | -66 | 332 20.2 20 55.9 | 180 56.4 -12 24.1 | | | |
| 22 | 312 36.4 125 | 16 44.8 | -68 | 2 25.7 20 55.8 | 211 .9 -12 24.2 | | | |
| Δ | -3 | 2 | | | 27 | 0 | 23 | -1 |

| UT | SUNCE | | | | MJESEC | | | | | |
|---------|-------------------------|----------------------|---------|----------------------|--------|----------------|-----------------|-----|-------|------|
| | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h min s | s | / | | h min min / | | | | | | |
| 00 | - 2 1.7 | -1.2 | 16.3 | T _{m̄} 0 28 | 2.0 | 54.4 | 14.8 | | | |
| 12 | - 2 16.2 | T _{m̄} 12 h | 2.3 min | Starost 15.6 d | Faza ○ | | | | | |
| PLANETE | Pl. | T _{m̄} | π | 360-π | Vel. | Pl. | T _{m̄} | π | 360-π | Vel. |
| Pl. | h min / | o | | | | h min / | o | | | |
| ♀ | 10 29 | .1 | 105 | -3.1 | 4 | 21 50 | .0 | 294 | -2.3 | |
| ♂ | 13 48 | .1 | 55 | 1.1 | 5 | 8 2 | .0 | 142 | -.8 | |

30. DECEMBAR

2012.

NEDJELJA

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 22.3 | -23 | 9.1 | 98 | 49.9 | 202 | 36.3 |
| 2 | 209 | 21.7 | -23 | 8.7 | 128 | 54.8 | 232 | 34.5 |
| 4 | 239 | 21.1 | -23 | 8.4 | 158 | 59.8 | 262 | 32.7 |
| 6 | 269 | 20.5 | -23 | 8.0 | 189 | 4.7 | 292 | 31.0 |
| 8 | 299 | 19.9 | -23 | 7.7 | 219 | 9.6 | 322 | 29.2 |
| 10 | 329 | 19.3 | -23 | 7.4 | 249 | 14.5 | 352 | 27.4 |
| 12 | 359 | 18.7 | -23 | 7.0 | 279 | 19.5 | 22 | 25.6 |
| 14 | 29 | 18.1 | -23 | 6.7 | 309 | 24.4 | 52 | 23.8 |
| 16 | 59 | 17.5 | -23 | 6.3 | 339 | 29.3 | 82 | 22.1 |
| 18 | 89 | 16.9 | -23 | 5.9 | 9 | 34.3 | 112 | 20.3 |
| 20 | 119 | 16.3 | -23 | 5.6 | 39 | 39.2 | 142 | 18.5 |
| 22 | 149 | 15.7 | -23 | 5.2 | 44.1 | | 172 | 16.7 |
| Δ | -3 | 2 | | | | | -9 | -4 |
| | | | | | | | | 4 |
| | | | | | | | | 5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | |
|----|-------------------------|-----------------|---------------------|-----------------|-----------------|----------------|-----------------|--------|--------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | |
| 60 | 9 3 | 15 3 | 0 57 | 2 45 | 18 4 | 3 2 | 9 24 | -7 | | |
| 55 | 8 25 | 15 41 | 0 45 | 2 17 | 18 24 | 2 9 | 9 3 | 1 0 | | |
| 50 | 7 59 | 16 7 | 0 38 | 1 59 | 18 39 | 2 8 | 8 46 | 1 2 | | |
| 45 | 7 38 | 16 27 | 0 34 | 1 47 | 18 51 | 2 6 | 8 33 | 1 3 | | |
| 40 | 7 22 | 16 44 | 0 30 | 1 37 | 19 1 | 2 5 | 8 23 | 1 4 | | |
| 35 | 7 8 | 16 58 | 0 28 | 1 31 | 19 9 | 2 4 | 8 13 | 1 5 | | |
| 30 | 6 55 | 17 10 | 0 26 | 1 25 | 19 17 | 2 3 | 8 5 | 1 6 | | |
| 26 | 6 35 | 17 31 | 0 24 | 1 19 | 19 30 | 2 2 | 7 51 | 1 7 | | |
| 10 | 6 16 | 17 49 | 0 23 | 1 15 | 19 41 | 2 0 | 7 39 | 1 8 | | |
| 0 | 5 59 | 18 6 | 0 22 | 1 15 | 19 51 | 1 9 | 7 27 | 1 9 | | |
| 10 | 5 42 | 18 24 | 0 23 | 1 17 | 20 2 | 1 8 | 7 15 | 2 0 | | |
| 20 | 5 23 | 18 43 | 0 25 | 1 24 | 20 13 | 1 7 | 7 3 | 2 2 | | |
| 30 | 5 1 | 19 4 | 0 27 | 1 36 | 20 25 | 1 5 | 6 48 | 2 3 | | |
| 35 | 4 48 | 19 17 | 0 30 | 1 46 | 20 32 | 1 4 | 6 40 | 2 4 | | |
| 40 | 4 33 | 19 32 | 0 33 | 2 2 | 20 41 | 1 3 | 6 30 | 2 5 | | |
| 45 | 4 16 | 19 50 | 0 37 | 2 31 | 20 50 | 1 2 | 6 19 | 2 6 | | |
| 50 | 3 54 | 20 12 | 0 44 | ::: | 21 2 | 1 1 | 6 5 | 2 7 | | |
| 55 | 3 24 | 20 41 | 0 57 | ::: | 21 16 | .9 | 5 48 | 2 9 | | |
| 60 | 2 40 | 21 24 | 1 38 | ::: | 21 35 | .7 | 5 25 | 3 1 | | |
| S | | | | | | | | | | |
| UT | SUNCE | | MJESEC | | | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h | min | s | / | h min | min | / | / | | | |
| 00 | -2 | 30.6 | -1.2 | 16.3 | T _{π̄} | 1 16 | 1.9 | 54.7 | 14.9 | |
| 12 | - | 2 45.0 | | T _{π̄} | 12 h | 2.8 min | Starost | 16.6 d | Faza ○ | |
| UT | PLANETE | | PLANETE | | | | | | | |
| UT | Pl. | T _{π̄} | π | 360-π | Vel. | Pl. | T _{π̄} | π | 360-π | Vel. |
| h | min | / | ° | 360-π | Vel. | Pl. | T _{π̄} | π | 360-π | Vel. |
| 0 | 10 30 | .1 | 104 | -3.1 | 4 | 21 46 | .0 | 294 | -2.3 | |
| 0 | 13 47 | .1 | 54 | 1.1 | 5 | 7 54 | .0 | 142 | -.8 | |

31. DECEMBAR

PONEDJELJAK

| UT | SUNCE | | PROLJ. TAČKA | | VENERA | | MARS | |
|----|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| | S _Ω | δ _Ω | S _Γ | δ _Γ | S _φ | δ _φ | S _♂ | δ _♂ |
| h | o | / | o | / | o | / | o | / |
| 0 | 179 | 15.1 | -23 | 4.8 | 99 | 49.0 | 202 | 14.9 |
| 2 | 209 | 14.5 | -23 | 4.5 | 129 | 54.0 | 232 | 13.1 |
| 4 | 239 | 13.9 | -23 | 4.1 | 159 | 58.9 | 262 | 11.3 |
| 6 | 269 | 13.3 | -23 | 3.7 | 190 | 3.8 | 292 | 9.6 |
| 8 | 299 | 12.7 | -23 | 3.3 | 220 | 8.8 | 322 | 7.8 |
| 10 | 329 | 12.2 | -23 | 2.9 | 250 | 13.7 | 352 | 6.0 |
| 12 | 359 | 11.6 | -23 | 2.6 | 280 | 18.6 | 22 | 4.2 |
| 14 | 29 | 11.0 | -23 | 2.2 | 310 | 23.5 | 52 | 2.4 |
| 16 | 59 | 10.4 | -23 | 1.8 | 340 | 28.5 | 82 | -.6 |
| 18 | 89 | 9.8 | -23 | 1.4 | 10 | 33.4 | 111 | 58.8 |
| 20 | 119 | 9.2 | -23 | 1.0 | 40 | 38.3 | 141 | 57.0 |
| 22 | 149 | 8.6 | -23 | .6 | 70 | 43.3 | 171 | 55.2 |
| Δ | -3 | 2 | | | | | -9 | -4 |
| | | | | | | | | 4 |
| | | | | | | | | 5 |

| UT | SUNCE | | TRAJANJE SUMRAKA | | MJESEC | | | | | |
|----|-------------------------|-----------------|---------------------|-----------------|-----------------|----------------|-----------------|--------|--------|------|
| | φ | IZLAZ | ZALAZ | GRAB. | AS TR. | IZLAZ | Δ/24 | ZALAZ | Δ/24 | |
| N | h min | h min | h min | h min | h min | h min | min | h min | min | |
| 60 | 9 3 | 15 4 | 0 57 | 2 45 | 19 20 | 3.3 | 9 42 | -.6 | | |
| 55 | 8 25 | 15 42 | 0 45 | 2 17 | 19 34 | 3.0 | 9 26 | .9 | | |
| 50 | 7 59 | 16 8 | 0 38 | 1 59 | 19 45 | 2.8 | 9 14 | 1.0 | | |
| 45 | 7 38 | 16 28 | 0 34 | 1 46 | 19 54 | 2.7 | 9 4 | 1.2 | | |
| 40 | 7 22 | 16 45 | 0 30 | 1 37 | 20 | 1.5 | 8 56 | 1.3 | | |
| 35 | 7 8 | 16 59 | 0 28 | 1 30 | 20 | 1.5 | 8 49 | 1.4 | | |
| 30 | 6 56 | 17 11 | 0 26 | 1 25 | 20 12 | 2.3 | 8 43 | 1.5 | | |
| 26 | 6 35 | 17 32 | 0 24 | 1 18 | 20 21 | 2.2 | 8 32 | 1.6 | | |
| 10 | 6 17 | 17 50 | 0 23 | 1 15 | 20 29 | 2.0 | 8 22 | 1.8 | | |
| 0 | 5 59 | 18 7 | 0 22 | 1 15 | 20 37 | 1.9 | 8 13 | 1.9 | | |
| 10 | 5 42 | 18 24 | 0 23 | 1 17 | 20 45 | 1.8 | 8 4 | 2.0 | | |
| 20 | 5 24 | 18 43 | 0 24 | 1 24 | 20 53 | 1.6 | 7 55 | 2.2 | | |
| 30 | 5 2 | 19 4 | 0 27 | 1 36 | 21 | 2.1 | 7 43 | 2.3 | | |
| 35 | 4 49 | 19 17 | 0 30 | 1 46 | 21 | 1.7 | 7 37 | 2.4 | | |
| 40 | 4 34 | 19 32 | 0 33 | 2 2 | 21 13 | 1.3 | 7 30 | 2.5 | | |
| 45 | 4 17 | 19 50 | 0 37 | 2 30 | 21 20 | 1.1 | 7 21 | 2.6 | | |
| 50 | 3 54 | 20 12 | 0 44 | ::: | 21 28 | 1.0 | 7 11 | 2.8 | | |
| 55 | 3 25 | 20 41 | 0 57 | ::: | 21 38 | .8 | 6 57 | 3.0 | | |
| 60 | 2 42 | 21 24 | 1 37 | ::: | 21 51 | .6 | 6 40 | 3.2 | | |
| S | | | | | | | | | | |
| UT | SUNCE | | MJESEC | | | | | | | |
| UT | e = T _p - UT | Δ/24 | t | Prolaz | Δ/24 | π _Ω | t | | | |
| h | min | s | / | h min | min | / | / | | | |
| 00 | - | 2 59.3 | -1.2 | 16.3 | T _{π̄} | 2 | 1.9 | 55.1 | 15.0 | |
| 12 | - | 3 13.6 | | T _{π̄} | 12 h | 3.2 min | Starost | 17.6 d | Faza ○ | |
| UT | PLANETE | | PLANETE | | | | | | | |
| UT | Pl. | T _{π̄} | π | 360-π | Vel. | Pl. | T _{π̄} | π | 360-π | Vel. |
| h | min | / | ° | 360-π | Vel. | Pl. | T _{π̄} | π | 360-π | Vel. |
| 0 | 10 32 | .1 | 102 | -3.1 | 4 | 21 42 | .0 | 294 | -2.3 | |
| 0 | 13 46 | .1 | 53 | 1.1 | 5 | 7 51 | .0 | 142 | -.8 | |

* * ★ * *

Efemeride

NAUTIČKIH ZVJEZDA

SUREKTASCENZIJE NAUTIČKIH ZVJEZDA

za 1. u mjesecu

| R.b. | Ime zvijezde | 360° - α | 2012 | JAN | FEB | MAR | APR | MAJ | JUN | JUL | AVG | SEP | OKT | NOV | DEC | 2013 |
|------|-----------------|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | | | o | / | / | / | / | / | / | / | / | / | / | / | JAN |
| 1 | ALPHERATZ | 357 | 44.7 | 44.8 | 44.7 | 44.6 | 44.4 | 44.1 | 43.9 | 43.7 | 43.6 | 43.7 | 43.7 | 43.8 | 43.9 | |
| 2 | CAPH | 357 | 32.6 | 32.7 | 32.7 | 32.5 | 32.2 | 31.8 | 31.4 | 31.2 | 31.1 | 31.1 | 31.3 | 31.5 | 31.7 | |
| 3 | DIPHDA | 348 | 57.0 | 57.1 | 57.1 | 57.0 | 56.8 | 56.6 | 56.3 | 56.1 | 56.0 | 56.0 | 56.1 | 56.2 | 56.3 | |
| 4 | ACHERNAR | 335 | 27.6 | 27.8 | 27.9 | 27.9 | 27.7 | 27.4 | 27.1 | 26.7 | 26.6 | 26.5 | 26.7 | 26.9 | 27.1 | |
| 5 | HAMAL | 328 | 1.9 | 2.0 | 2.0 | 2.0 | 1.9 | 1.6 | 1.4 | 1.1 | 1.0 | 0.9 | 0.9 | 0.9 | 1.1 | |
| 6 | POLARIS | 318 | 13.0 | 25.5 | 35.0 | 37.2 | 31.7 | 20.3 | 5.3 | 50.6 | 38.9 | 31.8 | 31.6 | 39.0 | 51.9 | |
| 7 | MIRFAK | 308 | 41.6 | 41.8 | 42.0 | 42.0 | 41.9 | 41.6 | 41.3 | 41.0 | 40.7 | 40.5 | 40.4 | 40.4 | 40.6 | |
| 8 | ALDEBARAN | 290 | 50.3 | 50.4 | 50.5 | 50.6 | 50.6 | 50.4 | 50.2 | 50.0 | 49.8 | 49.6 | 49.5 | 49.4 | 49.5 | |
| 9 | RIGEL | 281 | 12.7 | 12.9 | 13.0 | 13.1 | 13.1 | 13.0 | 12.8 | 12.6 | 12.4 | 12.2 | 12.1 | 12.0 | 12.1 | |
| 10 | CAPELLA | 280 | 35.5 | 35.7 | 35.9 | 36.0 | 36.0 | 35.9 | 35.6 | 35.3 | 35.0 | 34.7 | 34.5 | 34.4 | 34.5 | |
| 11 | BELLATRIX | 278 | 32.8 | 32.9 | 33.0 | 33.1 | 33.1 | 33.0 | 32.9 | 32.6 | 32.4 | 32.2 | 32.1 | 32.0 | 32.0 | |
| 12 | EL NATH | 278 | 13.6 | 13.7 | 13.8 | 13.9 | 13.9 | 13.8 | 13.6 | 13.4 | 13.1 | 12.9 | 12.7 | 12.6 | 12.7 | |
| 13 | ALNILAM | 275 | 47.1 | 47.2 | 47.3 | 47.4 | 47.4 | 47.4 | 47.2 | 47.0 | 46.8 | 46.6 | 46.4 | 46.3 | 46.4 | |
| 14 | BETELGEUSE | 271 | 2.1 | 2.1 | 2.3 | 2.4 | 2.4 | 2.3 | 2.2 | 2.0 | 1.8 | 1.6 | 1.4 | 1.3 | 1.3 | |
| 15 | CANOPUS | 263 | 56.1 | 56.3 | 56.6 | 56.8 | 57.0 | 57.0 | 56.9 | 56.6 | 56.3 | 56.0 | 55.8 | 55.7 | 55.8 | |
| 16 | SIRIUS | 258 | 34.3 | 34.3 | 34.5 | 34.6 | 34.7 | 34.7 | 34.5 | 34.4 | 34.2 | 33.9 | 33.7 | 33.6 | 33.6 | |
| 17 | ADHARA | 255 | 12.9 | 13.0 | 13.2 | 13.3 | 13.4 | 13.4 | 13.3 | 13.2 | 12.9 | 12.7 | 12.5 | 12.4 | 12.4 | |
| 18 | PROCYON | 245 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.7 | 0.7 | 0.5 | 0.3 | 0.1 | 59.9 | 59.7 | 59.7 | |
| 19 | POLLUX | 243 | 28.5 | 28.5 | 28.7 | 28.8 | 28.9 | 28.9 | 28.8 | 28.6 | 28.4 | 28.2 | 27.9 | 27.7 | 27.7 | |
| 20 | AVIOR | 234 | 17.8 | 17.9 | 18.1 | 18.4 | 18.7 | 18.9 | 18.9 | 18.8 | 18.5 | 18.1 | 17.8 | 17.5 | 17.4 | |
| 21 | AL SUHAIL | 222 | 52.7 | 52.7 | 52.8 | 53.0 | 53.2 | 53.3 | 53.3 | 53.2 | 53.1 | 52.8 | 52.5 | 52.3 | 52.1 | |
| 22 | MIAPLACIDUS | 221 | 39.0 | 39.1 | 39.4 | 39.8 | 40.2 | 40.6 | 40.7 | 40.7 | 40.4 | 39.8 | 39.3 | 38.9 | 38.7 | |
| 23 | ALPHARD | 217 | 56.7 | 56.7 | 56.7 | 56.8 | 56.9 | 57.0 | 57.0 | 56.9 | 56.8 | 56.6 | 56.3 | 56.1 | 56.0 | |
| 24 | REGULUS | 207 | 44.2 | 44.1 | 44.2 | 44.3 | 44.4 | 44.4 | 44.4 | 44.4 | 44.3 | 44.1 | 43.9 | 43.6 | 43.4 | |
| 25 | DUBHE | 193 | 52.2 | 52.1 | 52.1 | 52.3 | 52.5 | 52.8 | 52.9 | 53.0 | 52.9 | 52.6 | 52.3 | 51.8 | 51.4 | |
| 26 | DENEBOLA | 182 | 34.4 | 34.2 | 34.2 | 34.2 | 34.3 | 34.4 | 34.5 | 34.5 | 34.5 | 34.4 | 34.1 | 33.9 | 33.7 | |
| 27 | ACRUX | 173 | 10.0 | 9.8 | 9.6 | 9.7 | 9.9 | 10.1 | 10.3 | 10.5 | 10.6 | 10.4 | 10.0 | 9.6 | 9.1 | |
| 28 | GACRUX | 172 | 1.7 | 1.4 | 1.3 | 1.3 | 1.5 | 1.6 | 1.6 | 1.8 | 2.0 | 2.0 | 1.9 | 1.6 | 1.2 | 0.8 |
| 29 | MINOSA | 167 | 52.8 | 52.5 | 52.4 | 52.4 | 52.5 | 52.7 | 52.9 | 53.1 | 53.1 | 53.0 | 52.7 | 52.3 | 51.9 | |
| 30 | ALIOOTH | 166 | 21.2 | 21.0 | 20.8 | 20.9 | 21.0 | 21.2 | 21.4 | 21.6 | 21.7 | 21.6 | 21.4 | 21.0 | 20.7 | |
| 31 | MIZAR | 158 | 53.5 | 53.2 | 53.1 | 53.1 | 53.2 | 53.4 | 53.6 | 53.8 | 53.9 | 53.9 | 53.7 | 53.4 | 53.0 | |
| 32 | SPICA | 158 | 32.1 | 32.0 | 31.8 | 31.8 | 31.8 | 31.9 | 32.0 | 32.0 | 32.1 | 32.0 | 31.9 | 31.6 | 31.4 | |
| 33 | ALKAID | 152 | 59.5 | 59.2 | 59.1 | 59.0 | 59.1 | 59.3 | 59.4 | 59.6 | 59.7 | 59.7 | 59.6 | 59.3 | 59.0 | |
| 34 | MENKENT | 148 | 8.6 | 8.4 | 8.2 | 8.1 | 8.1 | 8.2 | 8.3 | 8.4 | 8.5 | 8.5 | 8.3 | 8.1 | 7.8 | |
| 35 | ARCTURUS | 145 | 56.5 | 56.3 | 56.2 | 56.1 | 56.1 | 56.2 | 56.3 | 56.4 | 56.5 | 56.5 | 56.4 | 56.1 | 55.9 | |
| 36 | RIGEL KENTAURUS | 139 | 53.1 | 52.7 | 52.4 | 52.3 | 52.2 | 52.4 | 52.6 | 52.9 | 53.1 | 53.1 | 52.9 | 52.5 | 52.1 | |
| 37 | KOHAB | 137 | 20.0 | 19.4 | 18.9 | 18.8 | 18.9 | 19.3 | 19.9 | 20.5 | 20.9 | 21.2 | 21.1 | 20.7 | 20.1 | |
| 38 | ALPHECCA | 126 | 11.9 | 11.7 | 11.4 | 11.3 | 11.3 | 11.3 | 11.4 | 11.5 | 11.7 | 11.7 | 11.7 | 11.5 | 11.3 | |
| 39 | DSCHUBBA | 119 | 44.1 | 43.8 | 43.6 | 43.4 | 43.3 | 43.3 | 43.4 | 43.5 | 43.6 | 43.7 | 43.6 | 43.4 | 43.2 | |
| 40 | ANTARES | 112 | 27.6 | 27.4 | 27.1 | 26.9 | 26.8 | 26.7 | 26.8 | 26.9 | 27.1 | 27.1 | 27.1 | 26.9 | 26.7 | |
| 41 | ATRIA | 107 | 30.6 | 30.1 | 29.5 | 29.0 | 28.7 | 28.6 | 28.8 | 29.1 | 29.5 | 29.8 | 29.8 | 29.5 | 29.0 | |
| 42 | SHAULA | 96 | 23.5 | 23.2 | 22.9 | 22.7 | 22.5 | 22.4 | 22.4 | 22.5 | 22.7 | 22.8 | 22.8 | 22.7 | 22.5 | |
| 43 | RASALHAGUE | 96 | 7.6 | 7.4 | 7.1 | 6.9 | 6.8 | 6.7 | 6.7 | 6.9 | 7.0 | 7.1 | 7.1 | 7.1 | 6.9 | |
| 44 | ELTANIN | 90 | 47.0 | 46.7 | 46.4 | 46.1 | 46.0 | 45.9 | 46.0 | 46.2 | 46.5 | 46.7 | 46.8 | 46.8 | 46.6 | |
| 45 | KAUS AUSTRALIS | 83 | 45.4 | 45.2 | 44.9 | 44.6 | 44.4 | 44.3 | 44.2 | 44.3 | 44.5 | 44.6 | 44.7 | 44.6 | 44.4 | |
| 46 | VEGA | 80 | 40.0 | 39.8 | 39.5 | 39.3 | 39.1 | 39.0 | 39.0 | 39.1 | 39.3 | 39.5 | 39.6 | 39.6 | 39.5 | |
| 47 | NUNKI | 75 | 59.8 | 59.6 | 59.4 | 59.1 | 58.9 | 58.8 | 58.7 | 58.8 | 58.9 | 59.0 | 59.1 | 59.1 | 58.9 | |
| 48 | ALTAIR | 62 | 9.5 | 9.3 | 9.1 | 8.9 | 8.7 | 8.6 | 8.5 | 8.5 | 8.6 | 8.8 | 8.8 | 8.9 | 8.8 | |
| 49 | PEACOCK | 53 | 21.3 | 21.1 | 20.8 | 20.4 | 20.0 | 19.7 | 19.6 | 19.6 | 19.8 | 20.0 | 20.2 | 20.3 | 20.2 | |
| 50 | DENEB | 49 | 32.6 | 32.5 | 32.3 | 32.0 | 31.7 | 31.5 | 31.4 | 31.4 | 31.6 | 31.8 | 32.0 | 32.1 | 32.1 | |
| 51 | ENIF | 33 | 48.4 | 48.3 | 48.2 | 48.0 | 47.7 | 47.5 | 47.4 | 47.3 | 47.4 | 47.5 | 47.6 | 47.6 | 47.7 | |
| 52 | AL NA IR | 27 | 45.3 | 45.3 | 45.1 | 44.9 | 44.5 | 44.3 | 44.0 | 43.9 | 44.0 | 44.1 | 44.3 | 44.4 | 44.5 | |
| 53 | FOMALHAUT | 15 | 25.3 | 25.3 | 25.2 | 25.0 | 24.8 | 24.5 | 24.3 | 24.2 | 24.2 | 24.3 | 24.4 | 24.5 | 24.6 | |
| 54 | MARKAB | 13 | 39.5 | 39.5 | 39.5 | 39.3 | 39.1 | 38.8 | 38.6 | 38.5 | 38.6 | 38.7 | 38.8 | 38.8 | 38.8 | |

DEKLINACIJE NAUTIČKIH ZVJEZDA
za 1. u mjesecu

| R.b. | Zvijezda–Sazviježđe | δ | 2012 JAN | FEB | MAR | APR | MAJ | JUN | JUL | AVG | SEP | OKT | NOV | DEC | 2013 JAN |
|------|----------------------|-----|-------------|------|------|------|------|------|------|------|------|------|------|------|-------------|
| 1 | α Andromedae | +29 | 9.6 | 9.5 | 9.4 | 9.4 | 9.4 | 9.5 | 9.6 | 9.8 | 9.9 | 10.0 | 10.0 | 10.0 | 9.9 |
| 2 | β Cassiopeiae | +59 | 13.3 | 13.2 | 13.0 | 12.9 | 12.9 | 12.9 | 13.1 | 13.2 | 13.4 | 13.5 | 13.6 | 13.7 | 13.6 |
| 3 | β Ceti | -17 | 55.3 | 55.3 | 55.2 | 55.1 | 55.0 | 54.9 | 54.8 | 54.8 | 54.8 | 54.9 | 54.9 | 55.0 | 55.0 |
| 4 | α Eridani | -57 | 10.8 | 10.7 | 10.5 | 10.4 | 10.2 | 10.1 | 10.0 | 10.0 | 10.1 | 10.3 | 10.4 | 10.5 | 10.5 |
| 5 | α Arietis | +23 | 31.3 | 31.2 | 31.2 | 31.1 | 31.2 | 31.2 | 31.3 | 31.4 | 31.4 | 31.5 | 31.5 | 31.5 | 31.5 |
| 6 | α Ursae Minoris | +89 | 19.3 | 19.3 | 19.2 | 19.0 | 18.9 | 18.8 | 18.8 | 18.8 | 19.0 | 19.1 | 19.3 | 19.5 | 19.5 |
| 7 | α Persei | +49 | 54.4 | 54.4 | 54.3 | 54.2 | 54.2 | 54.1 | 54.1 | 54.2 | 54.3 | 54.4 | 54.5 | 54.6 | 54.6 |
| 8 | α Tauri | +16 | 31.9 | 31.9 | 31.9 | 31.9 | 31.9 | 31.9 | 32.0 | 32.0 | 32.1 | 32.1 | 32.0 | 32.0 | 32.0 |
| 9 | β Orionis | -8 | 11.5 | 11.5 | 11.5 | 11.5 | 11.4 | 11.3 | 11.2 | 11.1 | 11.1 | 11.2 | 11.3 | 11.4 | 11.4 |
| 10 | α Aurigae | +46 | 0.6 | 0.7 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 |
| 11 | γ Orionis | +6 | 21.5 | 21.5 | 21.5 | 21.5 | 21.5 | 21.6 | 21.6 | 21.7 | 21.7 | 21.6 | 21.6 | 21.5 | 21.5 |
| 12 | β Tauri | +28 | 37.0 | 37.0 | 37.0 | 37.0 | 36.9 | 36.9 | 36.9 | 36.9 | 36.9 | 37.0 | 37.0 | 37.0 | 37.0 |
| 13 | ε Orionis | -1 | 11.8 | 11.9 | 11.9 | 11.9 | 11.8 | 11.7 | 11.7 | 11.6 | 11.6 | 11.6 | 11.7 | 11.8 | 11.9 |
| 14 | α Orionis | +7 | 24.4 | 24.4 | 24.4 | 24.4 | 24.4 | 24.4 | 24.5 | 24.5 | 24.5 | 24.5 | 24.4 | 24.4 | 24.4 |
| 15 | α Carinae | -52 | 42.4 | 42.5 | 42.6 | 42.5 | 42.4 | 42.4 | 42.1 | 42.0 | 41.9 | 42.0 | 42.2 | 42.3 | 42.5 |
| 16 | α Canis Majoris | -16 | 44.2 | 44.3 | 44.3 | 44.3 | 44.2 | 44.1 | 44.0 | 43.9 | 43.9 | 44.0 | 44.1 | 44.2 | 44.3 |
| 17 | ε Canis Majoris | -28 | 59.6 | 59.7 | 59.7 | 59.7 | 59.6 | 59.5 | 59.4 | 59.3 | 59.2 | 59.3 | 59.4 | 59.6 | 59.7 |
| 18 | α Canis Minoris | +5 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.4 | 11.5 | 11.5 | 11.5 | 11.4 | 11.4 | 11.3 | 11.2 |
| 19 | β Geminorum | +27 | 59.6 | 59.6 | 59.7 | 59.7 | 59.7 | 59.7 | 59.6 | 59.6 | 59.5 | 59.5 | 59.4 | 59.4 | 59.4 |
| 20 | ε Carinae | -59 | 33.1 | 33.3 | 33.4 | 33.4 | 33.4 | 33.2 | 33.1 | 32.9 | 32.9 | 32.9 | 33.0 | 33.1 | 33.3 |
| 21 | λ Velorum | -43 | 29.1 | 29.2 | 29.3 | 29.4 | 29.3 | 29.3 | 29.1 | 29.0 | 28.9 | 28.9 | 29.0 | 29.1 | 29.3 |
| 22 | β Carinae | -69 | 46.1 | 46.3 | 46.5 | 46.5 | 46.5 | 46.4 | 46.3 | 46.1 | 46.0 | 46.0 | 46.0 | 46.2 | 46.4 |
| 23 | α Hydriæ | -8 | 42.9 | 43.0 | 43.0 | 43.0 | 43.0 | 42.9 | 42.9 | 42.8 | 42.8 | 42.9 | 42.9 | 43.1 | 43.2 |
| 24 | α Leonis | +11 | 54.2 | 54.2 | 54.2 | 54.2 | 54.3 | 54.3 | 54.3 | 54.3 | 54.2 | 54.2 | 54.1 | 54.0 | 53.9 |
| 25 | α Ursae Majoris | +61 | 40.8 | 40.9 | 41.0 | 41.1 | 41.2 | 41.2 | 41.1 | 40.9 | 40.7 | 40.6 | 40.5 | 40.4 | 40.5 |
| 26 | β Leonis | +14 | 30.0 | 30.0 | 30.0 | 30.0 | 30.1 | 30.1 | 30.1 | 30.1 | 30.1 | 30.0 | 29.9 | 29.7 | 29.7 |
| 27 | α Crucis | -63 | 9.9 | 10.0 | 10.2 | 10.3 | 10.4 | 10.5 | 10.4 | 10.3 | 10.2 | 10.1 | 10.0 | 10.0 | 10.2 |
| 28 | γ Crucis | -57 | 10.8 | 10.9 | 11.1 | 11.2 | 11.3 | 11.3 | 11.3 | 11.2 | 11.1 | 11.0 | 10.9 | 11.0 | 11.1 |
| 29 | β Crucis | -59 | 45.2 | 45.3 | 45.5 | 45.6 | 45.7 | 45.8 | 45.7 | 45.6 | 45.6 | 45.4 | 45.3 | 45.4 | 45.5 |
| 30 | ε Ursae Majoris | +55 | 53.3 | 53.3 | 53.4 | 53.6 | 53.7 | 53.7 | 53.7 | 53.6 | 53.5 | 53.3 | 53.1 | 53.0 | 53.0 |
| 31 | ζ Ursae Majoris | +54 | 51.3 | 51.4 | 51.5 | 51.6 | 51.8 | 51.8 | 51.8 | 51.7 | 51.6 | 51.4 | 51.3 | 51.1 | 51.1 |
| 32 | α Virginis | -11 | 13.6 | 13.6 | 13.7 | 13.7 | 13.7 | 13.7 | 13.7 | 13.6 | 13.6 | 13.6 | 13.7 | 13.7 | 13.8 |
| 33 | η Ursae Majoris | +49 | 14.8 | 14.8 | 14.9 | 15.1 | 15.2 | 15.3 | 15.3 | 15.2 | 15.1 | 14.9 | 14.8 | 14.6 | 14.5 |
| 34 | θ Centauri | -36 | 25.7 | 25.8 | 25.9 | 26.0 | 26.0 | 26.1 | 26.1 | 26.1 | 25.9 | 25.9 | 25.8 | 25.9 | 25.9 |
| 35 | α Bootis | +19 | 6.9 | 6.9 | 6.9 | 7.0 | 7.1 | 7.1 | 7.2 | 7.2 | 7.1 | 7.0 | 6.9 | 6.8 | 6.7 |
| 36 | α Centauri | -60 | 52.9 | 53.0 | 53.1 | 53.2 | 53.4 | 53.4 | 53.5 | 53.4 | 53.3 | 53.2 | 53.1 | 53.1 | 53.1 |
| 37 | β Ursae Minoris | +74 | 6.0 | 6.0 | 6.1 | 6.2 | 6.4 | 6.5 | 6.5 | 6.5 | 6.4 | 6.2 | 6.0 | 5.8 | 5.8 |
| 38 | α Coronae Borealis | +26 | 40.2 | 40.2 | 40.2 | 40.3 | 40.4 | 40.5 | 40.6 | 40.6 | 40.6 | 40.5 | 40.3 | 40.2 | 40.1 |
| 39 | δ Scorpiorum | -22 | 39.3 | 39.3 | 39.4 | 39.4 | 39.4 | 39.4 | 39.4 | 39.4 | 39.4 | 39.4 | 39.3 | 39.4 | 39.4 |
| 40 | α Scorpiorum | -26 | 27.4 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.6 | 27.6 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 |
| 41 | α Trianguli Australi | -69 | 2.7 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.1 | 3.0 | 2.9 | 2.8 | 2.7 |
| 42 | λ Scorpiorum | -37 | 6.6 | 6.6 | 6.6 | 6.6 | 6.6 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | 6.6 | 6.6 | 6.6 |
| 43 | α Ophiuchi | +12 | 33.0 | 33.0 | 33.0 | 33.0 | 33.1 | 33.2 | 33.3 | 33.3 | 33.3 | 33.3 | 33.2 | 33.1 | 33.0 |
| 44 | γ Draconis | +51 | 29.1 | 29.0 | 29.0 | 29.1 | 29.2 | 29.4 | 29.6 | 29.6 | 29.7 | 29.6 | 29.5 | 29.3 | 29.1 |
| 45 | ε Sagittarii | -34 | 22.6 | 22.6 | 22.5 | 22.5 | 22.5 | 22.6 | 22.6 | 22.6 | 22.6 | 22.6 | 22.6 | 22.5 | 22.5 |
| 46 | α Lyrae | +38 | 47.6 | 47.5 | 47.5 | 47.6 | 47.7 | 47.9 | 48.0 | 48.1 | 48.2 | 48.1 | 48.0 | 47.9 | 47.7 |
| 47 | σ Sagittarii | -26 | 16.8 | 16.8 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 |
| 48 | α Aquilæ | +8 | 54.1 | 54.0 | 54.0 | 54.0 | 54.1 | 54.3 | 54.4 | 54.4 | 54.5 | 54.4 | 54.4 | 54.3 | 54.2 |
| 49 | α Pavonis | -56 | 41.7 | 41.5 | 41.4 | 41.4 | 41.3 | 41.4 | 41.5 | 41.6 | 41.6 | 41.7 | 41.6 | 41.5 | 41.4 |
| 50 | α Cygni | +45 | 19.5 | 19.4 | 19.3 | 19.3 | 19.4 | 19.5 | 19.7 | 19.9 | 20.0 | 20.0 | 20.0 | 19.9 | 19.7 |
| 51 | ε Pegasi | +9 | 55.9 | 55.9 | 55.8 | 55.9 | 56.0 | 56.1 | 56.2 | 56.3 | 56.3 | 56.3 | 56.3 | 56.3 | 56.2 |
| 52 | α Gruis | -46 | 54.2 | 54.0 | 53.9 | 53.8 | 53.7 | 53.7 | 53.7 | 53.8 | 53.9 | 53.9 | 54.0 | 53.9 | 53.9 |
| 53 | α Piscis Austrini | -29 | 33.5 | 33.5 | 33.4 | 33.2 | 33.1 | 33.1 | 33.0 | 33.0 | 33.1 | 33.2 | 33.2 | 33.2 | 33.2 |
| 54 | α Pegasi | +15 | 16.3 | 16.3 | 16.2 | 16.2 | 16.3 | 16.4 | 16.5 | 16.6 | 16.7 | 16.7 | 16.7 | 16.6 | 16.6 |

VREMENA GORNJIH PROLAZA NAUTIČKIH ZVJEZDA

kroz meridijan u Griniču

za 1. u mjesecu

| R.B. | Ime zvijezde | 2012 | JAN | FEB | MAR | APR | MAY | JUN | JUL | AVG | SEP | OKT | NOV | DEC | 2013 | JAN | | |
|------|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|
| | | | h min | | |
| 1 | ALPHERATZ | 15 | 27 | 13 | 36 | 11 | 30 | 9 | 32 | 7 | 30 | 5 | 31 | 3 | 29 | 1 | 27 | |
| 2 | CAPH | 15 | 27 | 13 | 37 | 11 | 31 | 9 | 33 | 7 | 30 | 5 | 32 | 3 | 30 | 1 | 28 | |
| 3 | DIPHDA | 16 | 2 | 14 | 11 | 12 | 5 | 10 | 7 | 8 | 5 | 6 | 4 | 4 | 2 | 2 | 0 | |
| 4 | ACHERNAR | 16 | 56 | 15 | 5 | 12 | 59 | 11 | 1 | 8 | 59 | 7 | 0 | 4 | 58 | 0 | 58 | |
| 5 | HAMAL | 17 | 25 | 15 | 35 | 13 | 29 | 11 | 31 | 9 | 28 | 7 | 30 | 5 | 28 | 3 | 26 | |
| 6 | POLARIS | 0 | 47 | 22 | 57 | 20 | 51 | 18 | 52 | 16 | 49 | 14 | 51 | 12 | 49 | 10 | 46 | |
| 7 | MIRFAK | 18 | 43 | 16 | 52 | 14 | 46 | 12 | 48 | 10 | 46 | 8 | 47 | 6 | 45 | 4 | 43 | |
| 8 | ALDEBARAN | 19 | 54 | 18 | 4 | 15 | 58 | 13 | 59 | 11 | 57 | 9 | 59 | 7 | 57 | 5 | 54 | |
| 9 | RIGEL | 20 | 33 | 18 | 42 | 16 | 36 | 14 | 38 | 12 | 36 | 10 | 37 | 8 | 35 | 6 | 33 | |
| 10 | CAPELLA | 20 | 35 | 18 | 45 | 16 | 39 | 14 | 40 | 12 | 38 | 10 | 40 | 8 | 38 | 6 | 35 | |
| 11 | BELLATRIX | 20 | 43 | 18 | 53 | 16 | 47 | 14 | 48 | 12 | 46 | 10 | 48 | 8 | 46 | 6 | 44 | |
| 12 | EL NATH | 20 | 45 | 18 | 54 | 16 | 48 | 14 | 50 | 12 | 48 | 10 | 49 | 8 | 47 | 6 | 45 | |
| 13 | ALNILAM | 20 | 54 | 19 | 4 | 16 | 58 | 14 | 60 | 12 | 57 | 10 | 59 | 8 | 57 | 6 | 55 | |
| 14 | BETELGEUSE | 21 | 13 | 19 | 23 | 17 | 17 | 15 | 19 | 13 | 16 | 11 | 18 | 9 | 16 | 7 | 14 | |
| 15 | CANOPUS | 21 | 42 | 19 | 51 | 17 | 45 | 15 | 47 | 13 | 45 | 11 | 46 | 9 | 44 | 7 | 42 | |
| 16 | SIRIUS | 22 | 3 | 20 | 13 | 18 | 7 | 16 | 8 | 14 | 6 | 12 | 8 | 10 | 6 | 8 | | |
| 17 | ADHARA | 22 | 17 | 20 | 26 | 18 | 20 | 16 | 22 | 14 | 20 | 12 | 21 | 10 | 19 | 8 | 17 | |
| 18 | PROCYON | 22 | 57 | 21 | 7 | 19 | 1 | 17 | 3 | 15 | 0 | 13 | 2 | 10 | 60 | 8 | 58 | |
| 19 | POLLUX | 23 | 4 | 21 | 13 | 19 | 7 | 17 | 9 | 15 | 7 | 13 | 8 | 11 | 6 | 9 | | |
| 20 | AVIOR | 23 | 40 | 21 | 50 | 19 | 44 | 17 | 45 | 15 | 43 | 13 | 45 | 11 | 43 | 7 | 42 | |
| 21 | AL SUHAIL | 0 | 26 | 22 | 36 | 20 | 29 | 18 | 31 | 16 | 29 | 14 | 31 | 12 | 28 | 8 | 28 | |
| 22 | MIAPLACIDUS | 0 | 31 | 22 | 41 | 20 | 34 | 18 | 36 | 16 | 34 | 14 | 35 | 12 | 33 | 10 | 31 | |
| 23 | ALPHARD | 0 | 46 | 22 | 55 | 20 | 49 | 18 | 51 | 16 | 49 | 14 | 50 | 12 | 48 | 8 | 48 | |
| 24 | REGULUS | 1 | 27 | 23 | 36 | 21 | 30 | 19 | 32 | 17 | 30 | 15 | 31 | 13 | 29 | 9 | 29 | |
| 25 | DUBHE | 2 | 22 | 0 | 32 | 22 | 25 | 20 | 27 | 18 | 25 | 16 | 27 | 14 | 24 | 12 | 22 | |
| 26 | DENEBOA | 3 | 7 | 1 | 17 | 23 | 11 | 21 | 12 | 19 | 10 | 17 | 12 | 15 | 10 | 13 | 7 | 11 |
| 27 | ACRUX | 3 | 45 | 1 | 54 | 23 | 48 | 21 | 50 | 19 | 48 | 17 | 50 | 15 | 47 | 13 | 45 | |
| 28 | GACRUX | 3 | 49 | 1 | 59 | 23 | 53 | 21 | 55 | 19 | 52 | 17 | 54 | 15 | 52 | 13 | 50 | |
| 29 | MINOSA | 4 | 6 | 2 | 16 | 0 | 9 | 22 | 11 | 20 | 9 | 18 | 11 | 16 | 8 | 14 | | |
| 30 | ALIOOTH | 4 | 12 | 2 | 22 | 0 | 16 | 22 | 17 | 20 | 15 | 18 | 17 | 16 | 14 | 12 | | |
| 31 | MIZAR | 4 | 42 | 2 | 52 | 0 | 45 | 22 | 47 | 20 | 45 | 18 | 47 | 16 | 44 | 14 | 42 | |
| 32 | SPICA | 4 | 43 | 2 | 53 | 0 | 47 | 22 | 49 | 20 | 46 | 18 | 48 | 16 | 46 | 14 | 45 | |
| 33 | ALKAI | 5 | 6 | 3 | 15 | 1 | 9 | 23 | 11 | 21 | 9 | 19 | 10 | 17 | 8 | 15 | | |
| 34 | MENKENT | 5 | 25 | 3 | 35 | 1 | 28 | 23 | 30 | 21 | 28 | 19 | 30 | 17 | 27 | 13 | 27 | |
| 35 | ARCTURUS | 5 | 34 | 3 | 43 | 1 | 37 | 23 | 39 | 21 | 37 | 19 | 38 | 17 | 36 | 15 | 34 | |
| 36 | RIGEL KENTAURUS | 5 | 58 | 4 | 8 | 2 | 1 | 0 | 3 | 22 | 1 | 20 | 3 | 18 | 0 | 15 | | |
| 37 | KOHAB | 6 | 8 | 4 | 18 | 2 | 12 | 0 | 13 | 22 | 11 | 20 | 13 | 18 | 11 | 16 | | |
| 38 | ALPHECCA | 6 | 53 | 5 | 2 | 2 | 56 | 0 | 58 | 22 | 56 | 20 | 57 | 18 | 55 | 14 | 55 | |
| 39 | DSCHUBBA | 7 | 19 | 5 | 28 | 3 | 22 | 1 | 24 | 23 | 22 | 21 | 23 | 19 | 17 | 15 | 18 | |
| 40 | ANTARES | 7 | 48 | 5 | 57 | 3 | 51 | 1 | 53 | 23 | 51 | 21 | 52 | 19 | 50 | 17 | 48 | |
| 41 | ATRIA | 8 | 7 | 6 | 17 | 4 | 11 | 2 | 13 | 0 | 11 | 22 | 12 | 20 | 10 | 8 | 7 | |
| 42 | SHAULA | 8 | 52 | 7 | 2 | 4 | 55 | 2 | 57 | 0 | 55 | 22 | 57 | 20 | 54 | 18 | 52 | |
| 43 | RASALHAGUE | 8 | 53 | 7 | 3 | 4 | 56 | 2 | 58 | 0 | 56 | 22 | 58 | 20 | 56 | 18 | 53 | |
| 44 | ELTANIN | 9 | 14 | 7 | 24 | 5 | 18 | 3 | 20 | 1 | 17 | 23 | 19 | 11 | 17 | 10 | 10 | |
| 45 | KAUS AUSTRALIS | 9 | 42 | 7 | 52 | 5 | 46 | 3 | 48 | 1 | 46 | 23 | 47 | 21 | 45 | 19 | 43 | |
| 46 | VEGA | 9 | 55 | 8 | 4 | 5 | 58 | 4 | 0 | 1 | 58 | 23 | 60 | 21 | 57 | 17 | 57 | |
| 47 | NUNKI | 10 | 14 | 8 | 23 | 6 | 17 | 4 | 19 | 2 | 17 | 0 | 18 | 22 | 16 | 20 | 14 | |
| 48 | ALTAIR | 11 | 9 | 9 | 19 | 7 | 12 | 5 | 14 | 3 | 12 | 1 | 14 | 23 | 11 | 21 | 9 | |
| 49 | PEACOCK | 11 | 44 | 9 | 54 | 7 | 48 | 5 | 49 | 3 | 47 | 1 | 49 | 23 | 47 | 21 | 44 | |
| 50 | DENEBO | 11 | 59 | 10 | 9 | 8 | 3 | 6 | 5 | 4 | 2 | 4 | 0 | 2 | 21 | 60 | 20 | |
| 51 | ENIF | 13 | 2 | 11 | 12 | 9 | 6 | 7 | 5 | 3 | 7 | 1 | 5 | 23 | 3 | 21 | 4 | |
| 52 | AL NA IR | 13 | 26 | 11 | 36 | 9 | 30 | 7 | 32 | 5 | 30 | 3 | 31 | 1 | 29 | 21 | 29 | |
| 53 | FOMALHAUT | 14 | 16 | 12 | 25 | 10 | 19 | 8 | 21 | 6 | 19 | 4 | 21 | 2 | 18 | 22 | 18 | |
| 54 | MARKAB | 14 | 23 | 12 | 32 | 10 | 26 | 8 | 28 | 6 | 26 | 4 | 28 | 2 | 25 | 0 | 23 | |

POPRAVKA ZA DATUM

uvijek se oduzima

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. | 21. | 22. | 23. | 24. | 25. | 26. | 27. | 28. | 29. | 30. | 31. |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| h min |
| 0 00 | 0 04 | 0 08 | 0 12 | 0 16 | 0 20 | 0 24 | 0 28 | 0 31 | 0 35 | 0 39 | 0 43 | 0 47 | 0 51 | 0 55 | 0 59 | 1 03 | 1 07 | 1 11 | 1 15 | 1 19 | 1 23 | 1 27 | 1 30 | 1 34 | 1 38 | 1 42 | 1 46 | 1 50 | 1 54 | 1 58 |

* * ★ * *

T_ablice

ZA

*ODREĐIVANJE GEOGRAFSKE ŠIRINE
POMOĆU VISINE I AZIMUTA SJEVERNJAČE*

TABLICA I

| S _T | Poprvka | S_{T} | Poprvka | S_{T} | Poprvka | S_{T} | Poprvka | S_{T} | Poprvka | S_{T} | Poprvka |
|----------------|---------|----------------|---------|----------------|---------|----------------|---------|----------------|---------|----------------|---------|
| o | i | o | i | o | i | o | i | o | i | o | i |
| 0 | -31.2 | 60 | -38.8 | 120 | -7.5 | 180 | 31.2 | 240 | 38.8 | 300 | 7.5 |
| 1 | -31.7 | 61 | -38.5 | 121 | -6.8 | 181 | 31.7 | 241 | 38.5 | 301 | 6.8 |
| 2 | -32.1 | 62 | -38.3 | 122 | -6.1 | 182 | 32.1 | 242 | 38.3 | 302 | 6.1 |
| 3 | -32.6 | 63 | -38.0 | 123 | -5.4 | 183 | 32.6 | 243 | 38.0 | 303 | 5.4 |
| 4 | -33.0 | 64 | -37.7 | 124 | -4.7 | 184 | 33.0 | 244 | 37.7 | 304 | 4.7 |
| 5 | -33.4 | 65 | -37.4 | 125 | -4.0 | 185 | 33.4 | 245 | 37.4 | 305 | 4.0 |
| 6 | -33.8 | 66 | -37.1 | 126 | -3.3 | 186 | 33.8 | 246 | 37.1 | 306 | 3.3 |
| 7 | -34.3 | 67 | -36.8 | 127 | -2.5 | 187 | 34.3 | 247 | 36.8 | 307 | 2.5 |
| 8 | -34.6 | 68 | -36.5 | 128 | -1.8 | 188 | 34.6 | 248 | 36.5 | 308 | 1.8 |
| 9 | -35.0 | 69 | -36.1 | 129 | -1.1 | 189 | 35.0 | 249 | 36.1 | 309 | 1.1 |
| 10 | -35.4 | 70 | -35.8 | 130 | -0.4 | 190 | 35.4 | 250 | 35.8 | 310 | 0.4 |
| 11 | -35.8 | 71 | -35.4 | 131 | 0.3 | 191 | 35.8 | 251 | 35.4 | 311 | -0.3 |
| 12 | -36.1 | 72 | -35.1 | 132 | 1.0 | 192 | 36.1 | 252 | 35.1 | 312 | -1.0 |
| 13 | -36.4 | 73 | -34.7 | 133 | 1.8 | 193 | 36.4 | 253 | 34.7 | 313 | -1.8 |
| 14 | -36.8 | 74 | -34.3 | 134 | 2.5 | 194 | 36.8 | 254 | 34.3 | 314 | -2.5 |
| 15 | -37.1 | 75 | -33.9 | 135 | 3.2 | 195 | 37.1 | 255 | 33.9 | 315 | -3.2 |
| 16 | -37.4 | 76 | -33.5 | 136 | 3.9 | 196 | 37.4 | 256 | 33.5 | 316 | -3.9 |
| 17 | -37.7 | 77 | -33.1 | 137 | 4.6 | 197 | 37.7 | 257 | 33.1 | 317 | -4.6 |
| 18 | -38.0 | 78 | -32.6 | 138 | 5.3 | 198 | 38.0 | 258 | 32.6 | 318 | -5.3 |
| 19 | -38.2 | 79 | -32.2 | 139 | 6.0 | 199 | 38.2 | 259 | 32.2 | 319 | -6.0 |
| 20 | -38.5 | 80 | -31.7 | 140 | 6.7 | 200 | 38.5 | 260 | 31.7 | 320 | -6.7 |
| 21 | -38.7 | 81 | -31.3 | 141 | 7.5 | 201 | 38.7 | 261 | 31.3 | 321 | -7.5 |
| 22 | -39.0 | 82 | -30.8 | 142 | 8.2 | 202 | 39.0 | 262 | 30.8 | 322 | -8.2 |
| 23 | -39.2 | 83 | -30.3 | 143 | 8.9 | 203 | 39.2 | 263 | 30.3 | 323 | -8.9 |
| 24 | -39.4 | 84 | -29.8 | 144 | 9.6 | 204 | 39.4 | 264 | 29.8 | 324 | -9.6 |
| 25 | -39.6 | 85 | -29.3 | 145 | 10.3 | 205 | 39.6 | 265 | 29.3 | 325 | -10.3 |
| 26 | -39.8 | 86 | -28.8 | 146 | 10.9 | 206 | 39.8 | 266 | 28.8 | 326 | -10.9 |
| 27 | -40.0 | 87 | -28.3 | 147 | 11.6 | 207 | 40.0 | 267 | 28.3 | 327 | -11.6 |
| 28 | -40.1 | 88 | -27.8 | 148 | 12.3 | 208 | 40.1 | 268 | 27.8 | 328 | -12.3 |
| 29 | -40.3 | 89 | -27.3 | 149 | 13.0 | 209 | 40.3 | 269 | 27.3 | 329 | -13.0 |
| 30 | -40.4 | 90 | -26.7 | 150 | 13.7 | 210 | 40.4 | 270 | 26.7 | 330 | -13.7 |
| 31 | -40.5 | 91 | -26.2 | 151 | 14.4 | 211 | 40.5 | 271 | 26.2 | 331 | -14.4 |
| 32 | -40.6 | 92 | -25.6 | 152 | 15.0 | 212 | 40.6 | 272 | 25.6 | 332 | -15.0 |
| 33 | -40.7 | 93 | -25.1 | 153 | 15.7 | 213 | 40.7 | 273 | 25.1 | 333 | -15.7 |
| 34 | -40.8 | 94 | -24.5 | 154 | 16.4 | 214 | 40.8 | 274 | 24.5 | 334 | -16.4 |
| 35 | -40.9 | 95 | -23.9 | 155 | 17.0 | 215 | 40.9 | 275 | 23.9 | 335 | -17.0 |
| 36 | -41.0 | 96 | -23.3 | 156 | 17.7 | 216 | 41.0 | 276 | 23.3 | 336 | -17.7 |
| 37 | -41.0 | 97 | -22.7 | 157 | 18.3 | 217 | 41.0 | 277 | 22.7 | 337 | -18.3 |
| 38 | -41.1 | 98 | -22.1 | 158 | 18.9 | 218 | 41.1 | 278 | 22.1 | 338 | -18.9 |
| 39 | -41.1 | 99 | -21.5 | 159 | 19.6 | 219 | 41.1 | 279 | 21.5 | 339 | -19.6 |
| 40 | -41.1 | 100 | -20.9 | 160 | 20.2 | 220 | 41.1 | 280 | 20.9 | 340 | -20.2 |
| 41 | -41.1 | 101 | -20.3 | 161 | 20.8 | 221 | 41.1 | 281 | 20.3 | 341 | -20.8 |
| 42 | -41.1 | 102 | -19.6 | 162 | 21.4 | 222 | 41.1 | 282 | 19.6 | 342 | -21.4 |
| 43 | -41.1 | 103 | -19.0 | 163 | 22.1 | 223 | 41.1 | 283 | 19.0 | 343 | -22.1 |
| 44 | -41.0 | 104 | -18.4 | 164 | 22.7 | 224 | 41.0 | 284 | 18.4 | 344 | -22.7 |
| 45 | -41.0 | 105 | -17.7 | 165 | 23.2 | 225 | 41.0 | 285 | 17.7 | 345 | -23.2 |
| 46 | -40.9 | 106 | -17.1 | 166 | 23.8 | 226 | 40.9 | 286 | 17.1 | 346 | -23.8 |
| 47 | -40.8 | 107 | -16.4 | 167 | 24.4 | 227 | 40.8 | 287 | 16.4 | 347 | -24.4 |
| 48 | -40.8 | 108 | -15.8 | 168 | 25.0 | 228 | 40.8 | 288 | 15.8 | 348 | -25.0 |
| 49 | -40.7 | 109 | -15.1 | 169 | 25.6 | 229 | 40.7 | 289 | 15.1 | 349 | -25.6 |
| 50 | -40.5 | 110 | -14.4 | 170 | 26.1 | 230 | 40.5 | 290 | 14.4 | 350 | -26.1 |
| 51 | -40.4 | 111 | -13.8 | 171 | 26.7 | 231 | 40.4 | 291 | 13.8 | 351 | -26.7 |
| 52 | -40.3 | 112 | -13.1 | 172 | 27.2 | 232 | 40.3 | 292 | 13.1 | 352 | -27.2 |
| 53 | -40.1 | 113 | -12.4 | 173 | 27.7 | 233 | 40.1 | 293 | 12.4 | 353 | -27.7 |
| 54 | -40.0 | 114 | -11.7 | 174 | 28.3 | 234 | 40.0 | 294 | 11.7 | 354 | -28.3 |
| 55 | -39.8 | 115 | -11.0 | 175 | 28.8 | 235 | 39.8 | 295 | 11.0 | 355 | -28.8 |
| 56 | -39.6 | 116 | -10.3 | 176 | 29.3 | 236 | 39.6 | 296 | 10.3 | 356 | -29.3 |
| 57 | -39.4 | 117 | -9.6 | 177 | 29.8 | 237 | 39.4 | 297 | 9.6 | 357 | -29.8 |
| 58 | -39.2 | 118 | -8.9 | 178 | 30.3 | 238 | 39.2 | 298 | 8.9 | 358 | -30.3 |
| 59 | -39.0 | 119 | -8.2 | 179 | 30.8 | 239 | 39.0 | 299 | 8.2 | 359 | -30.8 |
| 60 | -38.8 | 120 | -7.5 | 180 | 31.2 | 240 | 38.8 | 300 | 7.5 | 360 | -31.2 |

TABLICA II

| φ S τ | | 0° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 62° | 64° | 66° | φ S τ |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------|
| h | o | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / | o h |
| 1 | 15 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 15 1 |
| 2 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 30 2 |
| 3 | 45 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 45 3 |
| 4 | 60 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 60 4 |
| 5 | 75 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 75 5 |
| 6 | 90 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 90 6 |
| 7 | 105 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 105 7 |
| 8 | 120 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 120 8 |
| 9 | 135 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5 | 135 9 |
| 10 | 150 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 150 10 |
| 11 | 165 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 165 11 |
| 12 | 180 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 180 12 |
| 13 | 195 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 195 13 |
| 14 | 210 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 210 14 |
| 15 | 225 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 225 15 |
| 16 | 240 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 240 16 |
| 17 | 255 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 255 17 |
| 18 | 270 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 270 18 |
| 19 | 285 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 285 19 |
| 20 | 300 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 300 20 |
| 21 | 315 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.5 | 0.5 | 315 21 |
| 22 | 330 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 330 22 |
| 23 | 345 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.4 | 345 23 |
| 24 | 360 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 360 24 |

TABLICA III

| Datum S τ | | 2012 1.JAN | 1.FEB | 1.MAR | 1.APR | 1.MAJ | 1.JUN | 1.JUL | 1.AVG | 1.SEP | 1.OKT | 1.NOV | 1.DEC | 2013 1.JAN | Datum S τ | |
|-------------------|-----|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|-------------------|--------|
| h | o | / | / | / | / | / | / | / | / | / | / | / | / | / | / | o h |
| 1 | 15 | -2 | -2 | -2 | -1 | .0 | .1 | .2 | .3 | .3 | .1 | .0 | -.1 | -.3 | 15 1 | |
| 2 | 30 | -2 | -2 | -2 | -1 | .1 | .2 | .3 | .3 | .3 | .1 | .0 | -.2 | -.4 | 30 2 | |
| 3 | 45 | -2 | -2 | -2 | -1 | .1 | .2 | .3 | .3 | .3 | .1 | .0 | -.2 | -.4 | 45 3 | |
| 4 | 60 | -2 | -2 | -2 | -1 | .1 | .2 | .3 | .3 | .3 | .1 | .0 | -.2 | -.4 | 60 4 | |
| 5 | 75 | -2 | -2 | -1 | .0 | .1 | .2 | .3 | .3 | .2 | .0 | -.1 | -.2 | -.4 | 75 5 | |
| 6 | 90 | -1 | -.1 | -.1 | .0 | .1 | .2 | .2 | .2 | .2 | .0 | -.1 | -.2 | -.3 | 90 6 | |
| 7 | 105 | -1 | -.1 | -.0 | .0 | .1 | .2 | .2 | .2 | .1 | .0 | -.1 | -.2 | -.2 | 105 7 | |
| 8 | 120 | -.1 | -.0 | -.0 | .1 | .1 | .1 | .1 | .1 | .1 | -.1 | -.1 | -.1 | -.2 | 120 8 | |
| 9 | 135 | .0 | .0 | .1 | .1 | .1 | .1 | .0 | .0 | -.1 | -.1 | -.1 | -.1 | -.1 | 135 9 | |
| 10 | 150 | .1 | .1 | .1 | .1 | .1 | .0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | 150 10 | |
| 11 | 165 | .1 | .1 | .2 | .1 | .0 | .0 | -.1 | -.2 | -.1 | -.1 | -.1 | -.1 | -.2 | 165 11 | |
| 12 | 180 | .1 | .2 | .2 | .1 | .0 | -.1 | -.2 | -.2 | -.3 | -.1 | -.1 | -.1 | .2 | 180 12 | |
| 13 | 195 | .2 | .2 | .2 | .1 | .0 | -.1 | -.2 | -.3 | -.3 | -.1 | .0 | .1 | .3 | 195 13 | |
| 14 | 210 | .2 | .2 | .2 | .1 | -.1 | -.2 | -.3 | -.3 | -.3 | -.1 | .0 | .2 | .4 | 210 14 | |
| 15 | 225 | .2 | .2 | .2 | .1 | -.1 | -.2 | -.3 | -.3 | -.3 | -.1 | .0 | .2 | .4 | 225 15 | |
| 16 | 240 | .2 | .2 | .2 | .1 | -.1 | -.2 | -.3 | -.3 | -.3 | -.1 | .0 | .2 | .4 | 240 16 | |
| 17 | 255 | .2 | .2 | .1 | .0 | -.1 | -.2 | -.3 | -.3 | -.2 | .0 | .1 | .2 | .4 | 255 17 | |
| 18 | 270 | .1 | .1 | .1 | .0 | -.1 | -.2 | -.2 | -.2 | -.2 | .0 | .1 | .2 | .3 | 270 18 | |
| 19 | 285 | .1 | .1 | .0 | -.0 | -.1 | -.2 | -.2 | -.1 | -.1 | .0 | .1 | .2 | .2 | 285 19 | |
| 20 | 300 | .1 | .0 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .0 | .1 | .1 | .2 | 300 20 | |
| 21 | 315 | .0 | .0 | -.1 | -.1 | -.1 | -.1 | .0 | .0 | .1 | .1 | .1 | .1 | .1 | 315 21 | |
| 22 | 330 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | .1 | .1 | .1 | .1 | .1 | .0 | -.1 | 330 22 | |
| 23 | 345 | -.1 | -.1 | -.2 | -.1 | -.0 | -.0 | .1 | .2 | .2 | .1 | .1 | .0 | -.2 | 345 23 | |
| 24 | 360 | -.1 | -.2 | -.2 | -.1 | -.0 | -.1 | .2 | .2 | .3 | .1 | .1 | -.1 | -.2 | 360 24 | |

AZIMUTI SJEVERNJAČE

| φ | 0° | 30° | 40° | 50° | 55° | 60° | 65° | 70° | 75° | $+\varphi = \nu$ |
|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.2 | 1.4 | 1.9 | 0 |
| 30 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 1.0 | 1.3 | 15 |
| 45 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.6 | 30 |
| 60 | 360.0 | 359.9 | 359.9 | 359.9 | 359.9 | 359.9 | 359.9 | 359.9 | 359.8 | 45 |
| 75 | 359.8 | 359.7 | 359.7 | 359.6 | 359.6 | 359.5 | 359.4 | 359.3 | 359.1 | 60 |
| 90 | 359.6 | 359.5 | 359.5 | 359.4 | 359.4 | 359.3 | 359.2 | 359.0 | 358.8 | 75 |
| 105 | 359.5 | 359.4 | 359.4 | 359.3 | 359.1 | 359.0 | 358.9 | 358.7 | 358.4 | 90 |
| 120 | 359.4 | 359.3 | 359.2 | 359.1 | 359.0 | 358.9 | 358.7 | 358.4 | 358.1 | 105 |
| 135 | 359.3 | 359.3 | 359.2 | 359.1 | 358.9 | 358.8 | 358.6 | 358.3 | 357.9 | 120 |
| 150 | 359.2 | 359.3 | 359.1 | 358.9 | 358.8 | 358.6 | 358.4 | 358.0 | 357.4 | 150 |
| 165 | 359.1 | 359.4 | 359.3 | 359.2 | 359.1 | 359.0 | 358.8 | 358.6 | 358.3 | 165 |
| 180 | 359.0 | 359.5 | 359.4 | 359.3 | 359.2 | 359.1 | 358.9 | 358.6 | 358.2 | 180 |
| 195 | 358.9 | 359.7 | 359.6 | 359.5 | 359.4 | 359.4 | 359.3 | 359.1 | 358.8 | 195 |
| 210 | 358.8 | 359.9 | 359.8 | 359.8 | 359.8 | 359.7 | 359.7 | 359.6 | 359.5 | 210 |
| 225 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 225 |
| 240 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.8 | 240 |
| 255 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.1 | 1.5 | 255 |
| 270 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.1 | 1.3 | 1.6 | 2.0 | 270 |
| 285 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.5 | 1.9 | 2.5 | 285 |
| 300 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.4 | 1.7 | 2.1 | 2.7 | 300 |
| 315 | 0.7 | 0.8 | 0.9 | 1.1 | 1.3 | 1.4 | 1.7 | 2.1 | 2.8 | 315 |
| 330 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.4 | 1.6 | 2.0 | 2.7 | 330 |
| 345 | 0.6 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.5 | 1.8 | 2.4 | 345 |
| 360 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.2 | 1.4 | 1.9 | 360 |

O B J A Š N J E N J E

Poslednja rubrika daje podatak, koji algebarski zbrojen sa geografskom širinom zbirne pozicije broda daje približnu visinu sa tačnošću od nekoliko lučnih minuta radi njenog prethodnog postavljanja na sekstant u cilju olakšanja rada pri mjerenu visine Sjevernjače.

* * ★ * *

I_nterpolacione

I

POMOĆNE TABLICE

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza i zalaza Sunca i Mjeseca

| ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$ | | | | | | | | | | ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$ | | | | | | | | | |
|--|-----|------|------|------|------|------|------|------|------|--|------|------|------|------|------|------|------|------|---------------------------------|
| $\Delta\varphi$ Δt_s | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 0°.1 | 0°.2 | 0°.3 | 0°.4 | 0°.5 | 0°.6 | 0°.7 | 0°.8 | 0°.9 | $\Delta\varphi$ Δt_s |
| 1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 1 |
| 2 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 2 |
| 3 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 3 |
| 4 | 0.4 | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 2.8 | 3.2 | 3.6 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 4 |
| 5 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 5 |
| 6 | 0.6 | 1.2 | 1.8 | 2.4 | 3.0 | 3.6 | 4.2 | 4.8 | 5.4 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 6 |
| 7 | 0.7 | 1.4 | 2.1 | 2.8 | 3.5 | 4.2 | 4.9 | 5.6 | 6.3 | 0.1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6 | 7 |
| 8 | 0.8 | 1.6 | 2.4 | 3.2 | 4.0 | 4.8 | 5.6 | 6.4 | 7.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 8 |
| 9 | 0.9 | 1.8 | 2.7 | 3.6 | 4.5 | 5.4 | 6.3 | 7.2 | 8.1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 9 |
| 10 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 10 |
| 11 | 1.1 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 0.1 | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 11 |
| 12 | 1.2 | 2.4 | 3.6 | 4.8 | 6.0 | 7.2 | 8.4 | 9.6 | 10.8 | 0.1 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 12 |
| 13 | 1.3 | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1 | 10.4 | 11.7 | 0.1 | 0.3 | 0.5 | 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.3 | 13 |
| 14 | 1.4 | 2.8 | 4.2 | 5.6 | 7.0 | 8.4 | 9.8 | 11.2 | 12.6 | 0.1 | 0.3 | 0.4 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 14 |
| 15 | 1.5 | 3.0 | 4.5 | 6.0 | 7.5 | 9.0 | 10.5 | 12.0 | 13.5 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 | 1.1 | 1.2 | 1.4 | 15 |
| 16 | 1.6 | 3.2 | 4.8 | 6.4 | 8.0 | 9.6 | 11.2 | 12.8 | 14.4 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 16 |
| 17 | 1.7 | 3.4 | 5.1 | 6.8 | 8.5 | 10.2 | 11.9 | 13.6 | 15.3 | 0.2 | 0.3 | 0.5 | 0.7 | 0.9 | 1.0 | 1.2 | 1.4 | 1.5 | 17 |
| 18 | 1.8 | 3.6 | 5.4 | 7.2 | 9.0 | 10.8 | 12.6 | 14.4 | 16.2 | 0.2 | 0.4 | 0.5 | 0.7 | 0.9 | 1.1 | 1.3 | 1.4 | 1.6 | 18 |
| 19 | 1.9 | 3.8 | 5.7 | 7.6 | 9.5 | 11.4 | 13.3 | 15.2 | 17.1 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.1 | 1.3 | 1.5 | 1.7 | 19 |
| 20 | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 18.0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 20 |
| 21 | 2.1 | 4.2 | 6.3 | 8.4 | 10.5 | 12.6 | 14.7 | 16.8 | 18.9 | 0.2 | 0.4 | 0.6 | 0.8 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 21 |
| 22 | 2.2 | 4.4 | 6.6 | 8.8 | 11.0 | 13.2 | 15.4 | 17.6 | 19.8 | 0.2 | 0.4 | 0.7 | 0.9 | 1.1 | 1.3 | 1.5 | 1.8 | 2.0 | 22 |
| 23 | 2.3 | 4.6 | 6.9 | 9.2 | 11.5 | 13.8 | 16.1 | 18.4 | 20.7 | 0.2 | 0.5 | 0.7 | 0.9 | 1.2 | 1.4 | 1.6 | 1.8 | 2.1 | 23 |
| 24 | 2.4 | 4.8 | 7.2 | 9.6 | 12.0 | 14.4 | 16.8 | 19.2 | 21.6 | 0.2 | 0.5 | 0.7 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.2 | 24 |
| 25 | 2.5 | 5.0 | 7.5 | 10.0 | 12.5 | 15.0 | 17.5 | 20.0 | 22.5 | 0.3 | 0.5 | 0.8 | 1.0 | 1.3 | 1.5 | 1.8 | 2.0 | 2.3 | 25 |
| 26 | 2.6 | 5.2 | 7.8 | 10.4 | 13.0 | 15.6 | 18.2 | 20.8 | 23.4 | 0.3 | 0.5 | 0.8 | 1.0 | 1.3 | 1.6 | 1.8 | 2.1 | 2.3 | 26 |
| 27 | 2.7 | 5.4 | 8.1 | 10.8 | 13.5 | 16.2 | 18.9 | 21.6 | 24.3 | 0.3 | 0.5 | 0.8 | 1.1 | 1.4 | 1.6 | 1.9 | 2.2 | 2.4 | 27 |
| 28 | 2.8 | 5.6 | 8.4 | 11.2 | 14.0 | 16.8 | 19.6 | 22.4 | 25.2 | 0.3 | 0.6 | 0.8 | 1.1 | 1.4 | 1.7 | 2.0 | 2.2 | 2.5 | 28 |
| 29 | 2.9 | 5.8 | 8.7 | 11.6 | 14.5 | 17.4 | 20.3 | 23.2 | 26.1 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.7 | 2.0 | 2.3 | 2.6 | 29 |
| 30 | 3.0 | 6.0 | 9.0 | 12.0 | 15.0 | 18.0 | 21.0 | 24.0 | 27.0 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 30 |
| 31 | 3.1 | 6.2 | 9.3 | 12.4 | 15.5 | 18.6 | 21.7 | 24.8 | 27.9 | 0.3 | 0.6 | 0.9 | 1.2 | 1.6 | 1.9 | 2.2 | 2.5 | 2.8 | 31 |
| 32 | 3.2 | 6.4 | 9.6 | 12.8 | 16.0 | 19.2 | 22.4 | 25.6 | 28.8 | 0.3 | 0.6 | 1.0 | 1.3 | 1.6 | 1.9 | 2.2 | 2.6 | 2.9 | 32 |
| 33 | 3.3 | 6.6 | 9.9 | 13.2 | 16.5 | 19.8 | 23.1 | 26.4 | 29.7 | 0.3 | 0.7 | 1.0 | 1.3 | 1.7 | 2.0 | 2.3 | 2.6 | 3.0 | 33 |
| 34 | 3.4 | 6.8 | 10.2 | 13.6 | 17.0 | 20.4 | 23.8 | 27.2 | 30.6 | 0.3 | 0.7 | 1.0 | 1.4 | 1.7 | 2.0 | 2.4 | 2.7 | 3.1 | 34 |
| 35 | 3.5 | 7.0 | 10.5 | 14.0 | 17.5 | 21.0 | 24.5 | 28.0 | 31.5 | 0.4 | 0.7 | 1.1 | 1.4 | 1.8 | 2.1 | 2.5 | 2.8 | 3.2 | 35 |
| 36 | 3.6 | 7.2 | 10.8 | 14.4 | 18.0 | 21.6 | 25.2 | 28.8 | 32.4 | 0.4 | 0.7 | 1.1 | 1.4 | 1.8 | 2.2 | 2.5 | 2.9 | 3.2 | 36 |
| 37 | 3.7 | 7.4 | 11.1 | 14.8 | 18.5 | 22.2 | 25.9 | 29.6 | 33.3 | 0.4 | 0.7 | 1.1 | 1.5 | 1.9 | 2.2 | 2.6 | 3.0 | 3.3 | 37 |
| 38 | 3.8 | 7.6 | 11.4 | 15.2 | 19.0 | 22.8 | 26.6 | 30.4 | 34.2 | 0.4 | 0.8 | 1.1 | 1.5 | 1.9 | 2.3 | 2.7 | 3.0 | 3.4 | 38 |
| 39 | 3.9 | 7.8 | 11.7 | 15.6 | 19.5 | 23.4 | 27.3 | 31.2 | 35.1 | 0.4 | 0.8 | 1.2 | 1.6 | 2.0 | 2.3 | 2.7 | 3.1 | 3.5 | 39 |
| 40 | 4.0 | 8.0 | 12.0 | 16.0 | 20.0 | 24.0 | 28.0 | 32.0 | 36.0 | 0.4 | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 2.8 | 3.2 | 3.6 | 40 |
| 41 | 4.1 | 8.2 | 12.3 | 16.4 | 20.5 | 24.6 | 28.7 | 32.8 | 36.9 | 0.4 | 0.8 | 1.2 | 1.6 | 2.1 | 2.5 | 2.9 | 3.3 | 3.7 | 41 |
| 42 | 4.2 | 8.4 | 12.6 | 16.8 | 21.0 | 25.2 | 29.4 | 33.6 | 37.8 | 0.4 | 0.8 | 1.3 | 1.7 | 2.1 | 2.5 | 2.9 | 3.4 | 3.8 | 42 |
| 43 | 4.3 | 8.6 | 12.9 | 17.2 | 21.5 | 25.8 | 30.1 | 34.4 | 38.7 | 0.4 | 0.9 | 1.3 | 1.7 | 2.2 | 2.6 | 3.0 | 3.4 | 3.9 | 43 |
| 44 | 4.4 | 8.8 | 13.2 | 17.6 | 22.0 | 26.4 | 30.8 | 35.2 | 39.6 | 0.4 | 0.9 | 1.3 | 1.8 | 2.2 | 2.6 | 3.1 | 3.5 | 4.0 | 44 |
| 45 | 4.5 | 9.0 | 13.5 | 18.0 | 22.5 | 27.0 | 31.5 | 36.0 | 40.5 | 0.5 | 0.9 | 1.4 | 1.8 | 2.3 | 2.7 | 3.2 | 3.6 | 4.1 | 45 |
| 46 | 4.6 | 9.2 | 13.8 | 18.4 | 23.0 | 27.6 | 32.2 | 36.8 | 41.4 | 0.5 | 0.9 | 1.4 | 1.8 | 2.3 | 2.8 | 3.2 | 3.7 | 4.1 | 46 |
| 47 | 4.7 | 9.4 | 14.1 | 18.8 | 23.5 | 28.2 | 32.9 | 37.6 | 42.3 | 0.5 | 0.9 | 1.4 | 1.9 | 2.4 | 2.8 | 3.3 | 3.8 | 4.2 | 47 |
| 48 | 4.8 | 9.6 | 14.4 | 19.2 | 24.0 | 28.8 | 33.6 | 38.4 | 43.2 | 0.5 | 1.0 | 1.4 | 1.9 | 2.4 | 2.9 | 3.4 | 3.8 | 4.3 | 48 |
| 49 | 4.9 | 9.8 | 14.7 | 19.6 | 24.5 | 29.4 | 34.3 | 39.2 | 44.1 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 2.9 | 3.4 | 3.9 | 4.4 | 49 |
| 50 | 5.0 | 10.0 | 15.0 | 20.0 | 25.0 | 30.0 | 35.0 | 40.0 | 45.0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 50 |
| 51 | 5.1 | 10.2 | 15.3 | 20.4 | 25.5 | 30.6 | 35.7 | 40.8 | 45.9 | 0.5 | 1.0 | 1.5 | 2.0 | 2.6 | 3.1 | 3.6 | 4.1 | 4.6 | 51 |
| 52 | 5.2 | 10.4 | 15.6 | 20.8 | 26.0 | 31.2 | 36.4 | 41.6 | 46.8 | 0.5 | 1.0 | 1.6 | 2.1 | 2.6 | 3.1 | 3.6 | 4.2 | 4.7 | 52 |
| 53 | 5.3 | 10.6 | 15.9 | 21.2 | 26.5 | 31.8 | 37.1 | 42.4 | 47.7 | 0.5 | 1.1 | 1.6 | 2.1 | 2.7 | 3.2 | 3.7 | 4.2 | 4.8 | 53 |
| 54 | 5.4 | 10.8 | 16.2 | 21.6 | 27.0 | 32.4 | 37.8 | 43.2 | 48.6 | 0.5 | 1.1 | 1.6 | 2.2 | 2.7 | 3.2 | 3.8 | 4.3 | 4.9 | 54 |
| 55 | 5.5 | 11.0 | 16.5 | 22.0 | 27.5 | 33.0 | 38.5 | 44.0 | 49.5 | 0.6 | 1.1 | 1.7 | 2.2 | 2.8 | 3.3 | 3.9 | 4.4 | 5.0 | 55 |
| 56 | 5.6 | 11.2 | 16.8 | 22.4 | 28.0 | 33.6 | 39.2 | 44.8 | 50.4 | 0.6 | 1.1 | 1.7 | 2.2 | 2.8 | 3.4 | 3.9 | 4.5 | 5.0 | 56 |
| 57 | 5.7 | 11.4 | 17.1 | 22.8 | 28.5 | 34.2 | 39.9 | 45.6 | 51.3 | 0.6 | 1.1 | 1.7 | 2.3 | 2.9 | 3.4 | 4.0 | 4.6 | 5.1 | 57 |
| 58 | 5.8 | 11.6 | 17.4 | 23.2 | 29.0 | 34.8 | 40.6 | 46.4 | 52.2 | 0.6 | 1.2 | 1.7 | 2.3 | 2.9 | 3.5 | 4.1 | 4.6 | 5.2 | 58 |
| 59 | 5.9 | 11.8 | 17.7 | 23.6 | 29.5 | 35.4 | 41.3 | 47.2 | 53.1 | 0.6 | 1.2 | 1.8 | 2.4 | 3.0 | 3.5 | 4.1 | 4.7 | 5.3 | 59 |
| 60 | 6.0 | 12.0 | 18.0 | 24.0 | 30.0 | 36.0 | 42.0 | 48.0 | 54.0 | 0.6 | 1.2 | 1.8 | 2.4 | 3.0 | 3.6 | 4.2 | 4.8 | 5.4 | 60 |

INTERPOLACIONA TABLICA
za izračunavanje trenutaka izlaza i zalaza Sunca i Mjeseca

| ZA $\varphi = \pm(30^\circ \text{ do } 60^\circ)$ | | | | | ZA $\varphi = \pm(30^\circ \text{ do } 60^\circ)$ | | | | | | | | | |
|---|------|------|------|------|---|------|------|------|------|------|------|------|------|---------------------------------|
| $\Delta\varphi$ Δt_s | 1° | 2° | 3° | 4° | 0°.1 | 0°.2 | 0°.3 | 0°.4 | 0°.5 | 0°.6 | 0°.7 | 0°.8 | 0°.9 | $\Delta\varphi$ Δt_s |
| 1 | 0.2 | 0.4 | 0.6 | 0.8 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 1 |
| 2 | 0.4 | 0.8 | 1.2 | 1.6 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 2 |
| 3 | 0.6 | 1.2 | 1.8 | 2.4 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 3 |
| 4 | 0.8 | 1.6 | 2.4 | 3.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 4 |
| 5 | 1.0 | 2.0 | 3.0 | 4.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 5 |
| 6 | 1.2 | 2.4 | 3.6 | 4.8 | 0.1 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 6 |
| 7 | 1.4 | 2.8 | 4.2 | 5.6 | 0.1 | 0.3 | 0.4 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 7 |
| 8 | 1.6 | 3.2 | 4.8 | 6.4 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 8 |
| 9 | 1.8 | 3.6 | 5.4 | 7.2 | 0.2 | 0.4 | 0.5 | 0.7 | 0.9 | 1.1 | 1.3 | 1.4 | 1.6 | 9 |
| 10 | 2.0 | 4.0 | 6.0 | 8.0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 10 |
| 11 | 2.2 | 4.4 | 6.6 | 8.8 | 0.2 | 0.4 | 0.7 | 0.9 | 1.1 | 1.3 | 1.5 | 1.8 | 2.0 | 11 |
| 12 | 2.4 | 4.8 | 7.2 | 9.6 | 0.2 | 0.5 | 0.7 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.2 | 12 |
| 13 | 2.6 | 5.2 | 7.8 | 10.4 | 0.3 | 0.5 | 0.8 | 1.0 | 1.3 | 1.6 | 1.8 | 2.1 | 2.3 | 13 |
| 14 | 2.8 | 5.6 | 8.4 | 11.2 | 0.3 | 0.6 | 0.8 | 1.1 | 1.4 | 1.7 | 2.0 | 2.2 | 2.5 | 14 |
| 15 | 3.0 | 6.0 | 9.0 | 12.0 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 15 |
| 16 | 3.2 | 6.4 | 9.6 | 12.8 | 0.3 | 0.6 | 1.0 | 1.3 | 1.6 | 1.9 | 2.2 | 2.6 | 2.9 | 16 |
| 17 | 3.4 | 6.8 | 10.2 | 13.6 | 0.3 | 0.7 | 1.0 | 1.4 | 1.7 | 2.0 | 2.4 | 2.7 | 3.1 | 17 |
| 18 | 3.6 | 7.2 | 10.8 | 14.4 | 0.4 | 0.7 | 1.1 | 1.4 | 1.8 | 2.2 | 2.5 | 2.9 | 3.2 | 18 |
| 19 | 3.8 | 7.6 | 11.4 | 15.2 | 0.4 | 0.8 | 1.1 | 1.5 | 1.9 | 2.3 | 2.7 | 3.0 | 3.4 | 19 |
| 20 | 4.0 | 8.0 | 12.0 | 16.0 | 0.4 | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 2.8 | 3.2 | 3.6 | 20 |
| 21 | 4.2 | 8.4 | 12.6 | 16.8 | 0.4 | 0.8 | 1.3 | 1.7 | 2.1 | 2.5 | 2.9 | 3.4 | 3.8 | 21 |
| 22 | 4.4 | 8.8 | 13.2 | 17.6 | 0.4 | 0.9 | 1.3 | 1.8 | 2.2 | 2.6 | 3.1 | 3.5 | 4.0 | 22 |
| 23 | 4.6 | 9.2 | 13.8 | 18.4 | 0.5 | 0.9 | 1.4 | 1.8 | 2.3 | 2.8 | 3.2 | 3.7 | 4.1 | 23 |
| 24 | 4.8 | 9.6 | 14.4 | 19.2 | 0.5 | 1.0 | 1.4 | 1.9 | 2.4 | 2.9 | 3.4 | 3.8 | 4.3 | 24 |
| 25 | 5.0 | 10.0 | 15.0 | 20.0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 25 |
| 26 | 5.2 | 10.4 | 15.6 | 20.8 | 0.5 | 1.0 | 1.6 | 2.1 | 2.6 | 3.1 | 3.6 | 4.2 | 4.7 | 26 |
| 27 | 5.4 | 10.8 | 16.2 | 21.6 | 0.5 | 1.1 | 1.6 | 2.2 | 2.7 | 3.2 | 3.8 | 4.3 | 4.9 | 27 |
| 28 | 5.6 | 11.2 | 16.8 | 22.4 | 0.6 | 1.1 | 1.7 | 2.2 | 2.8 | 3.4 | 3.9 | 4.5 | 5.0 | 28 |
| 29 | 5.8 | 11.6 | 17.4 | 23.2 | 0.6 | 1.2 | 1.7 | 2.3 | 2.9 | 3.5 | 4.1 | 4.6 | 5.2 | 29 |
| 30 | 6.0 | 12.0 | 18.0 | 24.0 | 0.6 | 1.2 | 1.8 | 2.4 | 3.0 | 3.6 | 4.2 | 4.8 | 5.4 | 30 |
| 31 | 6.2 | 12.4 | 18.6 | 24.8 | 0.6 | 1.2 | 1.9 | 2.5 | 3.1 | 3.7 | 4.3 | 5.0 | 5.6 | 31 |
| 32 | 6.4 | 12.8 | 19.2 | 25.6 | 0.6 | 1.3 | 1.9 | 2.6 | 3.2 | 3.8 | 4.5 | 5.1 | 5.8 | 32 |
| 33 | 6.6 | 13.2 | 19.8 | 26.4 | 0.7 | 1.3 | 2.0 | 2.6 | 3.3 | 4.0 | 4.6 | 5.3 | 5.9 | 33 |
| 34 | 6.8 | 13.6 | 20.4 | 27.2 | 0.7 | 1.4 | 2.0 | 2.7 | 3.4 | 4.1 | 4.8 | 5.4 | 6.1 | 34 |
| 35 | 7.0 | 14.0 | 21.0 | 28.0 | 0.7 | 1.4 | 2.1 | 2.8 | 3.5 | 4.2 | 4.9 | 5.6 | 6.3 | 35 |
| 36 | 7.2 | 14.4 | 21.6 | 28.8 | 0.7 | 1.4 | 2.2 | 2.9 | 3.6 | 4.3 | 5.0 | 5.8 | 6.5 | 36 |
| 37 | 7.4 | 14.8 | 22.2 | 29.6 | 0.7 | 1.5 | 2.2 | 3.0 | 3.7 | 4.4 | 5.2 | 5.9 | 6.7 | 37 |
| 38 | 7.6 | 15.2 | 22.8 | 30.4 | 0.8 | 1.5 | 2.3 | 3.0 | 3.8 | 4.6 | 5.3 | 6.1 | 6.8 | 38 |
| 39 | 7.8 | 15.6 | 23.4 | 31.2 | 0.8 | 1.6 | 2.3 | 3.1 | 3.9 | 4.7 | 5.5 | 6.2 | 7.0 | 39 |
| 40 | 8.0 | 16.0 | 24.0 | 32.0 | 0.8 | 1.6 | 2.4 | 3.2 | 4.0 | 4.8 | 5.6 | 6.4 | 7.2 | 40 |
| 41 | 8.2 | 16.4 | 24.6 | 32.8 | 0.8 | 1.6 | 2.5 | 3.3 | 4.1 | 4.9 | 5.7 | 6.6 | 7.4 | 41 |
| 42 | 8.4 | 16.8 | 25.2 | 33.6 | 0.8 | 1.7 | 2.5 | 3.4 | 4.2 | 5.0 | 5.9 | 6.7 | 7.6 | 42 |
| 43 | 8.6 | 17.2 | 25.8 | 34.4 | 0.9 | 1.7 | 2.6 | 3.4 | 4.3 | 5.2 | 6.0 | 6.9 | 7.7 | 43 |
| 44 | 8.8 | 17.6 | 26.4 | 35.2 | 0.9 | 1.8 | 2.6 | 3.5 | 4.4 | 5.3 | 6.2 | 7.0 | 7.9 | 44 |
| 45 | 9.0 | 18.0 | 27.0 | 36.0 | 0.9 | 1.8 | 2.7 | 3.6 | 4.5 | 5.4 | 6.3 | 7.2 | 8.1 | 45 |
| 46 | 9.2 | 18.4 | 27.6 | 36.8 | 0.9 | 1.8 | 2.8 | 3.7 | 4.6 | 5.5 | 6.4 | 7.4 | 8.3 | 46 |
| 47 | 9.4 | 18.8 | 28.2 | 37.6 | 0.9 | 1.9 | 2.8 | 3.8 | 4.7 | 5.6 | 6.6 | 7.5 | 8.5 | 47 |
| 48 | 9.6 | 19.2 | 28.8 | 38.4 | 1.0 | 1.9 | 2.9 | 3.8 | 4.8 | 5.8 | 6.7 | 7.7 | 8.6 | 48 |
| 49 | 9.8 | 19.6 | 29.4 | 39.2 | 1.0 | 2.0 | 2.9 | 3.9 | 4.9 | 5.9 | 6.9 | 7.8 | 8.8 | 49 |
| 50 | 10.0 | 20.0 | 30.0 | 40.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 50 |
| 51 | 10.2 | 20.4 | 30.6 | 40.8 | 1.0 | 2.0 | 3.1 | 4.1 | 5.1 | 6.1 | 7.1 | 8.2 | 9.2 | 51 |
| 52 | 10.4 | 20.8 | 31.2 | 41.6 | 1.0 | 2.1 | 3.1 | 4.2 | 5.2 | 6.2 | 7.3 | 8.3 | 9.4 | 52 |
| 53 | 10.6 | 21.2 | 31.8 | 42.4 | 1.1 | 2.1 | 3.2 | 4.2 | 5.3 | 6.4 | 7.4 | 8.5 | 9.5 | 53 |
| 54 | 10.8 | 21.6 | 32.4 | 43.2 | 1.1 | 2.2 | 3.2 | 4.3 | 5.4 | 6.5 | 7.6 | 8.6 | 9.7 | 54 |
| 55 | 11.0 | 22.0 | 33.0 | 44.0 | 1.1 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 55 |
| 56 | 11.2 | 22.4 | 33.6 | 44.8 | 1.1 | 2.2 | 3.4 | 4.5 | 5.6 | 6.7 | 7.8 | 9.0 | 10.1 | 56 |
| 57 | 11.4 | 22.8 | 34.2 | 45.6 | 1.1 | 2.3 | 3.4 | 4.6 | 5.7 | 6.8 | 8.0 | 9.1 | 10.3 | 57 |
| 58 | 11.6 | 23.2 | 34.8 | 46.4 | 1.2 | 2.3 | 3.5 | 4.6 | 5.8 | 7.0 | 8.1 | 9.3 | 10.4 | 58 |
| 59 | 11.8 | 23.6 | 35.4 | 47.2 | 1.2 | 2.4 | 3.5 | 4.7 | 5.9 | 7.1 | 8.3 | 9.4 | 10.6 | 59 |
| 60 | 12.0 | 24.0 | 36.0 | 48.0 | 1.2 | 2.4 | 3.6 | 4.8 | 6.0 | 7.2 | 8.4 | 9.6 | 10.8 | 60 |

INTERPOLACIONA TABLICA
za izračunavanje trenutaka izlaza, zalaza i prolaza Mjeseca kroz meridijan

| $\frac{\lambda}{\Delta}$ | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° | 20° | $\frac{\lambda}{\Delta}$ |
|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|
| 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | |
| 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | |
| 0.3 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | |
| 0.4 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | |
| 0.5 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | |
| 0.6 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.6 | |
| 0.7 | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.9 | |
| 0.8 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.0 | 0.8 | |
| 0.9 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.1 | 1.2 | |
| 1.0 | 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 1.3 | 1.3 | |
| 1.1 | 0.1 | 0.1 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.5 | |
| 1.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | |
| 1.3 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.0 | 1.1 | 1.2 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | |
| 1.4 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | |
| 1.5 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | |
| 1.6 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 1.6 | |
| 1.7 | 0.1 | 0.2 | 0.3 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | |
| 1.8 | 0.1 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.2 | 1.8 | |
| 1.9 | 0.1 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 0.9 | 1.0 | 1.1 | 1.3 | 1.4 | 1.5 | 1.6 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | 2.4 | 1.9 | |
| 2.0 | 0.1 | 0.3 | 0.4 | 0.5 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.7 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.0 | |
| 2.1 | 0.1 | 0.3 | 0.4 | 0.6 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.5 | 1.7 | 1.8 | 2.0 | 2.1 | 2.2 | 2.4 | 2.5 | 2.7 | 2.8 | |
| 2.2 | 0.1 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 1.0 | 1.2 | 1.3 | 1.5 | 1.6 | 1.8 | 1.9 | 2.1 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 | 2.2 | |
| 2.3 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 | 1.1 | 1.2 | 1.4 | 1.5 | 1.7 | 1.8 | 2.0 | 2.1 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 3.1 | |
| 2.4 | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 1.9 | 2.1 | 2.2 | 2.4 | 2.6 | 2.7 | 2.9 | 3.0 | 3.2 | |
| 2.5 | 0.2 | 0.3 | 0.5 | 0.7 | 0.8 | 1.0 | 1.2 | 1.3 | 1.5 | 1.7 | 1.8 | 2.0 | 2.2 | 2.3 | 2.5 | 2.7 | 2.8 | 3.0 | 3.2 | 3.3 | |
| 2.6 | 0.2 | 0.3 | 0.5 | 0.7 | 0.9 | 1.0 | 1.2 | 1.4 | 1.6 | 1.7 | 1.9 | 2.1 | 2.3 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.3 | 2.6 | |
| 2.7 | 0.2 | 0.4 | 0.5 | 0.7 | 0.9 | 1.1 | 1.3 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.2 | 3.4 | 2.7 | |
| 2.8 | 0.2 | 0.4 | 0.6 | 0.7 | 0.9 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.5 | 2.8 | |
| 2.9 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.5 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.3 | 3.5 | 3.7 | 3.9 | |
| 3.0 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | |
| 3.1 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.1 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.3 | 3.5 | 3.7 | 3.9 | 4.1 | |
| 3.2 | 0.2 | 0.4 | 0.6 | 0.9 | 1.1 | 1.3 | 1.5 | 1.7 | 1.9 | 2.1 | 2.3 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 4.1 | 3.2 | |
| 3.3 | 0.2 | 0.4 | 0.7 | 0.9 | 1.1 | 1.3 | 1.5 | 1.8 | 2.0 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.3 | 3.5 | 3.7 | 4.0 | 4.2 | 4.4 | |
| 3.4 | 0.2 | 0.5 | 0.7 | 0.9 | 1.1 | 1.4 | 1.6 | 1.8 | 2.0 | 2.3 | 2.5 | 2.7 | 2.9 | 3.2 | 3.4 | 3.6 | 3.9 | 4.1 | 4.3 | 4.5 | |
| 3.5 | 0.2 | 0.5 | 0.7 | 0.9 | 1.2 | 1.4 | 1.6 | 1.9 | 2.1 | 2.3 | 2.6 | 2.8 | 3.0 | 3.3 | 3.5 | 3.7 | 4.0 | 4.2 | 4.4 | 4.7 | |
| 3.6 | 0.2 | 0.5 | 0.7 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.2 | 2.4 | 2.6 | 2.9 | 3.1 | 3.4 | 3.6 | 3.8 | 4.1 | 4.3 | 4.6 | 4.8 | |
| 3.7 | 0.2 | 0.5 | 0.7 | 1.0 | 1.2 | 1.5 | 1.7 | 2.0 | 2.2 | 2.5 | 2.7 | 3.0 | 3.2 | 3.5 | 3.7 | 3.9 | 4.2 | 4.4 | 4.7 | 4.9 | |
| 3.8 | 0.3 | 0.5 | 0.8 | 1.0 | 1.3 | 1.5 | 1.8 | 2.0 | 2.3 | 2.5 | 2.8 | 3.0 | 3.3 | 3.5 | 3.8 | 4.1 | 4.3 | 4.6 | 4.8 | 5.1 | |
| 3.9 | 0.3 | 0.5 | 0.8 | 1.0 | 1.3 | 1.6 | 1.8 | 2.1 | 2.3 | 2.6 | 2.9 | 3.1 | 3.4 | 3.6 | 3.9 | 4.2 | 4.4 | 4.7 | 4.9 | 5.2 | |
| 4.0 | 0.3 | 0.5 | 0.8 | 1.1 | 1.3 | 1.6 | 1.9 | 2.1 | 2.4 | 2.7 | 2.9 | 3.2 | 3.5 | 3.7 | 4.0 | 4.3 | 4.5 | 4.8 | 5.1 | 5.3 | |
| 4.1 | 0.3 | 0.5 | 0.8 | 1.1 | 1.4 | 1.6 | 1.9 | 2.2 | 2.5 | 2.7 | 3.0 | 3.3 | 3.6 | 3.8 | 4.1 | 4.4 | 4.6 | 4.9 | 5.2 | 5.5 | |
| 4.2 | 0.3 | 0.6 | 0.8 | 1.1 | 1.4 | 1.7 | 2.0 | 2.2 | 2.5 | 2.8 | 3.1 | 3.4 | 3.6 | 3.9 | 4.2 | 4.5 | 4.8 | 5.0 | 5.3 | 5.6 | |
| 4.3 | 0.3 | 0.6 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 | 2.3 | 2.6 | 2.9 | 3.2 | 3.4 | 3.7 | 4.0 | 4.3 | 4.6 | 4.9 | 5.2 | 5.4 | 5.7 | |
| 4.4 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.3 | 2.6 | 2.9 | 3.2 | 3.5 | 3.8 | 4.1 | 4.4 | 4.7 | 5.0 | 5.3 | 5.6 | 5.9 | |
| 4.5 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.4 | 2.7 | 3.0 | 3.3 | 3.6 | 3.9 | 4.2 | 4.5 | 4.8 | 5.1 | 5.4 | 5.7 | 6.0 | |
| 4.6 | 0.3 | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | 2.5 | 2.8 | 3.1 | 3.4 | 3.7 | 4.0 | 4.3 | 4.6 | 4.9 | 5.2 | 5.5 | 5.8 | 6.1 | |
| 4.7 | 0.3 | 0.6 | 0.9 | 1.3 | 1.6 | 1.9 | 2.2 | 2.5 | 2.8 | 3.1 | 3.4 | 3.8 | 4.1 | 4.4 | 4.7 | 5.0 | 5.3 | 5.6 | 6.0 | 6.3 | |
| 4.8 | 0.3 | 0.6 | 1.0 | 1.3 | 1.6 | 1.9 | 2.2 | 2.6 | 2.9 | 3.2 | 3.5 | 3.8 | 4.2 | 4.5 | 4.8 | 5.1 | 5.4 | 5.8 | 6.1 | 6.4 | |
| 4.9 | 0.3 | 0.7 | 1.0 | 1.3 | 1.6 | 2.0 | 2.3 | 2.6 | 2.9 | 3.3 | 3.6 | 3.9 | 4.2 | 4.6 | 4.9 | 5.2 | 5.6 | 5.9 | 6.2 | 6.5 | |
| 5.0 | 0.3 | 0.7 | 1.0 | 1.3 | 1.7 | 2.0 | 2.3 | 2.7 | 3.0 | 3.3 | 3.7 | 4.0 | 4.3 | 4.7 | 5.0 | 5.3 | 5.7 | 6.0 | 6.3 | 6.7 | |

INTERPOLACIONA TABLICA
za izračunavanje trenutaka izlaza, zalaza i prolaza Mjeseca kroz meridijan

| $\frac{\lambda}{24}$ | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° | 100° | 110° | 120° | 130° | 140° | 150° | 160° | 170° | 180° | $\frac{\lambda}{24}$ |
|----------------------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|
| 0.1 | 0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 | 0.1 |
| 0.2 | 0.3 | 0.4 | 0.5 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 1.5 | 1.6 | 1.7 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 0.2 |
| 0.3 | 0.4 | 0.6 | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 0.3 |
| 0.4 | 0.5 | 0.8 | 1.1 | 1.3 | 1.6 | 1.9 | 2.1 | 2.4 | 2.7 | 2.9 | 3.2 | 3.5 | 3.7 | 4.0 | 4.3 | 4.5 | 4.8 | 0.4 |
| 0.5 | 0.7 | 1.0 | 1.3 | 1.7 | 2.0 | 2.3 | 2.7 | 3.0 | 3.3 | 3.7 | 4.0 | 4.3 | 4.7 | 5.0 | 5.3 | 5.7 | 6.0 | 0.5 |
| 0.6 | 0.8 | 1.2 | 1.6 | 2.0 | 2.4 | 2.8 | 3.2 | 3.6 | 4.0 | 4.4 | 4.8 | 5.2 | 5.6 | 6.0 | 6.4 | 6.8 | 7.2 | 0.6 |
| 0.7 | 0.9 | 1.4 | 1.9 | 2.3 | 2.8 | 3.3 | 3.7 | 4.2 | 4.7 | 5.1 | 5.6 | 6.1 | 6.5 | 7.0 | 7.5 | 7.9 | 8.4 | 0.7 |
| 0.8 | 1.1 | 1.6 | 2.1 | 2.7 | 3.2 | 3.7 | 4.3 | 4.8 | 5.3 | 5.9 | 6.4 | 6.9 | 7.5 | 8.0 | 8.5 | 9.1 | 9.6 | 0.8 |
| 0.9 | 1.2 | 1.8 | 2.4 | 3.0 | 3.6 | 4.2 | 4.8 | 5.4 | 6.0 | 6.6 | 7.2 | 7.8 | 8.4 | 9.0 | 9.6 | 10.2 | 10.8 | 0.9 |
| 1.0 | 1.3 | 2.0 | 2.7 | 3.3 | 4.0 | 4.7 | 5.3 | 6.0 | 6.7 | 7.3 | 8.0 | 8.7 | 9.3 | 10.0 | 10.7 | 11.3 | 12.0 | 1.0 |
| 1.1 | 1.5 | 2.2 | 2.9 | 3.7 | 4.4 | 5.1 | 5.9 | 6.6 | 7.3 | 8.1 | 8.8 | 9.5 | 10.3 | 11.0 | 11.7 | 12.5 | 13.2 | 1.1 |
| 1.2 | 1.6 | 2.4 | 3.2 | 4.0 | 4.8 | 5.6 | 6.4 | 7.2 | 8.0 | 8.8 | 9.6 | 10.4 | 11.2 | 12.0 | 12.8 | 13.6 | 14.4 | 1.2 |
| 1.3 | 1.7 | 2.6 | 3.5 | 4.3 | 5.2 | 6.1 | 6.9 | 7.8 | 8.7 | 9.5 | 10.4 | 11.3 | 12.1 | 13.0 | 13.9 | 14.7 | 15.6 | 1.3 |
| 1.4 | 1.9 | 2.8 | 3.7 | 4.7 | 5.6 | 6.5 | 7.5 | 8.4 | 9.3 | 10.3 | 11.2 | 12.1 | 13.1 | 14.0 | 14.9 | 15.9 | 16.8 | 1.4 |
| 1.5 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 1.5 |
| 1.6 | 2.1 | 3.2 | 4.3 | 5.3 | 6.4 | 7.5 | 8.5 | 9.6 | 10.7 | 11.7 | 12.8 | 13.9 | 14.9 | 16.0 | 17.1 | 18.1 | 19.2 | 1.6 |
| 1.7 | 2.3 | 3.4 | 4.5 | 5.7 | 6.8 | 7.9 | 9.1 | 10.2 | 11.3 | 12.5 | 13.6 | 14.7 | 15.9 | 17.0 | 18.1 | 19.3 | 20.4 | 1.7 |
| 1.8 | 2.4 | 3.6 | 4.8 | 6.0 | 7.2 | 8.4 | 9.6 | 10.8 | 12.0 | 13.2 | 14.4 | 15.6 | 16.8 | 18.0 | 19.2 | 20.4 | 21.6 | 1.8 |
| 1.9 | 2.5 | 3.8 | 5.1 | 6.3 | 7.6 | 8.9 | 10.1 | 11.4 | 12.7 | 13.9 | 15.2 | 16.5 | 17.7 | 19.0 | 20.3 | 21.5 | 22.8 | 1.9 |
| 2.0 | 2.7 | 4.0 | 5.3 | 6.7 | 8.0 | 9.3 | 10.7 | 12.0 | 13.3 | 14.7 | 16.0 | 17.3 | 18.7 | 20.0 | 21.3 | 22.7 | 24.0 | 2.0 |
| 2.1 | 2.8 | 4.2 | 5.6 | 7.0 | 8.4 | 9.8 | 11.2 | 12.6 | 14.0 | 15.4 | 16.8 | 18.2 | 19.6 | 21.0 | 22.4 | 23.8 | 25.2 | 2.1 |
| 2.2 | 2.9 | 4.4 | 5.9 | 7.3 | 8.8 | 10.3 | 11.7 | 13.2 | 14.7 | 17.6 | 19.1 | 20.5 | 22.0 | 23.5 | 24.9 | 26.4 | 2.2 | |
| 2.3 | 3.1 | 4.6 | 6.1 | 7.7 | 9.2 | 10.7 | 12.3 | 13.8 | 15.3 | 16.9 | 18.4 | 19.9 | 21.5 | 23.0 | 24.5 | 26.1 | 27.6 | 2.3 |
| 2.4 | 3.2 | 4.8 | 6.4 | 8.0 | 9.6 | 11.2 | 12.8 | 14.4 | 16.0 | 17.6 | 19.2 | 20.8 | 22.4 | 24.0 | 25.6 | 27.2 | 28.8 | 2.4 |
| 2.5 | 3.3 | 5.0 | 6.7 | 8.3 | 10.0 | 11.7 | 13.3 | 15.0 | 16.7 | 18.3 | 20.0 | 21.7 | 23.3 | 25.0 | 26.7 | 28.3 | 30.0 | 2.5 |
| 2.6 | 3.5 | 5.2 | 6.9 | 8.7 | 10.4 | 12.1 | 13.9 | 15.6 | 17.3 | 19.1 | 20.8 | 22.5 | 24.3 | 26.0 | 27.7 | 29.5 | 31.2 | 2.6 |
| 2.7 | 3.6 | 5.4 | 7.2 | 9.0 | 10.8 | 12.6 | 14.4 | 16.2 | 18.0 | 19.8 | 21.6 | 23.4 | 25.2 | 27.0 | 28.8 | 30.6 | 32.4 | 2.7 |
| 2.8 | 3.7 | 5.6 | 7.5 | 9.3 | 11.2 | 13.1 | 14.9 | 16.8 | 18.7 | 20.5 | 22.4 | 24.3 | 26.1 | 28.0 | 29.9 | 31.7 | 33.6 | 2.8 |
| 2.9 | 3.9 | 5.8 | 7.7 | 9.7 | 11.6 | 13.5 | 15.5 | 17.4 | 19.3 | 21.3 | 23.2 | 25.1 | 27.1 | 29.0 | 30.9 | 32.9 | 34.8 | 2.9 |
| 3.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 18.0 | 20.0 | 22.0 | 24.0 | 26.0 | 28.0 | 30.0 | 32.0 | 34.0 | 36.0 | 3.0 |
| 3.1 | 4.1 | 6.2 | 8.3 | 10.3 | 12.4 | 14.5 | 16.5 | 18.6 | 20.7 | 22.7 | 24.8 | 26.9 | 28.9 | 31.0 | 33.1 | 35.1 | 37.2 | 3.1 |
| 3.2 | 4.3 | 6.4 | 8.5 | 10.7 | 12.8 | 14.9 | 17.1 | 19.2 | 21.3 | 23.5 | 25.6 | 27.7 | 29.9 | 32.0 | 34.1 | 36.3 | 38.4 | 3.2 |
| 3.3 | 4.4 | 6.6 | 8.8 | 11.0 | 13.2 | 15.4 | 17.6 | 19.8 | 22.0 | 24.2 | 26.4 | 28.6 | 30.8 | 33.0 | 35.2 | 37.4 | 39.6 | 3.3 |
| 3.4 | 4.5 | 6.8 | 9.1 | 11.3 | 13.6 | 15.9 | 18.1 | 20.4 | 22.7 | 24.9 | 27.2 | 29.5 | 31.7 | 34.0 | 36.3 | 38.5 | 40.8 | 3.4 |
| 3.5 | 4.7 | 7.0 | 9.3 | 11.7 | 14.0 | 16.3 | 18.7 | 21.0 | 23.3 | 25.7 | 28.0 | 30.3 | 32.7 | 35.0 | 37.3 | 39.7 | 42.0 | 3.5 |
| 3.6 | 4.8 | 7.2 | 9.6 | 12.0 | 14.4 | 16.8 | 19.2 | 21.6 | 24.0 | 26.4 | 28.8 | 31.2 | 33.6 | 36.0 | 38.4 | 40.8 | 43.2 | 3.6 |
| 3.7 | 4.9 | 7.4 | 9.9 | 12.3 | 14.8 | 17.3 | 19.7 | 22.2 | 24.7 | 27.1 | 29.6 | 32.1 | 34.5 | 37.0 | 39.5 | 41.9 | 44.4 | 3.7 |
| 3.8 | 5.1 | 7.6 | 10.1 | 12.7 | 15.2 | 17.7 | 20.3 | 22.8 | 25.3 | 27.9 | 30.4 | 32.9 | 35.5 | 38.0 | 40.5 | 43.1 | 45.6 | 3.8 |
| 3.9 | 5.2 | 7.8 | 10.4 | 13.0 | 15.6 | 18.2 | 20.8 | 23.4 | 26.0 | 28.6 | 31.2 | 33.8 | 36.4 | 39.0 | 41.6 | 44.2 | 46.8 | 3.9 |
| 4.0 | 5.3 | 8.0 | 10.7 | 13.3 | 16.0 | 18.7 | 21.3 | 24.0 | 26.7 | 29.3 | 32.0 | 34.7 | 37.3 | 40.0 | 42.7 | 45.3 | 48.0 | 4.0 |
| 4.1 | 5.5 | 8.2 | 10.9 | 13.7 | 16.4 | 19.1 | 21.9 | 24.6 | 27.3 | 30.1 | 32.8 | 35.5 | 38.3 | 41.0 | 43.7 | 46.5 | 49.2 | 4.1 |
| 4.2 | 5.6 | 8.4 | 11.2 | 14.0 | 16.8 | 19.6 | 22.4 | 25.2 | 28.0 | 30.8 | 33.6 | 36.4 | 39.2 | 42.0 | 44.8 | 47.6 | 50.4 | 4.2 |
| 4.3 | 5.7 | 8.6 | 11.5 | 14.3 | 17.2 | 20.1 | 22.9 | 25.8 | 28.7 | 31.5 | 34.4 | 37.3 | 40.1 | 43.0 | 45.9 | 48.7 | 51.6 | 4.3 |
| 4.4 | 5.9 | 8.8 | 11.7 | 14.7 | 17.6 | 20.5 | 23.5 | 26.4 | 29.3 | 32.3 | 35.2 | 38.1 | 41.1 | 44.0 | 46.9 | 49.9 | 52.8 | 4.4 |
| 4.5 | 6.0 | 9.0 | 12.0 | 15.0 | 18.0 | 21.0 | 24.0 | 27.0 | 30.0 | 33.0 | 36.0 | 39.0 | 42.0 | 45.0 | 48.0 | 51.0 | 54.0 | 4.5 |
| 4.6 | 6.1 | 9.2 | 12.3 | 15.3 | 18.4 | 21.5 | 24.5 | 27.6 | 30.7 | 33.7 | 36.8 | 39.9 | 42.9 | 46.0 | 49.1 | 52.1 | 55.2 | 4.6 |
| 4.7 | 6.3 | 9.4 | 12.5 | 15.7 | 18.8 | 21.9 | 25.1 | 28.2 | 31.3 | 34.5 | 37.6 | 40.7 | 43.9 | 47.0 | 50.1 | 53.3 | 56.4 | 4.7 |
| 4.8 | 6.4 | 9.6 | 12.8 | 16.0 | 19.2 | 22.4 | 25.6 | 28.8 | 32.0 | 35.2 | 38.4 | 41.6 | 44.8 | 48.0 | 51.2 | 54.4 | 57.6 | 4.8 |
| 4.9 | 6.5 | 9.8 | 13.1 | 16.3 | 19.6 | 22.9 | 26.1 | 29.4 | 32.7 | 35.9 | 39.2 | 42.5 | 45.7 | 49.0 | 52.3 | 55.5 | 58.8 | 4.9 |
| 5.0 | 6.7 | 10.0 | 13.3 | 16.7 | 20.0 | 23.3 | 26.7 | 30.0 | 33.3 | 36.7 | 40.0 | 43.3 | 46.7 | 50.0 | 53.3 | 56.7 | 60.0 | 5.0 |

* * ★ * *

Interpolaciona tablica

ZA

POPRAVKU ČASOVNOG UGLA I DEKLINACIJE

0 h 0 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 0 .0 | 0 .0 | 0 .0 | 0 .0 | 60 .1 | 120 .1 | |
| 1 | 0 .3 | 0 .3 | 0 .2 | 1 .0 | 61 .1 | 121 .1 | |
| 2 | 0 .5 | 0 .5 | 0 .5 | 2 .0 | 62 .1 | 122 .1 | |
| 3 | 0 .8 | 0 .8 | 0 .7 | 3 .0 | 63 .1 | 123 .1 | |
| 4 | 1 .0 | 1 .0 | 1 .0 | 4 .0 | 64 .1 | 124 .1 | |
| 5 | 0 1.3 | 0 1.3 | 0 1.2 | 5 .0 | 65 .1 | 125 .1 | |
| 6 | 0 1.5 | 0 1.5 | 0 1.4 | 6 .0 | 66 .1 | 126 .1 | |
| 7 | 0 1.8 | 0 1.8 | 0 1.7 | 7 .0 | 67 .1 | 127 .1 | |
| 8 | 0 2.0 | 0 2.0 | 0 1.9 | 8 .0 | 68 .1 | 128 .1 | |
| 9 | 0 2.3 | 0 2.3 | 0 2.1 | 9 .0 | 69 .1 | 129 .1 | |
| 10 | 0 2.5 | 0 2.5 | 0 2.4 | 10 .0 | 70 .1 | 130 .1 | |
| 11 | 0 2.8 | 0 2.8 | 0 2.6 | 11 .0 | 71 .1 | 131 .1 | |
| 12 | 0 3.0 | 0 3.0 | 0 2.9 | 12 .0 | 72 .1 | 132 .1 | |
| 13 | 0 3.3 | 0 3.3 | 0 3.1 | 13 .0 | 73 .1 | 133 .1 | |
| 14 | 0 3.5 | 0 3.5 | 0 3.3 | 14 .0 | 74 .1 | 134 .1 | |
| 15 | 0 3.8 | 0 3.8 | 0 3.6 | 15 .0 | 75 .1 | 135 .1 | |
| 16 | 0 4.0 | 0 4.0 | 0 3.8 | 16 .0 | 76 .1 | 136 .1 | |
| 17 | 0 4.3 | 0 4.3 | 0 4.1 | 17 .0 | 77 .1 | 137 .1 | |
| 18 | 0 4.5 | 0 4.5 | 0 4.3 | 18 .0 | 78 .1 | 138 .1 | |
| 19 | 0 4.8 | 0 4.8 | 0 4.5 | 19 .0 | 79 .1 | 139 .1 | |
| 20 | 0 5.0 | 0 5.0 | 0 4.8 | 20 .0 | 80 .1 | 140 .1 | |
| 21 | 0 5.3 | 0 5.3 | 0 5.0 | 21 .0 | 81 .1 | 141 .1 | |
| 22 | 0 5.5 | 0 5.5 | 0 5.2 | 22 .0 | 82 .1 | 142 .1 | |
| 23 | 0 5.8 | 0 5.8 | 0 5.5 | 23 .0 | 83 .1 | 143 .1 | |
| 24 | 0 6.0 | 0 6.0 | 0 5.7 | 24 .0 | 84 .1 | 144 .1 | |
| 25 | 0 6.3 | 0 6.3 | 0 6.0 | 25 .0 | 85 .1 | 145 .1 | |
| 26 | 0 6.5 | 0 6.5 | 0 6.2 | 26 .0 | 86 .1 | 146 .1 | |
| 27 | 0 6.8 | 0 6.8 | 0 6.4 | 27 .0 | 87 .1 | 147 .1 | |
| 28 | 0 7.0 | 0 7.0 | 0 6.7 | 28 .0 | 88 .1 | 148 .1 | |
| 29 | 0 7.3 | 0 7.3 | 0 6.9 | 29 .0 | 89 .1 | 149 .1 | |
| 30 | 0 7.5 | 0 7.5 | 0 7.2 | 30 .0 | 90 .1 | 150 .1 | |
| 31 | 0 7.8 | 0 7.8 | 0 7.4 | 31 .0 | 91 .1 | 151 .1 | |
| 32 | 0 8.0 | 0 8.0 | 0 7.6 | 32 .0 | 92 .1 | 152 .1 | |
| 33 | 0 8.3 | 0 8.3 | 0 7.9 | 33 .0 | 93 .1 | 153 .1 | |
| 34 | 0 8.5 | 0 8.5 | 0 8.1 | 34 .0 | 94 .1 | 154 .1 | |
| 35 | 0 8.8 | 0 8.8 | 0 8.4 | 35 .0 | 95 .1 | 155 .1 | |
| 36 | 0 9.0 | 0 9.0 | 0 8.6 | 36 .0 | 96 .1 | 156 .1 | |
| 37 | 0 9.3 | 0 9.3 | 0 8.8 | 37 .0 | 97 .1 | 157 .1 | |
| 38 | 0 9.5 | 0 9.5 | 0 9.1 | 38 .0 | 98 .1 | 158 .1 | |
| 39 | 0 9.8 | 0 9.8 | 0 9.3 | 39 .0 | 99 .1 | 159 .1 | |
| 40 | 0 10.0 | 0 10.0 | 0 9.5 | 40 .0 | 100 .1 | 160 .1 | |
| 41 | 0 10.3 | 0 10.3 | 0 9.8 | 41 .0 | 101 .1 | 161 .1 | |
| 42 | 0 10.5 | 0 10.5 | 0 10.0 | 42 .0 | 102 .1 | 162 .1 | |
| 43 | 0 10.8 | 0 10.8 | 0 10.3 | 43 .0 | 103 .1 | 163 .1 | |
| 44 | 0 11.0 | 0 11.0 | 0 10.5 | 44 .0 | 104 .1 | 164 .1 | |
| 45 | 0 11.3 | 0 11.3 | 0 10.7 | 45 .0 | 105 .1 | 165 .1 | |
| 46 | 0 11.5 | 0 11.5 | 0 11.0 | 46 .0 | 106 .1 | 166 .1 | |
| 47 | 0 11.8 | 0 11.8 | 0 11.2 | 47 .0 | 107 .1 | 167 .1 | |
| 48 | 0 12.0 | 0 12.0 | 0 11.5 | 48 .0 | 108 .1 | 168 .1 | |
| 49 | 0 12.3 | 0 12.3 | 0 11.7 | 49 .0 | 109 .1 | 169 .1 | |
| 50 | 0 12.5 | 0 12.5 | 0 11.9 | 50 .0 | 110 .1 | 170 .1 | |
| 51 | 0 12.8 | 0 12.8 | 0 12.2 | 51 .0 | 111 .1 | 171 .1 | |
| 52 | 0 13.0 | 0 13.0 | 0 12.4 | 52 .0 | 112 .1 | 172 .1 | |
| 53 | 0 13.3 | 0 13.3 | 0 12.6 | 53 .0 | 113 .1 | 173 .1 | |
| 54 | 0 13.5 | 0 13.5 | 0 12.9 | 54 .0 | 114 .1 | 174 .1 | |
| 55 | 0 13.8 | 0 13.8 | 0 13.1 | 55 .0 | 115 .1 | 175 .1 | |
| 56 | 0 14.0 | 0 14.0 | 0 13.4 | 56 .0 | 116 .1 | 176 .1 | |
| 57 | 0 14.3 | 0 14.3 | 0 13.6 | 57 .0 | 117 .1 | 177 .1 | |
| 58 | 0 14.5 | 0 14.5 | 0 13.8 | 58 .0 | 118 .1 | 178 .1 | |
| 59 | 0 14.8 | 0 14.8 | 0 14.1 | 59 .0 | 119 .1 | 179 .1 | |
| 60 | 0 15.0 | 0 15.0 | 0 14.3 | 60 .1 | 120 .1 | 180 .2 | |

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| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 0 15.0 | 0 15.0 | 0 14.3 | 0 .0 | 60 .2 | 120 .3 | |
| 1 | 0 15.3 | 0 15.3 | 0 14.6 | 1 .0 | 61 .2 | 121 .3 | |
| 2 | 0 15.5 | 0 15.5 | 0 14.8 | 2 .0 | 62 .2 | 122 .3 | |
| 3 | 0 15.8 | 0 15.8 | 0 15.0 | 3 .0 | 63 .2 | 123 .3 | |
| 4 | 0 16.0 | 0 16.0 | 0 15.3 | 4 .0 | 64 .2 | 124 .3 | |
| 5 | 0 16.3 | 0 16.3 | 0 15.5 | 5 .0 | 65 .2 | 125 .3 | |
| 6 | 0 16.5 | 0 16.5 | 0 15.7 | 6 .0 | 66 .2 | 126 .3 | |
| 7 | 0 16.8 | 0 16.8 | 0 16.0 | 7 .0 | 67 .2 | 127 .3 | |
| 8 | 0 17.0 | 0 17.0 | 0 16.2 | 8 .0 | 68 .2 | 128 .3 | |
| 9 | 0 17.3 | 0 17.3 | 0 16.5 | 9 .0 | 69 .2 | 129 .3 | |
| 10 | 0 17.5 | 0 17.5 | 0 16.7 | 10 .0 | 70 .2 | 130 .3 | |
| 11 | 0 17.8 | 0 17.8 | 0 16.9 | 11 .0 | 71 .2 | 131 .3 | |
| 12 | 0 18.0 | 0 18.0 | 0 18.1 | 12 .0 | 72 .2 | 132 .3 | |
| 13 | 0 18.3 | 0 18.3 | 0 18.4 | 13 .0 | 73 .2 | 133 .3 | |
| 14 | 0 18.5 | 0 18.6 | 0 17.7 | 14 .0 | 74 .2 | 134 .3 | |
| 15 | 0 18.8 | 0 18.8 | 0 17.9 | 15 .0 | 75 .2 | 135 .3 | |
| 16 | 0 19.0 | 0 19.1 | 0 18.1 | 16 .0 | 76 .2 | 136 .3 | |
| 17 | 0 19.3 | 0 19.3 | 0 18.4 | 17 .0 | 77 .2 | 137 .3 | |
| 18 | 0 19.5 | 0 19.6 | 0 18.6 | 18 .0 | 78 .2 | 138 .3 | |
| 19 | 0 19.8 | 0 19.8 | 0 18.9 | 19 .0 | 79 .2 | 139 .3 | |
| 20 | 0 20.0 | 0 20.1 | 0 19.1 | 20 .1 | 80 .2 | 140 .4 | |
| 21 | 0 20.3 | 0 20.3 | 0 19.3 | 21 .1 | 81 .2 | 141 .4 | |
| 22 | 0 20.5 | 0 20.6 | 0 19.6 | 22 .1 | 82 .2 | 142 .4 | |
| 23 | 0 20.8 | 0 20.8 | 0 19.8 | 23 .1 | 83 .2 | 143 .4 | |
| 24 | 0 21.0 | 0 21.1 | 0 20.0 | 24 .1 | 84 .2 | 144 .4 | |
| 25 | 0 21.3 | 0 21.3 | 0 20.3 | 25 .1 | 85 .2 | 145 .4 | |
| 26 | 0 21.5 | 0 21.6 | 0 20.5 | 26 .1 | 86 .2 | 146 .4 | |
| 27 | 0 21.8 | 0 21.8 | 0 20.8 | 27 .1 | 87 .2 | 147 .4 | |
| 28 | 0 22.0 | 0 22.1 | 0 21.0 | 28 .1 | 88 .2 | 148 .4 | |
| 29 | 0 22.3 | 0 22.3 | 0 21.2 | 29 .1 | 89 .2 | 149 .4 | |
| 30 | 0 22.5 | 0 22.6 | 0 21.5 | 30 .1 | 90 .2 | 150 .4 | |
| 31 | 0 22.8 | 0 22.8 | 0 21.7 | 31 .1 | 91 .2 | 151 .4 | |
| 32 | 0 23.0 | 0 23.0 | 0 22.1 | 32 .1 | 92 .2 | 152 .4 | |
| 33 | 0 23.3 | 0 23.3 | 0 22.2 | 33 .1 | 93 .2 | 153 .4 | |
| 34 | 0 23.5 | 0 23.6 | 0 22.4 | 34 .1 | 94 .2 | 154 .4 | |
| 35 | 0 23.8 | 0 23.8 | 0 22.7 | 35 .1 | 95 .2 | 155 .4 | |
| 36 | 0 24.0 | 0 24.0 | 0 24.1 | 36 .1 | 96 .2 | 156 .4 | |
| 37 | 0 24.3 | 0 24.3 | 0 23.1 | 37 .1 | 97 .2 | 157 .4 | |
| 38 | 0 24.5 | 0 24.6 | 0 23.4 | 38 .1 | 98 .2 | 158 .4 | |
| 39 | 0 24.8 | 0 24.8 | 0 23.6 | 39 .1 | 99 .2 | 159 .4 | |
| 40 | 0 25.0 | 0 25.1 | 0 23.9 | 40 .1 | 100 .3 | 160 .4 | |
| 41 | 0 25.3 | 0 25.3 | 0 24.1 | 41 .1 | 101 .3 | 161 .4 | |
| 42 | 0 25.5 | 0 25.6 | 0 24.3 | 42 .1 | 102 .3 | 162 .4 | |
| 43 | 0 25.8 | 0 25.8 | 0 24.6 | 43 .1 | 103 .3 | 163 .4 | |
| 44 | 0 26.0 | 0 26.1 | 0 24.8 | 44 .1 | 104 .3 | 164 .4 | |
| 45 | 0 26.3 | 0 26.3 | 0 25.1 | 45 .1 | 105 .3 | 165 .4 | |
| 46 | 0 26.5 | 0 26.6 | 0 25.3 | 46 .1 | 106 .3 | 166 .4 | |
| 47 | 0 26.8 | 0 26.8 | 0 25.5 | 47 .1 | 107 .3 | 167 .4 | |
| 48 | 0 27.0 | 0 27.1 | 0 25.8 | 48 .1 | 108 .3 | 168 .4 | |
| 49 | 0 27.3 | 0 27.3 | 0 26.0 | 49 .1 | 109 .3 | 169 .4 | |
| 50 | 0 27.5 | 0 27.6 | 0 26.2 | 50 .1 | 110 .3 | 170 .4 | |
| 51 | 0 27.8 | 0 27.8 | 0 26.5 | 51 .1 | 111 .3 | 171 .4 | |
| 52 | 0 28.0 | 0 28.1 | 0 26.7 | 52 .1 | 112 .3 | 172 .4 | |
| 53 | 0 28.3 | 0 28.3 | 0 27.0 | 53 .1 | 113 .3 | 173 .4 | |
| 54 | 0 28.5 | 0 28.6 | 0 27.2 | 54 .1 | 114 .3 | 174 .4 | |
| 55 | 0 28.8 | 0 28.8 | 0 27.4 | 55 .1 | 115 .3 | 175 .4 | |
| 56 | 0 29.0 | 0 29.1 | 0 27.7 | 56 .1 | 116 .3 | 176 .4 | |
| 57 | 0 29.3 | 0 29.3 | 0 27.9 | 57 .1 | 117 .3 | 177 .4 | |
| 58 | 0 29.5 | 0 29.6 | 0 28.2 | 58 .1 | 118 .3 | 178 .4 | |
| 59 | 0 29.8 | 0 29.8 | 0 28.4 | 59 .1 | 119 .3 | 179 .4 | |
| 60 | 0 30.0 | 0 30.1 | 0 28.6 | 60 .2 | 120 .3 | 180 .5 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 0 30.0 | 0 30.1 | 0 28.6 | 0 .0 | 60 .3 | 120 .5 | |
| 1 | 0 30.3 | 0 30.3 | 0 28.9 | 1 .0 | 61 .3 | 121 .5 | |
| 2 | 0 30.5 | 0 30.6 | 0 29.1 | 2 .0 | 62 .3 | 122 .5 | |
| 3 | 0 30.8 | 0 30.8 | 0 29.3 | 3 .0 | 63 .3 | 123 .5 | |
| 4 | 0 31.0 | 0 31.1 | 0 29.6 | 4 .0 | 64 .3 | 124 .5 | |
| 5 | 0 31.3 | 0 31.3 | 0 29.8 | 5 .0 | 65 .3 | 125 .5 | |
| 6 | 0 31.5 | 0 31.6 | 0 30.1 | 6 .0 | 66 .3 | 126 .5 | |
| 7 | 0 31.8 | 0 31.8 | 0 30.3 | 7 .0 | 67 .3 | 127 .5 | |
| 8 | 0 32.0 | 0 32.1 | 0 30.5 | 8 .0 | 68 .3 | 128 .5 | |
| 9 | 0 32.3 | 0 32.3 | 0 30.8 | 9 .0 | 69 .3 | 129 .5 | |
| 10 | 0 32.5 | 0 32.6 | 0 31.0 | 10 .0 | 70 .3 | 130 .5 | |
| 11 | 0 32.8 | 0 32.8 | 0 31.3 | 11 .0 | 71 .3 | 131 .5 | |
| 12 | 0 33.0 | 0 33.1 | 0 31.5 | 12 .1 | 72 .3 | 132 .6 | |
| 13 | 0 33.3 | 0 33.3 | 0 31.7 | 13 .1 | 73 .3 | 133 .6 | |
| 14 | 0 33.5 | 0 33.6 | 0 32.0 | 14 .1 | 74 .3 | 134 .6 | |
| 15 | 0 33.8 | 0 33.8 | 0 32.2 | 15 .1 | 75 .3 | 135 .6 | |
| 16 | 0 34.0 | 0 34.1 | 0 32.5 | 16 .1 | 76 .3 | 136 .6 | |
| 17 | 0 34.3 | 0 34.3 | 0 32.7 | 17 .1 | 77 .3 | 137 .6 | |
| 18 | 0 34.5 | 0 34.6 | 0 32.9 | 18 .1 | 78 .3 | 138 .6 | |
| 19 | 0 34.8 | 0 34.8 | 0 33.2 | 19 .1 | 79 .3 | 139 .6 | |
| 20 | 0 35.0 | 0 35.1 | 0 33.4 | 20 .1 | 80 .3 | 140 .6 | |
| 21 | 0 35.3 | 0 35.3 | 0 33.6 | 21 .1 | 81 .3 | 141 .6 | |
| 22 | 0 35.5 | 0 35.6 | 0 33.9 | 22 .1 | 82 .3 | 142 .6 | |
| 23 | 0 35.8 | 0 35.8 | 0 34.1 | 23 .1 | 83 .3 | 143 .6 | |
| 24 | 0 36.0 | 0 36.1 | 0 34.4 | 24 .1 | 84 .4 | 144 .6 | |
| 25 | 0 36.3 | 0 36.4 | 0 34.6 | 25 .1 | 85 .4 | 145 .6 | |
| 26 | 0 36.5 | 0 36.6 | 0 34.8 | 26 .1 | 86 .4 | 146 .6 | |
| 27 | 0 36.8 | 0 36.9 | 0 35.1 | 27 .1 | 87 .4 | 147 .6 | |
| 28 | 0 37.0 | 0 37.1 | 0 35.3 | 28 .1 | 88 .4 | 148 .6 | |
| 29 | 0 37.3 | 0 37.4 | 0 35.6 | 29 .1 | 89 .4 | 149 .6 | |
| 30 | 0 37.5 | 0 37.6 | 0 35.8 | 30 .1 | 90 .4 | 150 .6 | |
| 31 | 0 37.8 | 0 37.9 | 0 36.0 | 31 .1 | 91 .4 | 151 .6 | |
| 32 | 0 38.0 | 0 38.1 | 0 36.3 | 32 .1 | 92 .4 | 152 .6 | |
| 33 | 0 38.3 | 0 38.4 | 0 36.5 | 33 .1 | 93 .4 | 153 .6 | |
| 34 | 0 38.5 | 0 38.6 | 0 36.7 | 34 .1 | 94 .4 | 154 .6 | |
| 35 | 0 38.8 | 0 38.9 | 0 37.0 | 35 .1 | 95 .4 | 155 .6 | |
| 36 | 0 39.0 | 0 39.1 | 0 37.2 | 36 .2 | 96 .4 | 156 .7 | |
| 37 | 0 39.3 | 0 39.4 | 0 37.5 | 37 .2 | 97 .4 | 157 .7 | |
| 38 | 0 39.5 | 0 39.6 | 0 37.7 | 38 .2 | 98 .4 | 158 .7 | |
| 39 | 0 39.8 | 0 39.9 | 0 37.9 | 39 .2 | 99 .4 | 159 .7 | |
| 40 | 0 40.0 | 0 40.1 | 0 38.2 | 40 .2 | 100 .4 | 160 .7 | |
| 41 | 0 40.3 | 0 40.4 | 0 38.4 | 41 .2 | 101 .4 | 161 .7 | |
| 42 | 0 40.5 | 0 40.6 | 0 38.7 | 42 .2 | 102 .4 | 162 .7 | |
| 43 | 0 40.8 | 0 40.9 | 0 38.9 | 43 .2 | 103 .4 | 163 .7 | |
| 44 | 0 41.0 | 0 41.1 | 0 39.1 | 44 .2 | 104 .4 | 164 .7 | |
| 45 | 0 41.3 | 0 41.4 | 0 39.4 | 45 .2 | 105 .4 | 165 .7 | |
| 46 | 0 41.5 | 0 41.6 | 0 39.6 | 46 .2 | 106 .4 | 166 .7 | |
| 47 | 0 41.8 | 0 41.9 | 0 39.8 | 47 .2 | 107 .4 | 167 .7 | |
| 48 | 0 42.0 | 0 42.1 | 0 40.1 | 48 .2 | 108 .5 | 168 .7 | |
| 49 | 0 42.3 | 0 42.4 | 0 40.3 | 49 .2 | 109 .5 | 169 .7 | |
| 50 | 0 42.5 | 0 42.6 | 0 40.6 | 50 .2 | 110 .5 | 170 .7 | |
| 51 | 0 42.8 | 0 42.9 | 0 40.8 | 51 .2 | 111 .5 | 171 .7 | |
| 52 | 0 43.0 | 0 43.1 | 0 41.0 | 52 .2 | 112 .5 | 172 .7 | |
| 53 | 0 43.3 | 0 43.4 | 0 41.3 | 53 .2 | 113 .5 | 173 .7 | |
| 54 | 0 43.5 | 0 43.6 | 0 41.5 | 54 .2 | 114 .5 | 174 .7 | |
| 55 | 0 43.8 | 0 43.9 | 0 41.8 | 55 .2 | 115 .5 | 175 .7 | |
| 56 | 0 44.0 | 0 44.1 | 0 42.0 | 56 .2 | 116 .5 | 176 .7 | |
| 57 | 0 44.3 | 0 44.4 | 0 42.2 | 57 .2 | 117 .5 | 177 .7 | |
| 58 | 0 44.5 | 0 44.6 | 0 42.5 | 58 .2 | 118 .5 | 178 .7 | |
| 59 | 0 44.8 | 0 44.9 | 0 42.7 | 59 .2 | 119 .5 | 179 .7 | |
| 60 | 0 45.0 | 0 45.1 | 0 43.0 | 60 .3 | 120 .5 | 180 .8 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|-----|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 0 45.0 | 0 45.1 | 0 43.0 | 0 .0 | 60 .0 | 120 .4 | .7 |
| 1 | 0 45.3 | 0 45.4 | 0 43.2 | 1 .0 | 61 .4 | 121 .7 | .7 |
| 2 | 0 45.5 | 0 45.6 | 0 43.4 | 2 .0 | 62 .4 | 122 .7 | .7 |
| 3 | 0 45.8 | 0 45.9 | 0 43.7 | 3 .0 | 63 .4 | 123 .7 | .7 |
| 4 | 0 46.0 | 0 46.1 | 0 43.9 | 4 .0 | 64 .4 | 124 .7 | .7 |
| 5 | 0 46.3 | 0 46.4 | 0 44.1 | 5 .0 | 65 .4 | 125 .7 | .7 |
| 6 | 0 46.5 | 0 46.6 | 0 44.4 | 6 .0 | 66 .4 | 126 .7 | .7 |
| 7 | 0 46.8 | 0 46.9 | 0 44.6 | 7 .0 | 67 .4 | 127 .7 | .7 |
| 8 | 0 47.0 | 0 47.1 | 0 44.9 | 8 .0 | 68 .4 | 128 .7 | .7 |
| 9 | 0 47.3 | 0 47.4 | 0 45.1 | 9 .1 | 69 .4 | 129 .8 | .8 |
| 10 | 0 47.5 | 0 47.6 | 0 45.3 | 10 .1 | 70 .4 | 130 .8 | .8 |
| 11 | 0 47.8 | 0 47.9 | 0 45.6 | 11 .1 | 71 .4 | 131 .8 | .8 |
| 12 | 0 48.0 | 0 48.1 | 0 45.8 | 12 .1 | 72 .4 | 132 .8 | .8 |
| 13 | 0 48.3 | 0 48.4 | 0 46.1 | 13 .1 | 73 .4 | 133 .8 | .8 |
| 14 | 0 48.5 | 0 48.6 | 0 46.3 | 14 .1 | 74 .4 | 134 .8 | .8 |
| 15 | 0 48.8 | 0 48.9 | 0 46.5 | 15 .1 | 75 .4 | 135 .8 | .8 |
| 16 | 0 49.0 | 0 49.1 | 0 46.8 | 16 .1 | 76 .4 | 136 .8 | .8 |
| 17 | 0 49.3 | 0 49.4 | 0 47.0 | 17 .1 | 77 .4 | 137 .8 | .8 |
| 18 | 0 49.5 | 0 49.6 | 0 47.2 | 18 .1 | 78 .5 | 138 .8 | .8 |
| 19 | 0 49.8 | 0 49.9 | 0 47.5 | 19 .1 | 79 .5 | 139 .8 | .8 |
| 20 | 0 50.0 | 0 50.1 | 0 50.1 | 20 .1 | 80 .5 | 140 .8 | .8 |
| 21 | 0 50.3 | 0 50.4 | 0 50.4 | 21 .1 | 81 .5 | 141 .8 | .8 |
| 22 | 0 50.5 | 0 50.6 | 0 50.6 | 22 .1 | 82 .5 | 142 .8 | .8 |
| 23 | 0 50.8 | 0 50.9 | 0 50.8 | 23 .1 | 83 .5 | 143 .8 | .8 |
| 24 | 0 51.0 | 0 51.1 | 0 51.1 | 24 .1 | 84 .5 | 144 .8 | .8 |
| 25 | 0 51.3 | 0 51.4 | 0 48.9 | 25 .1 | 85 .5 | 145 .8 | .8 |
| 26 | 0 51.5 | 0 51.6 | 0 49.2 | 26 .2 | 86 .5 | 146 .9 | .9 |
| 27 | 0 51.8 | 0 51.9 | 0 49.4 | 27 .2 | 87 .5 | 147 .9 | .9 |
| 28 | 0 52.0 | 0 52.1 | 0 49.6 | 28 .2 | 88 .5 | 148 .9 | .9 |
| 29 | 0 52.3 | 0 52.4 | 0 49.9 | 29 .2 | 89 .5 | 149 .9 | .9 |
| 30 | 0 52.5 | 0 52.6 | 0 50.1 | 30 .2 | 90 .5 | 150 .9 | .9 |
| 31 | 0 52.8 | 0 52.9 | 0 50.3 | 31 .2 | 91 .5 | 151 .9 | .9 |
| 32 | 0 53.0 | 0 53.1 | 0 50.6 | 32 .2 | 92 .5 | 152 .9 | .9 |
| 33 | 0 53.3 | 0 53.4 | 0 50.8 | 33 .2 | 93 .5 | 153 .9 | .9 |
| 34 | 0 53.5 | 0 53.6 | 0 51.1 | 34 .2 | 94 .5 | 154 .9 | .9 |
| 35 | 0 53.8 | 0 53.9 | 0 51.3 | 35 .2 | 95 .6 | 155 .9 | .9 |
| 36 | 0 54.0 | 0 54.1 | 0 54.2 | 36 .2 | 96 .6 | 156 .9 | .9 |
| 37 | 0 54.3 | 0 54.4 | 0 51.8 | 37 .2 | 97 .6 | 157 .9 | .9 |
| 38 | 0 54.5 | 0 54.7 | 0 52.0 | 38 .2 | 98 .6 | 158 .9 | .9 |
| 39 | 0 54.8 | 0 54.9 | 0 52.3 | 39 .2 | 99 .6 | 159 .9 | .9 |
| 40 | 0 55.0 | 0 55.2 | 0 52.5 | 40 .2 | 100 .6 | 160 .9 | .9 |
| 41 | 0 55.3 | 0 55.4 | 0 52.7 | 41 .2 | 101 .6 | 161 .9 | .9 |
| 42 | 0 55.5 | 0 55.7 | 0 53.0 | 42 .2 | 102 .6 | 162 .9 | .9 |
| 43 | 0 55.8 | 0 55.9 | 0 53.2 | 43 .3 | 103 .6 | 163 .1 | 1.0 |
| 44 | 0 56.0 | 0 56.2 | 0 53.4 | 44 .3 | 104 .6 | 164 .1 | 1.0 |
| 45 | 0 56.3 | 0 56.4 | 0 53.7 | 45 .3 | 105 .6 | 165 .1 | 1.0 |
| 46 | 0 56.5 | 0 56.7 | 0 53.9 | 46 .3 | 106 .6 | 166 .1 | 1.0 |
| 47 | 0 56.8 | 0 56.9 | 0 54.2 | 47 .3 | 107 .6 | 167 .1 | 1.0 |
| 48 | 0 57.0 | 0 57.2 | 0 54.4 | 48 .3 | 108 .6 | 168 .1 | 1.0 |
| 49 | 0 57.3 | 0 57.4 | 0 54.6 | 49 .3 | 109 .6 | 169 .1 | 1.0 |
| 50 | 0 57.5 | 0 57.7 | 0 54.9 | 50 .3 | 110 .6 | 170 .1 | 1.0 |
| 51 | 0 57.8 | 0 57.9 | 0 55.1 | 51 .3 | 111 .6 | 171 .1 | 1.0 |
| 52 | 0 58.0 | 0 58.2 | 0 55.4 | 52 .3 | 112 .7 | 172 .1 | 1.0 |
| 53 | 0 58.3 | 0 58.4 | 0 55.6 | 53 .3 | 113 .7 | 173 .1 | 1.0 |
| 54 | 0 58.5 | 0 58.7 | 0 55.8 | 54 .3 | 114 .7 | 174 .1 | 1.0 |
| 55 | 0 58.8 | 0 58.9 | 0 56.1 | 55 .3 | 115 .7 | 175 .1 | 1.0 |
| 56 | 0 59.0 | 0 59.2 | 0 56.3 | 56 .3 | 116 .7 | 176 .1 | 1.0 |
| 57 | 0 59.3 | 0 59.4 | 0 56.6 | 57 .3 | 117 .7 | 177 .1 | 1.0 |
| 58 | 0 59.5 | 0 59.7 | 0 56.8 | 58 .3 | 118 .7 | 178 .1 | 1.0 |
| 59 | 0 59.8 | 0 59.9 | 0 57.0 | 59 .3 | 119 .7 | 179 .1 | 1.0 |
| 60 | 1 .0 | 1 .2 | 0 57.3 | 60 .4 | 120 .7 | 180 .1 | 1.1 |

0 h 4 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 1 .0 | 1 .2 | 0 57.3 | 0 .0 | 60 .5 | 120 .9 | |
| 1 | 1 .4 | 1 .4 | 0 57.5 | 1 .0 | 61 .5 | 121 .9 | |
| 2 | 1 .5 | 1 .7 | 0 57.7 | 2 .0 | 62 .5 | 122 .9 | |
| 3 | 1 .8 | 1 .9 | 0 58.0 | 3 .0 | 63 .5 | 123 .9 | |
| 4 | 1 1.0 | 1 1.2 | 0 58.2 | 4 .0 | 64 .5 | 124 .9 | |
| 5 | 1 1.3 | 1 1.4 | 0 58.5 | 5 .0 | 65 .5 | 125 .9 | |
| 6 | 1 1.5 | 1 1.7 | 0 58.7 | 6 .0 | 66 .5 | 126 .9 | |
| 7 | 1 1.8 | 1 1.9 | 0 58.9 | 7 .1 | 67 .5 | 127 1.0 | |
| 8 | 1 2.0 | 1 2.2 | 0 59.2 | 8 .1 | 68 .5 | 128 1.0 | |
| 9 | 1 2.3 | 1 2.4 | 0 59.4 | 9 .1 | 69 .5 | 129 1.0 | |
| 10 | 1 2.5 | 1 2.7 | 0 59.7 | 10 .1 | 70 .5 | 130 1.0 | |
| 11 | 1 2.8 | 1 2.9 | 0 59.9 | 11 .1 | 71 .5 | 131 1.0 | |
| 12 | 1 3.0 | 1 3.2 | 1 1.1 | 12 .1 | 72 .5 | 132 1.0 | |
| 13 | 1 3.3 | 1 3.4 | 1 .4 | 13 .1 | 73 .5 | 133 1.0 | |
| 14 | 1 3.5 | 1 3.7 | 1 .6 | 14 .1 | 74 .6 | 134 1.0 | |
| 15 | 1 3.8 | 1 3.9 | 1 .8 | 15 .1 | 75 .6 | 135 1.0 | |
| 16 | 1 4.0 | 1 4.2 | 1 1.1 | 16 .1 | 76 .6 | 136 1.0 | |
| 17 | 1 4.3 | 1 4.4 | 1 1.3 | 17 .1 | 77 .6 | 137 1.0 | |
| 18 | 1 4.5 | 1 4.7 | 1 1.6 | 18 .1 | 78 .6 | 138 1.0 | |
| 19 | 1 4.8 | 1 4.9 | 1 1.8 | 19 .1 | 79 .6 | 139 1.0 | |
| 20 | 1 5.0 | 1 5.2 | 1 2.0 | 20 .2 | 80 .6 | 140 1.1 | |
| 21 | 1 5.3 | 1 5.4 | 1 2.3 | 21 .2 | 81 .6 | 141 1.1 | |
| 22 | 1 5.5 | 1 5.7 | 1 2.5 | 22 .2 | 82 .6 | 142 1.1 | |
| 23 | 1 5.8 | 1 5.9 | 1 2.8 | 23 .2 | 83 .6 | 143 1.1 | |
| 24 | 1 6.0 | 1 6.2 | 1 3.0 | 24 .2 | 84 .6 | 144 1.1 | |
| 25 | 1 6.3 | 1 6.4 | 1 3.2 | 25 .2 | 85 .6 | 145 1.1 | |
| 26 | 1 6.5 | 1 6.7 | 1 3.5 | 26 .2 | 86 .6 | 146 1.1 | |
| 27 | 1 6.8 | 1 6.9 | 1 3.7 | 27 .2 | 87 .7 | 147 1.1 | |
| 28 | 1 7.0 | 1 7.2 | 1 3.9 | 28 .2 | 88 .7 | 148 1.1 | |
| 29 | 1 7.3 | 1 7.4 | 1 4.2 | 29 .2 | 89 .7 | 149 1.1 | |
| 30 | 1 7.5 | 1 7.7 | 1 4.4 | 30 .2 | 90 .7 | 150 1.1 | |
| 31 | 1 7.8 | 1 7.9 | 1 4.7 | 31 .2 | 91 .7 | 151 1.1 | |
| 32 | 1 8.0 | 1 8.2 | 1 4.9 | 32 .2 | 92 .7 | 152 1.1 | |
| 33 | 1 8.3 | 1 8.4 | 1 5.1 | 33 .2 | 93 .7 | 153 1.1 | |
| 34 | 1 8.5 | 1 8.7 | 1 5.4 | 34 .3 | 94 .7 | 154 1.2 | |
| 35 | 1 8.8 | 1 8.9 | 1 5.6 | 35 .3 | 95 .7 | 155 1.2 | |
| 36 | 1 9.0 | 1 9.2 | 1 5.9 | 36 .3 | 96 .7 | 156 1.2 | |
| 37 | 1 9.3 | 1 9.4 | 1 6.1 | 37 .3 | 97 .7 | 157 1.2 | |
| 38 | 1 9.5 | 1 9.7 | 1 6.3 | 38 .3 | 98 .7 | 158 1.2 | |
| 39 | 1 9.8 | 1 9.9 | 1 6.6 | 39 .3 | 99 .7 | 159 1.2 | |
| 40 | 1 10.0 | 1 10.2 | 1 6.8 | 40 .3 | 100 .8 | 160 1.2 | |
| 41 | 1 10.3 | 1 10.4 | 1 7.0 | 41 .3 | 101 .8 | 161 1.2 | |
| 42 | 1 10.5 | 1 10.7 | 1 7.3 | 42 .3 | 102 .8 | 162 1.2 | |
| 43 | 1 10.8 | 1 10.9 | 1 7.5 | 43 .3 | 103 .8 | 163 1.2 | |
| 44 | 1 11.0 | 1 11.2 | 1 7.8 | 44 .3 | 104 .8 | 164 1.2 | |
| 45 | 1 11.3 | 1 11.4 | 1 8.0 | 45 .3 | 105 .8 | 165 1.2 | |
| 46 | 1 11.5 | 1 11.7 | 1 8.2 | 46 .3 | 106 .8 | 166 1.2 | |
| 47 | 1 11.8 | 1 11.9 | 1 8.5 | 47 .4 | 107 .8 | 167 1.3 | |
| 48 | 1 12.0 | 1 12.2 | 1 8.7 | 48 .4 | 108 .8 | 168 1.3 | |
| 49 | 1 12.3 | 1 12.5 | 1 9.0 | 49 .4 | 109 .8 | 169 1.3 | |
| 50 | 1 12.5 | 1 12.7 | 1 9.2 | 50 .4 | 110 .8 | 170 1.3 | |
| 51 | 1 12.8 | 1 13.0 | 1 9.4 | 51 .4 | 111 .8 | 171 1.3 | |
| 52 | 1 13.0 | 1 13.2 | 1 9.7 | 52 .4 | 112 .8 | 172 1.3 | |
| 53 | 1 13.3 | 1 13.5 | 1 9.9 | 53 .4 | 113 .8 | 173 1.3 | |
| 54 | 1 13.5 | 1 13.7 | 1 10.2 | 54 .4 | 114 .9 | 174 1.3 | |
| 55 | 1 13.8 | 1 14.0 | 1 10.4 | 55 .4 | 115 .9 | 175 1.3 | |
| 56 | 1 14.0 | 1 14.2 | 1 10.6 | 56 .4 | 116 .9 | 176 1.3 | |
| 57 | 1 14.3 | 1 14.5 | 1 10.9 | 57 .4 | 117 .9 | 177 1.3 | |
| 58 | 1 14.5 | 1 14.7 | 1 11.1 | 58 .4 | 118 .9 | 178 1.3 | |
| 59 | 1 14.8 | 1 15.0 | 1 11.3 | 59 .4 | 119 .9 | 179 1.3 | |
| 60 | 1 15.0 | 1 15.2 | 1 11.6 | 60 .5 | 120 .9 | 180 1.4 | |

0 h 5 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 1 15.0 | 1 15.2 | 1 11.6 | 0 .0 | 60 .6 | 120 1.1 | |
| 1 | 1 15.3 | 1 15.5 | 1 11.8 | 1 .0 | 61 .6 | 121 1.1 | |
| 2 | 1 15.5 | 1 15.7 | 1 12.1 | 2 .0 | 62 .6 | 122 1.1 | |
| 3 | 1 15.8 | 1 16.0 | 1 12.3 | 3 .0 | 63 .6 | 123 1.1 | |
| 4 | 1 16.0 | 1 16.2 | 1 12.5 | 4 .0 | 64 .6 | 124 1.1 | |
| 5 | 1 16.3 | 1 16.5 | 1 12.8 | 5 .0 | 65 .6 | 125 1.1 | |
| 6 | 1 16.5 | 1 16.7 | 1 13.0 | 6 .1 | 66 .6 | 126 1.2 | |
| 7 | 1 16.8 | 1 17.0 | 1 13.3 | 7 .1 | 67 .6 | 127 1.2 | |
| 8 | 1 17.0 | 1 17.2 | 1 13.5 | 8 .1 | 68 .6 | 128 1.2 | |
| 9 | 1 17.3 | 1 17.5 | 1 13.7 | 9 .1 | 69 .6 | 129 1.2 | |
| 10 | 1 17.5 | 1 17.7 | 1 14.0 | 10 .1 | 70 .6 | 130 1.2 | |
| 11 | 1 17.8 | 1 18.0 | 1 14.2 | 11 .1 | 71 .7 | 131 1.2 | |
| 12 | 1 18.0 | 1 18.2 | 1 14.4 | 12 .1 | 72 .7 | 132 1.2 | |
| 13 | 1 18.3 | 1 18.5 | 1 14.7 | 13 .1 | 73 .7 | 133 1.2 | |
| 14 | 1 18.5 | 1 18.7 | 1 14.9 | 14 .1 | 74 .7 | 134 1.2 | |
| 15 | 1 18.8 | 1 19.0 | 1 15.2 | 15 .1 | 75 .7 | 135 1.2 | |
| 16 | 1 19.0 | 1 19.2 | 1 15.4 | 16 .1 | 76 .7 | 136 1.2 | |
| 17 | 1 19.3 | 1 19.5 | 1 15.6 | 17 .2 | 77 .7 | 137 1.3 | |
| 18 | 1 19.5 | 1 19.7 | 1 15.9 | 18 .2 | 78 .7 | 138 1.3 | |
| 19 | 1 19.8 | 1 20.0 | 1 16.1 | 19 .2 | 79 .7 | 139 1.3 | |
| 20 | 1 20.0 | 1 20.2 | 1 16.4 | 20 .2 | 80 .7 | 140 1.3 | |
| 21 | 1 20.3 | 1 20.5 | 1 16.6 | 21 .2 | 81 .7 | 141 1.3 | |
| 22 | 1 20.5 | 1 20.7 | 1 16.8 | 22 .2 | 82 .8 | 142 1.3 | |
| 23 | 1 20.8 | 1 21.0 | 1 17.1 | 23 .2 | 83 .8 | 143 1.3 | |
| 24 | 1 21.0 | 1 21.2 | 1 17.3 | 24 .2 | 84 .8 | 144 1.3 | |
| 25 | 1 21.3 | 1 21.5 | 1 17.5 | 25 .2 | 85 .8 | 145 1.3 | |
| 26 | 1 21.5 | 1 21.7 | 1 17.8 | 26 .2 | 86 .8 | 146 1.3 | |
| 27 | 1 21.8 | 1 22.0 | 1 18.0 | 27 .2 | 87 .8 | 147 1.3 | |
| 28 | 1 22.0 | 1 22.2 | 1 18.3 | 28 .3 | 88 .8 | 148 1.4 | |
| 29 | 1 22.3 | 1 22.5 | 1 18.5 | 29 .3 | 89 .8 | 149 1.4 | |
| 30 | 1 22.5 | 1 22.7 | 1 18.7 | 30 .3 | 90 .8 | 150 1.4 | |
| 31 | 1 22.8 | 1 23.0 | 1 19.0 | 31 .3 | 91 .8 | 151 1.4 | |
| 32 | 1 23.0 | 1 23.2 | 1 19.2 | 32 .3 | 92 .8 | 152 1.4 | |
| 33 | 1 23.3 | 1 23.5 | 1 19.5 | 33 .3 | 93 .9 | 153 1.4 | |
| 34 | 1 23.5 | 1 23.7 | 1 19.7 | 34 .3 | 94 .9 | 154 1.4 | |
| 35 | 1 23.8 | 1 24.0 | 1 19.9 | 35 .3 | 95 .9 | 155 1.4 | |
| 36 | 1 24.0 | 1 24.2 | 1 20.2 | 36 .3 | 96 .9 | 156 1.4 | |
| 37 | 1 24.3 | 1 24.5 | 1 20.4 | 37 .3 | 97 .9 | 157 1.4 | |
| 38 | 1 24.5 | 1 24.7 | 1 20.7 | 38 .3 | 98 .9 | 158 1.4 | |
| 39 | 1 24.8 | 1 25.0 | 1 20.9 | 39 .4 | 99 .9 | 159 1.5 | |
| 40 | 1 25.0 | 1 25.2 | 1 21.1 | 40 .4 | 100 .9 | 160 1.5 | |
| 41 | 1 25.3 | 1 25.5 | 1 21.4 | 41 .4 | 101 .9 | 161 1.5 | |
| 42 | 1 25.5 | 1 25.7 | 1 21.6 | 42 .4 | 102 .9 | 162 1.5 | |
| 43 | 1 25.8 | 1 26.0 | 1 21.8 | 43 .4 | 103 .9 | 163 1.5 | |
| 44 | 1 26.0 | 1 26.2 | 1 22.1 | 44 .4 | 104 .1 | 164 1.5 | |
| 45 | 1 26.3 | 1 26.5 | 1 22.3 | 45 .4 | 105 .1 | 165 1.5 | |
| 46 | 1 26.5 | 1 26.7 | 1 22.6 | 46 .4 | 106 .1 | 166 1.5 | |
| 47 | 1 26.8 | 1 27.0 | 1 22.8 | 47 .4 | 107 .1 | 167 1.5 | |
| 48 | 1 27.0 | 1 27.2 | 1 23.0 | 48 .4 | 108 .1 | 168 1.5 | |
| 49 | 1 27.3 | 1 27.5 | 1 23.3 | 49 .4 | 109 .1 | 169 1.5 | |
| 50 | 1 27.5 | 1 27.7 | 1 23.5 | 50 .5 | 110 .1 | 170 1.6 | |
| 51 | 1 27.8 | 1 28.0 | 1 23.8 | 51 .5 | 111 .1 | 171 1.6 | |
| 52 | 1 28.0 | 1 28.2 | 1 24.0 | 52 .5 | 112 .1 | 172 1.6 | |
| 53 | 1 28.3 | 1 28.5 | 1 24.2 | 53 .5 | 113 .1 | 173 1.6 | |
| 54 | 1 28.5 | 1 28.7 | 1 24.5 | 54 .5 | 114 .1 | 174 1.6 | |
| 55 | 1 28.8 | 1 29.0 | 1 24.7 | 55 .5 | 115 .1 | 175 1.6 | |
| 56 | 1 29.0 | 1 29.2 | 1 24.9 | 56 .5 | 116 .1 | 176 1.6 | |
| 57 | 1 29.3 | 1 29.5 | 1 25.2 | 57 .5 | 117 .1 | 177 1.6 | |
| 58 | 1 29.5 | 1 29.7 | 1 25.4 | 58 .5 | 118 .1 | 178 1.6 | |
| 59 | 1 29.8 | 1 30.0 | 1 25.7 | 59 .5 | 119 .1 | 179 1.6 | |
| 60 | 1 30.0 | 1 30.3 | 1 25.9 | 60 .6 | 120 .1 | 180 1.7 | |

0 h 6 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ° | Δ popr. | Δ popr. | Δ popr. | |
| | o ' | o ' | o ' | o ' | o ' | o ' | |
| 0 | 1 30.0 | 1 30.3 | 1 25.9 | 0 .0 | 60 .7 | 120 1.3 | |
| 1 | 1 30.3 | 1 30.5 | 1 26.1 | 1 .0 | 61 .7 | 121 1.3 | |
| 2 | 1 30.5 | 1 30.8 | 1 26.4 | 2 .0 | 62 .7 | 122 1.3 | |
| 3 | 1 30.8 | 1 31.0 | 1 26.6 | 3 .0 | 63 .7 | 123 1.3 | |
| 4 | 1 31.0 | 1 31.3 | 1 26.9 | 4 .0 | 64 .7 | 124 1.3 | |
| 5 | 1 31.3 | 1 31.5 | 1 27.1 | 5 .1 | 65 .7 | 125 1.4 | |
| 6 | 1 31.5 | 1 31.8 | 1 27.3 | 6 .1 | 66 .7 | 126 1.4 | |
| 7 | 1 31.8 | 1 32.0 | 1 27.6 | 7 .1 | 67 .7 | 127 1.4 | |
| 8 | 1 32.0 | 1 32.3 | 1 27.8 | 8 .1 | 68 .7 | 128 1.4 | |
| 9 | 1 32.3 | 1 32.5 | 1 28.0 | 9 .1 | 69 .7 | 129 1.4 | |
| 10 | 1 32.5 | 1 32.8 | 1 28.3 | 10 .1 | 70 .8 | 130 1.4 | |
| 11 | 1 32.8 | 1 33.0 | 1 28.5 | 11 .1 | 71 .8 | 131 1.4 | |
| 12 | 1 33.0 | 1 33.3 | 1 28.8 | 12 .1 | 72 .8 | 132 1.4 | |
| 13 | 1 33.3 | 1 33.5 | 1 29.0 | 13 .1 | 73 .8 | 133 1.4 | |
| 14 | 1 33.5 | 1 33.8 | 1 29.2 | 14 .2 | 74 .8 | 134 1.5 | |
| 15 | 1 33.8 | 1 34.0 | 1 29.5 | 15 .2 | 75 .8 | 135 1.5 | |
| 16 | 1 34.0 | 1 34.3 | 1 29.7 | 16 .2 | 76 .8 | 136 1.5 | |
| 17 | 1 34.3 | 1 34.5 | 1 30.0 | 17 .2 | 77 .8 | 137 1.5 | |
| 18 | 1 34.5 | 1 34.8 | 1 30.2 | 18 .2 | 78 .8 | 138 1.5 | |
| 19 | 1 34.8 | 1 35.0 | 1 30.4 | 19 .2 | 79 .9 | 139 1.5 | |
| 20 | 1 35.0 | 1 35.3 | 1 30.7 | 20 .2 | 80 .9 | 140 1.5 | |
| 21 | 1 35.3 | 1 35.5 | 1 30.9 | 21 .2 | 81 .9 | 141 1.5 | |
| 22 | 1 35.5 | 1 35.8 | 1 31.1 | 22 .2 | 82 .9 | 142 1.5 | |
| 23 | 1 35.8 | 1 36.0 | 1 31.4 | 23 .2 | 83 .9 | 143 1.5 | |
| 24 | 1 36.0 | 1 36.3 | 1 31.6 | 24 .3 | 84 .9 | 144 1.6 | |
| 25 | 1 36.3 | 1 36.5 | 1 31.9 | 25 .3 | 85 .9 | 145 1.6 | |
| 26 | 1 36.5 | 1 36.8 | 1 32.1 | 26 .3 | 86 .9 | 146 1.6 | |
| 27 | 1 36.8 | 1 37.0 | 1 32.3 | 27 .3 | 87 .9 | 147 1.6 | |
| 28 | 1 37.0 | 1 37.3 | 1 32.6 | 28 .3 | 88 .0 | 148 1.6 | |
| 29 | 1 37.3 | 1 37.5 | 1 32.8 | 29 .3 | 89 .0 | 149 1.6 | |
| 30 | 1 37.5 | 1 37.8 | 1 33.1 | 30 .3 | 90 1.0 | 150 1.6 | |
| 31 | 1 37.8 | 1 38.0 | 1 33.3 | 31 .3 | 91 1.0 | 151 1.6 | |
| 32 | 1 38.0 | 1 38.3 | 1 33.5 | 32 .3 | 92 1.0 | 152 1.6 | |
| 33 | 1 38.3 | 1 38.5 | 1 33.8 | 33 .4 | 93 1.0 | 153 1.7 | |
| 34 | 1 38.5 | 1 38.8 | 1 34.0 | 34 .4 | 94 1.0 | 154 1.7 | |
| 35 | 1 38.8 | 1 39.0 | 1 34.3 | 35 .4 | 95 1.0 | 155 1.7 | |
| 36 | 1 39.0 | 1 39.3 | 1 34.5 | 36 .4 | 96 1.0 | 156 1.7 | |
| 37 | 1 39.3 | 1 39.5 | 1 34.7 | 37 .4 | 97 1.1 | 157 1.7 | |
| 38 | 1 39.5 | 1 39.8 | 1 35.0 | 38 .4 | 98 1.1 | 158 1.7 | |
| 39 | 1 39.8 | 1 40.0 | 1 35.2 | 39 .4 | 99 1.1 | 159 1.7 | |
| 40 | 1 40.0 | 1 40.3 | 1 35.4 | 40 .4 | 100 1.1 | 160 1.7 | |
| 41 | 1 40.3 | 1 40.5 | 1 35.7 | 41 .4 | 101 1.1 | 161 1.7 | |
| 42 | 1 40.5 | 1 40.8 | 1 35.9 | 42 .5 | 102 1.1 | 162 1.8 | |
| 43 | 1 40.8 | 1 41.0 | 1 36.2 | 43 .5 | 103 1.1 | 163 1.8 | |
| 44 | 1 41.0 | 1 41.3 | 1 36.4 | 44 .5 | 104 1.1 | 164 1.8 | |
| 45 | 1 41.3 | 1 41.5 | 1 36.6 | 45 .5 | 105 1.1 | 165 1.8 | |
| 46 | 1 41.5 | 1 41.8 | 1 36.9 | 46 .5 | 106 1.1 | 166 1.8 | |
| 47 | 1 41.8 | 1 42.0 | 1 37.1 | 47 .5 | 107 1.2 | 167 1.8 | |
| 48 | 1 42.0 | 1 42.3 | 1 37.4 | 48 .5 | 108 1.2 | 168 1.8 | |
| 49 | 1 42.3 | 1 42.5 | 1 37.6 | 49 .5 | 109 1.2 | 169 1.8 | |
| 50 | 1 42.5 | 1 42.8 | 1 37.8 | 50 .5 | 110 1.2 | 170 1.8 | |
| 51 | 1 42.8 | 1 43.0 | 1 38.1 | 51 .6 | 111 1.2 | 171 1.9 | |
| 52 | 1 43.0 | 1 43.3 | 1 38.3 | 52 .6 | 112 1.2 | 172 1.9 | |
| 53 | 1 43.3 | 1 43.5 | 1 38.5 | 53 .6 | 113 1.2 | 173 1.9 | |
| 54 | 1 43.5 | 1 43.8 | 1 38.8 | 54 .6 | 114 1.2 | 174 1.9 | |
| 55 | 1 43.8 | 1 44.0 | 1 39.0 | 55 .6 | 115 1.2 | 175 1.9 | |
| 56 | 1 44.0 | 1 44.3 | 1 39.3 | 56 .6 | 116 1.3 | 176 1.9 | |
| 57 | 1 44.3 | 1 44.5 | 1 39.5 | 57 .6 | 117 1.3 | 177 1.9 | |
| 58 | 1 44.5 | 1 44.8 | 1 39.7 | 58 .6 | 118 1.3 | 178 1.9 | |
| 59 | 1 44.8 | 1 45.0 | 1 40.0 | 59 .6 | 119 1.3 | 179 1.9 | |
| 60 | 1 45.0 | 1 45.3 | 1 40.2 | 60 .7 | 120 1.3 | 180 2.0 | |

0 h 7 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ° | Δ popr. | Δ popr. | Δ popr. | |
| | o ' | o ' | o ' | o ' | o ' | o ' | |
| 0 | 1 45.0 | 1 45.3 | 1 40.2 | 0 .0 | 60 .8 | 120 1.5 | |
| 1 | 1 45.3 | 1 45.5 | 1 40.5 | 1 .0 | 61 .8 | 121 1.5 | |
| 2 | 1 45.5 | 1 45.8 | 1 40.7 | 2 .0 | 62 .8 | 122 1.5 | |
| 3 | 1 45.8 | 1 46.0 | 1 40.9 | 3 .0 | 63 .8 | 123 1.5 | |
| 4 | 1 46.0 | 1 46.3 | 1 41.2 | 4 .1 | 64 .8 | 124 1.6 | |
| 5 | 1 46.3 | 1 46.5 | 1 41.4 | 5 .1 | 65 .8 | 125 1.6 | |
| 6 | 1 46.5 | 1 46.8 | 1 41.6 | 6 .1 | 66 .8 | 126 1.6 | |
| 7 | 1 46.8 | 1 47.0 | 1 41.9 | 7 .1 | 67 .8 | 127 1.6 | |
| 8 | 1 47.0 | 1 47.3 | 1 42.1 | 8 .1 | 68 .9 | 128 1.6 | |
| 9 | 1 47.3 | 1 47.5 | 1 42.4 | 9 .1 | 69 .9 | 129 1.6 | |
| 10 | 1 47.5 | 1 47.8 | 1 42.6 | 10 .1 | 70 .9 | 130 1.6 | |
| 11 | 1 47.8 | 1 48.0 | 1 42.8 | 11 .1 | 71 .9 | 131 1.6 | |
| 12 | 1 48.0 | 1 48.3 | 1 43.1 | 12 .2 | 72 .9 | 132 1.7 | |
| 13 | 1 48.3 | 1 48.6 | 1 43.3 | 13 .2 | 73 .9 | 133 1.7 | |
| 14 | 1 48.5 | 1 48.8 | 1 43.6 | 14 .2 | 74 .9 | 134 1.7 | |
| 15 | 1 48.8 | 1 49.1 | 1 43.8 | 15 .2 | 75 .9 | 135 1.7 | |
| 16 | 1 49.0 | 1 49.3 | 1 44.0 | 16 .2 | 76 .9 | 136 1.7 | |
| 17 | 1 49.3 | 1 49.6 | 1 44.3 | 17 .2 | 77 .9 | 137 1.7 | |
| 18 | 1 49.5 | 1 49.8 | 1 44.5 | 18 .2 | 78 .9 | 138 1.7 | |
| 19 | 1 49.8 | 1 50.1 | 1 44.8 | 19 .2 | 79 .9 | 139 1.7 | |
| 20 | 1 50.0 | 1 50.3 | 1 45.0 | 20 .3 | 80 .9 | 140 1.8 | |
| 21 | 1 50.3 | 1 50.6 | 1 45.2 | 21 .3 | 81 .9 | 141 1.8 | |
| 22 | 1 50.5 | 1 50.8 | 1 45.5 | 22 .3 | 82 .9 | 142 1.8 | |
| 23 | 1 50.8 | 1 51.1 | 1 45.7 | 23 .3 | 83 .9 | 143 1.8 | |
| 24 | 1 51.0 | 1 51.3 | 1 45.9 | 24 .3 | 84 .9 | 144 1.8 | |
| 25 | 1 51.3 | 1 51.6 | 1 46.2 | 25 .3 | 85 .9 | 145 1.8 | |
| 26 | 1 51.5 | 1 51.8 | 1 46.4 | 26 .3 | 86 .9 | 146 1.8 | |
| 27 | 1 51.8 | 1 52.1 | 1 46.7 | 27 .3 | 87 .9 | 147 1.8 | |
| 28 | 1 52.0 | 1 52.3 | 1 46.9 | 28 .4 | 88 .9 | 148 1.9 | |
| 29 | 1 52.3 | 1 52.6 | 1 47.1 | 29 .4 | 89 .9 | 149 1.9 | |
| 30 | 1 52.5 | 1 52.8 | 1 47.4 | 30 .4 | 90 .9 | 150 1.9 | |
| 31 | 1 52.8 | 1 53.1 | 1 47.6 | 31 .4 | 91 .9 | 151 1.9 | |
| 32 | 1 53.0 | 1 53.3 | 1 47.9 | 32 .4 | 92 .9 | 152 1.9 | |
| 33 | 1 53.3 | 1 53.6 | 1 48.1 | 33 .4 | 93 .9 | 153 1.9 | |
| 34 | 1 53.5 | 1 53.8 | 1 48.3 | 34 .4 | 94 .9 | 154 1.9 | |
| 35 | 1 53.8 | 1 54.1 | 1 48.6 | 35 .4 | 95 .9 | 155 1.9 | |
| 36 | 1 54.0 | 1 54.3 | 1 48.8 | 36 .5 | 96 .9 | 156 2.0 | |
| 37 | 1 54.3 | 1 54.6 | 1 49.0 | 37 .5 | 97 .9 | 157 2.0 | |
| 38 | 1 54.5 | 1 54.8 | 1 49.3 | 38 .5 | 98 .9 | 158 2.0 | |
| 39 | 1 54.8 | 1 55.1 | 1 49.5 | 39 .5 | 99 .9 | 159 2.0 | |
| 40 | 1 55.0 | 1 55.3 | 1 49.8 | 40 .5 | 100 .9 | 160 2.0 | |
| 41 | 1 55.3 | 1 55.6 | 1 50.0 | 41 .5 | 101 .9 | 161 2.0 | |
| 42 | 1 55.5 | 1 55.8 | 1 50.2 | 42 .5 | 102 .9 | 162 2.0 | |
| 43 | 1 55.8 | 1 56.1 | 1 50.5 | 43 .5 | 103 .9 | 163 2.0 | |
| 44 | 1 56.0 | 1 56.3 | 1 50.7 | 44 .6 | 104 .9 | 164 2.1 | |
| 45 | 1 56.3 | 1 56.6 | 1 51.0 | 45 .6 | 105 .9 | 165 2.1 | |
| 46 | 1 56.5 | 1 56.8 | 1 51.2 | 46 .6 | 106 .9 | 166 2.1 | |
| 47 | 1 56.8 | 1 57.1 | 1 51.4 | 47 .6 | 107 .9 | 167 2.1 | |
| 48 | 1 57.0 | 1 57.3 | 1 51.7 | 48 .6 | 108 .9 | 168 2.1 | |
| 49 | 1 57.3 | 1 57.6 | 1 51.9 | 49 .6 | 109 .9 | 169 2.1 | |
| 50 | 1 57.5 | 1 57.8 | 1 52.1 | 50 .6 | 110 .9 | 170 2.1 | |
| 51 | 1 57.8 | 1 58.1 | 1 52.4 | 51 .6 | 111 .9 | 171 2.1 | |
| 52 | 1 58.0 | 1 58.3 | 1 52.6 | 52 .7 | 112 .9 | 172 2.2 | |
| 53 | 1 58.3 | 1 58.6 | 1 52.9 | 53 .7 | 113 .9 | 173 2.2 | |
| 54 | 1 58.5 | 1 58.8 | 1 53.1 | 54 .7 | 114 .9 | 174 2.2 | |
| 55 | 1 58.8 | 1 59.1 | 1 53.3 | 55 .7 | 115 .9 | 175 2.2 | |
| 56 | 1 59.0 | 1 59.3 | 1 53.6 | 56 .7 | 116 .9 | 176 2.2 | |
| 57 | 1 59.3 | 1 59.6 | 1 53.8 | 57 .7 | 117 .9 | 177 2.2 | |
| 58 | 1 59.5 | 1 59.8 | 1 54.1 | 58 .7 | 118 .9 | 178 2.2 | |
| 59 | 1 59.8 | 2 .0 | 1 54.3 | 59 .7 | 119 .9 | 179 2.2 | |
| 60 | 2 .0 | 2 .3 | 1 54.5 | 60 .8 | 120 .9 | 180 2.3 | |

0 h 8 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|------------|----|--------------------|---|----------------|------------|------------|------------|----|--------|--------|--------|-------|---------|---------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | | | | | | | |
| o | ' | o | ' | o | ' | o | o | ' | o | ' | o | ' | o | ' | o | ' | | | | |
| 0 | 2 .0 | 2 .3 | 1 54.5 | 0 .0 | 60 .9 | 120 1.7 | 0 | 2 15.0 | 2 15.4 | 2 8.9 | 0 .0 | 60 1.0 | 120 1.9 | 1 | 2 15.3 | 2 15.6 | 2 9.1 | 1 .0 | 61 1.0 | 121 1.9 |
| 1 | 2 .2 | 2 .6 | 1 54.8 | 1 .0 | 61 .9 | 121 1.7 | 1 | 2 15.5 | 2 15.9 | 2 9.3 | 2 .0 | 62 1.0 | 122 1.9 | 2 | 2 15.8 | 2 16.1 | 2 9.6 | 3 .0 | 63 1.0 | 123 1.9 |
| 2 | 2 .5 | 2 .8 | 1 55.0 | 2 .0 | 62 .9 | 122 1.7 | 2 | 2 16.0 | 2 16.4 | 2 9.8 | 4 .1 | 64 1.0 | 124 2.0 | 3 | 2 16.3 | 2 16.6 | 2 10.0 | 5 .1 | 65 1.0 | 125 2.0 |
| 3 | 2 .8 | 2 1.1 | 1 55.2 | 3 .0 | 63 .9 | 123 1.7 | 3 | 2 16.5 | 2 16.9 | 2 10.3 | 6 .1 | 66 1.0 | 126 2.0 | 4 | 2 16.8 | 2 17.1 | 2 10.5 | 7 .1 | 67 1.1 | 127 2.0 |
| 4 | 2 1.0 | 2 1.3 | 1 55.5 | 4 .1 | 64 .9 | 124 1.8 | 8 | 2 17.0 | 2 17.4 | 2 10.8 | 8 .1 | 68 1.1 | 128 2.0 | 5 | 2 17.3 | 2 17.6 | 2 11.0 | 9 .1 | 69 1.1 | 129 2.0 |
| 5 | 2 1.3 | 2 1.6 | 1 55.7 | 5 .1 | 65 .9 | 125 1.8 | 10 | 2 17.5 | 2 17.9 | 2 11.2 | 10 .2 | 70 1.1 | 130 2.1 | 6 | 2 1.5 | 2 1.8 | 1 56.0 | 6 .1 | 66 .9 | 126 1.8 |
| 6 | 2 1.5 | 2 1.8 | 1 56.0 | 6 .1 | 66 .9 | 126 1.8 | 11 | 2 17.8 | 2 18.1 | 2 11.5 | 11 .2 | 71 1.1 | 131 2.1 | 7 | 2 1.8 | 2 2.1 | 1 56.2 | 7 .1 | 67 1.9 | 127 1.8 |
| 7 | 2 1.8 | 2 2.1 | 1 56.2 | 7 .1 | 67 .9 | 127 1.8 | 12 | 2 18.0 | 2 18.4 | 2 11.7 | 12 .2 | 72 1.1 | 132 2.1 | 8 | 2 1.9 | 2 2.3 | 1 56.4 | 8 .1 | 68 1.0 | 128 1.8 |
| 8 | 2 2.0 | 2 2.3 | 1 56.4 | 8 .1 | 68 1.0 | 128 1.8 | 13 | 2 18.3 | 2 18.6 | 2 12.0 | 13 .2 | 73 1.2 | 133 2.1 | 9 | 2 2.3 | 2 2.6 | 1 56.7 | 9 .1 | 69 1.0 | 129 1.8 |
| 9 | 2 2.3 | 2 2.6 | 1 56.7 | 9 .1 | 69 1.0 | 129 1.8 | 14 | 2 18.5 | 2 18.9 | 2 12.2 | 14 .2 | 74 1.2 | 134 2.1 | 10 | 2 2.5 | 2 2.8 | 1 56.9 | 10 .1 | 70 1.0 | 130 1.8 |
| 10 | 2 2.5 | 2 2.8 | 1 56.9 | 10 .1 | 70 1.0 | 130 1.8 | 11 | 2 18.8 | 2 19.1 | 2 12.4 | 15 .2 | 75 1.2 | 135 2.1 | 12 | 2 2.8 | 2 3.1 | 1 57.2 | 11 .2 | 71 1.0 | 131 1.9 |
| 11 | 2 2.8 | 2 3.1 | 1 57.2 | 11 .2 | 71 1.0 | 131 1.9 | 13 | 2 19.0 | 2 19.4 | 2 12.7 | 16 .3 | 76 1.2 | 136 2.2 | 14 | 2 2.9 | 2 3.2 | 1 57.4 | 12 .2 | 72 1.0 | 132 1.9 |
| 12 | 2 3.0 | 2 3.3 | 1 57.4 | 12 .2 | 72 1.0 | 132 1.9 | 15 | 2 19.3 | 2 19.6 | 2 12.9 | 17 .3 | 77 1.2 | 137 2.2 | 13 | 2 3.3 | 2 3.6 | 1 57.6 | 13 .2 | 73 1.0 | 133 1.9 |
| 13 | 2 3.3 | 2 3.6 | 1 57.6 | 13 .2 | 73 1.0 | 133 1.9 | 16 | 2 19.5 | 2 19.9 | 2 13.1 | 18 .3 | 78 1.2 | 138 2.2 | 14 | 2 3.5 | 2 3.8 | 1 57.9 | 14 .2 | 74 1.2 | 134 2.1 |
| 14 | 2 3.5 | 2 3.8 | 1 57.9 | 14 .2 | 74 1.0 | 134 1.9 | 15 | 2 19.8 | 2 20.1 | 2 13.4 | 19 .3 | 79 1.3 | 139 2.2 | 16 | 2 3.8 | 2 4.1 | 1 58.1 | 15 .2 | 75 1.1 | 135 1.9 |
| 15 | 2 4.0 | 2 4.3 | 1 58.4 | 16 .2 | 76 1.1 | 136 1.9 | 17 | 2 19.9 | 2 20.2 | 2 13.7 | 20 .3 | 80 1.3 | 140 2.2 | 18 | 2 4.3 | 2 4.6 | 1 58.6 | 17 .2 | 77 1.1 | 137 1.9 |
| 16 | 2 4.2 | 2 4.5 | 1 58.6 | 17 .2 | 77 1.1 | 137 1.9 | 19 | 2 20.0 | 2 20.4 | 2 13.6 | 20 .3 | 80 1.3 | 140 2.2 | 20 | 2 5.0 | 2 5.3 | 1 59.3 | 20 .3 | 81 1.1 | 140 2.0 |
| 21 | 2 5.3 | 2 5.6 | 1 59.5 | 21 .3 | 81 1.1 | 141 2.0 | 21 | 2 20.3 | 2 20.6 | 2 13.9 | 21 .3 | 81 1.3 | 141 2.2 | 22 | 2 5.5 | 2 5.8 | 1 59.8 | 22 .3 | 82 1.2 | 142 2.0 |
| 22 | 2 5.5 | 2 5.8 | 1 59.8 | 22 .3 | 82 1.2 | 142 2.0 | 23 | 2 20.8 | 2 21.1 | 2 14.3 | 23 .0 | 83 1.3 | 143 2.3 | 24 | 2 5.8 | 2 6.1 | 2 0 .3 | 23 .3 | 84 1.2 | 144 2.3 |
| 23 | 2 5.8 | 2 6.1 | 2 0 .3 | 23 .3 | 84 1.2 | 144 2.0 | 25 | 2 21.3 | 2 21.6 | 2 14.8 | 25 .4 | 85 1.3 | 145 2.3 | 25 | 2 6.3 | 2 6.6 | 2 0 .5 | 25 .4 | 85 1.2 | 145 2.3 |
| 26 | 2 6.5 | 2 6.9 | 2 0 .7 | 26 .4 | 86 1.2 | 146 2.1 | 26 | 2 21.5 | 2 21.9 | 2 15.1 | 26 .4 | 86 1.4 | 146 2.3 | 27 | 2 6.8 | 2 7.1 | 2 0 .7 | 27 .4 | 87 1.4 | 147 2.3 |
| 27 | 2 6.8 | 2 7.1 | 2 0 .7 | 27 .4 | 87 1.2 | 147 2.1 | 28 | 2 22.0 | 2 22.4 | 2 15.5 | 28 .4 | 88 1.4 | 148 2.3 | 29 | 2 7.3 | 2 7.6 | 2 1 .5 | 29 .4 | 89 1.4 | 149 2.4 |
| 30 | 2 7.5 | 2 7.9 | 2 1 .7 | 30 .4 | 90 1.3 | 150 2.1 | 30 | 2 22.5 | 2 22.9 | 2 16.0 | 30 .5 | 90 1.4 | 150 2.4 | 31 | 2 7.8 | 2 8.1 | 2 1 .9 | 31 .4 | 91 1.3 | 151 2.4 |
| 31 | 2 7.8 | 2 8.1 | 2 1 .9 | 31 .4 | 91 1.3 | 151 2.1 | 32 | 2 23.0 | 2 23.4 | 2 16.5 | 32 .5 | 92 1.5 | 152 2.4 | 32 | 2 8.0 | 2 8.4 | 2 2 .2 | 32 .5 | 92 1.3 | 141 2.2 |
| 33 | 2 8.3 | 2 8.6 | 2 2 .4 | 33 .5 | 93 1.3 | 153 2.2 | 33 | 2 23.3 | 2 23.6 | 2 16.7 | 33 .5 | 93 1.5 | 153 2.4 | 34 | 2 8.5 | 2 8.9 | 2 2 .6 | 34 .5 | 94 1.3 | 154 2.4 |
| 35 | 2 8.8 | 2 9.1 | 2 2 .9 | 35 .5 | 95 1.3 | 155 2.2 | 35 | 2 23.8 | 2 24.1 | 2 17.2 | 35 .6 | 95 1.5 | 155 2.5 | 36 | 2 9.0 | 2 9.4 | 2 3 .1 | 36 .5 | 96 1.5 | 156 2.5 |
| 36 | 2 9.0 | 2 9.4 | 2 3 .1 | 36 .5 | 96 1.4 | 156 2.2 | 37 | 2 24.0 | 2 24.4 | 2 17.4 | 36 .6 | 96 1.5 | 156 2.5 | 37 | 2 9.3 | 2 9.6 | 2 3 .4 | 37 .5 | 97 1.5 | 157 2.5 |
| 38 | 2 9.5 | 2 9.9 | 2 3 .6 | 38 .5 | 98 1.4 | 158 2.2 | 38 | 2 24.4 | 2 24.9 | 2 17.9 | 38 .6 | 98 1.6 | 158 2.5 | 39 | 2 9.8 | 2 10.1 | 2 3 .8 | 39 .6 | 99 1.4 | 159 2.5 |
| 40 | 2 10.0 | 2 10.4 | 2 4 .1 | 40 .6 | 100 1.4 | 160 2.3 | 40 | 2 25.0 | 2 25.4 | 2 18.4 | 40 .6 | 100 1.6 | 160 2.5 | 41 | 2 10.3 | 2 10.6 | 2 4 .3 | 41 .6 | 101 1.6 | 161 2.5 |
| 42 | 2 10.5 | 2 10.9 | 2 4 .6 | 42 .6 | 102 1.4 | 162 2.3 | 42 | 2 25.5 | 2 25.9 | 2 18.9 | 42 .7 | 102 1.6 | 162 2.6 | 43 | 2 10.8 | 2 11.1 | 2 4 .8 | 43 .6 | 103 1.6 | 163 2.6 |
| 44 | 2 11.0 | 2 11.4 | 2 5 .0 | 44 .6 | 104 1.5 | 164 2.3 | 44 | 2 26.0 | 2 26.4 | 2 19.3 | 44 .7 | 104 1.6 | 164 2.6 | 45 | 2 11.3 | 2 11.6 | 2 5 .3 | 45 .6 | 105 1.7 | 165 2.6 |
| 46 | 2 11.5 | 2 11.9 | 2 5 .5 | 46 .7 | 106 1.5 | 166 2.4 | 46 | 2 26.3 | 2 26.7 | 2 19.6 | 45 .7 | 106 1.7 | 166 2.6 | 47 | 2 11.8 | 2 12.1 | 2 5 .7 | 47 .7 | 107 1.7 | 167 2.6 |
| 48 | 2 12.0 | 2 12.4 | 2 6 .0 | 48 .7 | 108 1.5 | 168 2.4 | 48 | 2 27.0 | 2 27.4 | 2 20.3 | 48 .8 | 108 1.7 | 168 2.7 | 49 | 2 12.3 | 2 12.6 | 2 6 .2 | 49 .7 | 109 1.5 | 169 2.7 |
| 50 | 2 12.5 | 2 12.9 | 2 6 .5 | 50 .7 | 110 1.6 | 170 2.4 | 50 | 2 27.5 | 2 27.9 | 2 20.8 | 50 .8 | 110 1.7 | 170 2.7 | 51 | 2 12.8 | 2 13.1 | 2 6 .7 | 51 .7 | 111 1.8 | 171 2.7 |
| 52 | 2 13.0 | 2 13.4 | 2 6 .9 | 52 .7 | 112 1.6 | 172 2.4 | 52 | 2 28.0 | 2 28.4 | 2 21.3 | 52 .8 | 112 1.8 | 172 2.7 | 53 | 2 13.3 | 2 13.6 | 2 7 .2 | 53 .8 | 113 1.8 | 173 2.7 |
| 54 | 2 13.5 | 2 13.9 | 2 7 .4 | 54 .8 | 114 1.6 | 174 2.5 | 54 | 2 28.5 | 2 28.9 | 2 21.7 | 54 .9 | 114 1.8 | 174 2.8 | 55 | 2 13.8 | 2 14.1 | 2 7 .7 | 55 .8 | 115 1.8 | 175 2.8 |
| 56 | 2 14.0 | 2 14.4 | 2 7 .9 | 56 .8 | 116 1.6 | 176 2.5 | 56 | 2 29.0 | 2 29.4 | 2 22.2 | 56 .9 | 116 1.8 | 176 2.8 | 57 | 2 14.3 | 2 14.6 | 2 8 .1 | 57 .8 | 117 1.9 | 177 2.8 |
| 58 | 2 14.5 | 2 14.9 | 2 8 .4 | 58 .8 | 118 1.7 | 178 2.5 | 58 | 2 29.5 | 2 29.9 | 2 22.7 | 58 .9 | 118 1.9 | 178 2.8 | 59 | 2 14.8 | 2 15.1 | 2 8 .6 | 59 .8 | 119 1.9 | 179 2.8 |
| 60 | 2 15.0 | 2 15.4 | 2 8 .9 | 60 .9 | 120 1.7 | 180 2.6 | 60 | 2 30.0 | 2 30.4 | 2 23.2 | 60 1.0 | 120 1.9 | 180 2.9 | | | | | | | |

0 h 9 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|------------|---|--------------------|---|----------------|------------|------------|------------|---|--------|--------|--------|------|--------|---------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | | | | | | | |
| o | ' | o | ' | o | ' | o | o | ' | o | ' | o | ' | o | ' | o | ' | | | | |
| 0 | 2 15.0 | 2 15.4 | 2 8.9 | 0 .0 | 60 .9 | 120 1.7 | 1 | 2 15.3 | 2 15.6 | 2 9.1 | 1 .0 | 61 1.0 | 121 1.9 | 2 | 2 15.5 | 2 15.9 | 2 9.3 | 2 .0 | 62 1.0 | 122 1.9 |
| 1 | 2 15.3 | 2 15.6 | 2 9.1 | 1 .0 | 61 .9 | 121 1.7 | 3 | 2 15.8 | 2 16.1 | 2 9.6 | 3 .0 | 63 1.0 | 123 1.9 | 4 | 2 16.0 | 2 16.4 | 2 9.8 | 4 .1 | 64 1.0 | 124 2.0 |
| 2 | 2 15.5 | 2 15.9 | 2 9.3 | 1 .0 | 62 .9 | 122 1.8 | 5 | 2 16.3 | 2 16.6 | 2 10.0 | 5 .1 | 65 1.0 | 125 2.0 | 6 | 2 16.5 | 2 16.9 | 2 10.3 | 6 .1 | 66 1.0 | 126 2.0 |
| 3 | 2 15.8 | 2 16.1 | 2 9.6 | 1 .1 | 63 .9 | 123 1.8 | 7 | 2 16.8 | 2 17.1 | 2 10.5 | 7 .1 | 67 1.1 | 127 2.0 | 8 | 2 17.0 | 2 17.4 | 2 10.8 | 8 .1 | 68 1.1 | 128 2.0 |
| 4 | 2 16.0 | 2 16.4 | 2 9.8 | 1 .1 | 64 .9 | 124 1.8 | 9 | 2 17.3 | 2 17.6 | 2 | | | | | | | | | | |

0 h 10 min

0 h 11 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 2 30.0 | 2 30.4 | 2 23.2 | 0 .0 | 60 1.1 | 120 2.1 | |
| 1 | 2 30.3 | 2 30.7 | 2 23.4 | 1 .0 | 61 1.1 | 121 2.1 | |
| 2 | 2 30.5 | 2 30.9 | 2 23.6 | 2 .0 | 62 1.1 | 122 2.1 | |
| 3 | 2 30.8 | 2 31.2 | 2 23.9 | 3 .1 | 63 1.1 | 123 2.2 | |
| 4 | 2 31.0 | 2 31.4 | 2 24.1 | 4 .1 | 64 1.1 | 124 2.2 | |
| 5 | 2 31.3 | 2 31.7 | 2 24.4 | 5 .1 | 65 1.1 | 125 2.2 | |
| 6 | 2 31.5 | 2 31.9 | 2 24.6 | 6 .1 | 66 1.2 | 126 2.2 | |
| 7 | 2 31.8 | 2 32.2 | 2 24.8 | 7 .1 | 67 1.2 | 127 2.2 | |
| 8 | 2 32.0 | 2 32.4 | 2 25.1 | 8 .1 | 68 1.2 | 128 2.2 | |
| 9 | 2 32.3 | 2 32.7 | 2 25.3 | 9 .2 | 69 1.2 | 129 2.3 | |
| 10 | 2 32.5 | 2 32.9 | 2 25.6 | 10 .2 | 70 1.2 | 130 2.3 | |
| 11 | 2 32.8 | 2 33.2 | 2 25.8 | 11 .2 | 71 1.2 | 131 2.3 | |
| 12 | 2 33.0 | 2 33.4 | 2 26.0 | 12 .2 | 72 1.3 | 132 2.3 | |
| 13 | 2 33.3 | 2 33.7 | 2 26.3 | 13 .2 | 73 1.3 | 133 2.3 | |
| 14 | 2 33.5 | 2 33.9 | 2 26.5 | 14 .2 | 74 1.3 | 134 2.3 | |
| 15 | 2 33.8 | 2 34.2 | 2 26.7 | 15 .3 | 75 1.3 | 135 2.4 | |
| 16 | 2 34.0 | 2 34.4 | 2 27.0 | 16 .3 | 76 1.3 | 136 2.4 | |
| 17 | 2 34.3 | 2 34.7 | 2 27.2 | 17 .3 | 77 1.3 | 137 2.4 | |
| 18 | 2 34.5 | 2 34.9 | 2 27.5 | 18 .3 | 78 1.4 | 138 2.4 | |
| 19 | 2 34.8 | 2 35.2 | 2 27.7 | 19 .3 | 79 1.4 | 139 2.4 | |
| 20 | 2 35.0 | 2 35.4 | 2 27.9 | 20 .4 | 80 1.4 | 140 2.5 | |
| 21 | 2 35.3 | 2 35.7 | 2 28.2 | 21 .4 | 81 1.4 | 141 2.5 | |
| 22 | 2 35.5 | 2 35.9 | 2 28.4 | 22 .4 | 82 1.4 | 142 2.5 | |
| 23 | 2 35.8 | 2 36.2 | 2 28.7 | 23 .4 | 83 1.5 | 143 2.5 | |
| 24 | 2 36.0 | 2 36.4 | 2 28.9 | 24 .4 | 84 1.5 | 144 2.5 | |
| 25 | 2 36.3 | 2 36.7 | 2 29.1 | 25 .4 | 85 1.5 | 145 2.5 | |
| 26 | 2 36.5 | 2 36.9 | 2 29.4 | 26 .5 | 86 1.5 | 146 2.6 | |
| 27 | 2 36.8 | 2 37.2 | 2 29.6 | 27 .5 | 87 1.5 | 147 2.6 | |
| 28 | 2 37.0 | 2 37.4 | 2 29.8 | 28 .5 | 88 1.5 | 148 2.6 | |
| 29 | 2 37.3 | 2 37.7 | 2 30.1 | 29 .5 | 89 1.6 | 149 2.6 | |
| 30 | 2 37.5 | 2 37.9 | 2 30.3 | 30 .5 | 90 1.6 | 150 2.6 | |
| 31 | 2 37.8 | 2 38.2 | 2 30.6 | 31 .5 | 91 1.6 | 151 2.6 | |
| 32 | 2 38.0 | 2 38.4 | 2 30.8 | 32 .6 | 92 1.6 | 152 2.7 | |
| 33 | 2 38.3 | 2 38.7 | 2 31.0 | 33 .6 | 93 1.6 | 153 2.7 | |
| 34 | 2 38.5 | 2 38.9 | 2 31.3 | 34 .6 | 94 1.6 | 154 2.7 | |
| 35 | 2 38.8 | 2 39.2 | 2 31.5 | 35 .6 | 95 1.7 | 155 2.7 | |
| 36 | 2 39.0 | 2 39.4 | 2 31.8 | 36 .6 | 96 1.7 | 156 2.7 | |
| 37 | 2 39.3 | 2 39.7 | 2 32.0 | 37 .6 | 97 1.7 | 157 2.7 | |
| 38 | 2 39.5 | 2 39.9 | 2 32.2 | 38 .7 | 98 1.7 | 158 2.8 | |
| 39 | 2 39.8 | 2 40.2 | 2 32.5 | 39 .7 | 99 1.7 | 159 2.8 | |
| 40 | 2 40.0 | 2 40.4 | 2 32.7 | 40 .7 | 100 1.8 | 160 2.8 | |
| 41 | 2 40.3 | 2 40.7 | 2 32.9 | 41 .7 | 101 1.8 | 161 2.8 | |
| 42 | 2 40.5 | 2 40.9 | 2 33.2 | 42 .7 | 102 1.8 | 162 2.8 | |
| 43 | 2 40.8 | 2 41.2 | 2 33.4 | 43 .8 | 103 1.8 | 163 2.9 | |
| 44 | 2 41.0 | 2 41.4 | 2 33.7 | 44 .8 | 104 1.8 | 164 2.9 | |
| 45 | 2 41.3 | 2 41.7 | 2 33.9 | 45 .8 | 105 1.8 | 165 2.9 | |
| 46 | 2 41.5 | 2 41.9 | 2 34.1 | 46 .8 | 106 1.9 | 166 2.9 | |
| 47 | 2 41.8 | 2 42.2 | 2 34.4 | 47 .8 | 107 1.9 | 167 2.9 | |
| 48 | 2 42.0 | 2 42.5 | 2 34.6 | 48 .8 | 108 1.9 | 168 2.9 | |
| 49 | 2 42.3 | 2 42.7 | 2 34.9 | 49 .9 | 109 1.9 | 169 3.0 | |
| 50 | 2 42.5 | 2 43.0 | 2 35.1 | 50 .9 | 110 1.9 | 170 3.0 | |
| 51 | 2 42.8 | 2 43.2 | 2 35.3 | 51 .9 | 111 1.9 | 171 3.0 | |
| 52 | 2 43.0 | 2 43.5 | 2 35.6 | 52 .9 | 112 2.0 | 172 3.0 | |
| 53 | 2 43.3 | 2 43.7 | 2 35.8 | 53 .9 | 113 2.0 | 173 3.0 | |
| 54 | 2 43.5 | 2 44.0 | 2 36.1 | 54 .9 | 114 2.0 | 174 3.0 | |
| 55 | 2 43.8 | 2 44.2 | 2 36.3 | 55 1.0 | 115 2.0 | 175 3.1 | |
| 56 | 2 44.0 | 2 44.5 | 2 36.5 | 56 1.0 | 116 2.0 | 176 3.1 | |
| 57 | 2 44.3 | 2 44.7 | 2 36.8 | 57 1.0 | 117 2.0 | 177 3.1 | |
| 58 | 2 44.5 | 2 45.0 | 2 37.0 | 58 1.0 | 118 2.1 | 178 3.1 | |
| 59 | 2 44.8 | 2 45.2 | 2 37.2 | 59 1.0 | 119 2.1 | 179 3.1 | |
| 60 | 2 45.0 | 2 45.5 | 2 37.5 | 60 1.1 | 120 2.1 | 180 3.2 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 2 45.0 | 2 45.5 | 2 37.5 | 0 .0 | 60 1.2 | 120 2.3 | |
| 1 | 2 45.3 | 2 45.7 | 2 37.7 | 1 .0 | 61 1.2 | 121 2.3 | |
| 2 | 2 45.5 | 2 46.0 | 2 38.0 | 2 .0 | 62 1.2 | 122 2.3 | |
| 3 | 2 45.8 | 2 46.2 | 2 38.2 | 3 .1 | 63 1.2 | 123 2.4 | |
| 4 | 2 46.0 | 2 46.5 | 2 38.4 | 4 .1 | 64 1.2 | 124 2.4 | |
| 5 | 2 46.3 | 2 46.7 | 2 38.7 | 5 .1 | 65 1.2 | 125 2.4 | |
| 6 | 2 46.5 | 2 47.0 | 2 38.9 | 6 .1 | 66 1.3 | 126 2.4 | |
| 7 | 2 46.8 | 2 47.2 | 2 39.2 | 7 .1 | 67 1.3 | 127 2.4 | |
| 8 | 2 47.0 | 2 47.5 | 2 39.4 | 8 .2 | 68 1.3 | 128 2.5 | |
| 9 | 2 47.3 | 2 47.7 | 2 39.6 | 9 .2 | 69 1.3 | 129 2.5 | |
| 10 | 2 47.5 | 2 48.0 | 2 39.9 | 10 .2 | 70 1.3 | 130 2.5 | |
| 11 | 2 47.8 | 2 48.2 | 2 40.1 | 11 .2 | 71 1.4 | 131 2.5 | |
| 12 | 2 48.0 | 2 48.5 | 2 40.3 | 12 .2 | 72 1.4 | 132 2.5 | |
| 13 | 2 48.3 | 2 48.7 | 2 40.6 | 13 .2 | 73 1.4 | 133 2.5 | |
| 14 | 2 48.5 | 2 49.0 | 2 40.8 | 14 .3 | 74 1.4 | 134 2.6 | |
| 15 | 2 48.8 | 2 49.2 | 2 41.1 | 15 .3 | 75 1.4 | 135 2.6 | |
| 16 | 2 49.0 | 2 49.5 | 2 41.3 | 16 .3 | 76 1.5 | 136 2.6 | |
| 17 | 2 49.3 | 2 49.7 | 2 41.5 | 17 .3 | 77 1.5 | 137 2.6 | |
| 18 | 2 49.5 | 2 50.0 | 2 41.8 | 18 .3 | 78 1.5 | 138 2.6 | |
| 19 | 2 49.8 | 2 50.2 | 2 42.0 | 19 .4 | 79 1.5 | 139 2.7 | |
| 20 | 2 50.0 | 2 50.5 | 2 42.3 | 20 .4 | 80 1.5 | 140 2.7 | |
| 21 | 2 50.3 | 2 50.7 | 2 42.5 | 21 .4 | 81 1.6 | 141 2.7 | |
| 22 | 2 50.5 | 2 51.0 | 2 42.7 | 22 .4 | 82 1.6 | 142 2.7 | |
| 23 | 2 50.8 | 2 51.2 | 2 43.0 | 23 .4 | 83 1.6 | 143 2.7 | |
| 24 | 2 51.0 | 2 51.5 | 2 43.2 | 24 .5 | 84 1.6 | 144 2.8 | |
| 25 | 2 51.3 | 2 51.7 | 2 43.4 | 25 .5 | 85 1.6 | 145 2.8 | |
| 26 | 2 51.5 | 2 52.0 | 2 43.7 | 26 .5 | 86 1.6 | 146 2.8 | |
| 27 | 2 51.8 | 2 52.2 | 2 43.9 | 27 .5 | 87 1.7 | 147 2.8 | |
| 28 | 2 52.0 | 2 52.5 | 2 44.2 | 28 .5 | 88 1.7 | 148 2.8 | |
| 29 | 2 52.3 | 2 52.7 | 2 44.4 | 29 .6 | 89 1.7 | 149 2.9 | |
| 30 | 2 52.5 | 2 53.0 | 2 44.6 | 30 .6 | 90 1.7 | 150 2.9 | |
| 31 | 2 52.8 | 2 53.2 | 2 44.9 | 31 .6 | 91 1.7 | 151 2.9 | |
| 32 | 2 53.0 | 2 53.5 | 2 45.1 | 32 .6 | 92 1.8 | 152 2.9 | |
| 33 | 2 53.3 | 2 53.7 | 2 45.4 | 33 .6 | 93 1.8 | 153 2.9 | |
| 34 | 2 53.5 | 2 54.0 | 2 45.6 | 34 .7 | 94 1.8 | 154 3.0 | |
| 35 | 2 53.8 | 2 54.2 | 2 45.8 | 35 .7 | 95 1.8 | 155 3.0 | |
| 36 | 2 54.0 | 2 54.5 | 2 46.1 | 36 .7 | 96 1.8 | 156 3.0 | |
| 37 | 2 54.3 | 2 54.7 | 2 46.3 | 37 .7 | 97 1.9 | 157 3.0 | |
| 38 | 2 54.5 | 2 55.0 | 2 46.6 | 38 .7 | 98 1.9 | 158 3.0 | |
| 39 | 2 54.8 | 2 55.2 | 2 46.8 | 39 .7 | 99 1.9 | 159 3.0 | |
| 40 | 2 55.0 | 2 55.5 | 2 47.0 | 40 .8 | 100 1.9 | 160 3.1 | |
| 41 | 2 55.3 | 2 55.7 | 2 47.3 | 41 .8 | 101 1.9 | 161 3.1 | |
| 42 | 2 55.5 | 2 56.0 | 2 47.5 | 42 .8 | 102 2.0 | 162 3.1 | |
| 43 | 2 55.8 | 2 56.2 | 2 47.7 | 43 .8 | 103 2.0 | 163 3.1 | |
| 44 | 2 56.0 | 2 56.5 | 2 48.0 | 44 .8 | 104 2.0 | 164 3.1 | |
| 45 | 2 56.3 | 2 56.7 | 2 48.2 | 45 .9 | 105 2.0 | 165 3.2 | |
| 46 | 2 56.5 | 2 57.0 | 2 48.5 | 46 .9 | 106 2.0 | 166 3.2 | |
| 47 | 2 56.8 | 2 57.2 | 2 48.7 | 47 .9 | 107 2.1 | 167 3.2 | |
| 48 | 2 57.0 | 2 57.5 | 2 48.9 | 48 .9 | 108 2.1 | 168 3.2 | |
| 49 | 2 57.3 | 2 57.7 | 2 49.2 | 49 .9 | 109 2.1 | 169 3.2 | |
| 50 | 2 57.5 | 2 58.0 | 2 49.4 | 50 1.0 | 110 2.1 | 170 3.3 | |
| 51 | 2 57.8 | 2 58.2 | 2 49.7 | 51 1.0 | 111 2.1 | 171 3.3 | |
| 52 | 2 58.0 | 2 58.5 | 2 49.9 | 52 1.0 | 112 2.1 | 172 3.3 | |
| 53 | 2 58.3 | 2 58.7 | 2 50.1 | 53 1.0 | 113 2.2 | 173 3.3 | |
| 54 | 2 58.5 | 2 59.0 | 2 50.4 | 54 1.0 | 114 2.2 | 174 3.3 | |
| 55 | 2 58.8 | 2 59.2 | 2 50.6 | 55 1.1 | 115 2.2 | 175 3.4 | |
| 56 | 2 59.0 | 2 59.5 | 2 50.8 | 56 1.1 | 116 2.2 | 176 3.4 | |
| 57 | 2 59.3 | 2 59.7 | 2 51.1 | 57 1.1 | 117 2.2 | 177 3.4 | |
| 58 | 2 59.5 | 2 60.0 | 2 51.3 | 58 1.1 | 118 2.3 | 178 3.4 | |
| 59 | 2 59.8 | 2 59.8 | 2 51.6 | 59 1.1 | 119 2.3 | 179 3.4 | |
| 60 | 3 .0 | 3 .5 | 2 51.8 | 60 1.2 | 120 2.3 | 180 3.5 | |

0 h 12 min

0 h 13 min

| POPRAVKA ČASOVNOG UGLA | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o |
| 0 | 3 .0 | 3 .5 | 2 51.8 | 0 .0 | 60 1.3 | 120 2.5 | 0 3 15.0 | 3 15.5 | 3 6.1 | 0 .0 | 60 1.4 | 120 2.7 |
| 1 | 3 .3 | 3 .8 | 2 52.0 | 1 .0 | 61 1.3 | 121 2.5 | 1 3 15.3 | 3 15.8 | 3 6.4 | 1 .0 | 61 1.4 | 121 2.7 |
| 2 | 3 .5 | 3 1.0 | 2 52.3 | 2 .0 | 62 1.3 | 122 2.5 | 2 3 15.5 | 3 16.0 | 3 6.6 | 2 .0 | 62 1.4 | 122 2.7 |
| 3 | 3 .8 | 3 1.3 | 2 52.5 | 3 .1 | 63 1.3 | 123 2.6 | 3 3 15.8 | 3 16.3 | 3 6.8 | 3 .1 | 63 1.4 | 123 2.8 |
| 4 | 3 1.0 | 3 1.5 | 2 52.8 | 4 .1 | 64 1.3 | 124 2.6 | 4 3 16.0 | 3 16.5 | 3 7.1 | 4 .1 | 64 1.4 | 124 2.8 |
| 5 | 3 1.3 | 3 1.8 | 2 53.0 | 5 .1 | 65 1.4 | 125 2.6 | 5 3 16.3 | 3 16.8 | 3 7.3 | 5 .1 | 65 1.5 | 125 2.8 |
| 6 | 3 1.5 | 3 2.0 | 2 53.2 | 6 .1 | 66 1.4 | 126 2.6 | 6 3 16.5 | 3 17.0 | 3 7.5 | 6 .1 | 66 1.5 | 126 2.8 |
| 7 | 3 1.8 | 3 2.3 | 2 53.5 | 7 .1 | 67 1.4 | 127 2.6 | 7 3 16.8 | 3 17.3 | 3 7.8 | 7 .2 | 67 1.5 | 127 2.9 |
| 8 | 3 2.0 | 3 2.5 | 2 53.7 | 8 .2 | 68 1.4 | 128 2.7 | 8 3 17.0 | 3 17.5 | 3 8.0 | 8 .2 | 68 1.5 | 128 2.9 |
| 9 | 3 2.3 | 3 2.8 | 2 53.9 | 9 .2 | 69 1.4 | 129 2.7 | 9 3 17.3 | 3 17.8 | 3 8.3 | 9 .2 | 69 1.6 | 129 2.9 |
| 10 | 3 2.5 | 3 3.0 | 2 54.2 | 10 .2 | 70 1.5 | 130 2.7 | 10 3 17.5 | 3 18.0 | 3 8.5 | 10 .2 | 70 1.6 | 130 2.9 |
| 11 | 3 2.8 | 3 3.3 | 2 54.4 | 11 .2 | 71 1.5 | 131 2.7 | 11 3 17.8 | 3 18.3 | 3 8.7 | 11 .2 | 71 1.6 | 131 2.9 |
| 12 | 3 3.0 | 3 3.5 | 2 54.7 | 12 .3 | 72 1.5 | 132 2.8 | 12 3 18.0 | 3 18.6 | 3 9.0 | 12 .3 | 72 1.6 | 132 3.0 |
| 13 | 3 3.3 | 3 3.8 | 2 54.9 | 13 .3 | 73 1.5 | 133 2.8 | 13 3 18.3 | 3 18.8 | 3 9.2 | 13 .3 | 73 1.6 | 133 3.0 |
| 14 | 3 3.5 | 3 4.0 | 2 55.1 | 14 .3 | 74 1.5 | 134 2.8 | 14 3 18.5 | 3 19.1 | 3 9.5 | 14 .3 | 74 1.7 | 134 3.0 |
| 15 | 3 3.8 | 3 4.3 | 2 55.4 | 15 .3 | 75 1.6 | 135 2.8 | 15 3 18.8 | 3 19.3 | 3 9.7 | 15 .3 | 75 1.7 | 135 3.0 |
| 16 | 3 4.0 | 3 4.5 | 2 55.6 | 16 .3 | 76 1.6 | 136 2.8 | 16 3 19.0 | 3 19.6 | 3 9.9 | 16 .4 | 76 1.7 | 136 3.1 |
| 17 | 3 4.3 | 3 4.8 | 2 55.9 | 17 .4 | 77 1.6 | 137 2.9 | 17 3 19.3 | 3 19.8 | 3 10.2 | 17 .4 | 77 1.7 | 137 3.1 |
| 18 | 3 4.5 | 3 5.0 | 2 56.1 | 18 .4 | 78 1.6 | 138 2.9 | 18 3 19.5 | 3 20.1 | 3 10.4 | 18 .4 | 78 1.8 | 138 3.1 |
| 19 | 3 4.8 | 3 5.3 | 2 56.3 | 19 .4 | 79 1.6 | 139 2.9 | 19 3 19.8 | 3 20.3 | 3 10.7 | 19 .4 | 79 1.8 | 139 3.1 |
| 20 | 3 5.0 | 3 5.5 | 2 56.6 | 20 .4 | 80 1.7 | 140 2.9 | 20 3 20.0 | 3 20.6 | 3 10.9 | 20 .5 | 80 1.8 | 140 3.2 |
| 21 | 3 5.3 | 3 5.8 | 2 56.8 | 21 .4 | 81 1.7 | 141 2.9 | 21 3 20.3 | 3 20.8 | 3 11.1 | 21 .5 | 81 1.8 | 141 3.2 |
| 22 | 3 5.5 | 3 6.0 | 2 57.0 | 22 .5 | 82 1.7 | 142 3.0 | 22 3 20.5 | 3 21.1 | 3 11.4 | 22 .5 | 82 1.8 | 142 3.2 |
| 23 | 3 5.8 | 3 6.3 | 2 57.3 | 23 .5 | 83 1.7 | 143 3.0 | 23 3 20.8 | 3 21.3 | 3 11.6 | 23 .5 | 83 1.9 | 143 3.2 |
| 24 | 3 6.0 | 3 6.5 | 2 57.5 | 24 .5 | 84 1.8 | 144 3.0 | 24 3 21.0 | 3 21.6 | 3 11.8 | 24 .5 | 84 1.9 | 144 3.2 |
| 25 | 3 6.3 | 3 6.8 | 2 57.8 | 25 .5 | 85 1.8 | 145 3.0 | 25 3 21.3 | 3 21.8 | 3 12.1 | 25 .6 | 85 1.9 | 145 3.3 |
| 26 | 3 6.5 | 3 7.0 | 2 58.0 | 26 .5 | 86 1.8 | 146 3.0 | 26 3 21.5 | 3 22.1 | 3 12.3 | 26 .6 | 86 1.9 | 146 3.3 |
| 27 | 3 6.8 | 3 7.3 | 2 58.2 | 27 .6 | 87 1.8 | 147 3.1 | 27 3 21.8 | 3 22.3 | 3 12.6 | 27 .6 | 87 2.0 | 147 3.3 |
| 28 | 3 7.0 | 3 7.5 | 2 58.5 | 28 .6 | 88 1.8 | 148 3.1 | 28 3 22.0 | 3 22.6 | 3 12.8 | 28 .6 | 88 2.0 | 148 3.3 |
| 29 | 3 7.3 | 3 7.8 | 2 58.7 | 29 .6 | 89 1.9 | 149 3.1 | 29 3 22.3 | 3 22.8 | 3 13.0 | 29 .7 | 89 2.0 | 149 3.4 |
| 30 | 3 7.5 | 3 8.0 | 2 59.0 | 30 .6 | 90 1.9 | 150 3.1 | 30 3 22.5 | 3 23.1 | 3 13.3 | 30 .7 | 90 2.0 | 150 3.4 |
| 31 | 3 7.8 | 3 8.3 | 2 59.2 | 31 .6 | 91 1.9 | 151 3.1 | 31 3 22.8 | 3 23.3 | 3 13.5 | 31 .7 | 91 2.0 | 151 3.4 |
| 32 | 3 8.0 | 3 8.5 | 2 59.4 | 32 .7 | 92 1.9 | 152 3.2 | 32 3 23.0 | 3 23.6 | 3 13.8 | 32 .7 | 92 2.1 | 152 3.4 |
| 33 | 3 8.3 | 3 8.8 | 2 59.7 | 33 .7 | 93 1.9 | 153 3.2 | 33 3 23.3 | 3 23.8 | 3 14.0 | 33 .7 | 93 2.1 | 153 3.4 |
| 34 | 3 8.5 | 3 9.0 | 2 59.9 | 34 .7 | 94 2.0 | 154 3.2 | 34 3 23.5 | 3 24.1 | 3 14.2 | 34 .8 | 94 2.1 | 154 3.5 |
| 35 | 3 8.8 | 3 9.3 | 3 .2 | 35 .7 | 95 2.0 | 155 3.2 | 35 3 23.8 | 3 24.3 | 3 14.5 | 35 .8 | 95 2.1 | 155 3.5 |
| 36 | 3 9.0 | 3 9.5 | 3 .4 | 36 .8 | 96 2.0 | 156 3.3 | 36 3 24.0 | 3 24.6 | 3 14.7 | 36 .8 | 96 2.2 | 156 3.5 |
| 37 | 3 9.3 | 3 9.8 | 3 .6 | 37 .8 | 97 2.0 | 157 3.3 | 37 3 24.3 | 3 24.8 | 3 14.9 | 37 .8 | 97 2.2 | 157 3.5 |
| 38 | 3 9.5 | 3 10.0 | 3 .9 | 38 .8 | 98 2.0 | 158 3.3 | 38 3 24.5 | 3 25.1 | 3 15.2 | 38 .9 | 98 2.2 | 158 3.6 |
| 39 | 3 9.8 | 3 10.3 | 3 .1 | 39 .8 | 99 2.1 | 159 3.3 | 39 3 24.8 | 3 25.3 | 3 15.4 | 39 .9 | 99 2.2 | 159 3.6 |
| 40 | 3 10.0 | 3 10.5 | 3 1.3 | 40 .8 | 100 2.1 | 160 3.3 | 40 3 25.0 | 3 25.6 | 3 15.7 | 40 .9 | 100 2.3 | 160 3.6 |
| 41 | 3 10.3 | 3 10.8 | 3 1.6 | 41 .9 | 101 2.1 | 161 3.4 | 41 3 25.3 | 3 25.8 | 3 15.9 | 41 .9 | 101 2.3 | 161 3.6 |
| 42 | 3 10.5 | 3 11.0 | 3 1.8 | 42 .9 | 102 2.1 | 162 3.4 | 42 3 25.5 | 3 26.1 | 3 16.1 | 42 .9 | 102 2.3 | 162 3.6 |
| 43 | 3 10.8 | 3 11.3 | 3 2.1 | 43 .9 | 103 2.1 | 163 3.4 | 43 3 25.8 | 3 26.3 | 3 16.4 | 43 .1 | 103 2.3 | 163 3.7 |
| 44 | 3 11.0 | 3 11.5 | 3 2.3 | 44 .9 | 104 2.2 | 164 3.4 | 44 3 26.0 | 3 26.6 | 3 16.6 | 44 .1 | 104 2.3 | 164 3.7 |
| 45 | 3 11.3 | 3 11.8 | 3 2.5 | 45 .9 | 105 2.2 | 165 3.4 | 45 3 26.3 | 3 26.8 | 3 16.9 | 45 .1 | 105 2.4 | 165 3.7 |
| 46 | 3 11.5 | 3 12.0 | 3 2.8 | 46 .0 | 106 2.2 | 166 3.5 | 46 3 26.5 | 3 27.1 | 3 17.1 | 46 .1 | 106 2.4 | 166 3.7 |
| 47 | 3 11.8 | 3 12.3 | 3 3.0 | 47 .0 | 107 2.2 | 167 3.5 | 47 3 26.8 | 3 27.3 | 3 17.3 | 47 .1 | 107 2.4 | 167 3.8 |
| 48 | 3 12.0 | 3 12.5 | 3 3.3 | 48 .1 | 108 2.3 | 168 3.5 | 48 3 27.0 | 3 27.6 | 3 17.6 | 48 .1 | 108 2.4 | 168 3.8 |
| 49 | 3 12.3 | 3 12.8 | 3 3.5 | 49 .1 | 109 2.3 | 169 3.5 | 49 3 27.3 | 3 27.8 | 3 17.8 | 49 .1 | 109 2.5 | 169 3.8 |
| 50 | 3 12.5 | 3 13.0 | 3 3.7 | 50 .1 | 110 2.3 | 170 3.5 | 50 3 27.5 | 3 28.1 | 3 18.0 | 50 .1 | 110 2.5 | 170 3.8 |
| 51 | 3 12.8 | 3 13.3 | 3 4.0 | 51 .1 | 111 2.3 | 171 3.6 | 51 3 27.8 | 3 28.3 | 3 18.3 | 51 .1 | 111 2.5 | 171 3.8 |
| 52 | 3 13.0 | 3 13.5 | 3 4.2 | 52 .1 | 112 2.3 | 172 3.6 | 52 3 28.0 | 3 28.6 | 3 18.5 | 52 .1 | 112 2.5 | 172 3.9 |
| 53 | 3 13.3 | 3 13.8 | 3 4.4 | 53 .1 | 113 2.4 | 173 3.6 | 53 3 28.3 | 3 28.8 | 3 18.8 | 53 .1 | 113 2.5 | 173 3.9 |
| 54 | 3 13.5 | 3 14.0 | 3 4.7 | 54 .1 | 114 2.4 | 174 3.6 | 54 3 28.5 | 3 29.1 | 3 19.0 | 54 .1 | 114 2.6 | 174 3.9 |
| 55 | 3 13.8 | 3 14.3 | 3 4.9 | 55 .1 | 115 2.4 | 175 3.6 | 55 3 28.8 | 3 29.3 | 3 19.2 | 55 .1 | 115 2.6 | 175 3.9 |
| 56 | 3 14.0 | 3 14.5 | 3 5.2 | 56 .1 | 116 2.4 | 176 3.7 | 56 3 29.0 | 3 29.6 | 3 19.5 | 56 .1 | 116 2.6 | 176 4.0 |
| 57 | 3 14.3 | 3 14.8 | 3 5.4 | 57 .1 | 117 2.4 | 177 3.7 | 57 3 29.3 | 3 29.8 | 3 19.7 | 57 .1 | 117 2.6 | 177 4.0 |
| 58 | 3 14.5 | 3 15.0 | 3 5.6 | 58 .1 | 118 2.5 | 178 3.7 | 58 3 29.5 | 3 30.1 | 3 20.0 | 58 .1 | 118 2.7 | 178 4.0 |
| 59 | 3 14.8 | 3 15.3 | 3 5.9 | 59 .1 | 119 2.5 | 179 3.7 | 59 3 29.8 | 3 30.3 | 3 20.2 | 59 .1 | 119 2.7 | 179 4.0 |
| 60 | 3 15.0 | 3 15.5 | 3 6.1 | 60 .1 | 120 2.5 | 180 3.8 | 60 3 30.0 | 3 30.6 | 3 20.4 | 60 .1 | 120 2.7 | 180 4.1 |

| POPRAVKA ČASOVNOG UGLA | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o |
| 0 | 3 15.0 | 3 15.5 | 3 6.1 | 0 .0 | 60 1.4 | 120 2.7 | 0 3 15.0 | 3 15.5 | 3 6.1 | 0 .0 | 60 1.4 | 120 2.7 |
| 1 | 3 15.3 | 3 15.8 | 3 6.4 | 1 .0 | 61 1.4 | 121 2.7 | 1 3 15.3 | 3 15.8 | 3 6.4 | 1 .0 | 61 1.4 | 121 2.7 |
| 2 | 3 15.5 | 3 16.0 | 3 6.6 | 2 .0 | 62 1.4 | 122 2.7 | 2 3 15.5 | 3 16.0 | 3 6.6 | 2 .0 | 62 1.4 | 122 2.7 |
| 3 | 3 15.8 | 3 16.3 | 3 6.8 | 3 .0 | 63 1.4 | 123 2.8 | 3 3 15.8 | 3 16.3 | 3 6.8 | 3 .0 | 63 1.4 | 123 2.8 |
| 4 | 3 16.0 | 3 16.5 | 3 7.1 | 4 .0 | 64 1.4 | 124 2.8 | 4 3 16.0 | 3 16.5 | 3 7.1 | 4 .0 | 64 1.4 | 124 2.8 |
| 5 | 3 16.3 | 3 16.8 | 3 7.3 | 5 .0 | 65 1.4 | 125 2.8 | 5 3 16.3 | 3 16.8 | 3 7.3 | 5 .0 | 65 1.5 | 125 2.8 |
| 6 | 3 16.5 | 3 17.0 | | | | | | | | | | |

0 h 14 min

0 h 15 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 3 30.0 | 3 30.6 | 3 20.4 | 0 .0 | 60 1.5 | 120 2.9 | |
| 1 | 3 30.3 | 3 30.8 | 3 20.7 | 1 .0 | 61 1.5 | 121 2.9 | |
| 2 | 3 30.5 | 3 31.1 | 3 20.9 | 2 .0 | 62 1.5 | 122 2.9 | |
| 3 | 3 30.8 | 3 31.3 | 3 21.1 | 3 .1 | 63 1.5 | 123 3.0 | |
| 4 | 3 31.0 | 3 31.6 | 3 21.4 | 4 .1 | 64 1.5 | 124 3.0 | |
| 5 | 3 31.3 | 3 31.8 | 3 21.6 | 5 .1 | 65 1.6 | 125 3.0 | |
| 6 | 3 31.5 | 3 32.1 | 3 21.9 | 6 .1 | 66 1.6 | 126 3.0 | |
| 7 | 3 31.8 | 3 32.3 | 3 22.1 | 7 .2 | 67 1.6 | 127 3.1 | |
| 8 | 3 32.0 | 3 32.6 | 3 22.3 | 8 .2 | 68 1.6 | 128 3.1 | |
| 9 | 3 32.3 | 3 32.8 | 3 22.6 | 9 .2 | 69 1.7 | 129 3.1 | |
| 10 | 3 32.5 | 3 33.1 | 3 22.8 | 10 .2 | 70 1.7 | 130 3.1 | |
| 11 | 3 32.8 | 3 33.3 | 3 23.1 | 11 .3 | 71 1.7 | 131 3.2 | |
| 12 | 3 33.0 | 3 33.6 | 3 23.3 | 12 .3 | 72 1.7 | 132 3.2 | |
| 13 | 3 33.3 | 3 33.8 | 3 23.5 | 13 .3 | 73 1.8 | 133 3.2 | |
| 14 | 3 33.5 | 3 34.1 | 3 23.8 | 14 .3 | 74 1.8 | 134 3.2 | |
| 15 | 3 33.8 | 3 34.3 | 3 24.0 | 15 .4 | 75 1.8 | 135 3.3 | |
| 16 | 3 34.0 | 3 34.6 | 3 24.3 | 16 .4 | 76 1.8 | 136 3.3 | |
| 17 | 3 34.3 | 3 34.8 | 3 24.5 | 17 .4 | 77 1.9 | 137 3.3 | |
| 18 | 3 34.5 | 3 35.1 | 3 24.7 | 18 .4 | 78 1.9 | 138 3.3 | |
| 19 | 3 34.8 | 3 35.3 | 3 25.0 | 19 .5 | 79 1.9 | 139 3.4 | |
| 20 | 3 35.0 | 3 35.6 | 3 25.2 | 20 .5 | 80 1.9 | 140 3.4 | |
| 21 | 3 35.3 | 3 35.8 | 3 25.4 | 21 .5 | 81 2.0 | 141 3.4 | |
| 22 | 3 35.5 | 3 36.1 | 3 25.7 | 22 .5 | 82 2.0 | 142 3.4 | |
| 23 | 3 35.8 | 3 36.3 | 3 25.9 | 23 .6 | 83 2.0 | 143 3.5 | |
| 24 | 3 36.0 | 3 36.6 | 3 26.2 | 24 .6 | 84 2.0 | 144 3.5 | |
| 25 | 3 36.3 | 3 36.9 | 3 26.4 | 25 .6 | 85 2.1 | 145 3.5 | |
| 26 | 3 36.5 | 3 37.1 | 3 26.6 | 26 .6 | 86 2.1 | 146 3.5 | |
| 27 | 3 36.8 | 3 37.4 | 3 26.9 | 27 .7 | 87 2.1 | 147 3.6 | |
| 28 | 3 37.0 | 3 37.6 | 3 27.1 | 28 .7 | 88 2.1 | 148 3.6 | |
| 29 | 3 37.3 | 3 37.9 | 3 27.4 | 29 .7 | 89 2.2 | 149 3.6 | |
| 30 | 3 37.5 | 3 38.1 | 3 27.6 | 30 .7 | 90 2.2 | 150 3.6 | |
| 31 | 3 37.8 | 3 38.4 | 3 27.8 | 31 .7 | 91 2.2 | 151 3.6 | |
| 32 | 3 38.0 | 3 38.6 | 3 28.1 | 32 .8 | 92 2.2 | 152 3.7 | |
| 33 | 3 38.3 | 3 38.9 | 3 28.3 | 33 .8 | 93 2.2 | 153 3.7 | |
| 34 | 3 38.5 | 3 39.1 | 3 28.5 | 34 .8 | 94 2.3 | 154 3.7 | |
| 35 | 3 38.8 | 3 39.4 | 3 28.8 | 35 .8 | 95 2.3 | 155 3.7 | |
| 36 | 3 39.0 | 3 39.6 | 3 29.0 | 36 .9 | 96 2.3 | 156 3.8 | |
| 37 | 3 39.3 | 3 39.9 | 3 29.3 | 37 .9 | 97 2.3 | 157 3.8 | |
| 38 | 3 39.5 | 3 40.1 | 3 29.5 | 38 .9 | 98 2.4 | 158 3.8 | |
| 39 | 3 39.8 | 3 40.4 | 3 29.7 | 39 .9 | 99 2.4 | 159 3.8 | |
| 40 | 3 40.0 | 3 40.6 | 3 30.0 | 40 1.0 | 100 2.4 | 160 3.9 | |
| 41 | 3 40.3 | 3 40.9 | 3 30.2 | 41 1.0 | 101 2.4 | 161 3.9 | |
| 42 | 3 40.5 | 3 41.1 | 3 30.5 | 42 1.0 | 102 2.5 | 162 3.9 | |
| 43 | 3 40.8 | 3 41.4 | 3 30.7 | 43 1.0 | 103 2.5 | 163 3.9 | |
| 44 | 3 41.0 | 3 41.6 | 3 30.9 | 44 1.1 | 104 2.5 | 164 4.0 | |
| 45 | 3 41.3 | 3 41.9 | 3 31.2 | 45 1.1 | 105 2.5 | 165 4.0 | |
| 46 | 3 41.5 | 3 42.1 | 3 31.4 | 46 1.1 | 106 2.6 | 166 4.0 | |
| 47 | 3 41.8 | 3 42.4 | 3 31.6 | 47 1.1 | 107 2.6 | 167 4.0 | |
| 48 | 3 42.0 | 3 42.6 | 3 31.9 | 48 1.2 | 108 2.6 | 168 4.1 | |
| 49 | 3 42.3 | 3 42.9 | 3 32.1 | 49 1.2 | 109 2.6 | 169 4.1 | |
| 50 | 3 42.5 | 3 43.1 | 3 32.4 | 50 1.2 | 110 2.7 | 170 4.1 | |
| 51 | 3 42.8 | 3 43.4 | 3 32.6 | 51 1.2 | 111 2.7 | 171 4.1 | |
| 52 | 3 43.0 | 3 43.6 | 3 32.8 | 52 1.3 | 112 2.7 | 172 4.2 | |
| 53 | 3 43.3 | 3 43.9 | 3 33.1 | 53 1.3 | 113 2.7 | 173 4.2 | |
| 54 | 3 43.5 | 3 44.1 | 3 33.3 | 54 1.3 | 114 2.8 | 174 4.2 | |
| 55 | 3 43.8 | 3 44.4 | 3 33.6 | 55 1.3 | 115 2.8 | 175 4.2 | |
| 56 | 3 44.0 | 3 44.6 | 3 33.8 | 56 1.4 | 116 2.8 | 176 4.3 | |
| 57 | 3 44.3 | 3 44.9 | 3 34.0 | 57 1.4 | 117 2.8 | 177 4.3 | |
| 58 | 3 44.5 | 3 45.1 | 3 34.3 | 58 1.4 | 118 2.9 | 178 4.3 | |
| 59 | 3 44.8 | 3 45.4 | 3 34.5 | 59 1.4 | 119 2.9 | 179 4.3 | |
| 60 | 3 45.0 | 3 45.6 | 3 34.8 | 60 1.5 | 120 2.9 | 180 4.4 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 3 45.0 | 3 45.6 | 3 34.8 | 0 .0 | 60 1.6 | 120 3.1 | |
| 1 | 3 45.3 | 3 45.9 | 3 35.0 | 1 .0 | 61 1.6 | 121 3.1 | |
| 2 | 3 45.5 | 3 46.1 | 3 35.2 | 2 .1 | 62 1.6 | 122 3.2 | |
| 3 | 3 45.8 | 3 46.4 | 3 35.5 | 3 .1 | 63 1.6 | 123 3.2 | |
| 4 | 3 46.0 | 3 46.6 | 3 35.7 | 4 .1 | 64 1.7 | 124 3.2 | |
| 5 | 3 46.3 | 3 46.9 | 3 35.9 | 5 .1 | 65 1.7 | 125 3.2 | |
| 6 | 3 46.5 | 3 47.1 | 3 36.2 | 6 .2 | 66 1.7 | 126 3.3 | |
| 7 | 3 46.8 | 3 47.4 | 3 36.4 | 7 .2 | 67 1.7 | 127 3.3 | |
| 8 | 3 47.0 | 3 47.6 | 3 36.7 | 8 .2 | 68 1.8 | 128 3.3 | |
| 9 | 3 47.3 | 3 47.9 | 3 36.9 | 9 .2 | 69 1.8 | 129 3.3 | |
| 10 | 3 47.5 | 3 48.1 | 3 37.1 | 10 .3 | 70 1.8 | 130 3.4 | |
| 11 | 3 47.8 | 3 48.4 | 3 37.4 | 11 .3 | 71 1.8 | 131 3.4 | |
| 12 | 3 48.0 | 3 48.6 | 3 37.6 | 12 .3 | 72 1.9 | 132 3.4 | |
| 13 | 3 48.3 | 3 48.9 | 3 37.9 | 13 .3 | 73 1.9 | 133 3.4 | |
| 14 | 3 48.5 | 3 49.1 | 3 38.1 | 14 .4 | 74 1.9 | 134 3.5 | |
| 15 | 3 48.8 | 3 49.4 | 3 38.3 | 15 .4 | 75 1.9 | 135 3.5 | |
| 16 | 3 49.0 | 3 49.6 | 3 38.6 | 16 .4 | 76 2.0 | 136 3.5 | |
| 17 | 3 49.3 | 3 49.9 | 3 38.8 | 17 .4 | 77 2.0 | 137 3.5 | |
| 18 | 3 49.5 | 3 50.1 | 3 39.0 | 18 .5 | 78 2.0 | 138 3.6 | |
| 19 | 3 49.8 | 3 50.4 | 3 39.3 | 19 .5 | 79 2.0 | 139 3.6 | |
| 20 | 3 50.0 | 3 50.6 | 3 39.5 | 20 .5 | 80 2.1 | 140 3.6 | |
| 21 | 3 50.3 | 3 50.9 | 3 39.8 | 21 .5 | 81 2.1 | 141 3.6 | |
| 22 | 3 50.5 | 3 51.1 | 3 40.0 | 22 .6 | 82 2.1 | 142 3.7 | |
| 23 | 3 50.8 | 3 51.4 | 3 40.2 | 23 .6 | 83 2.1 | 143 3.7 | |
| 24 | 3 51.0 | 3 51.6 | 3 40.5 | 24 .6 | 84 2.2 | 144 3.7 | |
| 25 | 3 51.3 | 3 51.9 | 3 40.7 | 25 .6 | 85 2.2 | 145 3.7 | |
| 26 | 3 51.5 | 3 52.1 | 3 41.0 | 26 .7 | 86 2.2 | 146 3.8 | |
| 27 | 3 51.8 | 3 52.4 | 3 41.2 | 27 .7 | 87 2.2 | 147 3.8 | |
| 28 | 3 52.0 | 3 52.6 | 3 41.4 | 28 .7 | 88 2.3 | 148 3.8 | |
| 29 | 3 52.3 | 3 52.9 | 3 41.7 | 29 .7 | 89 2.3 | 149 3.8 | |
| 30 | 3 52.5 | 3 53.1 | 3 41.9 | 30 .8 | 90 2.3 | 150 3.9 | |
| 31 | 3 52.8 | 3 53.4 | 3 42.1 | 31 .8 | 91 2.4 | 151 3.9 | |
| 32 | 3 53.0 | 3 53.6 | 3 42.4 | 32 .8 | 92 2.4 | 152 3.9 | |
| 33 | 3 53.3 | 3 53.9 | 3 42.6 | 33 .9 | 93 2.4 | 153 4.0 | |
| 34 | 3 53.5 | 3 54.1 | 3 42.9 | 34 .9 | 94 2.4 | 154 4.0 | |
| 35 | 3 53.8 | 3 54.4 | 3 43.1 | 35 .9 | 95 2.5 | 155 4.0 | |
| 36 | 3 54.0 | 3 54.7 | 3 43.3 | 36 .9 | 96 2.5 | 156 4.0 | |
| 37 | 3 54.3 | 3 54.9 | 3 43.6 | 37 .0 | 97 2.5 | 157 4.1 | |
| 38 | 3 54.5 | 3 55.2 | 3 43.8 | 38 .0 | 98 2.5 | 158 4.1 | |
| 39 | 3 54.8 | 3 55.4 | 3 44.1 | 39 .0 | 99 2.6 | 159 4.1 | |
| 40 | 3 55.0 | 3 55.7 | 3 44.3 | 40 .0 | 100 2.6 | 160 4.1 | |
| 41 | 3 55.3 | 3 55.9 | 3 44.5 | 41 .1 | 101 2.6 | 161 4.2 | |
| 42 | 3 55.5 | 3 56.2 | 3 44.8 | 42 .1 | 102 2.6 | 162 4.2 | |
| 43 | 3 55.8 | 3 56.4 | 3 45.0 | 43 .1 | 103 2.7 | 163 4.2 | |
| 44 | 3 56.0 | 3 56.7 | 3 45.2 | 44 .1 | 104 2.7 | 164 4.2 | |
| 45 | 3 56.3 | 3 56.9 | 3 45.5 | 45 .2 | 105 2.7 | 165 4.3 | |
| 46 | 3 56.5 | 3 57.2 | 3 45.7 | 46 .2 | 106 2.7 | 166 4.3 | |
| 47 | 3 56.8 | 3 57.4 | 3 46.0 | 47 .2 | 107 2.8 | 167 4.3 | |
| 48 | 3 57.0 | 3 57.7 | 3 46.2 | 48 .2 | 108 2.8 | 168 4.3 | |
| 49 | 3 57.3 | 3 57.9 | 3 46.4 | 49 .3 | 109 2.8 | 169 4.4 | |
| 50 | 3 57.5 | 3 58.2 | 3 46.7 | 50 .3 | 110 2.8 | 170 4.4 | |
| 51 | 3 57.8 | 3 58.4 | 3 46.9 | 51 .3 | 111 2.9 | 171 4.4 | |
| 52 | 3 58.0 | 3 58.7 | 3 47.2 | 52 .3 | 112 2.9 | 172 4.4 | |
| 53 | 3 58.3 | 3 58.9 | 3 47.4 | 53 .4 | 113 2.9 | 173 4.5 | |
| 54 | 3 58.5 | 3 59.2 | 3 47.6 | 54 .4 | 114 2.9 | 174 4.5 | |
| 55 | 3 58.8 | 3 59.4 | 3 47.9 | 55 .4 | 115 3.0 | 175 4.5 | |
| 56 | 3 59.0 | 3 59.7 | 3 48.1 | 56 .4 | 116 3.0 | 176 4.5 | |
| 57 | 3 59.3 | 3 59.9 | 3 48.4 | 57 .5 | 117 3.0 | 177 4.6 | |
| 58 | 3 59.5 | 3 59.4 | 3 48.6 | 58 .5 | 118 3.0 | 178 4.6 | |
| 59 | 3 59.8 | 3 59.8 | 3 48.8 | 59 .5 | 119 3.1 | 179 4.6 | |
| 60 | 4 .0 | 4 .7 | 3 49.1 | 60 .6 | 120 3.1 | 180 4.7 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 4 .0 | 4 .7 | 3 49.1 | 0 .0 | 60 1.7 | 120 3.3 | |
| 1 | 4 .3 | 4 .9 | 3 49.3 | 1 .0 | 61 1.7 | 121 3.3 | |
| 2 | 4 .5 | 4 1.2 | 3 49.5 | 2 .1 | 62 1.7 | 122 3.4 | |
| 3 | 4 .8 | 4 1.4 | 3 49.8 | 3 .1 | 63 1.7 | 123 3.4 | |
| 4 | 4 1.0 | 4 1.7 | 3 50.0 | 4 .1 | 64 1.8 | 124 3.4 | |
| 5 | 4 1.3 | 4 1.9 | 3 50.3 | 5 .1 | 65 1.8 | 125 3.4 | |
| 6 | 4 1.5 | 4 2.2 | 3 50.5 | 6 .2 | 66 1.8 | 126 3.5 | |
| 7 | 4 1.8 | 4 2.4 | 3 50.7 | 7 .2 | 67 1.8 | 127 3.5 | |
| 8 | 4 2.0 | 4 2.7 | 3 51.0 | 8 .2 | 68 1.9 | 128 3.5 | |
| 9 | 4 2.3 | 4 2.9 | 3 51.2 | 9 .2 | 69 1.9 | 129 3.5 | |
| 10 | 4 2.5 | 4 3.2 | 3 51.5 | 10 .3 | 70 1.9 | 130 3.6 | |
| 11 | 4 2.8 | 4 3.4 | 3 51.7 | 11 .3 | 71 2.0 | 131 3.6 | |
| 12 | 4 3.0 | 4 3.7 | 3 51.9 | 12 .3 | 72 2.0 | 132 3.6 | |
| 13 | 4 3.3 | 4 3.9 | 3 52.2 | 13 .4 | 73 2.0 | 133 3.7 | |
| 14 | 4 3.5 | 4 4.2 | 3 52.4 | 14 .4 | 74 2.0 | 134 3.7 | |
| 15 | 4 3.8 | 4 4.4 | 3 52.6 | 15 .4 | 75 2.1 | 135 3.7 | |
| 16 | 4 4.0 | 4 4.7 | 3 52.9 | 16 .4 | 76 2.1 | 136 3.7 | |
| 17 | 4 4.3 | 4 4.9 | 3 53.1 | 17 .5 | 77 2.1 | 137 3.8 | |
| 18 | 4 4.5 | 4 5.2 | 3 53.4 | 18 .5 | 78 2.1 | 138 3.8 | |
| 19 | 4 4.8 | 4 5.4 | 3 53.6 | 19 .5 | 79 2.2 | 139 3.8 | |
| 20 | 4 5.0 | 4 5.7 | 3 53.8 | 20 .6 | 80 2.2 | 140 3.9 | |
| 21 | 4 5.3 | 4 5.9 | 3 54.1 | 21 .6 | 81 2.2 | 141 3.9 | |
| 22 | 4 5.5 | 4 6.2 | 3 54.3 | 22 .6 | 82 2.3 | 142 3.9 | |
| 23 | 4 5.8 | 4 6.4 | 3 54.6 | 23 .6 | 83 2.3 | 143 3.9 | |
| 24 | 4 6.0 | 4 6.7 | 3 54.8 | 24 .7 | 84 2.3 | 144 4.0 | |
| 25 | 4 6.3 | 4 6.9 | 3 55.0 | 25 .7 | 85 2.3 | 145 4.0 | |
| 26 | 4 6.5 | 4 7.2 | 3 55.3 | 26 .7 | 86 2.4 | 146 4.0 | |
| 27 | 4 6.8 | 4 7.4 | 3 55.5 | 27 .7 | 87 2.4 | 147 4.0 | |
| 28 | 4 7.0 | 4 7.7 | 3 55.7 | 28 .8 | 88 2.4 | 148 4.1 | |
| 29 | 4 7.3 | 4 7.9 | 3 56.0 | 29 .8 | 89 2.4 | 149 4.1 | |
| 30 | 4 7.5 | 4 8.2 | 3 56.2 | 30 .8 | 90 2.5 | 150 4.1 | |
| 31 | 4 7.8 | 4 8.4 | 3 56.5 | 31 .9 | 91 2.5 | 151 4.2 | |
| 32 | 4 8.0 | 4 8.7 | 3 56.7 | 32 .9 | 92 2.5 | 152 4.2 | |
| 33 | 4 8.3 | 4 8.9 | 3 56.9 | 33 .9 | 93 2.6 | 153 4.2 | |
| 34 | 4 8.5 | 4 9.2 | 3 57.2 | 34 .9 | 94 2.6 | 154 4.2 | |
| 35 | 4 8.8 | 4 9.4 | 3 57.4 | 35 1.0 | 95 2.6 | 155 4.3 | |
| 36 | 4 9.0 | 4 9.7 | 3 57.7 | 36 1.0 | 96 2.6 | 156 4.3 | |
| 37 | 4 9.3 | 4 9.9 | 3 57.9 | 37 1.0 | 97 2.7 | 157 4.3 | |
| 38 | 4 9.5 | 4 10.2 | 3 58.1 | 38 1.0 | 98 2.7 | 158 4.3 | |
| 39 | 4 9.8 | 4 10.4 | 3 58.4 | 39 1.1 | 99 2.7 | 159 4.4 | |
| 40 | 4 10.0 | 4 10.7 | 3 58.6 | 40 1.1 | 100 2.8 | 160 4.4 | |
| 41 | 4 10.3 | 4 10.9 | 3 58.8 | 41 1.1 | 101 2.8 | 161 4.4 | |
| 42 | 4 10.5 | 4 11.2 | 3 59.1 | 42 1.2 | 102 2.8 | 162 4.5 | |
| 43 | 4 10.8 | 4 11.4 | 3 59.3 | 43 1.2 | 103 2.8 | 163 4.5 | |
| 44 | 4 11.0 | 4 11.7 | 3 59.6 | 44 1.2 | 104 2.9 | 164 4.5 | |
| 45 | 4 11.3 | 4 11.9 | 3 59.8 | 45 1.2 | 105 2.9 | 165 4.5 | |
| 46 | 4 11.5 | 4 12.2 | 4 0.6 | 46 1.3 | 106 2.9 | 166 4.6 | |
| 47 | 4 11.8 | 4 12.4 | 4 0.3 | 47 1.3 | 107 2.9 | 167 4.6 | |
| 48 | 4 12.0 | 4 12.7 | 4 0.5 | 48 1.3 | 108 3.0 | 168 4.6 | |
| 49 | 4 12.3 | 4 13.0 | 4 0.8 | 49 1.3 | 109 3.0 | 169 4.6 | |
| 50 | 4 12.5 | 4 13.2 | 4 1.0 | 50 1.4 | 110 3.0 | 170 4.7 | |
| 51 | 4 12.8 | 4 13.5 | 4 1.2 | 51 1.4 | 111 3.1 | 171 4.7 | |
| 52 | 4 13.0 | 4 13.7 | 4 1.5 | 52 1.4 | 112 3.1 | 172 4.7 | |
| 53 | 4 13.3 | 4 14.0 | 4 1.7 | 53 1.5 | 113 3.1 | 173 4.8 | |
| 54 | 4 13.5 | 4 14.2 | 4 2.0 | 54 1.5 | 114 3.1 | 174 4.8 | |
| 55 | 4 13.8 | 4 14.5 | 4 2.2 | 55 1.5 | 115 3.2 | 175 4.8 | |
| 56 | 4 14.0 | 4 14.7 | 4 2.4 | 56 1.5 | 116 3.2 | 176 4.8 | |
| 57 | 4 14.3 | 4 15.0 | 4 2.7 | 57 1.6 | 117 3.2 | 177 4.9 | |
| 58 | 4 14.5 | 4 15.2 | 4 2.9 | 58 1.6 | 118 3.2 | 178 4.9 | |
| 59 | 4 14.8 | 4 15.5 | 4 3.1 | 59 1.6 | 119 3.3 | 179 4.9 | |
| 60 | 4 15.0 | 4 15.7 | 4 3.4 | 60 1.7 | 120 3.3 | 180 5.0 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 4 15.0 | 4 15.7 | 4 3.4 | 0 .0 | 60 1.8 | 120 3.5 | |
| 1 | 4 15.3 | 4 16.0 | 4 3.6 | 1 .0 | 61 1.8 | 121 3.5 | |
| 2 | 4 15.5 | 4 16.2 | 4 3.9 | 2 .1 | 62 1.8 | 122 3.6 | |
| 3 | 4 15.8 | 4 16.5 | 4 4.1 | 3 .1 | 63 1.8 | 123 3.6 | |
| 4 | 4 16.0 | 4 16.7 | 4 4.3 | 4 .1 | 64 1.9 | 124 3.6 | |
| 5 | 4 16.3 | 4 17.0 | 4 4.6 | 5 .1 | 65 1.9 | 125 3.6 | |
| 6 | 4 16.5 | 4 17.2 | 4 4.8 | 6 .2 | 66 1.9 | 126 3.7 | |
| 7 | 4 16.8 | 4 17.5 | 4 5.1 | 7 .2 | 67 2.0 | 127 3.7 | |
| 8 | 4 17.0 | 4 17.7 | 4 5.3 | 8 .2 | 68 2.0 | 128 3.7 | |
| 9 | 4 17.3 | 4 18.0 | 4 5.5 | 9 .3 | 69 2.0 | 129 3.8 | |
| 10 | 4 17.5 | 4 18.2 | 4 5.8 | 10 .3 | 70 2.0 | 130 3.8 | |
| 11 | 4 17.8 | 4 18.5 | 4 6.0 | 11 .3 | 71 2.1 | 131 3.8 | |
| 12 | 4 18.0 | 4 18.7 | 4 6.2 | 12 .4 | 72 2.1 | 132 3.9 | |
| 13 | 4 18.3 | 4 19.0 | 4 6.5 | 13 .4 | 73 2.1 | 133 3.9 | |
| 14 | 4 18.5 | 4 19.2 | 4 6.7 | 14 .4 | 74 2.2 | 134 3.9 | |
| 15 | 4 18.8 | 4 19.5 | 4 7.0 | 15 .4 | 75 2.2 | 135 3.9 | |
| 16 | 4 19.0 | 4 19.7 | 4 7.2 | 16 .5 | 76 2.2 | 136 4.0 | |
| 17 | 4 19.3 | 4 20.0 | 4 7.4 | 17 .5 | 77 2.2 | 137 4.0 | |
| 18 | 4 19.5 | 4 20.2 | 4 7.7 | 18 .5 | 78 2.3 | 138 4.0 | |
| 19 | 4 19.8 | 4 20.5 | 4 7.9 | 19 .6 | 79 2.3 | 139 4.1 | |
| 20 | 4 20.0 | 4 20.7 | 4 8.2 | 20 .6 | 80 2.3 | 140 4.1 | |
| 21 | 4 20.3 | 4 21.0 | 4 8.4 | 21 .6 | 81 2.4 | 141 4.1 | |
| 22 | 4 20.5 | 4 21.2 | 4 8.6 | 22 .6 | 82 2.4 | 142 4.1 | |
| 23 | 4 20.8 | 4 21.5 | 4 8.9 | 23 .7 | 83 2.4 | 143 4.2 | |
| 24 | 4 21.0 | 4 21.7 | 4 9.1 | 24 .7 | 84 2.5 | 144 4.2 | |
| 25 | 4 21.3 | 4 22.0 | 4 9.3 | 25 .7 | 85 2.5 | 145 4.2 | |
| 26 | 4 21.5 | 4 22.4 | 4 9.6 | 26 .8 | 86 2.5 | 146 4.3 | |
| 27 | 4 21.8 | 4 22.5 | 4 9.8 | 27 .8 | 87 2.5 | 147 4.3 | |
| 28 | 4 22.0 | 4 22.7 | 4 10.1 | 28 .8 | 88 2.6 | 148 4.3 | |
| 29 | 4 22.3 | 4 23.0 | 4 10.3 | 29 .8 | 89 2.6 | 149 4.3 | |
| 30 | 4 22.5 | 4 23.2 | 4 10.5 | 30 .9 | 90 2.6 | 150 4.4 | |
| 31 | 4 22.8 | 4 23.5 | 4 10.8 | 31 .9 | 91 2.7 | 151 4.4 | |
| 32 | 4 23.0 | 4 23.7 | 4 11.0 | 32 .9 | 92 2.7 | 152 4.4 | |
| 33 | 4 23.3 | 4 24.0 | 4 11.3 | 33 .0 | 93 2.7 | 153 4.5 | |
| 34 | 4 23.5 | 4 24.2 | 4 11.5 | 34 .0 | 94 2.7 | 154 4.5 | |
| 35 | 4 23.8 | 4 24.5 | 4 11.7 | 35 .1 | 95 2.8 | 155 4.5 | |
| 36 | 4 24.0 | 4 24.7 | 4 12.0 | 36 .1 | 96 2.8 | 156 4.6 | |
| 37 | 4 24.3 | 4 25.0 | 4 12.2 | 37 .1 | 97 2.8 | 157 4.6 | |
| 38 | 4 24.5 | 4 25.2 | 4 12.5 | 38 .1 | 98 2.9 | 158 4.6 | |
| 39 | 4 24.8 | 4 25.5 | 4 12.7 | 39 .1 | 99 2.9 | 159 4.6 | |
| 40 | 4 25.0 | 4 25.7 | 4 12.9 | 40 .2 | 100 2.9 | 160 4.7 | |
| 41 | 4 25.3 | 4 26.0 | 4 13.2 | 41 .2 | 101 2.9 | 161 4.7 | |
| 42 | 4 25.5 | 4 26.2 | 4 13.4 | 42 .2 | 102 3.0 | 162 4.7 | |
| 43 | 4 25.8 | 4 26.5 | 4 13.6 | 43 .3 | 103 3.0 | 163 4.8 | |
| 44 | 4 26.0 | 4 26.7 | 4 13.9 | 44 .3 | 104 3.0 | 164 4.8 | |
| 45 | 4 26.3 | 4 27.0 | 4 14.1 | 45 .3 | 105 3.1 | 165 4.8 | |
| 46 | 4 26.5 | 4 27.2 | 4 14.4 | 46 .3 | 106 3.1 | 166 4.8 | |
| 47 | 4 26.8 | 4 27.5 | 4 14.6 | 47 .4 | 107 3.1 | 167 4.9 | |
| 48 | 4 27.0 | 4 27.7 | 4 14.8 | 48 .4 | 108 3.2 | 168 4.9 | |
| 49 | 4 27.3 | 4 28.0 | 4 15.1 | 49 .4 | 109 3.2 | 169 4.9 | |
| 50 | 4 27.5 | 4 28.2 | 4 15.3 | 50 .5 | 110 3.2 | 170 5.0 | |
| 51 | 4 27.8 | 4 28.5 | 4 15.6 | 51 .5 | 111 3.2 | 171 5.0 | |
| 52 | 4 28.0 | 4 28.7 | 4 15.8 | 52 .5 | 112 3.3 | 172 5.0 | |
| 53 | 4 28.3 | 4 29.0 | 4 16.0 | 53 .5 | 113 3.3 | 173 5.0 | |
| 54 | 4 28.5 | 4 29.2 | 4 16.3 | 54 .6 | 114 3.3 | 174 5.1 | |
| 55 | 4 28.8 | 4 29.5 | 4 16.5 | 55 .6 | 115 3.4 | 175 5.1 | |
| 56 | 4 29.0 | 4 29.7 | 4 16.7 | 56 .6 | 116 3.4 | 176 5.1 | |
| 57 | 4 29.3 | 4 30.0 | 4 17.0 | 57 .7 | 117 3.4 | 177 5.2 | |
| 58 | 4 29.5 | 4 30.2 | 4 17.2 | 58 .7 | 118 3.4 | 178 5.2 | |
| 59 | 4 29.8 | 4 30.5 | 4 17.5 | 59 .7 | 119 3.5 | 179 5.2 | |
| 60 | 4 30.0 | 4 30.8 | 4 17.7 | 60 .8 | 120 3.5 | 180 5.3 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 4 30.0 | 4 30.8 | 4 17.7 | 0 .0 | 60 1.9 | 120 3.7 | |
| 1 | 4 30.3 | 4 31.0 | 4 17.9 | 1 .0 | 61 1.9 | 121 3.7 | |
| 2 | 4 30.5 | 4 31.3 | 4 18.2 | 2 .1 | 62 1.9 | 122 3.8 | |
| 3 | 4 30.8 | 4 31.5 | 4 18.4 | 3 .1 | 63 1.9 | 123 3.8 | |
| 4 | 4 31.0 | 4 31.8 | 4 18.7 | 4 .1 | 64 2.0 | 124 3.8 | |
| 5 | 4 31.3 | 4 32.0 | 4 18.9 | 5 .2 | 65 2.0 | 125 3.9 | |
| 6 | 4 31.5 | 4 32.3 | 4 19.1 | 6 .2 | 66 2.0 | 126 3.9 | |
| 7 | 4 31.8 | 4 32.5 | 4 19.4 | 7 .2 | 67 2.1 | 127 3.9 | |
| 8 | 4 32.0 | 4 32.8 | 4 19.6 | 8 .2 | 68 2.1 | 128 3.9 | |
| 9 | 4 32.3 | 4 33.0 | 4 19.8 | 9 .3 | 69 2.1 | 129 4.0 | |
| 10 | 4 32.5 | 4 33.3 | 4 20.1 | 10 .3 | 70 2.2 | 130 4.0 | |
| 11 | 4 32.8 | 4 33.5 | 4 20.3 | 11 .3 | 71 2.2 | 131 4.0 | |
| 12 | 4 33.0 | 4 33.8 | 4 20.6 | 12 .4 | 72 2.2 | 132 4.1 | |
| 13 | 4 33.3 | 4 34.0 | 4 20.8 | 13 .4 | 73 2.3 | 133 4.1 | |
| 14 | 4 33.5 | 4 34.3 | 4 21.0 | 14 .4 | 74 2.3 | 134 4.1 | |
| 15 | 4 33.8 | 4 34.5 | 4 21.3 | 15 .5 | 75 2.3 | 135 4.2 | |
| 16 | 4 34.0 | 4 34.8 | 4 21.5 | 16 .5 | 76 2.3 | 136 4.2 | |
| 17 | 4 34.3 | 4 35.0 | 4 21.8 | 17 .5 | 77 2.4 | 137 4.2 | |
| 18 | 4 34.5 | 4 35.3 | 4 22.0 | 18 .6 | 78 2.4 | 138 4.3 | |
| 19 | 4 34.8 | 4 35.5 | 4 22.2 | 19 .6 | 79 2.4 | 139 4.3 | |
| 20 | 4 35.0 | 4 35.8 | 4 22.5 | 20 .6 | 80 2.5 | 140 4.3 | |
| 21 | 4 35.3 | 4 36.0 | 4 22.7 | 21 .6 | 81 2.5 | 141 4.3 | |
| 22 | 4 35.5 | 4 36.3 | 4 22.9 | 22 .7 | 82 2.5 | 142 4.4 | |
| 23 | 4 35.8 | 4 36.5 | 4 23.2 | 23 .7 | 83 2.6 | 143 4.4 | |
| 24 | 4 36.0 | 4 36.8 | 4 23.4 | 24 .7 | 84 2.6 | 144 4.4 | |
| 25 | 4 36.3 | 4 37.0 | 4 23.7 | 25 .8 | 85 2.6 | 145 4.5 | |
| 26 | 4 36.5 | 4 37.3 | 4 23.9 | 26 .8 | 86 2.7 | 146 4.5 | |
| 27 | 4 36.8 | 4 37.5 | 4 24.1 | 27 .8 | 87 2.7 | 147 4.5 | |
| 28 | 4 37.0 | 4 37.8 | 4 24.4 | 28 .9 | 88 2.7 | 148 4.6 | |
| 29 | 4 37.3 | 4 38.0 | 4 24.6 | 29 .9 | 89 2.7 | 149 4.6 | |
| 30 | 4 37.5 | 4 38.3 | 4 24.9 | 30 .9 | 90 2.8 | 150 4.6 | |
| 31 | 4 37.8 | 4 38.5 | 4 25.1 | 31 .0 | 91 2.8 | 151 4.7 | |
| 32 | 4 38.0 | 4 38.8 | 4 25.3 | 32 .0 | 92 2.8 | 152 4.7 | |
| 33 | 4 38.3 | 4 39.0 | 4 25.6 | 33 .0 | 93 2.9 | 153 4.7 | |
| 34 | 4 38.5 | 4 39.3 | 4 25.8 | 34 .0 | 94 2.9 | 154 4.7 | |
| 35 | 4 38.8 | 4 39.5 | 4 26.1 | 35 .1 | 95 2.9 | 155 4.8 | |
| 36 | 4 39.0 | 4 39.8 | 4 26.3 | 36 .1 | 96 3.0 | 156 4.8 | |
| 37 | 4 39.3 | 4 40.0 | 4 26.5 | 37 .1 | 97 3.0 | 157 4.8 | |
| 38 | 4 39.5 | 4 40.3 | 4 26.8 | 38 .2 | 98 3.0 | 158 4.9 | |
| 39 | 4 39.8 | 4 40.5 | 4 27.0 | 39 .2 | 99 3.1 | 159 4.9 | |
| 40 | 4 40.0 | 4 40.8 | 4 27.2 | 40 .2 | 100 3.1 | 160 4.9 | |
| 41 | 4 40.3 | 4 41.0 | 4 27.5 | 41 .3 | 101 3.1 | 161 5.0 | |
| 42 | 4 40.5 | 4 41.3 | 4 27.7 | 42 .3 | 102 3.1 | 162 5.0 | |
| 43 | 4 40.8 | 4 41.5 | 4 28.0 | 43 .3 | 103 3.2 | 163 5.0 | |
| 44 | 4 41.0 | 4 41.8 | 4 28.2 | 44 .4 | 104 3.2 | 164 5.1 | |
| 45 | 4 41.3 | 4 42.0 | 4 28.4 | 45 .4 | 105 3.2 | 165 5.1 | |
| 46 | 4 41.5 | 4 42.3 | 4 28.7 | 46 .4 | 106 3.3 | 166 5.1 | |
| 47 | 4 41.8 | 4 42.5 | 4 28.9 | 47 .4 | 107 3.3 | 167 5.1 | |
| 48 | 4 42.0 | 4 42.8 | 4 29.2 | 48 .5 | 108 3.3 | 168 5.2 | |
| 49 | 4 42.3 | 4 43.0 | 4 29.4 | 49 .5 | 109 3.4 | 169 5.2 | |
| 50 | 4 42.5 | 4 43.3 | 4 29.6 | 50 .5 | 110 3.4 | 170 5.2 | |
| 51 | 4 42.8 | 4 43.5 | 4 29.9 | 51 .6 | 111 3.4 | 171 5.3 | |
| 52 | 4 43.0 | 4 43.8 | 4 30.1 | 52 .6 | 112 3.5 | 172 5.3 | |
| 53 | 4 43.3 | 4 44.0 | 4 30.3 | 53 .6 | 113 3.5 | 173 5.3 | |
| 54 | 4 43.5 | 4 44.3 | 4 30.6 | 54 .7 | 114 3.5 | 174 5.4 | |
| 55 | 4 43.8 | 4 44.5 | 4 30.8 | 55 .7 | 115 3.5 | 175 5.4 | |
| 56 | 4 44.0 | 4 44.8 | 4 31.1 | 56 .7 | 116 3.6 | 176 5.4 | |
| 57 | 4 44.3 | 4 45.0 | 4 31.3 | 57 .8 | 117 3.6 | 177 5.5 | |
| 58 | 4 44.5 | 4 45.3 | 4 31.5 | 58 .8 | 118 3.6 | 178 5.5 | |
| 59 | 4 44.8 | 4 45.5 | 4 31.8 | 59 .8 | 119 3.7 | 179 5.5 | |
| 60 | 4 45.0 | 4 45.8 | 4 32.0 | 60 .9 | 120 3.7 | 180 5.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 4 45.0 | 4 45.8 | 4 32.0 | 0 .0 | 60 2.0 | 120 3.9 | |
| 1 | 4 45.3 | 4 46.0 | 4 32.3 | 1 .0 | 61 2.0 | 121 3.9 | |
| 2 | 4 45.5 | 4 46.3 | 4 32.5 | 2 .1 | 62 2.0 | 122 4.0 | |
| 3 | 4 45.8 | 4 46.5 | 4 32.7 | 3 .1 | 63 2.0 | 123 4.0 | |
| 4 | 4 46.0 | 4 46.8 | 4 33.0 | 4 .1 | 64 2.1 | 124 4.0 | |
| 5 | 4 46.3 | 4 47.0 | 4 33.2 | 5 .2 | 65 2.1 | 125 4.1 | |
| 6 | 4 46.5 | 4 47.3 | 4 33.4 | 6 .2 | 66 2.1 | 126 4.1 | |
| 7 | 4 46.8 | 4 47.5 | 4 33.7 | 7 .2 | 67 2.2 | 127 4.1 | |
| 8 | 4 47.0 | 4 47.8 | 4 33.9 | 8 .3 | 68 2.2 | 128 4.2 | |
| 9 | 4 47.3 | 4 48.0 | 4 34.2 | 9 .3 | 69 2.2 | 129 4.2 | |
| 10 | 4 47.5 | 4 48.3 | 4 34.4 | 10 .3 | 70 2.3 | 130 4.2 | |
| 11 | 4 47.8 | 4 48.5 | 4 34.6 | 11 .4 | 71 2.3 | 131 4.3 | |
| 12 | 4 48.0 | 4 48.8 | 4 34.9 | 12 .4 | 72 2.3 | 132 4.3 | |
| 13 | 4 48.3 | 4 49.1 | 4 35.1 | 13 .4 | 73 2.4 | 133 4.3 | |
| 14 | 4 48.5 | 4 49.3 | 4 35.4 | 14 .5 | 74 2.4 | 134 4.4 | |
| 15 | 4 48.8 | 4 49.6 | 4 35.6 | 15 .5 | 75 2.4 | 135 4.4 | |
| 16 | 4 49.0 | 4 49.8 | 4 35.8 | 16 .5 | 76 2.5 | 136 4.4 | |
| 17 | 4 49.3 | 4 50.1 | 4 36.1 | 17 .6 | 77 2.5 | 137 4.5 | |
| 18 | 4 49.5 | 4 50.3 | 4 36.3 | 18 .6 | 78 2.5 | 138 4.5 | |
| 19 | 4 49.8 | 4 50.6 | 4 36.6 | 19 .6 | 79 2.6 | 139 4.5 | |
| 20 | 4 50.0 | 4 50.8 | 4 36.8 | 20 .7 | 80 2.6 | 140 4.6 | |
| 21 | 4 50.3 | 4 51.1 | 4 37.0 | 21 .7 | 81 2.6 | 141 4.6 | |
| 22 | 4 50.5 | 4 51.3 | 4 37.3 | 22 .7 | 82 2.7 | 142 4.6 | |
| 23 | 4 50.8 | 4 51.6 | 4 37.5 | 23 .7 | 83 2.7 | 143 4.6 | |
| 24 | 4 51.0 | 4 51.8 | 4 37.7 | 24 .8 | 84 2.7 | 144 4.7 | |
| 25 | 4 51.3 | 4 52.1 | 4 38.0 | 25 .8 | 85 2.8 | 145 4.7 | |
| 26 | 4 51.5 | 4 52.3 | 4 38.2 | 26 .8 | 86 2.8 | 146 4.7 | |
| 27 | 4 51.8 | 4 52.6 | 4 38.5 | 27 .9 | 87 2.8 | 147 4.8 | |
| 28 | 4 52.0 | 4 52.8 | 4 38.7 | 28 .9 | 88 2.9 | 148 4.8 | |
| 29 | 4 52.3 | 4 53.1 | 4 38.9 | 29 .9 | 89 2.9 | 149 4.8 | |
| 30 | 4 52.5 | 4 53.3 | 4 39.2 | 30 .1 | 90 2.9 | 150 4.9 | |
| 31 | 4 52.8 | 4 53.6 | 4 39.4 | 31 .0 | 91 3.0 | 151 4.9 | |
| 32 | 4 53.0 | 4 53.8 | 4 39.7 | 32 .0 | 92 3.0 | 152 4.9 | |
| 33 | 4 53.3 | 4 54.1 | 4 39.9 | 33 .1 | 93 3.0 | 153 5.0 | |
| 34 | 4 53.5 | 4 54.3 | 4 40.1 | 34 .1 | 94 3.1 | 154 5.0 | |
| 35 | 4 53.8 | 4 54.6 | 4 40.4 | 35 .1 | 95 3.1 | 155 5.0 | |
| 36 | 4 54.0 | 4 54.8 | 4 40.6 | 36 .2 | 96 3.1 | 156 5.1 | |
| 37 | 4 54.3 | 4 55.1 | 4 40.8 | 37 .2 | 97 3.2 | 157 5.1 | |
| 38 | 4 54.5 | 4 55.3 | 4 41.1 | 38 .2 | 98 3.2 | 158 5.1 | |
| 39 | 4 54.8 | 4 55.6 | 4 41.3 | 39 .3 | 99 3.2 | 159 5.2 | |
| 40 | 4 55.0 | 4 55.8 | 4 41.6 | 40 .3 | 100 3.3 | 160 5.2 | |
| 41 | 4 55.3 | 4 56.1 | 4 41.8 | 41 .3 | 101 3.3 | 161 5.2 | |
| 42 | 4 55.5 | 4 56.3 | 4 42.0 | 42 .4 | 102 3.3 | 162 5.3 | |
| 43 | 4 55.8 | 4 56.6 | 4 42.3 | 43 .4 | 103 3.3 | 163 5.3 | |
| 44 | 4 56.0 | 4 56.8 | 4 42.5 | 44 .4 | 104 3.4 | 164 5.3 | |
| 45 | 4 56.3 | 4 57.1 | 4 42.8 | 45 .5 | 105 3.4 | 165 5.4 | |
| 46 | 4 56.5 | 4 57.3 | 4 43.0 | 46 .5 | 106 3.4 | 166 5.4 | |
| 47 | 4 56.8 | 4 57.6 | 4 43.2 | 47 .5 | 107 3.5 | 167 5.4 | |
| 48 | 4 57.0 | 4 57.8 | 4 43.5 | 48 .6 | 108 3.5 | 168 5.5 | |
| 49 | 4 57.3 | 4 58.1 | 4 43.7 | 49 .6 | 109 3.5 | 169 5.5 | |
| 50 | 4 57.5 | 4 58.3 | 4 43.9 | 50 .6 | 110 3.6 | 170 5.5 | |
| 51 | 4 57.8 | 4 58.6 | 4 44.2 | 51 .7 | 111 3.6 | 171 5.6 | |
| 52 | 4 58.0 | 4 58.8 | 4 44.4 | 52 .7 | 112 3.6 | 172 5.6 | |
| 53 | 4 58.3 | 4 59.1 | 4 44.7 | 53 .7 | 113 3.7 | 173 5.6 | |
| 54 | 4 58.5 | 4 59.3 | 4 44.9 | 54 .8 | 114 3.7 | 174 5.7 | |
| 55 | 4 58.8 | 4 59.6 | 4 45.1 | 55 .8 | 115 3.7 | 175 5.7 | |
| 56 | 4 59.0 | 4 59.8 | 4 45.4 | 56 .8 | 116 3.8 | 176 5.7 | |
| 57 | 4 59.3 | 4 59.5 | 4 45.6 | 57 .9 | 117 3.8 | 177 5.8 | |
| 58 | 4 59.5 | 4 59.7 | 4 45.9 | 58 .9 | 118 3.8 | 178 5.8 | |
| 59 | 4 59.8 | 4 59.8 | 4 46.1 | 59 .9 | 119 3.9 | 179 5.8 | |
| 60 | 5 .0 | 5 .8 | 4 46.3 | 60 .2 | 120 3.9 | 180 5.9 | |

0 h 20 min

0 h 21 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|--------------------|--------------|------------|------------|------------|---|---|--------------------|--------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA % | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA % | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 5 .0 | 5 .8 | 4 46.3 | 0 .0 | 60 2.1 | 120 4.1 | | 0 | 5 15.0 | 5 15.9 | 5 .7 | 0 .0 | 60 2.2 | 120 4.3 | |
| 1 | 5 .5 | 5 1.1 | 4 46.6 | 1 .0 | 61 2.1 | 121 4.1 | | 1 | 5 15.3 | 5 16.1 | 5 .9 | 1 .0 | 61 2.2 | 121 4.3 | |
| 2 | 5 .5 | 5 1.3 | 4 46.8 | 2 .1 | 62 2.1 | 122 4.2 | | 2 | 5 15.5 | 5 16.4 | 5 1.1 | 2 .1 | 62 2.2 | 122 4.4 | |
| 3 | 5 .8 | 5 1.6 | 4 47.0 | 3 .1 | 63 2.2 | 123 4.2 | | 3 | 5 15.8 | 5 16.6 | 5 1.4 | 3 .1 | 63 2.3 | 123 4.4 | |
| 4 | 5 1.0 | 5 1.8 | 4 47.3 | 4 .1 | 64 2.2 | 124 4.2 | | 4 | 5 16.0 | 5 16.9 | 5 1.6 | 4 .1 | 64 2.3 | 124 4.4 | |
| 5 | 5 1.3 | 5 2.1 | 4 47.5 | 5 .2 | 65 2.2 | 125 4.3 | | 5 | 5 16.3 | 5 17.1 | 5 1.8 | 5 .2 | 65 2.3 | 125 4.5 | |
| 6 | 5 1.5 | 5 2.3 | 4 47.8 | 6 .2 | 66 2.3 | 126 4.3 | | 6 | 5 16.5 | 5 17.4 | 5 2.1 | 6 .2 | 66 2.4 | 126 4.5 | |
| 7 | 5 1.8 | 5 2.6 | 4 48.0 | 7 .2 | 67 2.3 | 127 4.3 | | 7 | 5 16.8 | 5 17.6 | 5 2.3 | 7 .3 | 67 2.4 | 127 4.6 | |
| 8 | 5 2.0 | 5 2.8 | 4 48.2 | 8 .3 | 68 2.3 | 128 4.4 | | 8 | 5 17.0 | 5 17.9 | 5 2.6 | 8 .3 | 68 2.4 | 128 4.6 | |
| 9 | 5 2.3 | 5 3.1 | 4 48.5 | 9 .3 | 69 2.4 | 129 4.4 | | 9 | 5 17.3 | 5 18.1 | 5 2.8 | 9 .3 | 69 2.5 | 129 4.6 | |
| 10 | 5 2.5 | 5 3.3 | 4 48.7 | 10 .3 | 70 2.4 | 130 4.4 | | 10 | 5 17.5 | 5 18.4 | 5 3.0 | 10 .4 | 70 2.5 | 130 4.7 | |
| 11 | 5 2.8 | 5 3.6 | 4 49.0 | 11 .4 | 71 2.4 | 131 4.5 | | 11 | 5 17.8 | 5 18.6 | 5 3.3 | 11 .4 | 71 2.5 | 131 4.7 | |
| 12 | 5 3.0 | 5 3.8 | 4 49.2 | 12 .4 | 72 2.5 | 132 4.5 | | 12 | 5 18.0 | 5 18.9 | 5 3.5 | 12 .4 | 72 2.6 | 132 4.7 | |
| 13 | 5 3.3 | 5 4.1 | 4 49.4 | 13 .4 | 73 2.5 | 133 4.5 | | 13 | 5 18.3 | 5 19.1 | 5 3.8 | 13 .5 | 73 2.6 | 133 4.8 | |
| 14 | 5 3.5 | 5 4.3 | 4 49.7 | 14 .5 | 74 2.5 | 134 4.6 | | 14 | 5 18.5 | 5 19.4 | 5 4.0 | 14 .5 | 74 2.7 | 134 4.8 | |
| 15 | 5 3.8 | 5 4.6 | 4 49.9 | 15 .5 | 75 2.6 | 135 4.6 | | 15 | 5 18.8 | 5 19.6 | 5 4.2 | 15 .5 | 75 2.7 | 135 4.8 | |
| 16 | 5 4.0 | 5 4.8 | 4 50.2 | 16 .5 | 76 2.6 | 136 4.6 | | 16 | 5 19.0 | 5 19.9 | 5 4.5 | 16 .6 | 76 2.7 | 136 4.9 | |
| 17 | 5 4.3 | 5 5.1 | 4 50.4 | 17 .6 | 77 2.6 | 137 4.7 | | 17 | 5 19.3 | 5 20.1 | 5 4.7 | 17 .6 | 77 2.8 | 137 4.9 | |
| 18 | 5 4.5 | 5 5.3 | 4 50.6 | 18 .6 | 78 2.7 | 138 4.7 | | 18 | 5 19.5 | 5 20.4 | 5 4.9 | 18 .6 | 78 2.8 | 138 4.9 | |
| 19 | 5 4.8 | 5 5.6 | 4 50.9 | 19 .6 | 79 2.7 | 139 4.7 | | 19 | 5 19.8 | 5 20.6 | 5 5.2 | 19 .7 | 79 2.8 | 139 5.0 | |
| 20 | 5 5.0 | 5 5.8 | 4 51.1 | 20 .7 | 80 2.7 | 140 4.8 | | 20 | 5 20.0 | 5 20.9 | 5 5.4 | 20 .7 | 80 2.9 | 140 5.0 | |
| 21 | 5 5.3 | 5 6.1 | 4 51.3 | 21 .7 | 81 2.8 | 141 4.8 | | 21 | 5 20.3 | 5 21.1 | 5 5.7 | 21 .8 | 81 2.9 | 141 5.1 | |
| 22 | 5 5.5 | 5 6.3 | 4 51.6 | 22 .8 | 82 2.8 | 142 4.9 | | 22 | 5 20.5 | 5 21.4 | 5 5.9 | 22 .8 | 82 2.9 | 142 5.1 | |
| 23 | 5 5.8 | 5 6.6 | 4 51.8 | 23 .8 | 83 2.8 | 143 4.9 | | 23 | 5 20.8 | 5 21.6 | 5 6.1 | 23 .8 | 83 3.0 | 143 5.1 | |
| 24 | 5 6.0 | 5 6.9 | 4 52.1 | 24 .8 | 84 2.9 | 144 4.9 | | 24 | 5 21.0 | 5 21.9 | 5 6.4 | 24 .9 | 84 3.0 | 144 5.2 | |
| 25 | 5 6.3 | 5 7.1 | 4 52.3 | 25 .9 | 85 2.9 | 145 5.0 | | 25 | 5 21.3 | 5 22.1 | 5 6.6 | 25 .9 | 85 3.0 | 145 5.2 | |
| 26 | 5 6.5 | 5 7.4 | 4 52.5 | 26 .9 | 86 2.9 | 146 5.0 | | 26 | 5 21.5 | 5 22.4 | 5 6.9 | 26 .9 | 86 3.1 | 146 5.2 | |
| 27 | 5 6.8 | 5 7.6 | 4 52.8 | 27 .9 | 87 3.0 | 147 5.0 | | 27 | 5 21.8 | 5 22.6 | 5 7.1 | 27 1.0 | 87 3.1 | 147 5.3 | |
| 28 | 5 7.0 | 5 7.9 | 4 53.0 | 28 .1 | 88 3.0 | 148 5.1 | | 28 | 5 22.0 | 5 22.9 | 5 7.3 | 28 1.0 | 88 3.2 | 148 5.3 | |
| 29 | 5 7.3 | 5 8.1 | 4 53.3 | 29 .1 | 89 3.0 | 149 5.1 | | 29 | 5 22.3 | 5 23.1 | 5 7.6 | 29 1.0 | 89 3.2 | 149 5.3 | |
| 30 | 5 7.5 | 5 8.4 | 4 53.5 | 30 .1 | 90 3.1 | 150 5.1 | | 30 | 5 22.5 | 5 23.4 | 5 7.8 | 30 1.1 | 90 3.2 | 150 5.4 | |
| 31 | 5 7.8 | 5 8.6 | 4 53.7 | 31 .1 | 91 3.1 | 151 5.2 | | 31 | 5 22.8 | 5 23.6 | 5 8.0 | 31 1.1 | 91 3.3 | 151 5.4 | |
| 32 | 5 8.0 | 5 8.9 | 4 54.0 | 32 .1 | 92 3.1 | 152 5.2 | | 32 | 5 23.0 | 5 23.9 | 5 8.3 | 32 1.1 | 92 3.3 | 152 5.4 | |
| 33 | 5 8.3 | 5 9.1 | 4 54.2 | 33 .1 | 93 3.2 | 153 5.2 | | 33 | 5 23.3 | 5 24.1 | 5 8.5 | 33 1.2 | 93 3.3 | 153 5.5 | |
| 34 | 5 8.5 | 5 9.4 | 4 54.4 | 34 .2 | 94 3.2 | 154 5.3 | | 34 | 5 23.5 | 5 24.4 | 5 8.8 | 34 1.2 | 94 3.4 | 154 5.5 | |
| 35 | 5 8.8 | 5 9.6 | 4 54.7 | 35 .2 | 95 3.2 | 155 5.3 | | 35 | 5 23.8 | 5 24.6 | 5 9.0 | 35 1.3 | 95 3.4 | 155 5.6 | |
| 36 | 5 9.0 | 5 9.9 | 4 54.9 | 36 .2 | 96 3.3 | 156 5.3 | | 36 | 5 24.0 | 5 24.9 | 5 9.2 | 36 1.3 | 96 3.4 | 156 5.6 | |
| 37 | 5 9.3 | 5 10.1 | 4 55.2 | 37 .3 | 97 3.3 | 157 5.4 | | 37 | 5 24.3 | 5 25.2 | 5 9.5 | 37 1.3 | 97 3.5 | 157 5.6 | |
| 38 | 5 9.5 | 5 10.4 | 4 55.4 | 38 .3 | 98 3.3 | 158 5.4 | | 38 | 5 24.5 | 5 25.4 | 5 9.7 | 38 1.4 | 98 3.5 | 158 5.7 | |
| 39 | 5 9.8 | 5 10.6 | 4 55.6 | 39 .3 | 99 3.4 | 159 5.4 | | 39 | 5 24.8 | 5 25.7 | 5 10.0 | 39 1.4 | 99 3.5 | 159 5.7 | |
| 40 | 5 10.0 | 5 10.9 | 4 55.9 | 40 .4 | 100 3.4 | 160 5.5 | | 40 | 5 25.0 | 5 25.9 | 5 10.2 | 40 1.4 | 100 3.6 | 160 5.7 | |
| 41 | 5 10.3 | 5 11.1 | 4 56.1 | 41 .4 | 101 3.5 | 161 5.5 | | 41 | 5 25.3 | 5 26.2 | 5 10.4 | 41 1.5 | 101 3.6 | 161 5.8 | |
| 42 | 5 10.5 | 5 11.4 | 4 56.4 | 42 .4 | 102 3.5 | 162 5.5 | | 42 | 5 25.5 | 5 26.4 | 5 10.7 | 42 1.5 | 102 3.7 | 162 5.8 | |
| 43 | 5 10.8 | 5 11.6 | 4 56.6 | 43 .5 | 103 3.5 | 163 5.6 | | 43 | 5 25.8 | 5 26.7 | 5 10.9 | 43 1.5 | 103 3.7 | 163 5.8 | |
| 44 | 5 11.0 | 5 11.9 | 4 56.8 | 44 .5 | 104 3.6 | 164 5.6 | | 44 | 5 26.0 | 5 26.9 | 5 11.1 | 44 1.6 | 104 3.7 | 164 5.9 | |
| 45 | 5 11.3 | 5 12.1 | 4 57.1 | 45 .5 | 105 3.6 | 165 5.6 | | 45 | 5 26.3 | 5 27.2 | 5 11.4 | 45 1.6 | 105 3.8 | 165 5.9 | |
| 46 | 5 11.5 | 5 12.4 | 4 57.3 | 46 .6 | 106 3.6 | 166 5.7 | | 46 | 5 26.5 | 5 27.4 | 5 11.6 | 46 1.6 | 106 3.8 | 166 5.9 | |
| 47 | 5 11.8 | 5 12.6 | 4 57.5 | 47 .6 | 107 3.7 | 167 5.7 | | 47 | 5 26.8 | 5 27.7 | 5 11.9 | 47 1.7 | 107 3.8 | 167 6.0 | |
| 48 | 5 12.0 | 5 12.9 | 4 57.8 | 48 .6 | 108 3.7 | 168 5.7 | | 48 | 5 27.0 | 5 27.9 | 5 12.1 | 48 1.7 | 108 3.9 | 168 6.0 | |
| 49 | 5 12.3 | 5 13.1 | 4 58.0 | 49 .7 | 109 3.7 | 169 5.8 | | 49 | 5 27.3 | 5 28.2 | 5 12.3 | 49 1.8 | 109 3.9 | 169 6.1 | |
| 50 | 5 12.5 | 5 13.4 | 4 58.3 | 50 .7 | 110 3.8 | 170 5.8 | | 50 | 5 27.5 | 5 28.4 | 5 12.6 | 50 1.8 | 110 3.9 | 170 6.1 | |
| 51 | 5 12.8 | 5 13.6 | 4 58.5 | 51 .7 | 111 3.8 | 171 5.8 | | 51 | 5 27.8 | 5 28.7 | 5 12.8 | 51 1.8 | 111 4.0 | 171 6.1 | |
| 52 | 5 13.0 | 5 13.9 | 4 58.7 | 52 .8 | 112 3.8 | 172 5.9 | | 52 | 5 28.0 | 5 28.9 | 5 13.1 | 52 1.9 | 112 4.0 | 172 6.2 | |
| 53 | 5 13.3 | 5 14.1 | 4 59.0 | 53 .8 | 113 3.9 | 173 5.9 | | 53 | 5 28.3 | 5 29.2 | 5 13.3 | 53 1.9 | 113 4.0 | 173 6.2 | |
| 54 | 5 13.5 | 5 14.4 | 4 59.2 | 54 .8 | 114 3.9 | 174 5.9 | | 54 | 5 28.5 | 5 29.4 | 5 13.5 | 54 1.9 | 114 4.1 | 174 6.2 | |
| 55 | 5 13.8 | 5 14.6 | 4 59.5 | 55 .9 | 115 3.9 | 175 6.0 | | 55 | 5 28.8 | 5 29.7 | 5 13.8 | 55 2.0 | 115 4.1 | 175 6.3 | |
| 56 | 5 14.0 | 5 14.9 | 4 59.7 | 56 .9 | 116 4.0 | 176 6.0 | | 56 | 5 29.0 | 5 29.9 | 5 14.0 | 56 2.0 | 116 4.2 | 176 6.3 | |
| 57 | 5 14.3 | 5 15.1 | 4 59.9 | 57 .9 | 117 4.0 | 177 6.0 | | 57 | 5 29.3 | 5 30.2 | 5 14.3 | 57 2.0 | 117 4.2 | 177 6.3 | |
| 58 | 5 14.5 | 5 15.4 | 4 60.2 | 58 .2 | 118 4.0 | 178 6.1 | | 58 | 5 29.5 | 5 30.4 | 5 14.5 | 58 2.1 | 118 4.2 | 178 6.4 | |
| 59 | 5 14.8 | 5 15.6 | 4 60.4 | 59 .2 | 119 4.1 | 179 6.1 | | 59 | 5 29.8 | 5 30.7 | 5 14.7 | 59 2.1 | 119 4.3 | 179 6.4 | |
| 60 | 5 15.0 | 5 15.9 | 4 60 .7 | 60 .2 | 120 4.1 | 180 6.2 | | 60 | 5 30.0 | 5 30.9 | 5 15.0 | 60 2.2 | 120 4.3 | 180 6.5 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|--------------------|--------------|------------|------------|------------|--|---|--------------------|--------------------|--------------|------------|----------|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA % | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA % | Δ popr. | Δ pop | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 5 30.0 | 5 30.9 | 5 15.0 | 0 .0 | 60 2.3 | 120 4.5 | |
| 1 | 5 30.3 | 5 31.2 | 5 15.2 | 1 .0 | 61 2.3 | 121 4.5 | |
| 2 | 5 30.5 | 5 31.4 | 5 15.4 | 2 .1 | 62 2.3 | 122 4.6 | |
| 3 | 5 30.8 | 5 31.7 | 5 15.7 | 3 .1 | 63 2.4 | 123 4.6 | |
| 4 | 5 31.0 | 5 31.9 | 5 15.9 | 4 .2 | 64 2.4 | 124 4.7 | |
| 5 | 5 31.3 | 5 32.2 | 5 16.2 | 5 .2 | 65 2.4 | 125 4.7 | |
| 6 | 5 31.5 | 5 32.4 | 5 16.4 | 6 .2 | 66 2.5 | 126 4.7 | |
| 7 | 5 31.8 | 5 32.7 | 5 16.6 | 7 .3 | 67 2.5 | 127 4.8 | |
| 8 | 5 32.0 | 5 32.9 | 5 16.8 | 8 .3 | 68 2.6 | 128 4.8 | |
| 9 | 5 32.3 | 5 33.2 | 5 17.1 | 9 .3 | 69 2.6 | 129 4.8 | |
| 10 | 5 32.5 | 5 33.4 | 5 17.4 | 10 .4 | 70 2.6 | 130 4.9 | |
| 11 | 5 32.8 | 5 33.7 | 5 17.6 | 11 .4 | 71 2.7 | 131 4.9 | |
| 12 | 5 33.0 | 5 33.9 | 5 17.8 | 12 .5 | 72 2.7 | 132 5.0 | |
| 13 | 5 33.3 | 5 34.2 | 5 18.1 | 13 .5 | 73 2.7 | 133 5.0 | |
| 14 | 5 33.5 | 5 34.4 | 5 18.3 | 14 .5 | 74 2.8 | 134 5.0 | |
| 15 | 5 33.8 | 5 34.7 | 5 18.5 | 15 .6 | 75 2.8 | 135 5.1 | |
| 16 | 5 34.0 | 5 34.9 | 5 18.8 | 16 .6 | 76 2.9 | 136 5.1 | |
| 17 | 5 34.3 | 5 35.2 | 5 19.0 | 17 .6 | 77 2.9 | 137 5.1 | |
| 18 | 5 34.5 | 5 35.4 | 5 19.3 | 18 .7 | 78 2.9 | 138 5.2 | |
| 19 | 5 34.8 | 5 35.7 | 5 19.5 | 19 .7 | 79 3.0 | 139 5.2 | |
| 20 | 5 35.0 | 5 35.9 | 5 19.7 | 20 .8 | 80 3.0 | 140 5.3 | |
| 21 | 5 35.3 | 5 36.2 | 5 20.0 | 21 .8 | 81 3.0 | 141 5.3 | |
| 22 | 5 35.5 | 5 36.4 | 5 20.2 | 22 .8 | 82 3.1 | 142 5.3 | |
| 23 | 5 35.8 | 5 36.7 | 5 20.5 | 23 .9 | 83 3.1 | 143 5.4 | |
| 24 | 5 36.0 | 5 36.9 | 5 20.7 | 24 .9 | 84 3.2 | 144 5.4 | |
| 25 | 5 36.3 | 5 37.2 | 5 20.9 | 25 .9 | 85 3.2 | 145 5.4 | |
| 26 | 5 36.5 | 5 37.4 | 5 21.2 | 26 .0 | 86 3.2 | 146 5.5 | |
| 27 | 5 36.8 | 5 37.7 | 5 21.4 | 27 .0 | 87 3.3 | 147 5.5 | |
| 28 | 5 37.0 | 5 37.9 | 5 21.6 | 28 .1 | 88 3.3 | 148 5.6 | |
| 29 | 5 37.3 | 5 38.2 | 5 21.9 | 29 .1 | 89 3.3 | 149 5.6 | |
| 30 | 5 37.5 | 5 38.4 | 5 22.1 | 30 .1 | 90 3.4 | 150 5.6 | |
| 31 | 5 37.8 | 5 38.7 | 5 22.4 | 31 .2 | 91 3.4 | 151 5.7 | |
| 32 | 5 38.0 | 5 38.9 | 5 22.6 | 32 .2 | 92 3.5 | 152 5.7 | |
| 33 | 5 38.3 | 5 39.2 | 5 22.8 | 33 .2 | 93 3.5 | 153 5.7 | |
| 34 | 5 38.5 | 5 39.4 | 5 23.1 | 34 .3 | 94 3.5 | 154 5.8 | |
| 35 | 5 38.8 | 5 39.7 | 5 23.3 | 35 .3 | 95 3.6 | 155 5.8 | |
| 36 | 5 39.0 | 5 39.9 | 5 23.6 | 36 .4 | 96 3.6 | 156 5.9 | |
| 37 | 5 39.3 | 5 40.2 | 5 23.8 | 37 .4 | 97 3.6 | 157 5.9 | |
| 38 | 5 39.5 | 5 40.4 | 5 24.0 | 38 .4 | 98 3.7 | 158 5.9 | |
| 39 | 5 39.8 | 5 40.7 | 5 24.3 | 39 .5 | 99 3.7 | 159 6.0 | |
| 40 | 5 40.0 | 5 40.9 | 5 24.5 | 40 .5 | 100 3.8 | 160 6.0 | |
| 41 | 5 40.3 | 5 41.2 | 5 24.7 | 41 .5 | 101 3.8 | 161 6.0 | |
| 42 | 5 40.5 | 5 41.4 | 5 25.0 | 42 .6 | 102 3.8 | 162 6.1 | |
| 43 | 5 40.8 | 5 41.7 | 5 25.2 | 43 .6 | 103 3.9 | 163 6.1 | |
| 44 | 5 41.0 | 5 41.9 | 5 25.5 | 44 .7 | 104 3.9 | 164 6.2 | |
| 45 | 5 41.3 | 5 42.2 | 5 25.7 | 45 .7 | 105 3.9 | 165 6.2 | |
| 46 | 5 41.5 | 5 42.4 | 5 25.9 | 46 .7 | 106 4.0 | 166 6.2 | |
| 47 | 5 41.8 | 5 42.7 | 5 26.2 | 47 .8 | 107 4.0 | 167 6.3 | |
| 48 | 5 42.0 | 5 43.0 | 5 26.4 | 48 .8 | 108 4.1 | 168 6.3 | |
| 49 | 5 42.3 | 5 43.2 | 5 26.7 | 49 .8 | 109 4.1 | 169 6.3 | |
| 50 | 5 42.5 | 5 43.5 | 5 26.9 | 50 .9 | 110 4.1 | 170 6.4 | |
| 51 | 5 42.8 | 5 43.7 | 5 27.1 | 51 .9 | 111 4.2 | 171 6.4 | |
| 52 | 5 43.0 | 5 44.0 | 5 27.4 | 52 .0 | 112 4.2 | 172 6.5 | |
| 53 | 5 43.3 | 5 44.2 | 5 27.6 | 53 .2 | 113 4.2 | 173 6.5 | |
| 54 | 5 43.5 | 5 44.5 | 5 27.9 | 54 .2 | 114 4.3 | 174 6.5 | |
| 55 | 5 43.8 | 5 44.7 | 5 28.1 | 55 .2 | 115 4.3 | 175 6.6 | |
| 56 | 5 44.0 | 5 45.0 | 5 28.3 | 56 .2 | 116 4.4 | 176 6.6 | |
| 57 | 5 44.3 | 5 45.2 | 5 28.6 | 57 .2 | 117 4.4 | 177 6.6 | |
| 58 | 5 44.5 | 5 45.5 | 5 28.8 | 58 .2 | 118 4.4 | 178 6.7 | |
| 59 | 5 44.8 | 5 45.7 | 5 29.0 | 59 .2 | 119 4.5 | 179 6.7 | |
| 60 | 5 45.0 | 5 46.0 | 5 29.3 | 60 .2 | 120 4.5 | 180 6.8 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 5 45.0 | 5 46.0 | 5 29.3 | 0 .0 | 60 2.4 | 120 4.7 | |
| 1 | 5 45.3 | 5 46.2 | 5 29.5 | 1 .0 | 61 2.4 | 121 4.7 | |
| 2 | 5 45.5 | 5 46.5 | 5 29.8 | 2 .1 | 62 2.4 | 122 4.8 | |
| 3 | 5 45.8 | 5 46.7 | 5 30.0 | 3 .1 | 63 2.5 | 123 4.8 | |
| 4 | 5 46.0 | 5 47.0 | 5 30.2 | 4 .2 | 64 2.5 | 124 4.9 | |
| 5 | 5 46.3 | 5 47.2 | 5 30.5 | 5 .2 | 65 2.5 | 125 4.9 | |
| 6 | 5 46.5 | 5 47.5 | 5 30.7 | 6 .2 | 66 2.6 | 126 4.9 | |
| 7 | 5 46.8 | 5 47.7 | 5 31.0 | 7 .3 | 67 2.6 | 127 5.0 | |
| 8 | 5 47.0 | 5 48.0 | 5 31.2 | 8 .3 | 68 2.7 | 128 5.0 | |
| 9 | 5 47.3 | 5 48.2 | 5 31.4 | 9 .4 | 69 2.7 | 129 5.1 | |
| 10 | 5 47.5 | 5 48.5 | 5 31.7 | 10 .4 | 70 2.7 | 130 5.1 | |
| 11 | 5 47.8 | 5 48.7 | 5 31.9 | 11 .4 | 71 2.8 | 131 5.1 | |
| 12 | 5 48.0 | 5 49.0 | 5 32.1 | 12 .5 | 72 2.8 | 132 5.2 | |
| 13 | 5 48.3 | 5 49.2 | 5 32.4 | 13 .5 | 73 2.9 | 133 5.2 | |
| 14 | 5 48.5 | 5 49.5 | 5 32.6 | 14 .5 | 74 2.9 | 134 5.2 | |
| 15 | 5 48.8 | 5 49.7 | 5 32.9 | 15 .6 | 75 2.9 | 135 5.3 | |
| 16 | 5 49.0 | 5 50.0 | 5 33.1 | 16 .6 | 76 3.0 | 136 5.3 | |
| 17 | 5 49.3 | 5 50.2 | 5 33.3 | 17 .7 | 77 3.0 | 137 5.4 | |
| 18 | 5 49.5 | 5 50.5 | 5 33.6 | 18 .7 | 78 3.1 | 138 5.4 | |
| 19 | 5 49.8 | 5 50.7 | 5 33.8 | 19 .7 | 79 3.1 | 139 5.4 | |
| 20 | 5 50.0 | 5 51.0 | 5 34.1 | 20 .8 | 80 3.1 | 140 5.5 | |
| 21 | 5 50.3 | 5 51.2 | 5 34.3 | 21 .8 | 81 3.2 | 141 5.5 | |
| 22 | 5 50.5 | 5 51.5 | 5 34.5 | 22 .9 | 82 3.2 | 142 5.6 | |
| 23 | 5 50.8 | 5 51.7 | 5 34.8 | 23 .9 | 83 3.3 | 143 5.6 | |
| 24 | 5 51.0 | 5 52.0 | 5 35.0 | 24 .9 | 84 3.3 | 144 5.6 | |
| 25 | 5 51.3 | 5 52.2 | 5 35.2 | 25 .0 | 85 3.3 | 145 5.7 | |
| 26 | 5 51.5 | 5 52.5 | 5 35.5 | 26 .0 | 86 3.4 | 146 5.7 | |
| 27 | 5 51.8 | 5 52.7 | 5 35.7 | 27 .1 | 87 3.4 | 147 5.8 | |
| 28 | 5 52.0 | 5 53.0 | 5 36.0 | 28 .1 | 88 3.4 | 148 5.8 | |
| 29 | 5 52.3 | 5 53.2 | 5 36.2 | 29 .1 | 89 3.5 | 149 5.8 | |
| 30 | 5 52.5 | 5 53.5 | 5 36.4 | 30 .1 | 90 3.5 | 150 5.9 | |
| 31 | 5 52.8 | 5 53.7 | 5 36.7 | 31 .2 | 91 3.6 | 151 5.9 | |
| 32 | 5 53.0 | 5 54.0 | 5 36.9 | 32 .3 | 92 3.6 | 152 6.0 | |
| 33 | 5 53.3 | 5 54.2 | 5 37.2 | 33 .3 | 93 3.6 | 153 6.0 | |
| 34 | 5 53.5 | 5 54.5 | 5 37.4 | 34 .3 | 94 3.7 | 154 6.0 | |
| 35 | 5 53.8 | 5 54.7 | 5 37.6 | 35 .4 | 95 3.7 | 155 6.1 | |
| 36 | 5 54.0 | 5 55.0 | 5 37.9 | 36 .4 | 96 3.8 | 156 6.1 | |
| 37 | 5 54.3 | 5 55.2 | 5 38.1 | 37 .4 | 97 3.8 | 157 6.1 | |
| 38 | 5 54.5 | 5 55.5 | 5 38.4 | 38 .5 | 98 3.8 | 158 6.2 | |
| 39 | 5 54.8 | 5 55.7 | 5 38.6 | 39 .5 | 99 3.9 | 159 6.2 | |
| 40 | 5 55.0 | 5 56.0 | 5 38.8 | 40 .6 | 100 3.9 | 160 6.3 | |
| 41 | 5 55.3 | 5 56.2 | 5 39.1 | 41 .6 | 101 4.0 | 161 6.3 | |
| 42 | 5 55.5 | 5 56.5 | 5 39.3 | 42 .6 | 102 4.0 | 162 6.3 | |
| 43 | 5 55.8 | 5 56.7 | 5 39.5 | 43 .7 | 103 4.0 | 163 6.4 | |
| 44 | 5 56.0 | 5 57.0 | 5 39.8 | 44 .7 | 104 4.1 | 164 6.4 | |
| 45 | 5 56.3 | 5 57.2 | 5 40.0 | 45 .8 | 105 4.1 | 165 6.5 | |
| 46 | 5 56.5 | 5 57.5 | 5 40.3 | 46 .8 | 106 4.2 | 166 6.5 | |
| 47 | 5 56.8 | 5 57.7 | 5 40.5 | 47 .8 | 107 4.2 | 167 6.5 | |
| 48 | 5 57.0 | 5 58.0 | 5 40.7 | 48 .9 | 108 4.2 | 168 6.6 | |
| 49 | 5 57.3 | 5 58.2 | 5 41.0 | 49 .9 | 109 4.3 | 169 6.6 | |
| 50 | 5 57.5 | 5 58.5 | 5 41.2 | 50 .2 | 110 4.3 | 170 6.7 | |
| 51 | 5 57.8 | 5 58.7 | 5 41.5 | 51 .2 | 111 4.3 | 171 6.7 | |
| 52 | 5 58.0 | 5 59.0 | 5 41.7 | 52 .2 | 112 4.4 | 172 6.7 | |
| 53 | 5 58.3 | 5 59.2 | 5 41.9 | 53 .2 | 113 4.4 | 173 6.8 | |
| 54 | 5 58.5 | 5 59.5 | 5 42.2 | 54 .2 | 114 4.5 | 174 6.8 | |
| 55 | 5 58.8 | 5 59.7 | 5 42.4 | 55 .2 | 115 4.5 | 175 6.9 | |
| 56 | 5 59.0 | 5 60.0 | 5 42.6 | 56 .2 | 116 4.5 | 176 6.9 | |
| 57 | 5 59.3 | 5 60.2 | 5 42.9 | 57 .2 | 117 4.6 | 177 6.9 | |
| 58 | 5 59.5 | 5 60.5 | 5 43.1 | 58 .2 | 118 4.6 | 178 7.0 | |
| 59 | 5 59.8 | 5 60.7 | 5 43.4 | 59 .3 | 119 4.7 | 179 7.0 | |
| 60 | 6 .0 | 6 .1 | 5 43.6 | 60 .4 | 120 4.7 | 180 7.1 | |

0 h 24 min

0 h 25 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 6 .0 | 6 1.0 | 5 43.6 | 0 .0 | 60 2.5 | 120 4.9 | | 0 | 6 15.0 | 6 16.0 | 5 57.9 | 0 .0 | 60 2.6 | 120 5.1 | |
| 1 | 6 .3 | 6 1.3 | 5 43.8 | 1 .0 | 61 2.5 | 121 4.9 | | 1 | 6 15.3 | 6 16.3 | 5 58.2 | 1 .0 | 61 2.6 | 121 5.1 | |
| 2 | 6 .6 | 6 1.5 | 5 44.1 | 2 .1 | 62 2.5 | 122 5.0 | | 2 | 6 15.5 | 6 16.5 | 5 58.4 | 2 .1 | 62 2.6 | 122 5.2 | |
| 3 | 6 .8 | 6 1.8 | 5 44.3 | 3 .1 | 63 2.6 | 123 5.0 | | 3 | 6 15.8 | 6 16.8 | 5 58.6 | 3 .1 | 63 2.7 | 123 5.2 | |
| 4 | 6 1.0 | 6 2.0 | 5 44.6 | 4 .2 | 64 2.6 | 124 5.1 | | 4 | 6 16.0 | 6 17.0 | 5 58.9 | 4 .2 | 64 2.7 | 124 5.3 | |
| 5 | 6 1.3 | 6 2.3 | 5 44.8 | 5 .2 | 65 2.7 | 125 5.1 | | 5 | 6 16.3 | 6 17.3 | 5 59.1 | 5 .2 | 65 2.8 | 125 5.3 | |
| 6 | 6 1.5 | 6 2.5 | 5 45.0 | 6 .2 | 66 2.7 | 126 5.1 | | 6 | 6 16.5 | 6 17.5 | 5 59.3 | 6 .3 | 66 2.8 | 126 5.4 | |
| 7 | 6 1.8 | 6 2.8 | 5 45.3 | 7 .3 | 67 2.7 | 127 5.2 | | 7 | 6 16.8 | 6 17.8 | 5 59.6 | 7 .3 | 67 2.8 | 127 5.4 | |
| 8 | 6 2.0 | 6 3.0 | 5 45.5 | 8 .3 | 68 2.8 | 128 5.2 | | 8 | 6 17.0 | 6 18.0 | 5 59.8 | 8 .3 | 68 2.9 | 128 5.4 | |
| 9 | 6 2.3 | 6 3.3 | 5 45.7 | 9 .4 | 69 2.8 | 129 5.3 | | 9 | 6 17.3 | 6 18.3 | 6 .1 | 9 .4 | 69 2.9 | 129 5.5 | |
| 10 | 6 2.5 | 6 3.5 | 5 46.0 | 10 .4 | 70 2.9 | 130 5.3 | | 10 | 6 17.5 | 6 18.5 | 6 .3 | 10 .4 | 70 3.0 | 130 5.5 | |
| 11 | 6 2.8 | 6 3.8 | 5 46.2 | 11 .4 | 71 2.9 | 131 5.3 | | 11 | 6 17.8 | 6 18.8 | 6 .5 | 11 .5 | 71 3.0 | 131 5.6 | |
| 12 | 6 3.0 | 6 4.0 | 5 46.5 | 12 .5 | 72 2.9 | 132 5.4 | | 12 | 6 18.0 | 6 19.1 | 6 .8 | 12 .5 | 72 3.1 | 132 5.6 | |
| 13 | 6 3.3 | 6 4.3 | 5 46.7 | 13 .5 | 73 3.0 | 133 5.4 | | 13 | 6 18.3 | 6 19.3 | 6 1.0 | 13 .6 | 73 3.1 | 133 5.7 | |
| 14 | 6 3.5 | 6 4.5 | 5 46.9 | 14 .6 | 74 3.0 | 134 5.5 | | 14 | 6 18.5 | 6 19.6 | 6 1.3 | 14 .6 | 74 3.1 | 134 5.7 | |
| 15 | 6 3.8 | 6 4.8 | 5 47.2 | 15 .6 | 75 3.1 | 135 5.5 | | 15 | 6 18.8 | 6 19.8 | 6 1.5 | 15 .6 | 75 3.2 | 135 5.7 | |
| 16 | 6 4.0 | 6 5.0 | 5 47.4 | 16 .7 | 76 3.1 | 136 5.6 | | 16 | 6 19.0 | 6 20.1 | 6 1.7 | 16 .7 | 76 3.2 | 136 5.8 | |
| 17 | 6 4.3 | 6 5.3 | 5 47.7 | 17 .7 | 77 3.1 | 137 5.6 | | 17 | 6 19.3 | 6 20.3 | 6 2.0 | 17 .7 | 77 3.3 | 137 5.8 | |
| 18 | 6 4.5 | 6 5.5 | 5 47.9 | 18 .7 | 78 3.2 | 138 5.6 | | 18 | 6 19.5 | 6 20.6 | 6 2.2 | 18 .8 | 78 3.3 | 138 5.9 | |
| 19 | 6 4.8 | 6 5.8 | 5 48.1 | 19 .8 | 79 3.2 | 139 5.7 | | 19 | 6 19.8 | 6 20.8 | 6 2.5 | 19 .8 | 79 3.4 | 139 5.9 | |
| 20 | 6 5.0 | 6 6.0 | 5 48.4 | 20 .8 | 80 3.3 | 140 5.7 | | 20 | 6 20.0 | 6 21.1 | 6 2.7 | 20 .9 | 80 3.4 | 140 6.0 | |
| 21 | 6 5.3 | 6 6.3 | 5 48.6 | 21 .9 | 81 3.3 | 141 5.8 | | 21 | 6 20.3 | 6 21.3 | 6 2.9 | 21 .9 | 81 3.4 | 141 6.0 | |
| 22 | 6 5.5 | 6 6.5 | 5 48.8 | 22 .9 | 82 3.3 | 142 5.8 | | 22 | 6 20.5 | 6 21.6 | 6 3.2 | 22 .9 | 82 3.5 | 142 6.0 | |
| 23 | 6 5.8 | 6 6.8 | 5 49.1 | 23 .9 | 83 3.4 | 143 5.8 | | 23 | 6 20.8 | 6 21.8 | 6 3.4 | 23 1.0 | 83 3.5 | 143 6.1 | |
| 24 | 6 6.0 | 6 7.0 | 5 49.3 | 24 1.0 | 84 3.4 | 144 5.9 | | 24 | 6 21.0 | 6 22.1 | 6 3.6 | 24 1.0 | 84 3.6 | 144 6.1 | |
| 25 | 6 6.3 | 6 7.3 | 5 49.6 | 25 1.0 | 85 3.5 | 145 5.9 | | 25 | 6 21.3 | 6 22.3 | 6 3.9 | 25 1.1 | 85 3.6 | 145 6.2 | |
| 26 | 6 6.5 | 6 7.5 | 5 49.8 | 26 1.1 | 86 3.5 | 146 6.0 | | 26 | 6 21.5 | 6 22.6 | 6 4.1 | 26 1.1 | 86 3.7 | 146 6.2 | |
| 27 | 6 6.8 | 6 7.8 | 5 50.0 | 27 1.1 | 87 3.6 | 147 6.0 | | 27 | 6 21.8 | 6 22.8 | 6 4.4 | 27 1.1 | 87 3.7 | 147 6.2 | |
| 28 | 6 7.0 | 6 8.0 | 5 50.3 | 28 1.1 | 88 3.6 | 148 6.0 | | 28 | 6 22.0 | 6 23.1 | 6 4.6 | 28 1.2 | 88 3.7 | 148 6.3 | |
| 29 | 6 7.3 | 6 8.3 | 5 50.5 | 29 1.2 | 89 3.6 | 149 6.1 | | 29 | 6 22.3 | 6 23.3 | 6 4.8 | 29 1.2 | 89 3.8 | 149 6.3 | |
| 30 | 6 7.5 | 6 8.5 | 5 50.8 | 30 1.2 | 90 3.7 | 150 6.1 | | 30 | 6 22.5 | 6 23.6 | 6 5.1 | 30 1.3 | 90 3.8 | 150 6.4 | |
| 31 | 6 7.8 | 6 8.8 | 5 51.0 | 31 1.3 | 91 3.7 | 151 6.2 | | 31 | 6 22.8 | 6 23.8 | 6 5.3 | 31 1.3 | 91 3.9 | 151 6.4 | |
| 32 | 6 8.0 | 6 9.0 | 5 51.2 | 32 1.3 | 92 3.8 | 152 6.2 | | 32 | 6 23.0 | 6 24.1 | 6 5.6 | 32 1.4 | 92 3.9 | 152 6.5 | |
| 33 | 6 8.3 | 6 9.3 | 5 51.5 | 33 1.3 | 93 3.8 | 153 6.2 | | 33 | 6 23.3 | 6 24.3 | 6 5.8 | 33 1.4 | 93 4.0 | 153 6.5 | |
| 34 | 6 8.5 | 6 9.5 | 5 51.7 | 34 1.4 | 94 3.8 | 154 6.3 | | 34 | 6 23.5 | 6 24.6 | 6 6.0 | 34 1.4 | 94 4.0 | 154 6.5 | |
| 35 | 6 8.8 | 6 9.8 | 5 52.0 | 35 1.4 | 95 3.9 | 155 6.3 | | 35 | 6 23.8 | 6 24.8 | 6 6.3 | 35 1.5 | 95 4.0 | 155 6.6 | |
| 36 | 6 9.0 | 6 10.0 | 5 52.2 | 36 1.5 | 96 3.9 | 156 6.4 | | 36 | 6 24.0 | 6 25.1 | 6 6.5 | 36 1.5 | 96 4.1 | 156 6.6 | |
| 37 | 6 9.3 | 6 10.3 | 5 52.4 | 37 1.5 | 97 4.0 | 157 6.4 | | 37 | 6 24.3 | 6 25.3 | 6 6.7 | 37 1.6 | 97 4.1 | 157 6.7 | |
| 38 | 6 9.5 | 6 10.5 | 5 52.7 | 38 1.6 | 98 4.0 | 158 6.5 | | 38 | 6 24.5 | 6 25.6 | 6 7.0 | 38 1.6 | 98 4.2 | 158 6.7 | |
| 39 | 6 9.8 | 6 10.8 | 5 52.9 | 39 1.6 | 99 4.0 | 159 6.5 | | 39 | 6 24.8 | 6 25.8 | 6 7.2 | 39 1.7 | 99 4.2 | 159 6.8 | |
| 40 | 6 10.0 | 6 11.0 | 5 53.1 | 40 1.6 | 100 4.1 | 160 6.5 | | 40 | 6 25.0 | 6 26.1 | 6 7.5 | 40 1.7 | 100 4.3 | 160 6.8 | |
| 41 | 6 10.3 | 6 11.3 | 5 53.4 | 41 1.7 | 101 4.1 | 161 6.6 | | 41 | 6 25.3 | 6 26.3 | 6 7.7 | 41 1.7 | 101 4.3 | 161 6.8 | |
| 42 | 6 10.5 | 6 11.5 | 5 53.6 | 42 1.7 | 102 4.2 | 162 6.6 | | 42 | 6 25.5 | 6 26.6 | 6 7.9 | 42 1.8 | 102 4.3 | 162 6.9 | |
| 43 | 6 10.8 | 6 11.8 | 5 53.9 | 43 1.8 | 103 4.2 | 163 6.7 | | 43 | 6 25.8 | 6 26.8 | 6 8.2 | 43 1.8 | 103 4.4 | 163 6.9 | |
| 44 | 6 11.0 | 6 12.0 | 5 54.1 | 44 1.8 | 104 4.2 | 164 6.7 | | 44 | 6 26.0 | 6 27.1 | 6 8.4 | 44 1.9 | 104 4.4 | 164 7.0 | |
| 45 | 6 11.3 | 6 12.3 | 5 54.3 | 45 1.8 | 105 4.3 | 165 6.7 | | 45 | 6 26.3 | 6 27.3 | 6 8.7 | 45 1.9 | 105 4.5 | 165 7.0 | |
| 46 | 6 11.5 | 6 12.5 | 5 54.6 | 46 1.9 | 106 4.3 | 166 6.8 | | 46 | 6 26.5 | 6 27.6 | 6 8.9 | 46 2.0 | 106 4.5 | 166 7.1 | |
| 47 | 6 11.8 | 6 12.8 | 5 54.8 | 47 1.9 | 107 4.4 | 167 6.8 | | 47 | 6 26.8 | 6 27.8 | 6 9.1 | 47 2.0 | 107 4.5 | 167 7.1 | |
| 48 | 6 12.0 | 6 13.0 | 5 55.1 | 48 2.0 | 108 4.4 | 168 6.9 | | 48 | 6 27.0 | 6 28.1 | 6 9.4 | 48 2.0 | 108 4.6 | 168 7.1 | |
| 49 | 6 12.3 | 6 13.3 | 5 55.3 | 49 2.0 | 109 4.5 | 169 6.9 | | 49 | 6 27.3 | 6 28.3 | 6 9.6 | 49 2.1 | 109 4.6 | 169 7.2 | |
| 50 | 6 12.5 | 6 13.5 | 5 55.5 | 50 2.0 | 110 4.5 | 170 6.9 | | 50 | 6 27.5 | 6 28.6 | 6 9.8 | 50 2.1 | 110 4.7 | 170 7.2 | |
| 51 | 6 12.8 | 6 13.8 | 5 55.8 | 51 2.1 | 111 4.5 | 171 7.0 | | 51 | 6 27.8 | 6 28.8 | 6 10.1 | 51 2.2 | 111 4.7 | 171 7.3 | |
| 52 | 6 13.0 | 6 14.0 | 5 56.0 | 52 2.1 | 112 4.6 | 172 7.0 | | 52 | 6 28.0 | 6 29.1 | 6 10.3 | 52 2.2 | 112 4.8 | 172 7.3 | |
| 53 | 6 13.3 | 6 14.3 | 5 56.2 | 53 2.2 | 113 4.6 | 173 7.1 | | 53 | 6 28.3 | 6 29.3 | 6 10.6 | 53 2.3 | 113 4.8 | 173 7.4 | |
| 54 | 6 13.5 | 6 14.5 | 5 56.5 | 54 2.2 | 114 4.7 | 174 7.1 | | 54 | 6 28.5 | 6 29.6 | 6 10.8 | 54 2.3 | 114 4.8 | 174 7.4 | |
| 55 | 6 13.8 | 6 14.8 | 5 56.7 | 55 2.2 | 115 4.7 | 175 7.1 | | 55 | 6 28.8 | 6 29.8 | 6 11.0 | 55 2.3 | 115 4.9 | 175 7.4 | |
| 56 | 6 14.0 | 6 15.0 | 5 57.0 | 56 2.3 | 116 4.7 | 176 7.2 | | 56 | 6 29.0 | 6 30.1 | 6 11.3 | 56 2.4 | 116 4.9 | 176 7.5 | |
| 57 | 6 14.3 | 6 15.3 | 5 57.2 | 57 2.3 | 117 4.8 | 177 7.2 | | 57 | 6 29.3 | 6 30.3 | 6 11.5 | 57 2.4 | 117 5.0 | 177 7.5 | |
| 58 | 6 14.5 | 6 15.5 | 5 57.4 | 58 2.4 | 118 4.8 | 178 7.3 | | 58 | 6 29.5 | 6 30.6 | 6 11.8 | 58 2.5 | 118 5.0 | 178 7.6 | |
| 59 | 6 14.8 | 6 15.8 | 5 57.7 | 59 2.4 | 119 4.9 | 179 7.3 | | 59 | 6 29.8 | 6 30.8 | 6 12.0 | 59 2.5 | 119 5.1 | 179 7.6 | |
| 60 | 6 15.0 | 6 16.0 | 5 57.9 | 60 2.5 | 120 4.9 | 180 7.4 | | 60 | 6 30.0 | 6 31.1 | 6 12.2 | 60 2.6 | 120 5.1 | 180 7.7 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|--|--|--|--|---|--|--|--|--|--|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | | | | | | | | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 6 30.0 | 6 31.1 | 6 12.2 | 0 .0 | 60 2.7 | 120 5.3 | |
| 1 | 6 30.3 | 6 31.3 | 6 12.5 | 1 .0 | 61 2.7 | 121 5.3 | |
| 2 | 6 30.5 | 6 31.6 | 6 12.7 | 2 .1 | 62 2.7 | 122 5.4 | |
| 3 | 6 30.8 | 6 31.8 | 6 12.9 | 3 .1 | 63 2.8 | 123 5.4 | |
| 4 | 6 31.0 | 6 32.1 | 6 13.2 | 4 .2 | 64 2.8 | 124 5.5 | |
| 5 | 6 31.3 | 6 32.3 | 6 13.4 | 5 .2 | 65 2.9 | 125 5.5 | |
| 6 | 6 31.5 | 6 32.6 | 6 13.7 | 6 .3 | 66 2.9 | 126 5.6 | |
| 7 | 6 31.8 | 6 32.8 | 6 13.9 | 7 .3 | 67 3.0 | 127 5.6 | |
| 8 | 6 32.0 | 6 33.1 | 6 14.1 | 8 .4 | 68 3.0 | 128 5.7 | |
| 9 | 6 32.3 | 6 33.3 | 6 14.4 | 9 .4 | 69 3.0 | 129 5.7 | |
| 10 | 6 32.5 | 6 33.6 | 6 14.6 | 10 .4 | 70 3.1 | 130 5.7 | |
| 11 | 6 32.8 | 6 33.8 | 6 14.9 | 11 .5 | 71 3.1 | 131 5.8 | |
| 12 | 6 33.0 | 6 34.1 | 6 15.1 | 12 .5 | 72 3.2 | 132 5.8 | |
| 13 | 6 33.3 | 6 34.3 | 6 15.3 | 13 .6 | 73 3.2 | 133 5.9 | |
| 14 | 6 33.5 | 6 34.6 | 6 15.6 | 14 .6 | 74 3.3 | 134 5.9 | |
| 15 | 6 33.8 | 6 34.8 | 6 15.8 | 15 .7 | 75 3.3 | 135 6.0 | |
| 16 | 6 34.0 | 6 35.1 | 6 16.1 | 16 .7 | 76 3.4 | 136 6.0 | |
| 17 | 6 34.3 | 6 35.3 | 6 16.3 | 17 .8 | 77 3.4 | 137 6.1 | |
| 18 | 6 34.5 | 6 35.6 | 6 16.5 | 18 .8 | 78 3.4 | 138 6.1 | |
| 19 | 6 34.8 | 6 35.8 | 6 16.8 | 19 .8 | 79 3.5 | 139 6.1 | |
| 20 | 6 35.0 | 6 36.1 | 6 17.0 | 20 .9 | 80 3.5 | 140 6.2 | |
| 21 | 6 35.3 | 6 36.3 | 6 17.2 | 21 .9 | 81 3.6 | 141 6.2 | |
| 22 | 6 35.5 | 6 36.6 | 6 17.5 | 22 .0 | 82 3.6 | 142 6.3 | |
| 23 | 6 35.8 | 6 36.8 | 6 17.7 | 23 .0 | 83 3.7 | 143 6.3 | |
| 24 | 6 36.0 | 6 37.1 | 6 18.0 | 24 .1 | 84 3.7 | 144 6.4 | |
| 25 | 6 36.3 | 6 37.4 | 6 18.2 | 25 .1 | 85 3.8 | 145 6.4 | |
| 26 | 6 36.5 | 6 37.6 | 6 18.4 | 26 .1 | 86 3.8 | 146 6.4 | |
| 27 | 6 36.8 | 6 37.9 | 6 18.7 | 27 .2 | 87 3.8 | 147 6.5 | |
| 28 | 6 37.0 | 6 38.1 | 6 18.9 | 28 .2 | 88 3.9 | 148 6.5 | |
| 29 | 6 37.3 | 6 38.4 | 6 19.2 | 29 .3 | 89 3.9 | 149 6.6 | |
| 30 | 6 37.5 | 6 38.6 | 6 19.4 | 30 .3 | 90 4.0 | 150 6.6 | |
| 31 | 6 37.8 | 6 38.9 | 6 19.6 | 31 .4 | 91 4.0 | 151 6.7 | |
| 32 | 6 38.0 | 6 39.1 | 6 19.9 | 32 .4 | 92 4.1 | 152 6.7 | |
| 33 | 6 38.3 | 6 39.4 | 6 20.1 | 33 .5 | 93 4.1 | 153 6.8 | |
| 34 | 6 38.5 | 6 39.6 | 6 20.3 | 34 .5 | 94 4.2 | 154 6.8 | |
| 35 | 6 38.8 | 6 39.9 | 6 20.6 | 35 .5 | 95 4.2 | 155 6.8 | |
| 36 | 6 39.0 | 6 40.1 | 6 20.8 | 36 .6 | 96 4.2 | 156 6.9 | |
| 37 | 6 39.3 | 6 40.4 | 6 21.1 | 37 .6 | 97 4.3 | 157 6.9 | |
| 38 | 6 39.5 | 6 40.6 | 6 21.3 | 38 .7 | 98 4.3 | 158 7.0 | |
| 39 | 6 39.8 | 6 40.9 | 6 21.5 | 39 .7 | 99 4.4 | 159 7.0 | |
| 40 | 6 40.0 | 6 41.1 | 6 21.8 | 40 .8 | 100 4.4 | 160 7.1 | |
| 41 | 6 40.3 | 6 41.4 | 6 22.0 | 41 .8 | 101 4.5 | 161 7.1 | |
| 42 | 6 40.5 | 6 41.6 | 6 22.3 | 42 .9 | 102 4.5 | 162 7.2 | |
| 43 | 6 40.8 | 6 41.9 | 6 22.5 | 43 .9 | 103 4.5 | 163 7.2 | |
| 44 | 6 41.0 | 6 42.1 | 6 22.7 | 44 .9 | 104 4.6 | 164 7.2 | |
| 45 | 6 41.3 | 6 42.4 | 6 23.0 | 45 .2 | 105 4.6 | 165 7.3 | |
| 46 | 6 41.5 | 6 42.6 | 6 23.2 | 46 .2 | 106 4.7 | 166 7.3 | |
| 47 | 6 41.8 | 6 42.9 | 6 23.4 | 47 .1 | 107 4.7 | 167 7.4 | |
| 48 | 6 42.0 | 6 43.1 | 6 23.7 | 48 .2 | 108 4.8 | 168 7.4 | |
| 49 | 6 42.3 | 6 43.4 | 6 23.9 | 49 .2 | 109 4.8 | 169 7.5 | |
| 50 | 6 42.5 | 6 43.6 | 6 24.2 | 50 .2 | 110 4.9 | 170 7.5 | |
| 51 | 6 42.8 | 6 43.9 | 6 24.4 | 51 .3 | 111 4.9 | 171 7.6 | |
| 52 | 6 43.0 | 6 44.1 | 6 24.6 | 52 .3 | 112 4.9 | 172 7.6 | |
| 53 | 6 43.3 | 6 44.4 | 6 24.9 | 53 .3 | 113 5.0 | 173 7.6 | |
| 54 | 6 43.5 | 6 44.6 | 6 25.1 | 54 .4 | 114 5.0 | 174 7.7 | |
| 55 | 6 43.8 | 6 44.9 | 6 25.4 | 55 .4 | 115 5.1 | 175 7.7 | |
| 56 | 6 44.0 | 6 45.1 | 6 25.6 | 56 .5 | 116 5.1 | 176 7.8 | |
| 57 | 6 44.3 | 6 45.4 | 6 25.8 | 57 .5 | 117 5.2 | 177 7.8 | |
| 58 | 6 44.5 | 6 45.6 | 6 26.1 | 58 .6 | 118 5.2 | 178 7.9 | |
| 59 | 6 44.8 | 6 45.9 | 6 26.3 | 59 .6 | 119 5.3 | 179 7.9 | |
| 60 | 6 45.0 | 6 46.1 | 6 26.6 | 60 .7 | 120 5.3 | 180 8.0 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 6 45.0 | 6 46.1 | 6 26.6 | 0 .0 | 60 2.8 | 120 5.5 | |
| 1 | 6 45.3 | 6 46.4 | 6 26.8 | 1 .0 | 61 2.8 | 121 5.5 | |
| 2 | 6 45.5 | 6 46.6 | 6 27.0 | 2 .1 | 62 2.8 | 122 5.6 | |
| 3 | 6 45.8 | 6 46.9 | 6 27.3 | 3 .1 | 63 2.9 | 123 5.6 | |
| 4 | 6 46.0 | 6 47.1 | 6 27.5 | 4 .2 | 64 2.9 | 124 5.7 | |
| 5 | 6 46.3 | 6 47.4 | 6 27.7 | 5 .2 | 65 3.0 | 125 5.7 | |
| 6 | 6 46.5 | 6 47.6 | 6 28.0 | 6 .3 | 66 3.0 | 126 5.8 | |
| 7 | 6 46.8 | 6 47.9 | 6 28.2 | 7 .3 | 67 3.1 | 127 5.8 | |
| 8 | 6 47.0 | 6 48.1 | 6 28.5 | 8 .4 | 68 3.1 | 128 5.9 | |
| 9 | 6 47.3 | 6 48.4 | 6 28.7 | 9 .4 | 69 3.2 | 129 5.9 | |
| 10 | 6 47.5 | 6 48.6 | 6 28.9 | 10 .5 | 70 3.2 | 130 6.0 | |
| 11 | 6 47.8 | 6 48.9 | 6 29.2 | 11 .5 | 71 3.3 | 131 6.0 | |
| 12 | 6 48.0 | 6 49.1 | 6 29.4 | 12 .6 | 72 3.3 | 132 6.1 | |
| 13 | 6 48.3 | 6 49.4 | 6 29.7 | 13 .6 | 73 3.3 | 133 6.1 | |
| 14 | 6 48.5 | 6 49.6 | 6 29.9 | 14 .6 | 74 3.4 | 134 6.1 | |
| 15 | 6 48.8 | 6 49.9 | 6 30.1 | 15 .7 | 75 3.4 | 135 6.2 | |
| 16 | 6 49.0 | 6 50.1 | 6 30.4 | 16 .7 | 76 3.5 | 136 6.2 | |
| 17 | 6 49.3 | 6 50.4 | 6 30.6 | 17 .8 | 77 3.5 | 137 6.3 | |
| 18 | 6 49.5 | 6 50.6 | 6 30.8 | 18 .8 | 78 3.6 | 138 6.3 | |
| 19 | 6 49.8 | 6 50.9 | 6 31.1 | 19 .9 | 79 3.6 | 139 6.4 | |
| 20 | 6 50.0 | 6 51.1 | 6 31.3 | 20 .9 | 80 3.7 | 140 6.4 | |
| 21 | 6 50.3 | 6 51.4 | 6 31.6 | 21 .0 | 81 3.7 | 141 6.5 | |
| 22 | 6 50.5 | 6 51.6 | 6 31.8 | 22 .0 | 82 3.8 | 142 6.5 | |
| 23 | 6 50.8 | 6 51.9 | 6 32.0 | 23 .1 | 83 3.8 | 143 6.6 | |
| 24 | 6 51.0 | 6 52.1 | 6 32.3 | 24 .1 | 84 3.9 | 144 6.6 | |
| 25 | 6 51.3 | 6 52.4 | 6 32.5 | 25 .1 | 85 3.9 | 145 6.6 | |
| 26 | 6 51.5 | 6 52.6 | 6 32.8 | 26 .2 | 86 3.9 | 146 6.7 | |
| 27 | 6 51.8 | 6 52.9 | 6 33.0 | 27 .2 | 87 4.0 | 147 6.7 | |
| 28 | 6 52.0 | 6 53.1 | 6 33.2 | 28 .3 | 88 4.0 | 148 6.8 | |
| 29 | 6 52.3 | 6 53.4 | 6 33.5 | 29 .3 | 89 4.1 | 149 6.8 | |
| 30 | 6 52.5 | 6 53.6 | 6 33.7 | 30 .4 | 90 4.1 | 150 6.9 | |
| 31 | 6 52.8 | 6 53.9 | 6 33.9 | 31 .4 | 91 4.2 | 151 6.9 | |
| 32 | 6 53.0 | 6 54.1 | 6 34.2 | 32 .5 | 92 4.2 | 152 7.0 | |
| 33 | 6 53.3 | 6 54.4 | 6 34.4 | 33 .5 | 93 4.3 | 153 7.0 | |
| 34 | 6 53.5 | 6 54.6 | 6 34.7 | 34 .6 | 94 4.3 | 154 7.1 | |
| 35 | 6 53.8 | 6 54.9 | 6 34.9 | 35 .6 | 95 4.4 | 155 7.1 | |
| 36 | 6 54.0 | 6 55.2 | 6 35.1 | 36 .7 | 96 4.4 | 156 7.2 | |
| 37 | 6 54.3 | 6 55.4 | 6 35.4 | 37 .7 | 97 4.4 | 157 7.2 | |
| 38 | 6 54.5 | 6 55.7 | 6 35.6 | 38 .7 | 98 4.5 | 158 7.2 | |
| 39 | 6 54.8 | 6 55.9 | 6 35.9 | 39 .8 | 99 4.5 | 159 7.3 | |
| 40 | 6 55.0 | 6 56.2 | 6 36.1 | 40 .8 | 100 4.6 | 160 7.3 | |
| 41 | 6 55.3 | 6 56.4 | 6 36.3 | 41 .9 | 101 4.6 | 161 7.4 | |
| 42 | 6 55.5 | 6 56.7 | 6 36.6 | 42 .9 | 102 4.7 | 162 7.4 | |
| 43 | 6 55.8 | 6 56.9 | 6 36.8 | 43 .0 | 103 4.7 | 163 7.5 | |
| 44 | 6 56.0 | 6 57.2 | 6 37.0 | 44 .0 | 104 4.8 | 164 7.5 | |
| 45 | 6 56.3 | 6 57.4 | 6 37.3 | 45 .1 | 105 4.8 | 165 7.6 | |
| 46 | 6 56.5 | 6 57.7 | 6 37.5 | 46 .1 | 106 4.9 | 166 7.6 | |
| 47 | 6 56.8 | 6 57.9 | 6 37.8 | 47 .2 | 107 4.9 | 167 7.7 | |
| 48 | 6 57.0 | 6 58.2 | 6 38.0 | 48 .2 | 108 5.0 | 168 7.7 | |
| 49 | 6 57.3 | 6 58.4 | 6 38.2 | 49 .2 | 109 5.0 | 169 7.7 | |
| 50 | 6 57.5 | 6 58.7 | 6 38.5 | 50 .2 | 110 5.0 | 170 7.8 | |
| 51 | 6 57.8 | 6 58.9 | 6 38.7 | 51 .3 | 111 5.1 | 171 7.8 | |
| 52 | 6 58.0 | 6 59.2 | 6 39.0 | 52 .4 | 112 5.1 | 172 7.9 | |
| 53 | 6 58.3 | 6 59.4 | 6 39.2 | 53 .4 | 113 5.2 | 173 7.9 | |
| 54 | 6 58.5 | 6 59.7 | 6 39.4 | 54 .5 | 114 5.2 | 174 8.0 | |
| 55 | 6 58.8 | 6 59.9 | 6 39.7 | 55 .5 | 115 5.3 | 175 8.0 | |
| 56 | 6 59.0 | 6 60.2 | 6 39.9 | 56 .6 | 116 5.3 | 176 8.1 | |
| 57 | 6 59.3 | 6 60.4 | 6 40.2 | 57 .6 | 117 5.4 | 177 8.1 | |
| 58 | 6 59.5 | 6 60.7 | 6 40.4 | 58 .7 | 118 5.4 | 178 8.2 | |
| 59 | 6 59.8 | 6 60.9 | 6 40.6 | 59 .7 | 119 5.5 | 179 8.2 | |
| 60 | 6 70.0 | 6 61.2 | 6 40.9 | 60 .8 | 120 5.5 | 180 8.3 | |

0 h 28 min

0 h 29 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 7 .0 | 7 1.2 | 6 40.9 | 0 .0 | 60 2.9 | 120 5.7 | |
| 1 | 7 .3 | 7 1.4 | 6 41.1 | 1 .0 | 61 2.9 | 121 5.7 | |
| 2 | 7 .5 | 7 1.7 | 6 41.3 | 2 .1 | 62 2.9 | 122 5.8 | |
| 3 | 7 .8 | 7 1.9 | 6 41.6 | 3 .1 | 63 3.0 | 123 5.8 | |
| 4 | 7 1.0 | 7 2.2 | 6 41.8 | 4 .2 | 64 3.0 | 124 5.9 | |
| 5 | 7 1.3 | 7 2.4 | 6 42.1 | 5 .2 | 65 3.1 | 125 5.9 | |
| 6 | 7 1.5 | 7 2.7 | 6 42.3 | 6 .3 | 66 3.1 | 126 6.0 | |
| 7 | 7 1.8 | 7 2.9 | 6 42.5 | 7 .3 | 67 3.2 | 127 6.0 | |
| 8 | 7 2.0 | 7 3.2 | 6 42.8 | 8 .4 | 68 3.2 | 128 6.1 | |
| 9 | 7 2.3 | 7 3.4 | 6 43.0 | 9 .4 | 69 3.3 | 129 6.1 | |
| 10 | 7 2.5 | 7 3.7 | 6 43.3 | 10 .5 | 70 3.3 | 130 6.2 | |
| 11 | 7 2.8 | 7 3.9 | 6 43.5 | 11 .5 | 71 3.4 | 131 6.2 | |
| 12 | 7 3.0 | 7 4.2 | 6 43.7 | 12 .6 | 72 3.4 | 132 6.3 | |
| 13 | 7 3.3 | 7 4.4 | 6 44.0 | 13 .6 | 73 3.5 | 133 6.3 | |
| 14 | 7 3.5 | 7 4.7 | 6 44.2 | 14 .7 | 74 3.5 | 134 6.4 | |
| 15 | 7 3.8 | 7 4.9 | 6 44.4 | 15 .7 | 75 3.6 | 135 6.4 | |
| 16 | 7 4.0 | 7 5.2 | 6 44.7 | 16 .8 | 76 3.6 | 136 6.5 | |
| 17 | 7 4.3 | 7 5.4 | 6 44.9 | 17 .8 | 77 3.7 | 137 6.5 | |
| 18 | 7 4.5 | 7 5.7 | 6 45.2 | 18 .9 | 78 3.7 | 138 6.6 | |
| 19 | 7 4.8 | 7 5.9 | 6 45.4 | 19 .9 | 79 3.8 | 139 6.6 | |
| 20 | 7 5.0 | 7 6.2 | 6 45.6 | 20 1.0 | 80 3.8 | 140 6.7 | |
| 21 | 7 5.3 | 7 6.4 | 6 45.9 | 21 1.0 | 81 3.8 | 141 6.7 | |
| 22 | 7 5.5 | 7 6.7 | 6 46.1 | 22 1.0 | 82 3.9 | 142 6.7 | |
| 23 | 7 5.8 | 7 6.9 | 6 46.4 | 23 1.1 | 83 3.9 | 143 6.8 | |
| 24 | 7 6.0 | 7 7.2 | 6 46.6 | 24 1.1 | 84 4.0 | 144 6.8 | |
| 25 | 7 6.3 | 7 7.4 | 6 46.8 | 25 1.2 | 85 4.0 | 145 6.9 | |
| 26 | 7 6.5 | 7 7.7 | 6 47.1 | 26 1.2 | 86 4.1 | 146 6.9 | |
| 27 | 7 6.8 | 7 7.9 | 6 47.3 | 27 1.3 | 87 4.1 | 147 7.0 | |
| 28 | 7 7.0 | 7 8.2 | 6 47.5 | 28 1.3 | 88 4.2 | 148 7.0 | |
| 29 | 7 7.3 | 7 8.4 | 6 47.8 | 29 1.4 | 89 4.2 | 149 7.1 | |
| 30 | 7 7.5 | 7 8.7 | 6 48.0 | 30 1.4 | 90 4.3 | 150 7.1 | |
| 31 | 7 7.8 | 7 8.9 | 6 48.3 | 31 1.5 | 91 4.3 | 151 7.2 | |
| 32 | 7 8.0 | 7 9.2 | 6 48.5 | 32 1.5 | 92 4.4 | 152 7.2 | |
| 33 | 7 8.3 | 7 9.4 | 6 48.7 | 33 1.6 | 93 4.4 | 153 7.3 | |
| 34 | 7 8.5 | 7 9.7 | 6 49.0 | 34 1.6 | 94 4.5 | 154 7.3 | |
| 35 | 7 8.8 | 7 9.9 | 6 49.2 | 35 1.7 | 95 4.5 | 155 7.4 | |
| 36 | 7 9.0 | 7 10.2 | 6 49.5 | 36 1.7 | 96 4.6 | 156 7.4 | |
| 37 | 7 9.3 | 7 10.4 | 6 49.7 | 37 1.8 | 97 4.6 | 157 7.5 | |
| 38 | 7 9.5 | 7 10.7 | 6 49.9 | 38 1.8 | 98 4.7 | 158 7.5 | |
| 39 | 7 9.8 | 7 10.9 | 6 50.2 | 39 1.9 | 99 4.7 | 159 7.6 | |
| 40 | 7 10.0 | 7 11.2 | 6 50.4 | 40 1.9 | 100 4.8 | 160 7.6 | |
| 41 | 7 10.3 | 7 11.4 | 6 50.6 | 41 1.9 | 101 4.8 | 161 7.6 | |
| 42 | 7 10.5 | 7 11.7 | 6 50.9 | 42 2.0 | 102 4.8 | 162 7.7 | |
| 43 | 7 10.8 | 7 11.9 | 6 51.1 | 43 2.0 | 103 4.9 | 163 7.7 | |
| 44 | 7 11.0 | 7 12.2 | 6 51.4 | 44 2.1 | 104 4.9 | 164 7.8 | |
| 45 | 7 11.3 | 7 12.4 | 6 51.6 | 45 2.1 | 105 5.0 | 165 7.8 | |
| 46 | 7 11.5 | 7 12.7 | 6 51.8 | 46 2.2 | 106 5.0 | 166 7.9 | |
| 47 | 7 11.8 | 7 12.9 | 6 52.1 | 47 2.2 | 107 5.1 | 167 7.9 | |
| 48 | 7 12.0 | 7 13.2 | 6 52.3 | 48 2.3 | 108 5.1 | 168 8.0 | |
| 49 | 7 12.3 | 7 13.5 | 6 52.6 | 49 2.3 | 109 5.2 | 169 8.0 | |
| 50 | 7 12.5 | 7 13.7 | 6 52.8 | 50 2.4 | 110 5.2 | 170 8.1 | |
| 51 | 7 12.8 | 7 14.0 | 6 53.0 | 51 2.4 | 111 5.3 | 171 8.1 | |
| 52 | 7 13.0 | 7 14.2 | 6 53.3 | 52 2.5 | 112 5.3 | 172 8.2 | |
| 53 | 7 13.3 | 7 14.5 | 6 53.5 | 53 2.5 | 113 5.4 | 173 8.2 | |
| 54 | 7 13.5 | 7 14.7 | 6 53.8 | 54 2.6 | 114 5.4 | 174 8.3 | |
| 55 | 7 13.8 | 7 15.0 | 6 54.0 | 55 2.6 | 115 5.5 | 175 8.3 | |
| 56 | 7 14.0 | 7 15.2 | 6 54.2 | 56 2.7 | 116 5.5 | 176 8.4 | |
| 57 | 7 14.3 | 7 15.5 | 6 54.5 | 57 2.7 | 117 5.6 | 177 8.4 | |
| 58 | 7 14.5 | 7 15.7 | 6 54.7 | 58 2.8 | 118 5.6 | 178 8.5 | |
| 59 | 7 14.8 | 7 16.0 | 6 54.9 | 59 2.8 | 119 5.7 | 179 8.5 | |
| 60 | 7 15.0 | 7 16.2 | 6 55.2 | 60 2.9 | 120 5.7 | 180 8.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 7 15.0 | 7 16.2 | 6 55.2 | 0 .0 | 60 3.0 | 120 5.9 | |
| 1 | 7 15.3 | 7 16.5 | 6 55.4 | 1 .0 | 61 3.0 | 121 5.9 | |
| 2 | 7 15.5 | 7 16.7 | 6 55.7 | 2 .1 | 62 3.0 | 122 6.0 | |
| 3 | 7 15.8 | 7 17.0 | 6 55.9 | 3 .1 | 63 3.1 | 123 6.0 | |
| 4 | 7 16.0 | 7 17.2 | 6 56.1 | 4 .2 | 64 3.1 | 124 6.1 | |
| 5 | 7 16.3 | 7 17.5 | 6 56.4 | 5 .2 | 65 3.2 | 125 6.1 | |
| 6 | 7 16.5 | 7 17.7 | 6 56.6 | 6 .3 | 66 3.2 | 126 6.2 | |
| 7 | 7 16.8 | 7 18.0 | 6 56.9 | 7 .3 | 67 3.3 | 127 6.2 | |
| 8 | 7 17.0 | 7 18.2 | 6 57.1 | 8 .4 | 68 3.3 | 128 6.3 | |
| 9 | 7 17.3 | 7 18.5 | 6 57.3 | 9 .4 | 69 3.4 | 129 6.3 | |
| 10 | 7 17.5 | 7 18.7 | 6 57.6 | 10 .5 | 70 3.4 | 130 6.4 | |
| 11 | 7 17.8 | 7 19.0 | 6 57.8 | 11 .5 | 71 3.5 | 131 6.4 | |
| 12 | 7 18.0 | 7 19.2 | 6 58.0 | 12 .6 | 72 3.5 | 132 6.5 | |
| 13 | 7 18.3 | 7 19.5 | 6 58.3 | 13 .6 | 73 3.6 | 133 6.5 | |
| 14 | 7 18.5 | 7 19.7 | 6 58.5 | 14 .7 | 74 3.6 | 134 6.6 | |
| 15 | 7 18.8 | 7 20.0 | 6 58.8 | 15 .7 | 75 3.7 | 135 6.6 | |
| 16 | 7 19.0 | 7 20.2 | 6 59.0 | 16 .8 | 76 3.7 | 136 6.7 | |
| 17 | 7 19.3 | 7 20.5 | 6 59.2 | 17 .8 | 77 3.8 | 137 6.7 | |
| 18 | 7 19.5 | 7 20.7 | 6 59.5 | 18 .9 | 78 3.8 | 138 6.8 | |
| 19 | 7 19.8 | 7 21.0 | 6 59.7 | 19 .9 | 79 3.9 | 139 6.8 | |
| 20 | 7 20.0 | 7 21.2 | 6 60.0 | 20 1.0 | 80 3.9 | 140 6.9 | |
| 21 | 7 20.3 | 7 21.5 | 7 2.2 | 21 1.0 | 81 4.0 | 141 6.9 | |
| 22 | 7 20.5 | 7 21.7 | 7 4.2 | 22 1.1 | 82 4.0 | 142 7.0 | |
| 23 | 7 20.8 | 7 22.0 | 7 7.2 | 23 1.1 | 83 4.1 | 143 7.0 | |
| 24 | 7 21.0 | 7 22.2 | 7 9.2 | 24 1.2 | 84 4.1 | 144 7.1 | |
| 25 | 7 21.3 | 7 22.5 | 7 1.1 | 25 1.2 | 85 4.2 | 145 7.1 | |
| 26 | 7 21.5 | 7 22.7 | 7 1.4 | 26 1.3 | 86 4.2 | 146 7.2 | |
| 27 | 7 21.8 | 7 23.0 | 7 1.6 | 27 1.3 | 87 4.3 | 147 7.2 | |
| 28 | 7 22.0 | 7 23.2 | 7 1.9 | 28 1.4 | 88 4.3 | 148 7.3 | |
| 29 | 7 22.3 | 7 23.5 | 7 2.1 | 29 1.4 | 89 4.4 | 149 7.3 | |
| 30 | 7 22.5 | 7 23.7 | 7 2.3 | 30 1.5 | 90 4.4 | 150 7.4 | |
| 31 | 7 22.8 | 7 24.0 | 7 2.6 | 31 1.5 | 91 4.5 | 151 7.4 | |
| 32 | 7 23.0 | 7 24.2 | 7 2.8 | 32 1.6 | 92 4.5 | 152 7.5 | |
| 33 | 7 23.3 | 7 24.5 | 7 3.1 | 33 1.6 | 93 4.6 | 153 7.5 | |
| 34 | 7 23.5 | 7 24.7 | 7 3.3 | 34 1.7 | 94 4.6 | 154 7.6 | |
| 35 | 7 23.8 | 7 25.0 | 7 3.5 | 35 1.7 | 95 4.7 | 155 7.6 | |
| 36 | 7 24.0 | 7 25.2 | 7 3.8 | 36 1.8 | 96 4.7 | 156 7.7 | |
| 37 | 7 24.3 | 7 25.5 | 7 4.0 | 37 1.8 | 97 4.8 | 157 7.7 | |
| 38 | 7 24.5 | 7 25.7 | 7 4.3 | 38 1.9 | 98 4.8 | 158 7.8 | |
| 39 | 7 24.8 | 7 26.0 | 7 4.5 | 39 1.9 | 99 4.9 | 159 7.8 | |
| 40 | 7 25.0 | 7 26.2 | 7 4.7 | 40 2.0 | 100 4.9 | 160 7.9 | |
| 41 | 7 25.3 | 7 26.5 | 7 5.0 | 41 2.0 | 101 5.0 | 161 7.9 | |
| 42 | 7 25.5 | 7 26.7 | 7 5.2 | 42 2.1 | 102 5.0 | 162 8.0 | |
| 43 | 7 25.8 | 7 27.0 | 7 5.4 | 43 2.1 | 103 5.1 | 163 8.0 | |
| 44 | 7 26.0 | 7 27.2 | 7 5.7 | 44 2.2 | 104 5.1 | 164 8.1 | |
| 45 | 7 26.3 | 7 27.5 | 7 5.9 | 45 2.2 | 105 5.2 | 165 8.1 | |
| 46 | 7 26.5 | 7 27.7 | 7 6.2 | 46 2.3 | 106 5.2 | 166 8.2 | |
| 47 | 7 26.8 | 7 28.0 | 7 6.4 | 47 2.3 | 107 5.3 | 167 8.2 | |
| 48 | 7 27.0 | 7 28.2 | 7 6.6 | 48 2.4 | 108 5.3 | 168 8.3 | |
| 49 | 7 27.3 | 7 28.5 | 7 6.9 | 49 2.4 | 109 5.4 | 169 8.3 | |
| 50 | 7 27.5 | 7 28.7 | 7 7.1 | 50 2.5 | 110 5.4 | 170 8.4 | |
| 51 | 7 27.8 | 7 29.0 | 7 7.4 | 51 2.5 | 111 5.5 | 171 8.4 | |
| 52 | 7 28.0 | 7 29.2 | 7 7.6 | 52 2.6 | 112 5.5 | 172 8.5 | |
| 53 | 7 28.3 | 7 29.5 | 7 7.8 | 53 2.6 | 113 5.6 | 173 8.5 | |
| 54 | 7 28.5 | 7 29.7 | 7 8.1 | 54 2.7 | 114 5.6 | 174 8.6 | |
| 55 | 7 28.8 | 7 30.0 | 7 8.3 | 55 2.7 | 115 5.7 | 175 8.6 | |
| 56 | 7 29.0 | 7 30.2 | 7 8.5 | 56 2.8 | 116 5.7 | 176 8.7 | |
| 57 | 7 29.3 | 7 30.5 | 7 8.8 | 57 2.8 | 117 5.8 | 177 8.7 | |
| 58 | 7 29.5 | 7 30.7 | 7 9.0 | 58 2.9 | 118 5.8 | 178 8.8 | |
| 59 | 7 29.8 | 7 31.0 | 7 9.3 | 59 2.9 | 119 5.9 | 179 8.8 | |
| 60 | 7 30.0 | 7 31.3 | 7 9.5 | 60 3.0 | 120 5.9 | 180 8.9 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|------------|---|---|--------------------|----------------------|----------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 7 30.0 | 7 31.3 | 7 9.5 | 0 .0 | 60 3.1 | 120 6.1 | | 0 | 7 45.0 | 7 46.3 | 7 23.8 | 0 .0 | 60 3.2 | 120 6.3 | |
| 1 | 7 30.3 | 7 31.5 | 7 9.7 | 1 .1 | 61 3.1 | 121 6.2 | | 1 | 7 45.3 | 7 46.5 | 7 24.1 | 1 .1 | 61 3.2 | 121 6.4 | |
| 2 | 7 30.5 | 7 31.8 | 7 10.0 | 2 .1 | 62 3.2 | 122 6.2 | | 2 | 7 45.5 | 7 46.8 | 7 24.3 | 2 .1 | 62 3.3 | 122 6.4 | |
| 3 | 7 30.8 | 7 32.0 | 7 10.2 | 3 .2 | 63 3.2 | 123 6.3 | | 3 | 7 45.8 | 7 47.0 | 7 24.5 | 3 .2 | 63 3.3 | 123 6.5 | |
| 4 | 7 31.0 | 7 32.3 | 7 10.5 | 4 .2 | 64 3.3 | 124 6.3 | | 4 | 7 46.0 | 7 47.3 | 7 24.8 | 4 .2 | 64 3.4 | 124 6.5 | |
| 5 | 7 31.3 | 7 32.5 | 7 10.7 | 5 .3 | 65 3.3 | 125 6.4 | | 5 | 7 46.3 | 7 47.5 | 7 25.0 | 5 .3 | 65 3.4 | 125 6.6 | |
| 6 | 7 31.5 | 7 32.8 | 7 10.9 | 6 .3 | 66 3.4 | 126 6.4 | | 6 | 7 46.5 | 7 47.8 | 7 25.2 | 6 .3 | 66 3.5 | 126 6.6 | |
| 7 | 7 31.8 | 7 33.0 | 7 11.2 | 7 .4 | 67 3.4 | 127 6.5 | | 7 | 7 46.8 | 7 48.0 | 7 25.5 | 7 .4 | 67 3.5 | 127 6.7 | |
| 8 | 7 32.0 | 7 33.3 | 7 11.4 | 8 .4 | 68 3.5 | 128 6.5 | | 8 | 7 47.0 | 7 48.3 | 7 25.7 | 8 .4 | 68 3.6 | 128 6.7 | |
| 9 | 7 32.3 | 7 33.5 | 7 11.6 | 9 .5 | 69 3.5 | 129 6.6 | | 9 | 7 47.3 | 7 48.5 | 7 26.0 | 9 .5 | 69 3.6 | 129 6.8 | |
| 10 | 7 32.5 | 7 33.8 | 7 11.9 | 10 .5 | 70 3.6 | 130 6.6 | | 10 | 7 47.5 | 7 48.8 | 7 26.2 | 10 .5 | 70 3.7 | 130 6.8 | |
| 11 | 7 32.8 | 7 34.0 | 7 12.1 | 11 .6 | 71 3.6 | 131 6.7 | | 11 | 7 47.8 | 7 49.0 | 7 26.4 | 11 .6 | 71 3.7 | 131 6.9 | |
| 12 | 7 33.0 | 7 34.3 | 7 12.4 | 12 .6 | 72 3.7 | 132 6.7 | | 12 | 7 48.0 | 7 49.3 | 7 26.7 | 12 .6 | 72 3.8 | 132 6.9 | |
| 13 | 7 33.3 | 7 34.5 | 7 12.6 | 13 .7 | 73 3.7 | 133 6.8 | | 13 | 7 48.3 | 7 49.6 | 7 26.9 | 13 .7 | 73 3.8 | 133 7.0 | |
| 14 | 7 33.5 | 7 34.8 | 7 12.8 | 14 .7 | 74 3.8 | 134 6.8 | | 14 | 7 48.5 | 7 49.8 | 7 27.2 | 14 .7 | 74 3.9 | 134 7.0 | |
| 15 | 7 33.8 | 7 35.0 | 7 13.1 | 15 .8 | 75 3.8 | 135 6.9 | | 15 | 7 48.8 | 7 50.1 | 7 27.4 | 15 .8 | 75 3.9 | 135 7.1 | |
| 16 | 7 34.0 | 7 35.3 | 7 13.3 | 16 .8 | 76 3.9 | 136 6.9 | | 16 | 7 49.0 | 7 50.3 | 7 27.6 | 16 .8 | 76 4.0 | 136 7.1 | |
| 17 | 7 34.3 | 7 35.5 | 7 13.6 | 17 .9 | 77 3.9 | 137 7.0 | | 17 | 7 49.3 | 7 50.6 | 7 27.9 | 17 .9 | 77 4.0 | 137 7.2 | |
| 18 | 7 34.5 | 7 35.8 | 7 13.8 | 18 .9 | 78 4.0 | 138 7.0 | | 18 | 7 49.5 | 7 50.8 | 7 28.1 | 18 .9 | 78 4.1 | 138 7.2 | |
| 19 | 7 34.8 | 7 36.0 | 7 14.0 | 19 .0 | 79 4.0 | 139 7.1 | | 19 | 7 49.8 | 7 51.1 | 7 28.4 | 19 .0 | 79 4.1 | 139 7.3 | |
| 20 | 7 35.0 | 7 36.3 | 7 14.3 | 20 .0 | 80 4.1 | 140 7.1 | | 20 | 7 50.0 | 7 51.3 | 7 28.6 | 20 .1 | 80 4.2 | 140 7.4 | |
| 21 | 7 35.3 | 7 36.5 | 7 14.5 | 21 .1 | 81 4.1 | 141 7.2 | | 21 | 7 50.3 | 7 51.6 | 7 28.8 | 21 .1 | 81 4.3 | 141 7.4 | |
| 22 | 7 35.5 | 7 36.8 | 7 14.7 | 22 .1 | 82 4.2 | 142 7.2 | | 22 | 7 50.5 | 7 51.8 | 7 29.1 | 22 .2 | 82 4.3 | 142 7.5 | |
| 23 | 7 35.8 | 7 37.0 | 7 15.0 | 23 .2 | 83 4.2 | 143 7.3 | | 23 | 7 50.8 | 7 52.1 | 7 29.3 | 23 .2 | 83 4.4 | 143 7.5 | |
| 24 | 7 36.0 | 7 37.3 | 7 15.2 | 24 .2 | 84 4.3 | 144 7.3 | | 24 | 7 51.0 | 7 52.3 | 7 29.5 | 24 .3 | 84 4.4 | 144 7.6 | |
| 25 | 7 36.3 | 7 37.5 | 7 15.5 | 25 .3 | 85 4.3 | 145 7.4 | | 25 | 7 51.3 | 7 52.6 | 7 29.8 | 25 .3 | 85 4.5 | 145 7.6 | |
| 26 | 7 36.5 | 7 37.8 | 7 15.7 | 26 .3 | 86 4.4 | 146 7.4 | | 26 | 7 51.5 | 7 52.8 | 7 30.0 | 26 .4 | 86 4.5 | 146 7.7 | |
| 27 | 7 36.8 | 7 38.0 | 7 15.9 | 27 .4 | 87 4.4 | 147 7.5 | | 27 | 7 51.8 | 7 53.1 | 7 30.3 | 27 .4 | 87 4.6 | 147 7.7 | |
| 28 | 7 37.0 | 7 38.3 | 7 16.2 | 28 .4 | 88 4.5 | 148 7.5 | | 28 | 7 52.0 | 7 53.3 | 7 30.5 | 28 .5 | 88 4.6 | 148 7.8 | |
| 29 | 7 37.3 | 7 38.5 | 7 16.4 | 29 .5 | 89 4.5 | 149 7.6 | | 29 | 7 52.3 | 7 53.6 | 7 30.7 | 29 .5 | 89 4.7 | 149 7.8 | |
| 30 | 7 37.5 | 7 38.8 | 7 16.7 | 30 .5 | 90 4.6 | 150 7.6 | | 30 | 7 52.5 | 7 53.8 | 7 31.0 | 30 .6 | 90 4.7 | 150 7.9 | |
| 31 | 7 37.8 | 7 39.0 | 7 16.9 | 31 .6 | 91 4.6 | 151 7.7 | | 31 | 7 52.8 | 7 54.1 | 7 31.2 | 31 .6 | 91 4.8 | 151 7.9 | |
| 32 | 7 38.0 | 7 39.3 | 7 17.1 | 32 .6 | 92 4.7 | 152 7.7 | | 32 | 7 53.0 | 7 54.3 | 7 31.5 | 32 .7 | 92 4.8 | 152 8.0 | |
| 33 | 7 38.3 | 7 39.5 | 7 17.4 | 33 .7 | 93 4.7 | 153 7.8 | | 33 | 7 53.3 | 7 54.6 | 7 31.7 | 33 .7 | 93 4.9 | 153 8.0 | |
| 34 | 7 38.5 | 7 39.8 | 7 17.6 | 34 .7 | 94 4.8 | 154 7.8 | | 34 | 7 53.5 | 7 54.8 | 7 31.9 | 34 .8 | 94 4.9 | 154 8.1 | |
| 35 | 7 38.8 | 7 40.0 | 7 17.9 | 35 .8 | 95 4.8 | 155 7.9 | | 35 | 7 53.8 | 7 55.1 | 7 32.2 | 35 .8 | 95 5.0 | 155 8.1 | |
| 36 | 7 39.0 | 7 40.3 | 7 18.1 | 36 .8 | 96 4.9 | 156 7.9 | | 36 | 7 54.0 | 7 55.3 | 7 32.4 | 36 .9 | 96 5.0 | 156 8.2 | |
| 37 | 7 39.3 | 7 40.5 | 7 18.3 | 37 .9 | 97 4.9 | 157 8.0 | | 37 | 7 54.3 | 7 55.6 | 7 32.6 | 37 .9 | 97 5.1 | 157 8.2 | |
| 38 | 7 39.5 | 7 40.8 | 7 18.6 | 38 .9 | 98 5.0 | 158 8.0 | | 38 | 7 54.5 | 7 55.8 | 7 32.9 | 38 .9 | 98 5.1 | 158 8.3 | |
| 39 | 7 39.8 | 7 41.0 | 7 18.8 | 39 .9 | 99 5.0 | 159 8.1 | | 39 | 7 54.8 | 7 56.1 | 7 33.1 | 39 .9 | 99 5.2 | 159 8.3 | |
| 40 | 7 40.0 | 7 41.3 | 7 19.0 | 40 .2 | 100 5.1 | 160 8.1 | | 40 | 7 55.0 | 7 56.3 | 7 33.4 | 40 .2 | 100 5.3 | 160 8.4 | |
| 41 | 7 40.3 | 7 41.5 | 7 19.3 | 41 .2 | 101 5.1 | 161 8.2 | | 41 | 7 55.3 | 7 56.6 | 7 33.6 | 41 .2 | 101 5.3 | 161 8.5 | |
| 42 | 7 40.5 | 7 41.8 | 7 19.5 | 42 .2 | 102 5.2 | 162 8.2 | | 42 | 7 55.5 | 7 56.8 | 7 33.8 | 42 .2 | 102 5.4 | 162 8.5 | |
| 43 | 7 40.8 | 7 42.0 | 7 19.8 | 43 .2 | 103 5.2 | 163 8.3 | | 43 | 7 55.8 | 7 57.1 | 7 34.1 | 43 .2 | 103 5.4 | 163 8.6 | |
| 44 | 7 41.0 | 7 42.3 | 7 20.0 | 44 .2 | 104 5.3 | 164 8.3 | | 44 | 7 56.0 | 7 57.3 | 7 34.3 | 44 .2 | 104 5.5 | 164 8.6 | |
| 45 | 7 41.3 | 7 42.5 | 7 20.2 | 45 .2 | 105 5.3 | 165 8.4 | | 45 | 7 56.3 | 7 57.6 | 7 34.6 | 45 .2 | 105 5.5 | 165 8.7 | |
| 46 | 7 41.5 | 7 42.8 | 7 20.5 | 46 .2 | 106 5.4 | 166 8.4 | | 46 | 7 56.5 | 7 57.8 | 7 34.8 | 46 .2 | 106 5.6 | 166 8.7 | |
| 47 | 7 41.8 | 7 43.0 | 7 20.7 | 47 .4 | 107 5.4 | 167 8.5 | | 47 | 7 56.8 | 7 58.1 | 7 35.0 | 47 .2 | 107 5.6 | 167 8.8 | |
| 48 | 7 42.0 | 7 43.3 | 7 21.0 | 48 .2 | 108 5.5 | 168 8.5 | | 48 | 7 57.0 | 7 58.3 | 7 35.3 | 48 .2 | 108 5.7 | 168 8.8 | |
| 49 | 7 42.3 | 7 43.5 | 7 21.2 | 49 .2 | 109 5.5 | 169 8.6 | | 49 | 7 57.3 | 7 58.6 | 7 35.5 | 49 .2 | 109 5.7 | 169 8.9 | |
| 50 | 7 42.5 | 7 43.8 | 7 21.4 | 50 .2 | 110 5.6 | 170 8.6 | | 50 | 7 57.5 | 7 58.8 | 7 35.7 | 50 .2 | 110 5.8 | 170 8.9 | |
| 51 | 7 42.8 | 7 44.0 | 7 21.7 | 51 .2 | 111 5.6 | 171 8.7 | | 51 | 7 57.8 | 7 59.1 | 7 36.0 | 51 .2 | 111 5.8 | 171 9.0 | |
| 52 | 7 43.0 | 7 44.3 | 7 21.9 | 52 .2 | 112 5.7 | 172 8.7 | | 52 | 7 58.0 | 7 59.3 | 7 36.2 | 52 .2 | 112 5.9 | 172 9.0 | |
| 53 | 7 43.3 | 7 44.5 | 7 22.1 | 53 .2 | 113 5.7 | 173 8.8 | | 53 | 7 58.3 | 7 59.6 | 7 36.5 | 53 .2 | 113 5.9 | 173 9.1 | |
| 54 | 7 43.5 | 7 44.8 | 7 22.4 | 54 .2 | 114 5.8 | 174 8.8 | | 54 | 7 58.5 | 7 59.8 | 7 36.7 | 54 .2 | 114 6.0 | 174 9.1 | |
| 55 | 7 43.8 | 7 45.0 | 7 22.6 | 55 .2 | 115 5.8 | 175 8.9 | | 55 | 7 58.8 | 7 .1 | 7 36.9 | 55 .2 | 115 6.0 | 175 9.2 | |
| 56 | 7 44.0 | 7 45.3 | 7 22.9 | 56 .2 | 116 5.9 | 176 8.9 | | 56 | 7 59.0 | 7 .3 | 7 37.2 | 56 .2 | 116 6.1 | 176 9.2 | |
| 57 | 7 44.3 | 7 45.5 | 7 23.1 | 57 .2 | 117 5.9 | 177 9.0 | | 57 | 7 59.3 | 7 .6 | 7 37.4 | 57 .3 | 117 6.1 | 177 9.3 | |
| 58 | 7 44.5 | 7 45.8 | 7 23.3 | 58 .2 | 118 6.0 | 178 9.0 | | 58 | 7 59.5 | 7 .8 | 7 37.7 | 58 .3 | 118 6.2 | 178 9.3 | |
| 59 | 7 44.8 | 7 46.0 | 7 23.6 | 59 .3 | 119 6.0 | 179 9.1 | | 59 | 7 59.8 | 7 .1 | 7 37.9 | 59 .3 | 119 6.2 | 179 9.4 | |
| 60 | 7 45.0 | 7 46.3 | 7 23.8 | 60 .3 | 120 6.1 | 180 9.2 | | 60 | 8 .0 | 8 .3 | 7 38.1 | 60 .3 | 120 6.3 | 180 9.5 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|--|--|---|--|--|--|--|--|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | | | | | | | | | | |

0 h 32 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|------------|---|---|--------------------|----------------------|----------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 8 .0 | 8 1.3 | 7 38.1 | 0 .0 | 60 3.3 | 120 6.5 | | 0 | 8 15.0 | 8 16.4 | 7 52.5 | 0 .0 | 60 3.4 | 120 6.7 | |
| 1 | 8 .3 | 8 1.6 | 7 38.4 | 1 .1 | 61 3.3 | 121 6.6 | | 1 | 8 15.3 | 8 16.6 | 7 52.7 | 1 .1 | 61 3.4 | 121 6.8 | |
| 2 | 8 .5 | 8 1.8 | 7 38.6 | 2 .1 | 62 3.4 | 122 6.6 | | 2 | 8 15.5 | 8 16.9 | 7 52.9 | 2 .1 | 62 3.5 | 122 6.8 | |
| 3 | 8 .8 | 8 2.1 | 7 38.8 | 3 .2 | 63 3.4 | 123 6.7 | | 3 | 8 15.8 | 8 17.1 | 7 53.2 | 3 .2 | 63 3.5 | 123 6.9 | |
| 4 | 8 1.0 | 8 2.3 | 7 39.1 | 4 .2 | 64 3.5 | 124 6.7 | | 4 | 8 16.0 | 8 17.4 | 7 53.4 | 4 .2 | 64 3.6 | 124 6.9 | |
| 5 | 8 1.3 | 8 2.6 | 7 39.3 | 5 .3 | 65 3.5 | 125 6.8 | | 5 | 8 16.3 | 8 17.6 | 7 53.6 | 5 .3 | 65 3.6 | 125 7.0 | |
| 6 | 8 1.5 | 8 2.8 | 7 39.6 | 6 .3 | 66 3.6 | 126 6.8 | | 6 | 8 16.5 | 8 17.9 | 7 53.9 | 6 .3 | 66 3.7 | 126 7.0 | |
| 7 | 8 1.8 | 8 3.1 | 7 39.8 | 7 .4 | 67 3.6 | 127 6.9 | | 7 | 8 16.8 | 8 18.1 | 7 54.1 | 7 .4 | 67 3.7 | 127 7.1 | |
| 8 | 8 2.0 | 8 3.3 | 7 40.0 | 8 .4 | 68 3.7 | 128 6.9 | | 8 | 8 17.0 | 8 18.4 | 7 54.4 | 8 .4 | 68 3.8 | 128 7.1 | |
| 9 | 8 2.3 | 8 3.6 | 7 40.3 | 9 .5 | 69 3.7 | 129 7.0 | | 9 | 8 17.3 | 8 18.6 | 7 54.6 | 9 .5 | 69 3.9 | 129 7.2 | |
| 10 | 8 2.5 | 8 3.8 | 7 40.5 | 10 .5 | 70 3.8 | 130 7.0 | | 10 | 8 17.5 | 8 18.9 | 7 54.8 | 10 .6 | 70 3.9 | 130 7.3 | |
| 11 | 8 2.8 | 8 4.1 | 7 40.8 | 11 .6 | 71 3.8 | 131 7.1 | | 11 | 8 17.8 | 8 19.1 | 7 55.1 | 11 .6 | 71 4.0 | 131 7.3 | |
| 12 | 8 3.0 | 8 4.3 | 7 41.0 | 12 .7 | 72 3.9 | 132 7.2 | | 12 | 8 18.0 | 8 19.4 | 7 55.3 | 12 .7 | 72 4.0 | 132 7.4 | |
| 13 | 8 3.3 | 8 4.6 | 7 41.2 | 13 .7 | 73 4.0 | 133 7.2 | | 13 | 8 18.3 | 8 19.6 | 7 55.6 | 13 .7 | 73 4.1 | 133 7.4 | |
| 14 | 8 3.5 | 8 4.8 | 7 41.5 | 14 .8 | 74 4.0 | 134 7.3 | | 14 | 8 18.5 | 8 19.9 | 7 55.8 | 14 .8 | 74 4.1 | 134 7.5 | |
| 15 | 8 3.8 | 8 5.1 | 7 41.7 | 15 .8 | 75 4.1 | 135 7.3 | | 15 | 8 18.8 | 8 20.1 | 7 56.0 | 15 .8 | 75 4.2 | 135 7.5 | |
| 16 | 8 4.0 | 8 5.3 | 7 42.0 | 16 .9 | 76 4.1 | 136 7.4 | | 16 | 8 19.0 | 8 20.4 | 7 56.3 | 16 .9 | 76 4.2 | 136 7.6 | |
| 17 | 8 4.3 | 8 5.6 | 7 42.2 | 17 .9 | 77 4.2 | 137 7.4 | | 17 | 8 19.3 | 8 20.6 | 7 56.5 | 17 .9 | 77 4.3 | 137 7.6 | |
| 18 | 8 4.5 | 8 5.8 | 7 42.4 | 18 .0 | 78 4.2 | 138 7.5 | | 18 | 8 19.5 | 8 20.9 | 7 56.7 | 18 .0 | 78 4.4 | 138 7.7 | |
| 19 | 8 4.8 | 8 6.1 | 7 42.7 | 19 .0 | 79 4.3 | 139 7.5 | | 19 | 8 19.8 | 8 21.1 | 7 57.0 | 19 .1 | 79 4.4 | 139 7.8 | |
| 20 | 8 5.0 | 8 6.3 | 7 42.9 | 20 .1 | 80 4.3 | 140 7.6 | | 20 | 8 20.0 | 8 21.4 | 7 57.2 | 20 .1 | 80 4.5 | 140 7.8 | |
| 21 | 8 5.3 | 8 6.6 | 7 43.1 | 21 .1 | 81 4.4 | 141 7.6 | | 21 | 8 20.3 | 8 21.6 | 7 57.5 | 21 .2 | 81 4.5 | 141 7.9 | |
| 22 | 8 5.5 | 8 6.8 | 7 43.4 | 22 .2 | 82 4.4 | 142 7.7 | | 22 | 8 20.5 | 8 21.9 | 7 57.7 | 22 .2 | 82 4.6 | 142 7.9 | |
| 23 | 8 5.8 | 8 7.1 | 7 43.6 | 23 .2 | 83 4.5 | 143 7.7 | | 23 | 8 20.8 | 8 22.1 | 7 57.9 | 23 .3 | 83 4.6 | 143 8.0 | |
| 24 | 8 6.0 | 8 7.4 | 7 43.9 | 24 .3 | 84 4.6 | 144 7.8 | | 24 | 8 21.0 | 8 22.4 | 7 58.2 | 24 .3 | 84 4.7 | 144 8.0 | |
| 25 | 8 6.3 | 8 7.6 | 7 44.1 | 25 .4 | 85 4.6 | 145 7.9 | | 25 | 8 21.3 | 8 22.6 | 7 58.4 | 25 .4 | 85 4.7 | 145 8.1 | |
| 26 | 8 6.5 | 8 7.9 | 7 44.3 | 26 .4 | 86 4.7 | 146 7.9 | | 26 | 8 21.5 | 8 22.9 | 7 58.7 | 26 .5 | 86 4.8 | 146 8.2 | |
| 27 | 8 6.8 | 8 8.1 | 7 44.6 | 27 .5 | 87 4.7 | 147 8.0 | | 27 | 8 21.8 | 8 23.1 | 7 58.9 | 27 .5 | 87 4.9 | 147 8.2 | |
| 28 | 8 7.0 | 8 8.4 | 7 44.8 | 28 .5 | 88 4.8 | 148 8.0 | | 28 | 8 22.0 | 8 23.4 | 7 59.1 | 28 .6 | 88 4.9 | 148 8.3 | |
| 29 | 8 7.3 | 8 8.6 | 7 45.1 | 29 .6 | 89 4.8 | 149 8.1 | | 29 | 8 22.3 | 8 23.6 | 7 59.4 | 29 .6 | 89 5.0 | 149 8.3 | |
| 30 | 8 7.5 | 8 8.9 | 7 45.3 | 30 .6 | 90 4.9 | 150 8.1 | | 30 | 8 22.5 | 8 23.9 | 7 59.6 | 30 .7 | 90 5.0 | 150 8.4 | |
| 31 | 8 7.8 | 8 9.1 | 7 45.5 | 31 .7 | 91 4.9 | 151 8.2 | | 31 | 8 22.8 | 8 24.1 | 7 59.8 | 31 .7 | 91 5.1 | 151 8.4 | |
| 32 | 8 8.0 | 8 9.4 | 7 45.8 | 32 .7 | 92 5.0 | 152 8.2 | | 32 | 8 23.0 | 8 24.4 | 8 .1 | 32 1.8 | 92 5.1 | 152 8.5 | |
| 33 | 8 8.3 | 8 9.6 | 7 46.0 | 33 .8 | 93 5.0 | 153 8.3 | | 33 | 8 23.3 | 8 24.6 | 8 .3 | 33 1.8 | 93 5.2 | 153 8.5 | |
| 34 | 8 8.5 | 8 9.9 | 7 46.2 | 34 .8 | 94 5.1 | 154 8.3 | | 34 | 8 23.5 | 8 24.9 | 8 .6 | 34 1.9 | 94 5.2 | 154 8.6 | |
| 35 | 8 8.8 | 8 10.1 | 7 46.5 | 35 .9 | 95 5.1 | 155 8.4 | | 35 | 8 23.8 | 8 25.1 | 8 .8 | 35 2.0 | 95 5.3 | 155 8.7 | |
| 36 | 8 9.0 | 8 10.4 | 7 46.7 | 36 .9 | 96 5.2 | 156 8.5 | | 36 | 8 24.0 | 8 25.4 | 8 1.0 | 36 2.0 | 96 5.4 | 156 8.7 | |
| 37 | 8 9.3 | 8 10.6 | 7 47.0 | 37 .9 | 97 5.3 | 157 8.5 | | 37 | 8 24.3 | 8 25.7 | 8 1.3 | 37 2.1 | 97 5.4 | 157 8.8 | |
| 38 | 8 9.5 | 8 10.9 | 7 47.2 | 38 .9 | 98 5.3 | 158 8.6 | | 38 | 8 24.5 | 8 25.9 | 8 1.5 | 38 2.1 | 98 5.5 | 158 8.8 | |
| 39 | 8 9.8 | 8 11.1 | 7 47.4 | 39 .9 | 99 5.4 | 159 8.6 | | 39 | 8 24.8 | 8 26.2 | 8 1.8 | 39 2.2 | 99 5.5 | 159 8.9 | |
| 40 | 8 10.0 | 8 11.4 | 7 47.7 | 40 .2 | 100 5.4 | 160 8.7 | | 40 | 8 25.0 | 8 26.4 | 8 2.0 | 40 2.2 | 100 5.6 | 160 8.9 | |
| 41 | 8 10.3 | 8 11.6 | 7 47.9 | 41 .2 | 101 5.5 | 161 8.7 | | 41 | 8 25.3 | 8 26.7 | 8 2.2 | 41 2.3 | 101 5.6 | 161 9.0 | |
| 42 | 8 10.5 | 8 11.9 | 7 48.2 | 42 .3 | 102 5.5 | 162 8.8 | | 42 | 8 25.5 | 8 26.9 | 8 2.5 | 42 2.3 | 102 5.7 | 162 9.0 | |
| 43 | 8 10.8 | 8 12.1 | 7 48.4 | 43 .3 | 103 5.6 | 163 8.8 | | 43 | 8 25.8 | 8 27.2 | 8 2.7 | 43 2.4 | 103 5.8 | 163 9.1 | |
| 44 | 8 11.0 | 8 12.4 | 7 48.6 | 44 .4 | 104 5.6 | 164 8.9 | | 44 | 8 26.0 | 8 27.4 | 8 2.9 | 44 2.5 | 104 5.8 | 164 9.2 | |
| 45 | 8 11.3 | 8 12.6 | 7 48.9 | 45 .4 | 105 5.7 | 165 8.9 | | 45 | 8 26.3 | 8 27.7 | 8 3.2 | 45 2.5 | 105 5.9 | 165 9.2 | |
| 46 | 8 11.5 | 8 12.9 | 7 49.1 | 46 .5 | 106 5.7 | 166 9.0 | | 46 | 8 26.5 | 8 27.9 | 8 3.4 | 46 2.6 | 106 5.9 | 166 9.3 | |
| 47 | 8 11.8 | 8 13.1 | 7 49.3 | 47 .5 | 107 5.8 | 167 9.0 | | 47 | 8 26.8 | 8 28.2 | 8 3.7 | 47 2.6 | 107 6.0 | 167 9.3 | |
| 48 | 8 12.0 | 8 13.4 | 7 49.6 | 48 .6 | 108 5.9 | 168 9.1 | | 48 | 8 27.0 | 8 28.4 | 8 3.9 | 48 2.7 | 108 6.0 | 168 9.4 | |
| 49 | 8 12.3 | 8 13.6 | 7 49.8 | 49 .7 | 109 5.9 | 169 9.2 | | 49 | 8 27.3 | 8 28.7 | 8 4.1 | 49 2.7 | 109 6.1 | 169 9.4 | |
| 50 | 8 12.5 | 8 13.9 | 7 50.1 | 50 .7 | 110 6.0 | 170 9.2 | | 50 | 8 27.5 | 8 28.9 | 8 4.4 | 50 2.8 | 110 6.1 | 170 9.5 | |
| 51 | 8 12.8 | 8 14.1 | 7 50.3 | 51 .8 | 111 6.0 | 171 9.3 | | 51 | 8 27.8 | 8 29.2 | 8 4.6 | 51 2.8 | 111 6.2 | 171 9.5 | |
| 52 | 8 13.0 | 8 14.4 | 7 50.5 | 52 .8 | 112 6.1 | 172 9.3 | | 52 | 8 28.0 | 8 29.4 | 8 4.9 | 52 2.9 | 112 6.3 | 172 9.6 | |
| 53 | 8 13.3 | 8 14.6 | 7 50.8 | 53 .9 | 113 6.1 | 173 9.4 | | 53 | 8 28.3 | 8 29.7 | 8 5.1 | 53 3.0 | 113 6.3 | 173 9.7 | |
| 54 | 8 13.5 | 8 14.9 | 7 51.0 | 54 .9 | 114 6.2 | 174 9.4 | | 54 | 8 28.5 | 8 29.9 | 8 5.3 | 54 3.0 | 114 6.4 | 174 9.7 | |
| 55 | 8 13.8 | 8 15.1 | 7 51.3 | 55 .3 | 115 6.2 | 175 9.5 | | 55 | 8 28.8 | 8 30.2 | 8 5.6 | 55 3.1 | 115 6.4 | 175 9.8 | |
| 56 | 8 14.0 | 8 15.4 | 7 51.5 | 56 .3 | 116 6.3 | 176 9.5 | | 56 | 8 29.0 | 8 30.4 | 8 5.8 | 56 3.1 | 116 6.5 | 176 9.8 | |
| 57 | 8 14.3 | 8 15.6 | 7 51.7 | 57 .3 | 117 6.3 | 177 9.6 | | 57 | 8 29.3 | 8 30.7 | 8 6.1 | 57 3.2 | 117 6.5 | 177 9.9 | |
| 58 | 8 14.5 | 8 15.9 | 7 52.0 | 58 .3 | 118 6.4 | 178 9.6 | | 58 | 8 29.5 | 8 30.9 | 8 6.3 | 58 3.2 | 118 6.6 | 178 9.9 | |
| 59 | 8 14.8 | 8 16.1 | 7 52.2 | 59 .3 | 119 6.4 | 179 9.7 | | 59 | 8 29.8 | 8 31.2 | 8 6.5 | 59 3.3 | 119 6.6 | 179 10.0 | |
| 60 | 8 15.0 | 8 16.4 | 7 52.5 | 60 .3 | 120 6.5 | 180 9.8 | | 60 | 8 30.0 | 8 31.4 | 8 6.8 | 60 3.4 | 120 6.7 | 180 10.1 | |

0 h 33 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|----------------|------------|------------|------------|--|---|--------------------|------------------|--|--|--|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČ | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ' | o " | o ° | o ' | o " | |
| 0 | 8 30.0 | 8 31.4 | 8 6.8 | 0 .0 | 60 3.5 | 120 6.9 | |
| 1 | 8 30.3 | 8 31.7 | 8 7.0 | 1 .1 | 61 3.5 | 121 7.0 | |
| 2 | 8 30.5 | 8 31.9 | 8 7.2 | 2 .1 | 62 3.6 | 122 7.0 | |
| 3 | 8 30.8 | 8 32.2 | 8 7.5 | 3 .2 | 63 3.6 | 123 7.1 | |
| 4 | 8 31.0 | 8 32.4 | 8 7.7 | 4 .2 | 64 3.7 | 124 7.1 | |
| 5 | 8 31.3 | 8 32.7 | 8 8.0 | 5 .3 | 65 3.7 | 125 7.2 | |
| 6 | 8 31.5 | 8 32.9 | 8 8.2 | 6 .3 | 66 3.8 | 126 7.2 | |
| 7 | 8 31.8 | 8 33.2 | 8 8.4 | 7 .4 | 67 3.9 | 127 7.3 | |
| 8 | 8 32.0 | 8 33.4 | 8 8.7 | 8 .5 | 68 3.9 | 128 7.4 | |
| 9 | 8 32.3 | 8 33.7 | 8 8.9 | 9 .5 | 69 4.0 | 129 7.4 | |
| 10 | 8 32.5 | 8 33.9 | 8 9.2 | 10 .6 | 70 4.0 | 130 7.5 | |
| 11 | 8 32.8 | 8 34.2 | 8 9.4 | 11 .6 | 71 4.1 | 131 7.5 | |
| 12 | 8 33.0 | 8 34.4 | 8 9.6 | 12 .7 | 72 4.1 | 132 7.6 | |
| 13 | 8 33.3 | 8 34.7 | 8 9.9 | 13 .7 | 73 4.2 | 133 7.6 | |
| 14 | 8 33.5 | 8 34.9 | 8 10.1 | 14 .8 | 74 4.3 | 134 7.7 | |
| 15 | 8 33.8 | 8 35.2 | 8 10.3 | 15 .9 | 75 4.3 | 135 7.8 | |
| 16 | 8 34.0 | 8 35.4 | 8 10.6 | 16 .9 | 76 4.4 | 136 7.8 | |
| 17 | 8 34.3 | 8 35.7 | 8 10.8 | 17 .0 | 77 4.4 | 137 7.9 | |
| 18 | 8 34.5 | 8 35.9 | 8 11.1 | 18 .0 | 78 4.5 | 138 7.9 | |
| 19 | 8 34.8 | 8 36.2 | 8 11.3 | 19 .1 | 79 4.5 | 139 8.0 | |
| 20 | 8 35.0 | 8 36.4 | 8 11.5 | 20 .2 | 80 4.6 | 140 8.1 | |
| 21 | 8 35.3 | 8 36.7 | 8 11.8 | 21 .2 | 81 4.7 | 141 8.1 | |
| 22 | 8 35.5 | 8 36.9 | 8 12.0 | 22 .3 | 82 4.7 | 142 8.2 | |
| 23 | 8 35.8 | 8 37.2 | 8 12.3 | 23 .3 | 83 4.8 | 143 8.2 | |
| 24 | 8 36.0 | 8 37.4 | 8 12.5 | 24 .4 | 84 4.8 | 144 8.3 | |
| 25 | 8 36.3 | 8 37.7 | 8 12.7 | 25 .4 | 85 4.9 | 145 8.3 | |
| 26 | 8 36.5 | 8 37.9 | 8 13.0 | 26 .5 | 86 4.9 | 146 8.4 | |
| 27 | 8 36.8 | 8 38.2 | 8 13.2 | 27 .6 | 87 5.0 | 147 8.5 | |
| 28 | 8 37.0 | 8 38.4 | 8 13.4 | 28 .6 | 88 5.1 | 148 8.5 | |
| 29 | 8 37.3 | 8 38.7 | 8 13.7 | 29 .7 | 89 5.1 | 149 8.6 | |
| 30 | 8 37.5 | 8 38.9 | 8 13.9 | 30 .7 | 90 5.2 | 150 8.6 | |
| 31 | 8 37.8 | 8 39.2 | 8 14.2 | 31 .8 | 91 5.2 | 151 8.7 | |
| 32 | 8 38.0 | 8 39.4 | 8 14.4 | 32 .8 | 92 5.3 | 152 8.7 | |
| 33 | 8 38.3 | 8 39.7 | 8 14.6 | 33 .9 | 93 5.3 | 153 8.8 | |
| 34 | 8 38.5 | 8 39.9 | 8 14.9 | 34 .0 | 94 5.4 | 154 8.9 | |
| 35 | 8 38.8 | 8 40.2 | 8 15.1 | 35 .2 | 95 5.5 | 155 8.9 | |
| 36 | 8 39.0 | 8 40.4 | 8 15.4 | 36 .2 | 96 5.5 | 156 9.0 | |
| 37 | 8 39.3 | 8 40.7 | 8 15.6 | 37 .2 | 97 5.6 | 157 9.0 | |
| 38 | 8 39.5 | 8 40.9 | 8 15.8 | 38 .2 | 98 5.6 | 158 9.1 | |
| 39 | 8 39.8 | 8 41.2 | 8 16.1 | 39 .2 | 99 5.7 | 159 9.1 | |
| 40 | 8 40.0 | 8 41.4 | 8 16.3 | 40 .3 | 100 5.8 | 160 9.2 | |
| 41 | 8 40.3 | 8 41.7 | 8 16.5 | 41 .4 | 101 5.8 | 161 9.3 | |
| 42 | 8 40.5 | 8 41.9 | 8 16.8 | 42 .4 | 102 5.9 | 162 9.3 | |
| 43 | 8 40.8 | 8 42.2 | 8 17.0 | 43 .5 | 103 5.9 | 163 9.4 | |
| 44 | 8 41.0 | 8 42.4 | 8 17.3 | 44 .5 | 104 6.0 | 164 9.4 | |
| 45 | 8 41.3 | 8 42.7 | 8 17.5 | 45 .6 | 105 6.0 | 165 9.5 | |
| 46 | 8 41.5 | 8 42.9 | 8 17.7 | 46 .6 | 106 6.1 | 166 9.5 | |
| 47 | 8 41.8 | 8 43.2 | 8 18.0 | 47 .7 | 107 6.2 | 167 9.6 | |
| 48 | 8 42.0 | 8 43.5 | 8 18.2 | 48 .8 | 108 6.2 | 168 9.7 | |
| 49 | 8 42.3 | 8 43.7 | 8 18.5 | 49 .8 | 109 6.3 | 169 9.7 | |
| 50 | 8 42.5 | 8 44.0 | 8 18.7 | 50 .9 | 110 6.3 | 170 9.8 | |
| 51 | 8 42.8 | 8 44.2 | 8 18.9 | 51 .9 | 111 6.4 | 171 9.8 | |
| 52 | 8 43.0 | 8 44.5 | 8 19.2 | 52 .0 | 112 6.4 | 172 9.9 | |
| 53 | 8 43.3 | 8 44.7 | 8 19.4 | 53 .0 | 113 6.5 | 173 9.9 | |
| 54 | 8 43.5 | 8 45.0 | 8 19.7 | 54 .1 | 114 6.6 | 174 10.0 | |
| 55 | 8 43.8 | 8 45.2 | 8 19.9 | 55 .2 | 115 6.6 | 175 10.1 | |
| 56 | 8 44.0 | 8 45.5 | 8 20.1 | 56 .2 | 116 6.7 | 176 10.1 | |
| 57 | 8 44.3 | 8 45.7 | 8 20.4 | 57 .3 | 117 6.7 | 177 10.2 | |
| 58 | 8 44.5 | 8 46.0 | 8 20.6 | 58 .3 | 118 6.8 | 178 10.2 | |
| 59 | 8 44.8 | 8 46.2 | 8 20.8 | 59 .4 | 119 6.8 | 179 10.3 | |
| 60 | 8 45.0 | 8 46.5 | 8 21.1 | 60 .5 | 120 6.9 | 180 10.4 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ' | o " | o ° | o ' | o " | |
| 0 | 8 45.0 | 8 46.5 | 8 21.1 | 0 .0 | 60 3.6 | 120 7.1 | |
| 1 | 8 45.3 | 8 46.7 | 8 21.3 | 1 .1 | 61 3.6 | 121 7.2 | |
| 2 | 8 45.5 | 8 47.0 | 8 21.6 | 2 .1 | 62 3.7 | 122 7.2 | |
| 3 | 8 45.8 | 8 47.2 | 8 21.8 | 3 .2 | 63 3.7 | 123 7.3 | |
| 4 | 8 46.0 | 8 47.5 | 8 22.0 | 4 .2 | 64 3.8 | 124 7.3 | |
| 5 | 8 46.3 | 8 47.7 | 8 22.3 | 5 .3 | 65 3.8 | 125 7.4 | |
| 6 | 8 46.5 | 8 48.0 | 8 22.5 | 6 .4 | 66 3.9 | 126 7.5 | |
| 7 | 8 46.8 | 8 48.2 | 8 22.8 | 7 .4 | 67 4.0 | 127 7.5 | |
| 8 | 8 47.0 | 8 48.5 | 8 23.0 | 8 .5 | 68 4.0 | 128 7.6 | |
| 9 | 8 47.3 | 8 48.7 | 8 23.2 | 9 .5 | 69 4.1 | 129 7.6 | |
| 10 | 8 47.5 | 8 49.0 | 8 23.5 | 10 .6 | 70 4.1 | 130 7.7 | |
| 11 | 8 47.8 | 8 49.2 | 8 23.7 | 11 .7 | 71 4.2 | 131 7.8 | |
| 12 | 8 48.0 | 8 49.5 | 8 23.9 | 12 .7 | 72 4.3 | 132 7.8 | |
| 13 | 8 48.3 | 8 49.7 | 8 24.2 | 13 .8 | 73 4.3 | 133 7.9 | |
| 14 | 8 48.5 | 8 50.0 | 8 24.4 | 14 .8 | 74 4.4 | 134 7.9 | |
| 15 | 8 48.8 | 8 50.2 | 8 24.7 | 15 .9 | 75 4.4 | 135 8.0 | |
| 16 | 8 49.0 | 8 50.5 | 8 24.9 | 16 .9 | 76 4.5 | 136 8.0 | |
| 17 | 8 49.3 | 8 50.7 | 8 25.1 | 17 .0 | 77 4.6 | 137 8.1 | |
| 18 | 8 49.5 | 8 51.0 | 8 25.4 | 18 .1 | 78 4.6 | 138 8.2 | |
| 19 | 8 49.8 | 8 51.2 | 8 25.6 | 19 .1 | 79 4.7 | 139 8.2 | |
| 20 | 8 50.0 | 8 51.5 | 8 25.9 | 20 .2 | 80 4.7 | 140 8.3 | |
| 21 | 8 50.3 | 8 51.7 | 8 26.1 | 21 .2 | 81 4.8 | 141 8.3 | |
| 22 | 8 50.5 | 8 52.0 | 8 26.3 | 22 .3 | 82 4.9 | 142 8.4 | |
| 23 | 8 50.8 | 8 52.2 | 8 26.6 | 23 .4 | 83 4.9 | 143 8.5 | |
| 24 | 8 51.0 | 8 52.5 | 8 26.8 | 24 .4 | 84 5.0 | 144 8.5 | |
| 25 | 8 51.3 | 8 52.7 | 8 27.0 | 25 .5 | 85 5.0 | 145 8.6 | |
| 26 | 8 51.5 | 8 53.0 | 8 27.3 | 26 .5 | 86 5.1 | 146 8.6 | |
| 27 | 8 51.8 | 8 53.2 | 8 27.5 | 27 .6 | 87 5.1 | 147 8.7 | |
| 28 | 8 52.0 | 8 53.5 | 8 27.8 | 28 .7 | 88 5.2 | 148 8.8 | |
| 29 | 8 52.3 | 8 53.7 | 8 28.0 | 29 .7 | 89 5.3 | 149 8.8 | |
| 30 | 8 52.5 | 8 54.0 | 8 28.2 | 30 .8 | 90 5.3 | 150 8.9 | |
| 31 | 8 52.8 | 8 54.2 | 8 28.5 | 31 .8 | 91 5.4 | 151 8.9 | |
| 32 | 8 53.0 | 8 54.5 | 8 28.7 | 32 .9 | 92 5.4 | 152 9.0 | |
| 33 | 8 53.3 | 8 54.7 | 8 29.0 | 33 .0 | 93 5.5 | 153 9.1 | |
| 34 | 8 53.5 | 8 55.0 | 8 29.2 | 34 .0 | 94 5.6 | 154 9.1 | |
| 35 | 8 53.8 | 8 55.2 | 8 29.4 | 35 .1 | 95 5.6 | 155 9.2 | |
| 36 | 8 54.0 | 8 55.5 | 8 29.7 | 36 .2 | 96 5.7 | 156 9.2 | |
| 37 | 8 54.3 | 8 55.7 | 8 29.9 | 37 .2 | 97 5.7 | 157 9.3 | |
| 38 | 8 54.5 | 8 56.0 | 8 30.2 | 38 .2 | 98 5.8 | 158 9.3 | |
| 39 | 8 54.8 | 8 56.2 | 8 30.4 | 39 .3 | 99 5.9 | 159 9.4 | |
| 40 | 8 55.0 | 8 56.5 | 8 30.6 | 40 .4 | 100 5.9 | 160 9.5 | |
| 41 | 8 55.3 | 8 56.7 | 8 30.9 | 41 .4 | 101 6.0 | 161 9.5 | |
| 42 | 8 55.5 | 8 57.0 | 8 31.1 | 42 .5 | 102 6.0 | 162 9.6 | |
| 43 | 8 55.8 | 8 57.2 | 8 31.3 | 43 .5 | 103 6.1 | 163 9.6 | |
| 44 | 8 56.0 | 8 57.5 | 8 31.6 | 44 .6 | 104 6.2 | 164 9.7 | |
| 45 | 8 56.3 | 8 57.7 | 8 31.8 | 45 .7 | 105 6.2 | 165 9.8 | |
| 46 | 8 56.5 | 8 58.0 | 8 32.1 | 46 .7 | 106 6.3 | 166 9.8 | |
| 47 | 8 56.8 | 8 58.2 | 8 32.3 | 47 .8 | 107 6.3 | 167 9.9 | |
| 48 | 8 57.0 | 8 58.5 | 8 32.5 | 48 .8 | 108 6.4 | 168 9.9 | |
| 49 | 8 57.3 | 8 58.7 | 8 32.8 | 49 .9 | 109 6.4 | 169 10.0 | |
| 50 | 8 57.5 | 8 59.0 | 8 33.0 | 50 .3 | 110 6.5 | 170 10.1 | |
| 51 | 8 57.8 | 8 59.2 | 8 33.3 | 51 .3 | 111 6.6 | 171 10.1 | |
| 52 | 8 58.0 | 8 59.5 | 8 33.5 | 52 .3 | 112 6.6 | 172 10.2 | |
| 53 | 8 58.3 | 8 59.7 | 8 33.7 | 53 .3 | 113 6.7 | 173 10.2 | |
| 54 | 8 58.5 | 8 60.0 | 8 34.0 | 54 .3 | 114 6.7 | 174 10.3 | |
| 55 | 8 58.8 | 8 60.2 | 8 34.2 | 55 .3 | 115 6.8 | 175 10.4 | |
| 56 | 8 59.0 | 8 60.5 | 8 34.4 | 56 .3 | 116 6.9 | 176 10.4 | |
| 57 | 8 59.3 | 8 60.7 | 8 34.7 | 57 .3 | 117 6.9 | 177 10.5 | |
| 58 | 8 59.5 | 8 60.9 | 8 34.9 | 58 .3 | 118 7.0 | 178 10.5 | |
| 59 | 8 59.8 | 8 61.2 | 8 35.2 | 59 .3 | 119 7.0 | 179 10.6 | |
| 60 | 8 60.0 | 8 61.5 | 8 35.4 | 60 .3 | 120 7.1 | 180 10.7 | |

0 h 36 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 9 .0 | 9 1.5 | 8 35.4 | 0 .0 | 60 3.7 | 120 7.3 | | 0 | 9 15.0 | 9 16.5 | 8 49.7 | 0 .0 | 60 3.8 | 120 7.5 | |
| 1 | 9 .3 | 9 1.8 | 8 35.6 | 1 .1 | 61 3.7 | 121 7.4 | | 1 | 9 15.3 | 9 16.8 | 8 50.0 | 1 .1 | 61 3.8 | 121 7.6 | |
| 2 | 9 .5 | 9 2.0 | 8 35.9 | 2 .1 | 62 3.8 | 122 7.4 | | 2 | 9 15.5 | 9 17.0 | 8 50.2 | 2 .1 | 62 3.9 | 122 7.6 | |
| 3 | 9 .8 | 9 2.3 | 8 36.1 | 3 .2 | 63 3.8 | 123 7.5 | | 3 | 9 15.8 | 9 17.3 | 8 50.4 | 3 .2 | 63 3.9 | 123 7.7 | |
| 4 | 9 1.0 | 9 2.5 | 8 36.4 | 4 .2 | 64 3.9 | 124 7.5 | | 4 | 9 16.0 | 9 17.5 | 8 50.7 | 4 .3 | 64 4.0 | 124 7.8 | |
| 5 | 9 1.3 | 9 2.8 | 8 36.6 | 5 .3 | 65 4.0 | 125 7.6 | | 5 | 9 16.3 | 9 17.8 | 8 50.9 | 5 .3 | 65 4.1 | 125 7.8 | |
| 6 | 9 1.5 | 9 3.0 | 8 36.8 | 6 .4 | 66 4.0 | 126 7.7 | | 6 | 9 16.5 | 9 18.0 | 8 51.1 | 6 .4 | 66 4.1 | 126 7.9 | |
| 7 | 9 1.8 | 9 3.3 | 8 37.1 | 7 .4 | 67 4.1 | 127 7.7 | | 7 | 9 16.8 | 9 18.3 | 8 51.4 | 7 .4 | 67 4.2 | 127 7.9 | |
| 8 | 9 2.0 | 9 3.5 | 8 37.3 | 8 .5 | 68 4.1 | 128 7.8 | | 8 | 9 17.0 | 9 18.5 | 8 51.6 | 8 .5 | 68 4.3 | 128 8.0 | |
| 9 | 9 2.3 | 9 3.8 | 8 37.5 | 9 .5 | 69 4.2 | 129 7.8 | | 9 | 9 17.3 | 9 18.8 | 8 51.9 | 9 .6 | 69 4.3 | 129 8.1 | |
| 10 | 9 2.5 | 9 4.0 | 8 37.8 | 10 .6 | 70 4.3 | 130 7.9 | | 10 | 9 17.5 | 9 19.0 | 8 52.1 | 10 .6 | 70 4.4 | 130 8.1 | |
| 11 | 9 2.8 | 9 4.3 | 8 38.0 | 11 .7 | 71 4.3 | 131 8.0 | | 11 | 9 17.8 | 9 19.3 | 8 52.3 | 11 .7 | 71 4.4 | 131 8.2 | |
| 12 | 9 3.0 | 9 4.5 | 8 38.3 | 12 .7 | 72 4.4 | 132 8.0 | | 12 | 9 18.0 | 9 19.6 | 8 52.6 | 12 .8 | 72 4.5 | 132 8.3 | |
| 13 | 9 3.3 | 9 4.8 | 8 38.5 | 13 .8 | 73 4.4 | 133 8.1 | | 13 | 9 18.3 | 9 19.8 | 8 52.8 | 13 .8 | 73 4.6 | 133 8.3 | |
| 14 | 9 3.5 | 9 5.0 | 8 38.7 | 14 .9 | 74 4.5 | 134 8.2 | | 14 | 9 18.5 | 9 20.1 | 8 53.1 | 14 .9 | 74 4.6 | 134 8.4 | |
| 15 | 9 3.8 | 9 5.3 | 8 39.0 | 15 .9 | 75 4.6 | 135 8.2 | | 15 | 9 18.8 | 9 20.3 | 8 53.3 | 15 .9 | 75 4.7 | 135 8.4 | |
| 16 | 9 4.0 | 9 5.5 | 8 39.2 | 16 .0 | 76 4.6 | 136 8.3 | | 16 | 9 19.0 | 9 20.6 | 8 53.5 | 16 .0 | 76 4.8 | 136 8.5 | |
| 17 | 9 4.3 | 9 5.8 | 8 39.5 | 17 .0 | 77 4.7 | 137 8.3 | | 17 | 9 19.3 | 9 20.8 | 8 53.8 | 17 .1 | 77 4.8 | 137 8.6 | |
| 18 | 9 4.5 | 9 6.0 | 8 39.7 | 18 .1 | 78 4.7 | 138 8.4 | | 18 | 9 19.5 | 9 21.1 | 8 54.0 | 18 .1 | 78 4.9 | 138 8.6 | |
| 19 | 9 4.8 | 9 6.3 | 8 39.9 | 19 .2 | 79 4.8 | 139 8.5 | | 19 | 9 19.8 | 9 21.3 | 8 54.3 | 19 .2 | 79 4.9 | 139 8.7 | |
| 20 | 9 5.0 | 9 6.5 | 8 40.2 | 20 .2 | 80 4.9 | 140 8.5 | | 20 | 9 20.0 | 9 21.6 | 8 54.5 | 20 .3 | 80 5.0 | 140 8.8 | |
| 21 | 9 5.3 | 9 6.8 | 8 40.4 | 21 .3 | 81 4.9 | 141 8.6 | | 21 | 9 20.3 | 9 21.8 | 8 54.7 | 21 .3 | 81 5.1 | 141 8.8 | |
| 22 | 9 5.5 | 9 7.0 | 8 40.6 | 22 .3 | 82 5.0 | 142 8.6 | | 22 | 9 20.5 | 9 22.1 | 8 55.0 | 22 .4 | 82 5.1 | 142 8.9 | |
| 23 | 9 5.8 | 9 7.3 | 8 40.9 | 23 .4 | 83 5.0 | 143 8.7 | | 23 | 9 20.8 | 9 22.3 | 8 55.2 | 23 .4 | 83 5.2 | 143 8.9 | |
| 24 | 9 6.0 | 9 7.5 | 8 41.1 | 24 .5 | 84 5.1 | 144 8.8 | | 24 | 9 21.0 | 9 22.6 | 8 55.4 | 24 .5 | 84 5.3 | 144 9.0 | |
| 25 | 9 6.3 | 9 7.8 | 8 41.4 | 25 .5 | 85 5.2 | 145 8.8 | | 25 | 9 21.3 | 9 22.8 | 8 55.7 | 25 .6 | 85 5.3 | 145 9.1 | |
| 26 | 9 6.5 | 9 8.0 | 8 41.6 | 26 .6 | 86 5.2 | 146 8.9 | | 26 | 9 21.5 | 9 23.1 | 8 55.9 | 26 .6 | 86 5.4 | 146 9.1 | |
| 27 | 9 6.8 | 9 8.3 | 8 41.8 | 27 .6 | 87 5.3 | 147 8.9 | | 27 | 9 21.8 | 9 23.3 | 8 56.2 | 27 .7 | 87 5.4 | 147 9.2 | |
| 28 | 9 7.0 | 9 8.5 | 8 42.1 | 28 .7 | 88 5.4 | 148 9.0 | | 28 | 9 22.0 | 9 23.6 | 8 56.4 | 28 .8 | 88 5.5 | 148 9.3 | |
| 29 | 9 7.3 | 9 8.8 | 8 42.3 | 29 .8 | 89 5.4 | 149 9.1 | | 29 | 9 22.3 | 9 23.8 | 8 56.6 | 29 .8 | 89 5.6 | 149 9.3 | |
| 30 | 9 7.5 | 9 9.0 | 8 42.6 | 30 .8 | 90 5.5 | 150 9.1 | | 30 | 9 22.5 | 9 24.1 | 8 56.9 | 30 .9 | 90 5.6 | 150 9.4 | |
| 31 | 9 7.8 | 9 9.3 | 8 42.8 | 31 .9 | 91 5.5 | 151 9.2 | | 31 | 9 22.8 | 9 24.3 | 8 57.1 | 31 .9 | 91 5.7 | 151 9.4 | |
| 32 | 9 8.0 | 9 9.5 | 8 43.0 | 32 .9 | 92 5.6 | 152 9.2 | | 32 | 9 23.0 | 9 24.6 | 8 57.4 | 32 .0 | 92 5.8 | 152 9.5 | |
| 33 | 9 8.3 | 9 9.8 | 8 43.3 | 33 .2 | 93 5.7 | 153 9.3 | | 33 | 9 23.3 | 9 24.8 | 8 57.6 | 33 .2 | 93 5.8 | 153 9.6 | |
| 34 | 9 8.5 | 9 10.0 | 8 43.5 | 34 .2 | 94 5.7 | 154 9.4 | | 34 | 9 23.5 | 9 25.1 | 8 57.8 | 34 .2 | 94 5.9 | 154 9.6 | |
| 35 | 9 8.8 | 9 10.3 | 8 43.8 | 35 .2 | 95 5.8 | 155 9.4 | | 35 | 9 23.8 | 9 25.3 | 8 58.1 | 35 .2 | 95 5.9 | 155 9.7 | |
| 36 | 9 9.0 | 9 10.5 | 8 44.0 | 36 .2 | 96 5.8 | 156 9.5 | | 36 | 9 24.0 | 9 25.6 | 8 58.3 | 36 .3 | 96 6.0 | 156 9.8 | |
| 37 | 9 9.3 | 9 10.8 | 8 44.2 | 37 .3 | 97 5.9 | 157 9.6 | | 37 | 9 24.3 | 9 25.8 | 8 58.5 | 37 .3 | 97 6.1 | 157 9.8 | |
| 38 | 9 9.5 | 9 11.0 | 8 44.5 | 38 .3 | 98 6.0 | 158 9.6 | | 38 | 9 24.5 | 9 26.1 | 8 58.8 | 38 .4 | 98 6.1 | 158 9.9 | |
| 39 | 9 9.8 | 9 11.3 | 8 44.7 | 39 .4 | 99 6.0 | 159 9.7 | | 39 | 9 24.8 | 9 26.3 | 8 59.0 | 39 .4 | 99 6.2 | 159 9.9 | |
| 40 | 9 10.0 | 9 11.5 | 8 44.9 | 40 .4 | 100 6.1 | 160 9.7 | | 40 | 9 25.0 | 9 26.6 | 8 59.3 | 40 .5 | 100 6.3 | 160 10.0 | |
| 41 | 9 10.3 | 9 11.8 | 8 45.2 | 41 .5 | 101 6.1 | 161 9.8 | | 41 | 9 25.3 | 9 26.8 | 8 59.5 | 41 .6 | 101 6.3 | 161 10.1 | |
| 42 | 9 10.5 | 9 12.0 | 8 45.4 | 42 .6 | 102 6.2 | 162 9.9 | | 42 | 9 25.5 | 9 27.1 | 8 59.7 | 42 .6 | 102 6.4 | 162 10.1 | |
| 43 | 9 10.8 | 9 12.3 | 8 45.7 | 43 .6 | 103 6.3 | 163 9.9 | | 43 | 9 25.8 | 9 27.3 | 8 60.0 | 43 .7 | 103 6.4 | 163 10.2 | |
| 44 | 9 11.0 | 9 12.5 | 8 45.9 | 44 .7 | 104 6.3 | 164 10.0 | | 44 | 9 26.0 | 9 27.6 | 8 60.2 | 44 .8 | 104 6.5 | 164 10.3 | |
| 45 | 9 11.3 | 9 12.8 | 8 46.1 | 45 .7 | 105 6.4 | 165 10.0 | | 45 | 9 26.3 | 9 27.8 | 8 60.5 | 45 .8 | 105 6.6 | 165 10.3 | |
| 46 | 9 11.5 | 9 13.0 | 8 46.4 | 46 .8 | 106 6.4 | 166 10.1 | | 46 | 9 26.5 | 9 28.1 | 8 60.7 | 46 .9 | 106 6.6 | 166 10.4 | |
| 47 | 9 11.8 | 9 13.3 | 8 46.6 | 47 .9 | 107 6.5 | 167 10.2 | | 47 | 9 26.8 | 9 28.3 | 8 61.0 | 47 .9 | 107 6.7 | 167 10.4 | |
| 48 | 9 12.0 | 9 13.5 | 8 46.9 | 48 .9 | 108 6.6 | 168 10.2 | | 48 | 9 27.0 | 9 28.6 | 8 61.3 | 48 .9 | 108 6.8 | 168 10.5 | |
| 49 | 9 12.3 | 9 13.8 | 8 47.1 | 49 .0 | 109 6.6 | 169 10.3 | | 49 | 9 27.3 | 9 28.8 | 8 61.6 | 49 .0 | 109 6.8 | 169 10.6 | |
| 50 | 9 12.5 | 9 14.0 | 8 47.3 | 50 .3 | 110 6.7 | 170 10.3 | | 50 | 9 27.5 | 9 29.1 | 8 62.0 | 50 .3 | 110 6.9 | 170 10.6 | |
| 51 | 9 12.8 | 9 14.3 | 8 47.6 | 51 .3 | 111 6.8 | 171 10.4 | | 51 | 9 27.8 | 9 29.3 | 8 62.3 | 51 .3 | 111 6.9 | 171 10.7 | |
| 52 | 9 13.0 | 9 14.5 | 8 47.8 | 52 .3 | 112 6.8 | 172 10.5 | | 52 | 9 28.0 | 9 29.6 | 8 62.6 | 52 .3 | 112 7.0 | 172 10.8 | |
| 53 | 9 13.3 | 9 14.8 | 8 48.0 | 53 .3 | 113 6.9 | 173 10.5 | | 53 | 9 28.3 | 9 29.8 | 8 62.9 | 53 .3 | 113 7.1 | 173 10.8 | |
| 54 | 9 13.5 | 9 15.0 | 8 48.3 | 54 .3 | 114 6.9 | 174 10.6 | | 54 | 9 28.5 | 9 30.1 | 8 63.2 | 54 .3 | 114 7.1 | 174 10.9 | |
| 55 | 9 13.8 | 9 15.3 | 8 48.5 | 55 .3 | 115 7.0 | 175 10.6 | | 55 | 9 28.8 | 9 30.3 | 8 63.5 | 55 .3 | 115 7.2 | 175 10.9 | |
| 56 | 9 14.0 | 9 15.5 | 8 48.8 | 56 .3 | 116 7.1 | 176 10.7 | | 56 | 9 29.0 | 9 30.6 | 8 63.8 | 56 .3 | 116 7.3 | 176 11.0 | |
| 57 | 9 14.3 | 9 15.8 | 8 49.0 | 57 .3 | 117 7.1 | 177 10.8 | | 57 | 9 29.3 | 9 30.8 | 8 64.1 | 57 .3 | 117 7.3 | 177 11.1 | |
| 58 | 9 14.5 | 9 16.0 | 8 49.2 | 58 .3 | 118 7.2 | 178 10.8 | | 58 | 9 29.5 | 9 31.1 | 8 64.4 | 58 .3 | 118 7.4 | 178 11.1 | |
| 59 | 9 14.8 | 9 16.3 | 8 49.5 | 59 .3 | 119 7.2 | 179 10.9 | | 59 | 9 29.8 | 9 31.3 | 8 64.7 | 59 .3 | 119 7.4 | 179 11.2 | |
| 60 | 9 15.0 | 9 16.5 | 8 49.7 | 60 .3 | 120 7.3 | 180 11.0 | | 60 | 9 30.0 | 9 31.6 | 8 65.0 | 60 .3 | 120 7.5 | 180 11.3 | |

0 h 37 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|--|---|----------------------|--------------|--|--|--|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 9 30.0 | 9 31.6 | 9 4.3 | 0 .0 | 60 3.9 | 120 7.7 | |
| 1 | 9 30.3 | 9 31.8 | 9 4.3 | 1 .1 | 61 3.9 | 121 7.8 | |
| 2 | 9 30.5 | 9 32.1 | 9 4.5 | 2 .1 | 62 4.0 | 122 7.8 | |
| 3 | 9 30.8 | 9 32.3 | 9 4.7 | 3 .2 | 63 4.0 | 123 7.9 | |
| 4 | 9 31.0 | 9 32.6 | 9 5.0 | 4 .3 | 64 4.1 | 124 8.0 | |
| 5 | 9 31.3 | 9 32.8 | 9 5.2 | 5 .3 | 65 4.2 | 125 8.0 | |
| 6 | 9 31.5 | 9 33.1 | 9 5.5 | 6 .4 | 66 4.2 | 126 8.1 | |
| 7 | 9 31.8 | 9 33.3 | 9 5.7 | 7 .4 | 67 4.3 | 127 8.1 | |
| 8 | 9 32.0 | 9 33.6 | 9 5.9 | 8 .5 | 68 4.4 | 128 8.2 | |
| 9 | 9 32.3 | 9 33.8 | 9 6.2 | 9 .6 | 69 4.4 | 129 8.3 | |
| 10 | 9 32.5 | 9 34.1 | 9 6.4 | 10 .6 | 70 4.5 | 130 8.3 | |
| 11 | 9 32.8 | 9 34.3 | 9 6.7 | 11 .7 | 71 4.6 | 131 8.4 | |
| 12 | 9 33.0 | 9 34.6 | 9 6.9 | 12 .8 | 72 4.6 | 132 8.5 | |
| 13 | 9 33.3 | 9 34.8 | 9 7.1 | 13 .8 | 73 4.7 | 133 8.5 | |
| 14 | 9 33.5 | 9 35.1 | 9 7.4 | 14 .9 | 74 4.7 | 134 8.6 | |
| 15 | 9 33.8 | 9 35.3 | 9 7.6 | 15 .0 | 75 4.8 | 135 8.7 | |
| 16 | 9 34.0 | 9 35.6 | 9 7.9 | 16 .0 | 76 4.9 | 136 8.7 | |
| 17 | 9 34.3 | 9 35.8 | 9 8.1 | 17 .1 | 77 4.9 | 137 8.8 | |
| 18 | 9 34.5 | 9 36.1 | 9 8.3 | 18 .2 | 78 5.0 | 138 8.9 | |
| 19 | 9 34.8 | 9 36.3 | 9 8.6 | 19 .2 | 79 5.1 | 139 8.9 | |
| 20 | 9 35.0 | 9 36.6 | 9 8.8 | 20 .3 | 80 5.1 | 140 9.0 | |
| 21 | 9 35.3 | 9 36.8 | 9 9.0 | 21 .3 | 81 5.2 | 141 9.0 | |
| 22 | 9 35.5 | 9 37.1 | 9 9.3 | 22 .4 | 82 5.3 | 142 9.1 | |
| 23 | 9 35.8 | 9 37.3 | 9 9.5 | 23 .5 | 83 5.3 | 143 9.2 | |
| 24 | 9 36.0 | 9 37.6 | 9 9.8 | 24 .5 | 84 5.4 | 144 9.2 | |
| 25 | 9 36.3 | 9 37.9 | 9 10.0 | 25 .6 | 85 5.5 | 145 9.3 | |
| 26 | 9 36.5 | 9 38.1 | 9 10.2 | 26 .7 | 86 5.5 | 146 9.4 | |
| 27 | 9 36.8 | 9 38.4 | 9 10.5 | 27 .7 | 87 5.6 | 147 9.4 | |
| 28 | 9 37.0 | 9 38.6 | 9 10.7 | 28 .8 | 88 5.6 | 148 9.5 | |
| 29 | 9 37.3 | 9 38.9 | 9 11.0 | 29 .9 | 89 5.7 | 149 9.6 | |
| 30 | 9 37.5 | 9 39.1 | 9 11.2 | 30 .9 | 90 5.8 | 150 9.6 | |
| 31 | 9 37.8 | 9 39.4 | 9 11.4 | 31 .9 | 91 5.8 | 151 9.7 | |
| 32 | 9 38.0 | 9 39.6 | 9 11.7 | 32 .1 | 92 5.9 | 152 9.8 | |
| 33 | 9 38.3 | 9 39.9 | 9 11.9 | 33 .2 | 93 6.0 | 153 9.8 | |
| 34 | 9 38.5 | 9 40.1 | 9 12.1 | 34 .2 | 94 6.0 | 154 9.9 | |
| 35 | 9 38.8 | 9 40.4 | 9 12.4 | 35 .2 | 95 6.1 | 155 9.9 | |
| 36 | 9 39.0 | 9 40.6 | 9 12.6 | 36 .3 | 96 6.2 | 156 10.0 | |
| 37 | 9 39.3 | 9 40.9 | 9 12.9 | 37 .4 | 97 6.2 | 157 10.1 | |
| 38 | 9 39.5 | 9 41.1 | 9 13.1 | 38 .4 | 98 6.3 | 158 10.1 | |
| 39 | 9 39.8 | 9 41.4 | 9 13.3 | 39 .5 | 99 6.4 | 159 10.2 | |
| 40 | 9 40.0 | 9 41.6 | 9 13.6 | 40 .6 | 100 6.4 | 160 10.3 | |
| 41 | 9 40.3 | 9 41.9 | 9 13.8 | 41 .6 | 101 6.5 | 161 10.3 | |
| 42 | 9 40.5 | 9 42.1 | 9 14.1 | 42 .7 | 102 6.5 | 162 10.4 | |
| 43 | 9 40.8 | 9 42.4 | 9 14.3 | 43 .8 | 103 6.6 | 163 10.5 | |
| 44 | 9 41.0 | 9 42.6 | 9 14.5 | 44 .8 | 104 6.7 | 164 10.5 | |
| 45 | 9 41.3 | 9 42.9 | 9 14.8 | 45 .9 | 105 6.7 | 165 10.6 | |
| 46 | 9 41.5 | 9 43.1 | 9 15.0 | 46 .9 | 106 6.8 | 166 10.7 | |
| 47 | 9 41.8 | 9 43.4 | 9 15.2 | 47 .0 | 107 6.9 | 167 10.7 | |
| 48 | 9 42.0 | 9 43.6 | 9 15.5 | 48 .1 | 108 6.9 | 168 10.8 | |
| 49 | 9 42.3 | 9 43.9 | 9 15.7 | 49 .1 | 109 7.0 | 169 10.8 | |
| 50 | 9 42.5 | 9 44.1 | 9 16.0 | 50 .2 | 110 7.1 | 170 10.9 | |
| 51 | 9 42.8 | 9 44.4 | 9 16.2 | 51 .3 | 111 7.1 | 171 11.0 | |
| 52 | 9 43.0 | 9 44.6 | 9 16.4 | 52 .3 | 112 7.2 | 172 11.0 | |
| 53 | 9 43.3 | 9 44.9 | 9 16.7 | 53 .4 | 113 7.3 | 173 11.1 | |
| 54 | 9 43.5 | 9 45.1 | 9 16.9 | 54 .5 | 114 7.3 | 174 11.2 | |
| 55 | 9 43.8 | 9 45.4 | 9 17.2 | 55 .5 | 115 7.4 | 175 11.2 | |
| 56 | 9 44.0 | 9 45.6 | 9 17.4 | 56 .6 | 116 7.4 | 176 11.3 | |
| 57 | 9 44.3 | 9 45.9 | 9 17.6 | 57 .7 | 117 7.5 | 177 11.4 | |
| 58 | 9 44.5 | 9 46.1 | 9 17.9 | 58 .7 | 118 7.6 | 178 11.4 | |
| 59 | 9 44.8 | 9 46.4 | 9 18.1 | 59 .8 | 119 7.6 | 179 11.5 | |
| 60 | 9 45.0 | 9 46.6 | 9 18.4 | 60 .9 | 120 7.7 | 180 11.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 9 45.0 | 9 46.6 | 9 18.4 | 0 .0 | 60 4.0 | 120 7.9 | |
| 1 | 9 45.3 | 9 46.9 | 9 18.6 | 1 .1 | 61 4.0 | 121 8.0 | |
| 2 | 9 45.5 | 9 47.1 | 9 18.8 | 2 .1 | 62 4.1 | 122 8.0 | |
| 3 | 9 45.8 | 9 47.4 | 9 19.1 | 3 .2 | 63 4.1 | 123 8.1 | |
| 4 | 9 46.0 | 9 47.6 | 9 19.3 | 4 .3 | 64 4.2 | 124 8.2 | |
| 5 | 9 46.3 | 9 47.9 | 9 19.5 | 5 .3 | 65 4.3 | 125 8.2 | |
| 6 | 9 46.5 | 9 48.1 | 9 19.8 | 6 .4 | 66 4.3 | 126 8.3 | |
| 7 | 9 46.8 | 9 48.4 | 9 20.0 | 7 .5 | 67 4.4 | 127 8.4 | |
| 8 | 9 47.0 | 9 48.6 | 9 20.3 | 8 .5 | 68 4.5 | 128 8.4 | |
| 9 | 9 47.3 | 9 48.9 | 9 20.5 | 9 .6 | 69 4.5 | 129 8.5 | |
| 10 | 9 47.5 | 9 49.1 | 9 20.7 | 10 .7 | 70 4.6 | 130 8.6 | |
| 11 | 9 47.8 | 9 49.4 | 9 21.0 | 11 .7 | 71 4.7 | 131 8.6 | |
| 12 | 9 48.0 | 9 49.6 | 9 21.2 | 12 .8 | 72 4.7 | 132 8.7 | |
| 13 | 9 48.3 | 9 49.9 | 9 21.5 | 13 .9 | 73 4.8 | 133 8.8 | |
| 14 | 9 48.5 | 9 50.1 | 9 21.7 | 14 .9 | 74 4.9 | 134 8.8 | |
| 15 | 9 48.8 | 9 50.4 | 9 21.9 | 15 .0 | 75 4.9 | 135 8.9 | |
| 16 | 9 49.0 | 9 50.6 | 9 22.2 | 16 .1 | 76 5.0 | 136 9.0 | |
| 17 | 9 49.3 | 9 50.9 | 9 22.4 | 17 .1 | 77 5.1 | 137 9.0 | |
| 18 | 9 49.5 | 9 51.1 | 9 22.6 | 18 .2 | 78 5.1 | 138 9.1 | |
| 19 | 9 49.8 | 9 51.4 | 9 22.9 | 19 .3 | 79 5.2 | 139 9.2 | |
| 20 | 9 50.0 | 9 51.6 | 9 23.1 | 20 .3 | 80 5.3 | 140 9.2 | |
| 21 | 9 50.3 | 9 51.9 | 9 23.4 | 21 .4 | 81 5.3 | 141 9.3 | |
| 22 | 9 50.5 | 9 52.1 | 9 23.6 | 22 .4 | 82 5.4 | 142 9.3 | |
| 23 | 9 50.8 | 9 52.4 | 9 23.8 | 23 .5 | 83 5.5 | 143 9.4 | |
| 24 | 9 51.0 | 9 52.6 | 9 24.1 | 24 .6 | 84 5.5 | 144 9.5 | |
| 25 | 9 51.3 | 9 52.9 | 9 24.3 | 25 .6 | 85 5.6 | 145 9.5 | |
| 26 | 9 51.5 | 9 53.1 | 9 24.6 | 26 .7 | 86 5.7 | 146 9.6 | |
| 27 | 9 51.8 | 9 53.4 | 9 24.8 | 27 .8 | 87 5.7 | 147 9.7 | |
| 28 | 9 52.0 | 9 53.6 | 9 25.0 | 28 .8 | 88 5.8 | 148 9.7 | |
| 29 | 9 52.3 | 9 53.9 | 9 25.3 | 29 .9 | 89 5.9 | 149 9.8 | |
| 30 | 9 52.5 | 9 54.1 | 9 25.5 | 30 .0 | 90 5.9 | 150 9.9 | |
| 31 | 9 52.8 | 9 54.4 | 9 25.7 | 31 .0 | 91 6.0 | 151 9.9 | |
| 32 | 9 53.0 | 9 54.6 | 9 26.0 | 32 .1 | 92 6.1 | 152 10.0 | |
| 33 | 9 53.3 | 9 54.9 | 9 26.2 | 33 .2 | 93 6.1 | 153 10.1 | |
| 34 | 9 53.5 | 9 55.1 | 9 26.5 | 34 .2 | 94 6.2 | 154 10.1 | |
| 35 | 9 53.8 | 9 55.4 | 9 26.7 | 35 .3 | 95 6.3 | 155 10.2 | |
| 36 | 9 54.0 | 9 55.7 | 9 26.9 | 36 .4 | 96 6.3 | 156 10.3 | |
| 37 | 9 54.3 | 9 55.9 | 9 27.2 | 37 .4 | 97 6.4 | 157 10.3 | |
| 38 | 9 54.5 | 9 56.2 | 9 27.4 | 38 .5 | 98 6.5 | 158 10.4 | |
| 39 | 9 54.8 | 9 56.4 | 9 27.7 | 39 .6 | 99 6.5 | 159 10.5 | |
| 40 | 9 55.0 | 9 56.7 | 9 27.9 | 40 .6 | 100 6.6 | 160 10.5 | |
| 41 | 9 55.3 | 9 56.9 | 9 28.1 | 41 .7 | 101 6.6 | 161 10.6 | |
| 42 | 9 55.5 | 9 57.2 | 9 28.4 | 42 .8 | 102 6.7 | 162 10.7 | |
| 43 | 9 55.8 | 9 57.4 | 9 28.6 | 43 .8 | 103 6.8 | 163 10.7 | |
| 44 | 9 56.0 | 9 57.7 | 9 28.8 | 44 .9 | 104 6.8 | 164 10.8 | |
| 45 | 9 56.3 | 9 57.9 | 9 29.1 | 45 .0 | 105 6.9 | 165 10.9 | |
| 46 | 9 56.5 | 9 58.2 | 9 29.3 | 46 .0 | 106 7.0 | 166 10.9 | |
| 47 | 9 56.8 | 9 58.4 | 9 29.6 | 47 .1 | 107 7.0 | 167 11.0 | |
| 48 | 9 57.0 | 9 58.7 | 9 29.8 | 48 .2 | 108 7.1 | 168 11.1 | |
| 49 | 9 57.3 | 9 58.9 | 9 30.0 | 49 .3 | 109 7.2 | 169 11.1 | |
| 50 | 9 57.5 | 9 59.2 | 9 30.3 | 50 .3 | 110 7.2 | 170 11.2 | |
| 51 | 9 57.8 | 9 59.4 | 9 30.5 | 51 .4 | 111 7.3 | 171 11.3 | |
| 52 | 9 58.0 | 9 59.7 | 9 30.8 | 52 .4 | 112 7.4 | 172 11.3 | |
| 53 | 9 58.3 | 9 59.9 | 9 31.0 | 53 .5 | 113 7.4 | 173 11.4 | |
| 54 | 9 58.5 | 9 60 .2 | 9 31.2 | 54 .6 | 114 7.5 | 174 11.5 | |
| 55 | 9 58.8 | 10 .4 | 9 31.5 | 55 .6 | 115 7.6 | 175 11.5 | |
| 56 | 9 59.0 | 10 .7 | 9 31.7 | 56 .7 | 116 7.6 | 176 11.6 | |
| 57 | 9 59.3 | 10 .9 | 9 32.0 | 57 .8 | 117 7.7 | 177 11.7 | |
| 58 | 9 59.5 | 10 .2 | 9 32.2 | 58 .8 | 118 7.8 | 178 11.7 | |
| 59 | 9 59.8 | 10 .4 | 9 32.4 | 59 .9 | 119 7.8 | 179 11.8 | |
| 60 | 10 .0 | 10 .7 | 9 32.7 | 60 .4 | 120 7.9 | 180 11.9 | |

0 h 40 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | t ' | o ° | t ' | o ° | t ' | t ' |
| 0 | 10 .0 | 10 1.7 | 9 32.7 | 0 .0 | 60 4.1 | 120 8.1 | |
| 1 | 10 .3 | 10 1.9 | 9 32.9 | 1 .1 | 61 4.1 | 121 8.2 | |
| 2 | 10 .5 | 10 2.2 | 9 33.1 | 2 .1 | 62 4.2 | 122 8.2 | |
| 3 | 10 .8 | 10 2.4 | 9 33.4 | 3 .2 | 63 4.3 | 123 8.3 | |
| 4 | 10 1.0 | 10 2.7 | 9 33.6 | 4 .3 | 64 4.3 | 124 8.4 | |
| 5 | 10 1.3 | 10 2.9 | 9 33.9 | 5 .3 | 65 4.4 | 125 8.4 | |
| 6 | 10 1.5 | 10 3.2 | 9 34.1 | 6 .4 | 66 4.5 | 126 8.5 | |
| 7 | 10 1.8 | 10 3.4 | 9 34.3 | 7 .5 | 67 4.5 | 127 8.6 | |
| 8 | 10 2.0 | 10 3.7 | 9 34.6 | 8 .5 | 68 4.6 | 128 8.6 | |
| 9 | 10 2.3 | 10 3.9 | 9 34.8 | 9 .6 | 69 4.7 | 129 8.7 | |
| 10 | 10 2.5 | 10 4.2 | 9 35.1 | 10 .7 | 70 4.7 | 130 8.8 | |
| 11 | 10 2.8 | 10 4.4 | 9 35.3 | 11 .7 | 71 4.8 | 131 8.8 | |
| 12 | 10 3.0 | 10 4.7 | 9 35.5 | 12 .8 | 72 4.9 | 132 8.9 | |
| 13 | 10 3.3 | 10 4.9 | 9 35.8 | 13 .9 | 73 4.9 | 133 9.0 | |
| 14 | 10 3.5 | 10 5.2 | 9 36.0 | 14 .9 | 74 5.0 | 134 9.0 | |
| 15 | 10 3.8 | 10 5.4 | 9 36.2 | 15 .0 | 75 5.1 | 135 9.1 | |
| 16 | 10 4.0 | 10 5.7 | 9 36.5 | 16 .1 | 76 5.1 | 136 9.2 | |
| 17 | 10 4.3 | 10 5.9 | 9 36.7 | 17 .1 | 77 5.2 | 137 9.2 | |
| 18 | 10 4.5 | 10 6.2 | 9 37.0 | 18 .2 | 78 5.3 | 138 9.3 | |
| 19 | 10 4.8 | 10 6.4 | 9 37.2 | 19 .3 | 79 5.3 | 139 9.4 | |
| 20 | 10 5.0 | 10 6.7 | 9 37.4 | 20 .4 | 80 5.4 | 140 9.5 | |
| 21 | 10 5.3 | 10 6.9 | 9 37.7 | 21 .4 | 81 5.5 | 141 9.5 | |
| 22 | 10 5.5 | 10 7.2 | 9 37.9 | 22 .5 | 82 5.5 | 142 9.6 | |
| 23 | 10 5.8 | 10 7.4 | 9 38.2 | 23 .6 | 83 5.6 | 143 9.7 | |
| 24 | 10 6.0 | 10 7.7 | 9 38.4 | 24 .6 | 84 5.7 | 144 9.7 | |
| 25 | 10 6.3 | 10 7.9 | 9 38.6 | 25 .7 | 85 5.7 | 145 9.8 | |
| 26 | 10 6.5 | 10 8.2 | 9 38.9 | 26 .8 | 86 5.8 | 146 9.9 | |
| 27 | 10 6.8 | 10 8.4 | 9 39.1 | 27 .8 | 87 5.9 | 147 9.9 | |
| 28 | 10 7.0 | 10 8.7 | 9 39.3 | 28 .9 | 88 5.9 | 148 10.0 | |
| 29 | 10 7.3 | 10 8.9 | 9 39.6 | 29 .0 | 89 6.0 | 149 10.1 | |
| 30 | 10 7.5 | 10 9.2 | 9 39.8 | 30 .2 | 90 6.1 | 150 10.1 | |
| 31 | 10 7.8 | 10 9.4 | 9 40.1 | 31 .2 | 91 6.1 | 151 10.2 | |
| 32 | 10 8.0 | 10 9.7 | 9 40.3 | 32 .2 | 92 6.2 | 152 10.3 | |
| 33 | 10 8.3 | 10 9.9 | 9 40.5 | 33 .2 | 93 6.3 | 153 10.3 | |
| 34 | 10 8.5 | 10 10.2 | 9 40.8 | 34 .2 | 94 6.3 | 154 10.4 | |
| 35 | 10 8.8 | 10 10.4 | 9 41.0 | 35 .4 | 95 6.4 | 155 10.5 | |
| 36 | 10 9.0 | 10 10.7 | 9 41.3 | 36 .4 | 96 6.5 | 156 10.5 | |
| 37 | 10 9.3 | 10 10.9 | 9 41.5 | 37 .5 | 97 6.5 | 157 10.6 | |
| 38 | 10 9.5 | 10 11.2 | 9 41.7 | 38 .6 | 98 6.6 | 158 10.7 | |
| 39 | 10 9.8 | 10 11.4 | 9 42.0 | 39 .6 | 99 6.7 | 159 10.7 | |
| 40 | 10 10.0 | 10 11.7 | 9 42.2 | 40 .7 | 100 6.8 | 160 10.8 | |
| 41 | 10 10.3 | 10 11.9 | 9 42.4 | 41 .8 | 101 6.8 | 161 10.9 | |
| 42 | 10 10.5 | 10 12.2 | 9 42.7 | 42 .8 | 102 6.9 | 162 10.9 | |
| 43 | 10 10.8 | 10 12.4 | 9 42.9 | 43 .9 | 103 7.0 | 163 11.0 | |
| 44 | 10 11.0 | 10 12.7 | 9 43.2 | 44 .9 | 104 7.0 | 164 11.1 | |
| 45 | 10 11.3 | 10 12.9 | 9 43.4 | 45 .3 | 105 7.1 | 165 11.1 | |
| 46 | 10 11.5 | 10 13.2 | 9 43.6 | 46 .3 | 106 7.2 | 166 11.2 | |
| 47 | 10 11.8 | 10 13.4 | 9 43.9 | 47 .3 | 107 7.2 | 167 11.3 | |
| 48 | 10 12.0 | 10 13.7 | 9 44.1 | 48 .3 | 108 7.3 | 168 11.3 | |
| 49 | 10 12.3 | 10 14.0 | 9 44.4 | 49 .3 | 109 7.4 | 169 11.4 | |
| 50 | 10 12.5 | 10 14.2 | 9 44.6 | 50 .3 | 110 7.4 | 170 11.5 | |
| 51 | 10 12.8 | 10 14.5 | 9 44.8 | 51 .3 | 111 7.5 | 171 11.5 | |
| 52 | 10 13.0 | 10 14.7 | 9 45.1 | 52 .3 | 112 7.6 | 172 11.6 | |
| 53 | 10 13.3 | 10 15.0 | 9 45.3 | 53 .3 | 113 7.6 | 173 11.7 | |
| 54 | 10 13.5 | 10 15.2 | 9 45.6 | 54 .3 | 114 7.7 | 174 11.7 | |
| 55 | 10 13.8 | 10 15.5 | 9 45.8 | 55 .3 | 115 7.8 | 175 11.8 | |
| 56 | 10 14.0 | 10 15.7 | 9 46.0 | 56 .3 | 116 7.8 | 176 11.9 | |
| 57 | 10 14.3 | 10 16.0 | 9 46.3 | 57 .3 | 117 7.9 | 177 11.9 | |
| 58 | 10 14.5 | 10 16.2 | 9 46.5 | 58 .3 | 118 8.0 | 178 12.0 | |
| 59 | 10 14.8 | 10 16.5 | 9 46.7 | 59 .4 | 119 8.0 | 179 12.1 | |
| 60 | 10 15.0 | 10 16.7 | 9 47.0 | 60 .4 | 120 8.1 | 180 12.2 | |

0 h 41 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | t ' | o ° | t ' | o ° | t ' | t ' |
| 0 | 10 15.0 | 10 16.7 | 9 47.0 | 0 .0 | 60 4.2 | 120 8.3 | |
| 1 | 10 15.3 | 10 17.0 | 9 47.2 | 1 .1 | 61 4.2 | 121 8.4 | |
| 2 | 10 15.5 | 10 17.2 | 9 47.5 | 2 .1 | 62 4.3 | 122 8.4 | |
| 3 | 10 15.8 | 10 17.5 | 9 47.7 | 3 .2 | 63 4.4 | 123 8.5 | |
| 4 | 10 16.0 | 10 17.7 | 9 47.9 | 4 .3 | 64 4.4 | 124 8.6 | |
| 5 | 10 16.3 | 10 18.0 | 9 48.2 | 5 .3 | 65 4.5 | 125 8.6 | |
| 6 | 10 16.5 | 10 18.2 | 9 48.4 | 6 .4 | 66 4.6 | 126 8.7 | |
| 7 | 10 16.8 | 10 18.5 | 9 48.7 | 7 .5 | 67 4.6 | 127 8.8 | |
| 8 | 10 17.0 | 10 18.7 | 9 48.9 | 8 .6 | 68 4.7 | 128 8.9 | |
| 9 | 10 17.3 | 10 19.0 | 9 49.1 | 9 .6 | 69 4.8 | 129 8.9 | |
| 10 | 10 17.5 | 10 19.2 | 9 49.4 | 10 .7 | 70 4.8 | 130 9.0 | |
| 11 | 10 17.8 | 10 19.5 | 9 49.6 | 11 .8 | 71 4.9 | 131 9.1 | |
| 12 | 10 18.0 | 10 19.7 | 9 49.8 | 12 .8 | 72 5.0 | 132 9.1 | |
| 13 | 10 18.3 | 10 20.0 | 9 50.1 | 13 .9 | 73 5.0 | 133 9.2 | |
| 14 | 10 18.5 | 10 20.2 | 9 50.3 | 14 .0 | 74 5.1 | 134 9.3 | |
| 15 | 10 18.8 | 10 20.5 | 9 50.6 | 15 .0 | 75 5.2 | 135 9.3 | |
| 16 | 10 19.0 | 10 20.7 | 9 50.8 | 16 .1 | 76 5.3 | 136 9.4 | |
| 17 | 10 19.3 | 10 21.0 | 9 51.0 | 17 .2 | 77 5.3 | 137 9.5 | |
| 18 | 10 19.5 | 10 21.2 | 9 51.3 | 18 .2 | 78 5.4 | 138 9.5 | |
| 19 | 10 19.8 | 10 21.5 | 9 51.5 | 19 .3 | 79 5.5 | 139 9.6 | |
| 20 | 10 20.0 | 10 21.7 | 9 51.8 | 20 .4 | 80 5.5 | 140 9.7 | |
| 21 | 10 20.3 | 10 22.0 | 9 52.0 | 21 .5 | 81 5.6 | 141 9.8 | |
| 22 | 10 20.5 | 10 22.2 | 9 52.2 | 22 .5 | 82 5.7 | 142 9.8 | |
| 23 | 10 20.8 | 10 22.5 | 9 52.5 | 23 .6 | 83 5.7 | 143 9.9 | |
| 24 | 10 21.0 | 10 22.7 | 9 52.7 | 24 .7 | 84 5.8 | 144 10.0 | |
| 25 | 10 21.3 | 10 23.0 | 9 52.9 | 25 .8 | 85 5.9 | 145 10.0 | |
| 26 | 10 21.5 | 10 23.2 | 9 53.2 | 26 .8 | 86 5.9 | 146 10.1 | |
| 27 | 10 21.8 | 10 23.5 | 9 53.4 | 27 .9 | 87 6.0 | 147 10.2 | |
| 28 | 10 22.0 | 10 23.7 | 9 53.7 | 28 .9 | 88 6.1 | 148 10.2 | |
| 29 | 10 22.3 | 10 24.0 | 9 53.9 | 29 .0 | 89 6.2 | 149 10.3 | |
| 30 | 10 22.5 | 10 24.2 | 9 54.1 | 30 .1 | 90 6.2 | 150 10.4 | |
| 31 | 10 22.8 | 10 24.5 | 9 54.4 | 31 .2 | 91 6.3 | 151 10.4 | |
| 32 | 10 23.0 | 10 24.7 | 9 54.6 | 32 .2 | 92 6.4 | 152 10.5 | |
| 33 | 10 23.3 | 10 25.0 | 9 54.9 | 33 .3 | 93 6.4 | 153 10.6 | |
| 34 | 10 23.5 | 10 25.2 | 9 55.1 | 34 .4 | 94 6.5 | 154 10.7 | |
| 35 | 10 23.8 | 10 25.5 | 9 55.3 | 35 .4 | 95 6.6 | 155 10.7 | |
| 36 | 10 24.0 | 10 25.7 | 9 55.6 | 36 .5 | 96 6.6 | 156 10.8 | |
| 37 | 10 24.3 | 10 26.0 | 9 55.8 | 37 .6 | 97 6.7 | 157 10.9 | |
| 38 | 10 24.5 | 10 26.2 | 9 56.1 | 38 .6 | 98 6.8 | 158 10.9 | |
| 39 | 10 24.8 | 10 26.5 | 9 56.3 | 39 .7 | 99 6.8 | 159 11.0 | |
| 40 | 10 25.0 | 10 26.7 | 9 56.5 | 40 .8 | 100 6.9 | 160 11.1 | |
| 41 | 10 25.3 | 10 27.0 | 9 56.8 | 41 .8 | 101 7.0 | 161 11.1 | |
| 42 | 10 25.5 | 10 27.2 | 9 57.0 | 42 .9 | 102 7.1 | 162 11.2 | |
| 43 | 10 25.8 | 10 27.5 | 9 57.2 | 43 .0 | 103 7.1 | 163 11.3 | |
| 44 | 10 26.0 | 10 27.7 | 9 57.5 | 44 .0 | 104 7.2 | 164 11.3 | |
| 45 | 10 26.3 | 10 28.0 | 9 57.7 | 45 .1 | 105 7.3 | 165 11.4 | |
| 46 | 10 26.5 | 10 28.2 | 9 58.0 | 46 .2 | 106 7.3 | 166 11.5 | |
| 47 | 10 26.8 | 10 28.5 | 9 58.2 | 47 .3 | 107 7.4 | 167 11.6 | |
| 48 | 10 27.0 | 10 28.7 | 9 58.4 | 48 .3 | 108 7.5 | 168 11.6 | |
| 49 | 10 27.3 | 10 29.0 | 9 58.7 | 49 .4 | 109 7.5 | 169 11.7 | |
| 50 | 10 27.5 | 10 29.2 | 9 58.9 | 50 .5 | 110 7.6 | 170 11.8 | |
| 51 | 10 27.8 | 10 29.5 | 9 59.2 | 51 .5 | 111 7.7 | 171 11.8 | |
| 52 | 10 28.0 | 10 29.7 | 9 59.4 | 52 .6 | 112 7.7 | 172 11.9 | |
| 53 | 10 28.3 | 10 30.0 | 9 59.6 | 53 .7 | 113 7.8 | 173 12.0 | |
| 54 | 10 28.5 | 10 30.2 | 9 59.9 | 54 .7 | 114 7.9 | 174 12.0 | |
| 55 | 10 28.8 | 10 30.5 | 10 .1 | 55 3.8 | 115 8.0 | 175 12.1 | |
| 56 | 10 29.0 | 10 30.7 | 10 .3 | 56 3.9 | 116 8.0 | 176 12.2 | |
| 57 | 10 29.3 | 10 31.0 | 10 .6 | 57 3.9 | 117 8.1 | 177 12.2 | |
| 58 | 10 29.5 | 10 31.2 | 10 .8 | 58 4.0 | 118 8.2 | 178 12.3 | |
| 59 | 10 29.8 | 10 31.5 | 10 .1 | 59 4.1 | 119 8.2 | 179 12 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | | |
|------------------------|--------------------|--------------------|--------------|------------|------------|------------|----------|---|--------------------|--------------------|--------------|------------|------------|------------|---------|----------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA C | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE | MJESECA C | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | |
| 0 | 10 30.0 | 10 31.8 | 10 1.3 | 0 .0 | 60 4.3 | 120 8.5 | | 0 | 10 45.0 | 10 46.8 | 10 15.6 | 0 .0 | 60 4.4 | 120 8.7 | | |
| 1 | 10 30.3 | 10 32.0 | 10 1.5 | .1 | 61 4.3 | 121 8.6 | | 1 | 10 45.3 | 10 47.0 | 10 15.9 | .1 | 61 4.4 | 121 8.8 | | |
| 2 | 10 30.5 | 10 32.3 | 10 1.8 | .2 | 62 4.4 | 122 8.6 | | 2 | 10 45.5 | 10 47.3 | 10 16.1 | .2 | 62 4.5 | 122 8.8 | | |
| 3 | 10 30.8 | 10 32.5 | 10 2.0 | .3 | 63 4.5 | 123 8.7 | | 3 | 10 45.8 | 10 47.5 | 10 16.3 | .3 | 63 4.6 | 123 8.9 | | |
| 4 | 10 31.0 | 10 32.8 | 10 2.3 | .4 | 64 4.5 | 124 8.8 | | 4 | 10 46.0 | 10 47.8 | 10 16.6 | .4 | 64 4.6 | 124 9.0 | | |
| 5 | 10 31.3 | 10 33.0 | 10 2.5 | .5 | 65 4.6 | 125 8.9 | | 5 | 10 46.3 | 10 48.0 | 10 16.8 | .5 | 65 4.7 | 125 9.1 | | |
| 6 | 10 31.5 | 10 33.3 | 10 2.7 | .6 | 66 4.7 | 126 8.9 | | 6 | 10 46.5 | 10 48.3 | 10 17.0 | .6 | 66 4.8 | 126 9.1 | | |
| 7 | 10 31.8 | 10 33.5 | 10 3.0 | .7 | 67 4.7 | 127 9.0 | | 7 | 10 46.8 | 10 48.5 | 10 17.3 | .7 | 67 4.9 | 127 9.2 | | |
| 8 | 10 32.0 | 10 33.8 | 10 3.2 | .8 | 68 4.8 | 128 9.1 | | 8 | 10 47.0 | 10 48.8 | 10 17.5 | .8 | 68 4.9 | 128 9.3 | | |
| 9 | 10 32.3 | 10 34.0 | 10 3.4 | .9 | 69 4.9 | 129 9.1 | | 9 | 10 47.3 | 10 49.0 | 10 17.8 | .9 | 69 5.0 | 129 9.4 | | |
| 10 | 10 32.5 | 10 34.3 | 10 3.7 | .10 | 70 5.0 | 130 9.2 | | 10 | 10 47.5 | 10 49.3 | 10 18.0 | .10 | 70 5.1 | 130 9.4 | | |
| 11 | 10 32.8 | 10 34.5 | 10 3.9 | .11 | 71 5.0 | 131 9.3 | | 11 | 10 47.8 | 10 49.5 | 10 18.2 | .11 | 71 5.1 | 131 9.5 | | |
| 12 | 10 33.0 | 10 34.8 | 10 4.2 | .12 | 72 5.1 | 132 9.4 | | 12 | 10 48.0 | 10 49.8 | 10 18.5 | .12 | 72 5.2 | 132 9.6 | | |
| 13 | 10 33.3 | 10 35.0 | 10 4.4 | .13 | .9 | 73 5.2 | 133 9.4 | | 13 | 10 48.3 | 10 50.1 | 10 18.7 | .13 | .9 | 73 5.3 | 133 9.6 |
| 14 | 10 33.5 | 10 35.3 | 10 4.6 | .14 | 1.0 | 74 5.2 | 134 9.5 | | 14 | 10 48.5 | 10 50.3 | 10 19.0 | .14 | 1.0 | 74 5.4 | 134 9.7 |
| 15 | 10 33.8 | 10 35.5 | 10 4.9 | .15 | 1.1 | 75 5.3 | 135 9.6 | | 15 | 10 48.8 | 10 50.6 | 10 19.2 | .15 | 1.1 | 75 5.4 | 135 9.8 |
| 16 | 10 34.0 | 10 35.8 | 10 5.1 | .16 | 1.1 | 76 5.4 | 136 9.6 | | 16 | 10 49.0 | 10 50.8 | 10 19.4 | .16 | 1.2 | 76 5.5 | 136 9.9 |
| 17 | 10 34.3 | 10 36.0 | 10 5.4 | .17 | 1.2 | 77 5.5 | 137 9.7 | | 17 | 10 49.3 | 10 51.1 | 10 19.7 | .17 | 1.2 | 77 5.6 | 137 9.9 |
| 18 | 10 34.5 | 10 36.3 | 10 5.6 | .18 | 1.3 | 78 5.5 | 138 9.8 | | 18 | 10 49.5 | 10 51.3 | 10 19.9 | .18 | 1.3 | 78 5.7 | 138 10.0 |
| 19 | 10 34.8 | 10 36.5 | 10 5.8 | .19 | 1.3 | 79 5.6 | 139 9.8 | | 19 | 10 49.8 | 10 51.6 | 10 20.2 | .19 | 1.4 | 79 5.7 | 139 10.1 |
| 20 | 10 35.0 | 10 36.8 | 10 6.1 | .20 | 1.4 | 80 5.7 | 140 9.9 | | 20 | 10 50.0 | 10 51.8 | 10 20.4 | .20 | 1.5 | 80 5.8 | 140 10.2 |
| 21 | 10 35.3 | 10 37.0 | 10 6.3 | .21 | 1.5 | 81 5.7 | 141 10.0 | | 21 | 10 50.3 | 10 52.1 | 10 20.6 | .21 | 1.5 | 81 5.9 | 141 10.2 |
| 22 | 10 35.5 | 10 37.3 | 10 6.5 | .22 | 1.6 | 82 5.8 | 142 10.1 | | 22 | 10 50.5 | 10 52.3 | 10 20.9 | .22 | 1.6 | 82 5.9 | 142 10.3 |
| 23 | 10 35.8 | 10 37.5 | 10 6.8 | .23 | 1.6 | 83 5.9 | 143 10.1 | | 23 | 10 50.8 | 10 52.6 | 10 21.1 | .23 | 1.7 | 83 6.0 | 143 10.4 |
| 24 | 10 36.0 | 10 37.8 | 10 7.0 | .24 | 1.7 | 84 6.0 | 144 10.2 | | 24 | 10 51.0 | 10 52.8 | 10 21.3 | .24 | 1.7 | 84 6.1 | 144 10.4 |
| 25 | 10 36.3 | 10 38.0 | 10 7.3 | .25 | 1.8 | 85 6.0 | 145 10.3 | | 25 | 10 51.3 | 10 53.1 | 10 21.6 | .25 | 1.8 | 85 6.2 | 145 10.5 |
| 26 | 10 36.5 | 10 38.3 | 10 7.5 | .26 | 1.8 | 86 6.1 | 146 10.3 | | 26 | 10 51.5 | 10 53.3 | 10 21.8 | .26 | 1.9 | 86 6.2 | 146 10.6 |
| 27 | 10 36.8 | 10 38.5 | 10 7.7 | .27 | 1.9 | 87 6.2 | 147 10.4 | | 27 | 10 51.8 | 10 53.6 | 10 22.1 | .27 | 2.0 | 87 6.3 | 147 10.7 |
| 28 | 10 37.0 | 10 38.8 | 10 8.0 | .28 | 2.0 | 88 6.2 | 148 10.5 | | 28 | 10 52.0 | 10 53.8 | 10 22.3 | .28 | 2.0 | 88 6.4 | 148 10.7 |
| 29 | 10 37.3 | 10 39.0 | 10 8.2 | .29 | 2.1 | 89 6.3 | 149 10.6 | | 29 | 10 52.3 | 10 54.1 | 10 22.5 | .29 | 2.1 | 89 6.5 | 149 10.8 |
| 30 | 10 37.5 | 10 39.3 | 10 8.5 | .30 | 2.1 | 90 6.4 | 150 10.6 | | 30 | 10 52.5 | 10 54.3 | 10 22.8 | .30 | 2.2 | 90 6.5 | 150 10.9 |
| 31 | 10 37.8 | 10 39.5 | 10 8.7 | .31 | 2.2 | 91 6.4 | 151 10.7 | | 31 | 10 52.8 | 10 54.6 | 10 23.0 | .31 | 2.2 | 91 6.6 | 151 10.9 |
| 32 | 10 38.0 | 10 39.8 | 10 8.9 | .32 | 2.3 | 92 6.5 | 152 10.8 | | 32 | 10 53.0 | 10 54.8 | 10 23.3 | .32 | 2.3 | 92 6.7 | 152 11.0 |
| 33 | 10 38.3 | 10 40.0 | 10 9.2 | .33 | 2.3 | 93 6.6 | 153 10.8 | | 33 | 10 53.3 | 10 55.1 | 10 23.5 | .33 | 2.4 | 93 6.7 | 153 11.1 |
| 34 | 10 38.5 | 10 40.3 | 10 9.4 | .34 | 2.4 | 94 6.7 | 154 10.9 | | 34 | 10 53.5 | 10 55.3 | 10 23.7 | .34 | 2.5 | 94 6.8 | 154 11.2 |
| 35 | 10 38.8 | 10 40.5 | 10 9.7 | .35 | 2.5 | 95 6.7 | 155 11.0 | | 35 | 10 53.8 | 10 55.6 | 10 24.0 | .35 | 2.5 | 95 6.9 | 155 11.2 |
| 36 | 10 39.0 | 10 40.8 | 10 9.9 | .36 | 2.6 | 96 6.8 | 156 11.1 | | 36 | 10 54.0 | 10 55.8 | 10 24.2 | .36 | 2.6 | 96 7.0 | 156 11.3 |
| 37 | 10 39.3 | 10 41.0 | 10 10.1 | .37 | 2.6 | 97 6.9 | 157 11.1 | | 37 | 10 54.3 | 10 56.1 | 10 24.4 | .37 | 2.7 | 97 7.0 | 157 11.4 |
| 38 | 10 39.5 | 10 41.3 | 10 10.4 | .38 | 2.7 | 98 6.9 | 158 11.2 | | 38 | 10 54.5 | 10 56.3 | 10 24.7 | .38 | 2.8 | 98 7.1 | 158 11.5 |
| 39 | 10 39.8 | 10 41.5 | 10 10.6 | .39 | 2.8 | 99 7.0 | 159 11.3 | | 39 | 10 54.8 | 10 56.6 | 10 24.9 | .39 | 2.8 | 99 7.2 | 159 11.5 |
| 40 | 10 40.0 | 10 41.8 | 10 10.8 | .40 | 2.8 | 100 7.1 | 160 11.3 | | 40 | 10 55.0 | 10 56.8 | 10 25.2 | .40 | 2.9 | 100 7.3 | 160 11.6 |
| 41 | 10 40.3 | 10 42.0 | 10 11.1 | .41 | 2.9 | 101 7.2 | 161 11.4 | | 41 | 10 55.3 | 10 57.1 | 10 25.4 | .41 | 3.0 | 101 7.3 | 161 11.7 |
| 42 | 10 40.5 | 10 42.3 | 10 11.3 | .42 | 3.0 | 102 7.2 | 162 11.5 | | 42 | 10 55.5 | 10 57.3 | 10 25.6 | .42 | 3.0 | 102 7.4 | 162 11.7 |
| 43 | 10 40.8 | 10 42.5 | 10 11.6 | .43 | 3.0 | 103 7.3 | 163 11.5 | | 43 | 10 55.8 | 10 57.6 | 10 25.9 | .43 | 3.1 | 103 7.5 | 163 11.8 |
| 44 | 10 41.0 | 10 42.8 | 10 11.8 | .44 | 3.1 | 104 7.4 | 164 11.6 | | 44 | 10 56.0 | 10 57.8 | 10 26.1 | .44 | 3.2 | 104 7.5 | 164 11.9 |
| 45 | 10 41.3 | 10 43.0 | 10 12.0 | .45 | 3.2 | 105 7.4 | 165 11.7 | | 45 | 10 56.3 | 10 58.1 | 10 26.4 | .45 | 3.3 | 105 7.6 | 165 12.0 |
| 46 | 10 41.5 | 10 43.3 | 10 12.3 | .46 | 3.3 | 106 7.5 | 166 11.8 | | 46 | 10 56.5 | 10 58.3 | 10 26.6 | .46 | 3.3 | 106 7.7 | 166 12.0 |
| 47 | 10 41.8 | 10 43.5 | 10 12.5 | .47 | 3.3 | 107 7.6 | 167 11.8 | | 47 | 10 56.8 | 10 58.6 | 10 26.8 | .47 | 3.4 | 107 7.8 | 167 12.1 |
| 48 | 10 42.0 | 10 43.8 | 10 12.8 | .48 | 3.4 | 108 7.7 | 168 11.9 | | 48 | 10 57.0 | 10 58.8 | 10 27.1 | .48 | 3.5 | 108 7.8 | 168 12.2 |
| 49 | 10 42.3 | 10 44.0 | 10 13.0 | .49 | 3.5 | 109 7.7 | 169 12.0 | | 49 | 10 57.3 | 10 59.1 | 10 27.3 | .49 | 3.6 | 109 7.9 | 169 12.3 |
| 50 | 10 42.5 | 10 44.3 | 10 13.2 | .50 | 3.5 | 110 7.8 | 170 12.0 | | 50 | 10 57.5 | 10 59.3 | 10 27.5 | .50 | 3.6 | 110 8.0 | 170 12.3 |
| 51 | 10 42.8 | 10 44.5 | 10 13.5 | .51 | 3.6 | 111 7.9 | 171 12.1 | | 51 | 10 57.8 | 10 59.6 | 10 27.8 | .51 | 3.7 | 111 8.0 | 171 12.4 |
| 52 | 10 43.0 | 10 44.8 | 10 13.7 | .52 | 3.7 | 112 7.9 | 172 12.2 | | 52 | 10 58.0 | 10 59.8 | 10 28.0 | .52 | 3.8 | 112 8.1 | 172 12.5 |
| 53 | 10 43.3 | 10 45.0 | 10 13.9 | .53 | 3.8 | 113 8.0 | 173 12.3 | | 53 | 10 58.3 | 10 60.1 | 10 28.3 | .53 | 3.8 | 113 8.2 | 173 12.5 |
| 54 | 10 43.5 | 10 45.3 | 10 14.2 | .54 | 3.8 | 114 8.1 | 174 12.3 | | 54 | 10 58.5 | 10 60.3 | 10 28.5 | .54 | 3.9 | 114 8.3 | 174 12.6 |
| 55 | 10 43.8 | 10 45.5 | 10 14.4 | .55 | 3.9 | 115 8.1 | 175 12.4 | | 55 | 10 58.8 | 10 60.6 | 10 28.7 | .55 | 4.0 | 115 8.3 | 175 12.7 |
| 56 | 10 44.0 | 10 45.8 | 10 14.7 | .56 | 4.0 | 116 8.2 | 176 12.5 | | 56 | 10 59.0 | 10 60.8 | 10 29.0 | .56 | 4.1 | 116 8.4 | 176 12.8 |
| 57 | 10 44.3 | 10 46.0 | 10 14.9 | .57 | 4.0 | 117 8.3 | 177 12.5 | | 57 | 10 59.3 | 10 61.1 | 10 29.2 | .57 | 4.1 | 117 8.5 | 177 12.8 |
| 58 | 10 44.5 | 10 46.3 | 10 15.1 | .58 | 4.1 | 118 8.4 | 178 12.6 | | 58 | 10 59.5 | 10 61.3 | 10 29.5 | .58 | 4.2 | 118 8.6 | 178 12.9 |
| 59 | 10 44.8 | 10 46.5 | 10 15.4 | .59 | 4.2 | 119 8.4 | 179 12.7 | | 59 | 10 59.8 | 10 61.6 | 10 29.7 | .59 | 4.3 | 119 8.6 | 179 13.0 |
| 60 | 10 45.0 | 10 46.8 | 10 15.6 | .60 | 4.3 | 120 8.5 | 180 12.8 | | 60 | 11 .0 | 11 1.8 | 10 29.9 | .60 | 4.4 | 120 8.7 | 180 13.1 |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POP | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

0 h 44 min

0 h 45 min

| POPRAVKA ČASOVNOG UGLA | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | | |
|------------------------|--------------------|---------------------------|--------------------|----------------|----------------|---|----|--------------------|---------------------------|--------------------|----------------|----------------|----------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE τ | MJESECA ζ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE τ | MJESECA ζ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o |
| 0 | 11 .0 | 11 1.8 | 10 29.9 | 0 .0 | 60 4.5 | 120 8.9 | 0 | 11 15.0 | 11 16.9 | 10 44.3 | 0 .0 | 60 4.6 | 120 9.1 | |
| 1 | 11 1.1 | 11 2.1 | 10 30.2 | 1 .1 | 61 4.5 | 121 9.0 | 1 | 11 15.3 | 11 17.1 | 10 44.5 | 1 .1 | 61 4.6 | 121 9.2 | |
| 2 | 11 .5 | 11 2.3 | 10 30.4 | 2 .1 | 62 4.6 | 122 9.0 | 2 | 11 15.5 | 11 17.4 | 10 44.7 | 2 .2 | 62 4.7 | 122 9.3 | |
| 3 | 11 .8 | 11 2.6 | 10 30.6 | 3 .2 | 63 4.7 | 123 9.1 | 3 | 11 15.8 | 11 17.6 | 10 45.0 | 3 .2 | 63 4.8 | 123 9.3 | |
| 4 | 11 1.0 | 11 2.8 | 10 30.9 | 4 .3 | 64 4.7 | 124 9.2 | 4 | 11 16.0 | 11 17.9 | 10 45.2 | 4 .3 | 64 4.9 | 124 9.4 | |
| 5 | 11 1.3 | 11 3.1 | 10 31.1 | 5 .4 | 65 4.8 | 125 9.3 | 5 | 11 16.3 | 11 18.1 | 10 45.4 | 5 .4 | 65 4.9 | 125 9.5 | |
| 6 | 11 1.5 | 11 3.3 | 10 31.4 | 6 .4 | 66 4.9 | 126 9.3 | 6 | 11 16.5 | 11 18.4 | 10 45.7 | 6 .5 | 66 5.0 | 126 9.6 | |
| 7 | 11 1.8 | 11 3.6 | 10 31.6 | 7 .5 | 67 5.0 | 127 9.4 | 7 | 11 16.8 | 11 18.6 | 10 45.9 | 7 .5 | 67 5.1 | 127 9.6 | |
| 8 | 11 2.0 | 11 3.8 | 10 31.8 | 8 .6 | 68 5.0 | 128 9.5 | 8 | 11 17.0 | 11 18.9 | 10 46.2 | 8 .6 | 68 5.2 | 128 9.7 | |
| 9 | 11 2.3 | 11 4.1 | 10 32.1 | 9 .7 | 69 5.1 | 129 9.6 | 9 | 11 17.3 | 11 19.1 | 10 46.4 | 9 .7 | 69 5.2 | 129 9.8 | |
| 10 | 11 2.5 | 11 4.3 | 10 32.3 | 10 .7 | 70 5.2 | 130 9.6 | 10 | 11 17.5 | 11 19.4 | 10 46.6 | 10 .8 | 70 5.3 | 130 9.9 | |
| 11 | 11 2.8 | 11 4.6 | 10 32.6 | 11 .8 | 71 5.3 | 131 9.7 | 11 | 11 17.8 | 11 19.6 | 10 46.9 | 11 .8 | 71 5.4 | 131 9.9 | |
| 12 | 11 3.0 | 11 4.8 | 10 32.8 | 12 .9 | 72 5.3 | 132 9.8 | 12 | 11 18.0 | 11 19.9 | 10 47.1 | 12 .9 | 72 5.5 | 132 10.0 | |
| 13 | 11 3.3 | 11 5.1 | 10 33.0 | 13 1.0 | 73 5.4 | 133 9.9 | 13 | 11 18.3 | 11 20.1 | 10 47.4 | 13 1.0 | 73 5.5 | 133 10.1 | |
| 14 | 11 3.5 | 11 5.3 | 10 33.3 | 14 1.0 | 74 5.5 | 134 9.9 | 14 | 11 18.5 | 11 20.4 | 10 47.6 | 14 1.1 | 74 5.6 | 134 10.2 | |
| 15 | 11 3.8 | 11 5.6 | 10 33.5 | 15 1.1 | 75 5.6 | 135 10.0 | 15 | 11 18.8 | 11 20.6 | 10 47.8 | 15 1.1 | 75 5.7 | 135 10.2 | |
| 16 | 11 4.0 | 11 5.8 | 10 33.8 | 16 1.2 | 76 5.6 | 136 10.1 | 16 | 11 19.0 | 11 20.9 | 10 48.1 | 16 1.2 | 76 5.8 | 136 10.3 | |
| 17 | 11 4.3 | 11 6.1 | 10 34.0 | 17 1.3 | 77 5.7 | 137 10.2 | 17 | 11 19.3 | 11 21.1 | 10 48.3 | 17 1.3 | 77 5.8 | 137 10.4 | |
| 18 | 11 4.5 | 11 6.3 | 10 34.2 | 18 1.3 | 78 5.8 | 138 10.2 | 18 | 11 19.5 | 11 21.4 | 10 48.5 | 18 1.4 | 78 5.9 | 138 10.5 | |
| 19 | 11 4.8 | 11 6.6 | 10 34.5 | 19 1.4 | 79 5.9 | 139 10.3 | 19 | 11 19.8 | 11 21.6 | 10 48.8 | 19 1.4 | 79 6.0 | 139 10.5 | |
| 20 | 11 5.0 | 11 6.8 | 10 34.7 | 20 1.5 | 80 5.9 | 140 10.4 | 20 | 11 20.0 | 11 21.9 | 10 49.0 | 20 1.5 | 80 6.1 | 140 10.6 | |
| 21 | 11 5.3 | 11 7.1 | 10 34.9 | 21 1.6 | 81 6.0 | 141 10.5 | 21 | 11 20.3 | 11 22.1 | 10 49.3 | 21 1.6 | 81 6.1 | 141 10.7 | |
| 22 | 11 5.5 | 11 7.3 | 10 35.2 | 22 1.6 | 82 6.1 | 142 10.5 | 22 | 11 20.5 | 11 22.4 | 10 49.5 | 22 1.7 | 82 6.2 | 142 10.8 | |
| 23 | 11 5.8 | 11 7.6 | 10 35.4 | 23 1.7 | 83 6.2 | 143 10.6 | 23 | 11 20.8 | 11 22.6 | 10 49.7 | 23 1.7 | 83 6.3 | 143 10.8 | |
| 24 | 11 6.0 | 11 7.9 | 10 35.7 | 24 1.8 | 84 6.2 | 144 10.7 | 24 | 11 21.0 | 11 22.9 | 10 50.0 | 24 1.8 | 84 6.4 | 144 10.9 | |
| 25 | 11 6.3 | 11 8.1 | 10 35.9 | 25 1.9 | 85 6.3 | 145 10.8 | 25 | 11 21.3 | 11 23.1 | 10 50.2 | 25 1.9 | 85 6.4 | 145 11.0 | |
| 26 | 11 6.5 | 11 8.4 | 10 36.1 | 26 1.9 | 86 6.4 | 146 10.8 | 26 | 11 21.5 | 11 23.4 | 10 50.5 | 26 2.0 | 86 6.5 | 146 11.1 | |
| 27 | 11 6.8 | 11 8.6 | 10 36.4 | 27 2.0 | 87 6.5 | 147 10.9 | 27 | 11 21.8 | 11 23.6 | 10 50.7 | 27 2.0 | 87 6.6 | 147 11.1 | |
| 28 | 11 7.0 | 11 8.9 | 10 36.6 | 28 2.1 | 88 6.5 | 148 11.0 | 28 | 11 22.0 | 11 23.9 | 10 50.9 | 28 2.1 | 88 6.7 | 148 11.2 | |
| 29 | 11 7.3 | 11 9.1 | 10 36.9 | 29 2.2 | 89 6.6 | 149 11.1 | 29 | 11 22.3 | 11 24.1 | 10 51.2 | 29 2.2 | 89 6.7 | 149 11.3 | |
| 30 | 11 7.5 | 11 9.4 | 10 37.1 | 30 2.2 | 90 6.7 | 150 11.1 | 30 | 11 22.5 | 11 24.4 | 10 51.4 | 30 2.3 | 90 6.8 | 150 11.4 | |
| 31 | 11 7.8 | 11 9.6 | 10 37.3 | 31 2.3 | 91 6.7 | 151 11.2 | 31 | 11 22.8 | 11 24.6 | 10 51.6 | 31 2.4 | 91 6.9 | 151 11.5 | |
| 32 | 11 8.0 | 11 9.9 | 10 37.6 | 32 2.4 | 92 6.8 | 152 11.3 | 32 | 11 23.0 | 11 24.9 | 10 51.9 | 32 2.4 | 92 7.0 | 152 11.5 | |
| 33 | 11 8.3 | 11 10.1 | 10 37.8 | 33 2.4 | 93 6.9 | 153 11.3 | 33 | 11 23.3 | 11 25.1 | 10 52.1 | 33 2.5 | 93 7.1 | 153 11.6 | |
| 34 | 11 8.5 | 11 10.4 | 10 38.0 | 34 2.5 | 94 7.0 | 154 11.4 | 34 | 11 23.5 | 11 25.4 | 10 52.4 | 34 2.6 | 94 7.1 | 154 11.7 | |
| 35 | 11 8.8 | 11 10.6 | 10 38.3 | 35 2.6 | 95 7.0 | 155 11.5 | 35 | 11 23.8 | 11 25.6 | 10 52.6 | 35 2.7 | 95 7.2 | 155 11.8 | |
| 36 | 11 9.0 | 11 10.9 | 10 38.5 | 36 2.7 | 96 7.1 | 156 11.6 | 36 | 11 24.0 | 11 25.9 | 10 52.8 | 36 2.7 | 96 7.3 | 156 11.8 | |
| 37 | 11 9.3 | 11 11.1 | 10 38.8 | 37 2.7 | 97 7.2 | 157 11.6 | 37 | 11 24.3 | 11 26.2 | 10 53.1 | 37 2.8 | 97 7.4 | 157 11.9 | |
| 38 | 11 9.5 | 11 11.4 | 10 39.0 | 38 2.8 | 98 7.3 | 158 11.7 | 38 | 11 24.5 | 11 26.4 | 10 53.3 | 38 2.9 | 98 7.4 | 158 12.0 | |
| 39 | 11 9.8 | 11 11.6 | 10 39.2 | 39 2.9 | 99 7.3 | 159 11.8 | 39 | 11 24.8 | 11 26.7 | 10 53.6 | 39 3.0 | 99 7.5 | 159 12.1 | |
| 40 | 11 10.0 | 11 11.9 | 10 39.5 | 40 3.0 | 100 7.4 | 160 11.9 | 40 | 11 25.0 | 11 26.9 | 10 53.8 | 40 3.0 | 100 7.6 | 160 12.1 | |
| 41 | 11 10.3 | 11 12.1 | 10 39.7 | 41 3.0 | 101 7.5 | 161 11.9 | 41 | 11 25.3 | 11 27.2 | 10 54.0 | 41 3.1 | 101 7.7 | 161 12.2 | |
| 42 | 11 10.5 | 11 12.4 | 10 40.0 | 42 3.1 | 102 7.6 | 162 12.0 | 42 | 11 25.5 | 11 27.4 | 10 54.3 | 42 3.2 | 102 7.7 | 162 12.3 | |
| 43 | 11 10.8 | 11 12.6 | 10 40.2 | 43 3.2 | 103 7.6 | 163 12.1 | 43 | 11 25.8 | 11 27.7 | 10 54.5 | 43 3.3 | 103 7.8 | 163 12.4 | |
| 44 | 11 11.0 | 11 12.9 | 10 40.4 | 44 3.3 | 104 7.7 | 164 12.2 | 44 | 11 26.0 | 11 27.9 | 10 54.7 | 44 3.3 | 104 7.9 | 164 12.4 | |
| 45 | 11 11.3 | 11 13.1 | 10 40.7 | 45 3.3 | 105 7.8 | 165 12.2 | 45 | 11 26.3 | 11 28.2 | 10 55.0 | 45 3.4 | 105 8.0 | 165 12.5 | |
| 46 | 11 11.5 | 11 13.4 | 10 40.9 | 46 3.4 | 106 7.9 | 166 12.3 | 46 | 11 26.5 | 11 28.4 | 10 55.2 | 46 3.5 | 106 8.0 | 166 12.6 | |
| 47 | 11 11.8 | 11 13.6 | 10 41.1 | 47 3.5 | 107 7.9 | 167 12.4 | 47 | 11 26.8 | 11 28.7 | 10 55.5 | 47 3.6 | 107 8.1 | 167 12.7 | |
| 48 | 11 12.0 | 11 13.9 | 10 41.4 | 48 3.6 | 108 8.0 | 168 12.5 | 48 | 11 27.0 | 11 28.9 | 10 55.7 | 48 3.6 | 108 8.2 | 168 12.7 | |
| 49 | 11 12.3 | 11 14.1 | 10 41.6 | 49 3.6 | 109 8.1 | 169 12.5 | 49 | 11 27.3 | 11 29.2 | 10 55.9 | 49 3.7 | 109 8.3 | 169 12.8 | |
| 50 | 11 12.5 | 11 14.4 | 10 41.9 | 50 3.7 | 110 8.2 | 170 12.6 | 50 | 11 27.5 | 11 29.4 | 10 56.2 | 50 3.8 | 110 8.3 | 170 12.9 | |
| 51 | 11 12.8 | 11 14.6 | 10 42.1 | 51 3.8 | 111 8.2 | 171 12.7 | 51 | 11 27.8 | 11 29.7 | 10 56.4 | 51 3.9 | 111 8.4 | 171 13.0 | |
| 52 | 11 13.0 | 11 14.9 | 10 42.3 | 52 3.9 | 112 8.3 | 172 12.8 | 52 | 11 28.0 | 11 29.9 | 10 56.7 | 52 3.9 | 112 8.5 | 172 13.0 | |
| 53 | 11 13.3 | 11 15.1 | 10 42.6 | 53 3.9 | 113 8.4 | 173 12.8 | 53 | 11 28.3 | 11 30.2 | 10 56.9 | 53 4.0 | 113 8.6 | 173 13.1 | |
| 54 | 11 13.5 | 11 15.4 | 10 42.8 | 54 4.0 | 114 8.5 | 174 12.9 | 54 | 11 28.5 | 11 30.4 | 10 57.1 | 54 4.1 | 114 8.6 | 174 13.2 | |
| 55 | 11 13.8 | 11 15.6 | 10 43.1 | 55 4.1 | 115 8.5 | 175 13.0 | 55 | 11 28.8 | 11 30.7 | 10 57.4 | 55 4.2 | 115 8.7 | 175 13.3 | |
| 56 | 11 14.0 | 11 15.9 | 10 43.3 | 56 4.2 | 116 8.6 | 176 13.1 | 56 | 11 29.0 | 11 30.9 | 10 57.6 | 56 4.2 | 116 8.8 | 176 13.3 | |
| 57 | 11 14.3 | 11 16.1 | 10 43.5 | 57 4.2 | 117 8.7 | 177 13.1 | 57 | 11 29.3 | 11 31.2 | 10 57.9 | 57 4.3 | 117 8.9 | 177 13.4 | |
| 58 | 11 14.5 | 11 16.4 | 10 43.8 | 58 4.3 | 118 8.8 | 178 13.2 | 58 | 11 29.5 | 11 31.4 | 10 58.1 | 58 4.4 | 118 8.9 | 178 13.5 | |
| 59 | 11 14.8 | 11 16.6 | 10 44.0 | 59 4.4 | 119 8.8 | 179 13.3 | 59 | 11 29.8 | 11 31.7 | 10 58.3 | 59 4.5 | 119 9.0 | 179 13.6 | |
| 60 | 11 15.0 | 11 16.9 | 10 44.3 | 60 4.5 | 120 8.9 | 180 13.4 | 60 | 11 30.0 | 11 31.9 | 10 58.6 | 60 4.6 | 120 9.1 | 180 13.7 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | |
|------------------------|--|--|--|--|--|---|--|
|------------------------|--|--|--|--|--|---|--|

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 11 30.0 | 11 31.9 | 10 58.6 | 0 .0 | 60 4.7 | 120 9.3 | | 0 | 11 45.0 | 11 47.0 | 11 12.9 | 0 .0 | 60 4.8 | 120 9.5 | |
| 1 | 11 30.3 | 11 32.2 | 10 58.8 | 1 .1 | 61 4.7 | 121 9.4 | | 1 | 11 45.3 | 11 47.2 | 11 13.1 | 1 .1 | 61 4.8 | 121 9.6 | |
| 2 | 11 30.5 | 11 32.4 | 10 59.0 | 2 .2 | 62 4.8 | 122 9.5 | | 2 | 11 45.5 | 11 47.5 | 11 13.4 | 2 .2 | 62 4.9 | 122 9.7 | |
| 3 | 11 30.8 | 11 32.7 | 10 59.3 | 3 .2 | 63 4.9 | 123 9.5 | | 3 | 11 45.8 | 11 47.7 | 11 13.6 | 3 .2 | 63 5.0 | 123 9.7 | |
| 4 | 11 31.0 | 11 32.9 | 10 59.5 | 4 .3 | 64 5.0 | 124 9.6 | | 4 | 11 46.0 | 11 48.0 | 11 13.8 | 4 .3 | 64 5.1 | 124 9.8 | |
| 5 | 11 31.3 | 11 33.2 | 10 59.8 | 5 .4 | 65 5.0 | 125 9.7 | | 5 | 11 46.3 | 11 48.2 | 11 14.1 | 5 .4 | 65 5.1 | 125 9.9 | |
| 6 | 11 31.5 | 11 33.4 | 10 60.0 | 6 .5 | 66 5.1 | 126 9.8 | | 6 | 11 46.5 | 11 48.5 | 11 14.3 | 6 .5 | 66 5.2 | 126 10.0 | |
| 7 | 11 31.8 | 11 33.7 | 11 .2 | 7 .5 | 67 5.2 | 127 9.8 | | 7 | 11 46.8 | 11 48.7 | 11 14.6 | 7 .6 | 67 5.3 | 127 10.1 | |
| 8 | 11 32.0 | 11 33.9 | 11 .5 | 8 .6 | 68 5.3 | 128 9.9 | | 8 | 11 47.0 | 11 49.0 | 11 14.8 | 8 .6 | 68 5.4 | 128 10.1 | |
| 9 | 11 32.3 | 11 34.2 | 11 .7 | 9 .7 | 69 5.3 | 129 10.0 | | 9 | 11 47.3 | 11 49.2 | 11 15.0 | 9 .7 | 69 5.5 | 129 10.2 | |
| 10 | 11 32.5 | 11 34.4 | 11 1.0 | 10 .8 | 70 5.4 | 130 10.1 | | 10 | 11 47.5 | 11 49.5 | 11 15.3 | 10 .8 | 70 5.5 | 130 10.3 | |
| 11 | 11 32.8 | 11 34.7 | 11 1.2 | 11 .9 | 71 5.5 | 131 10.2 | | 11 | 11 47.8 | 11 49.7 | 11 15.5 | 11 .9 | 71 5.6 | 131 10.4 | |
| 12 | 11 33.0 | 11 34.9 | 11 1.4 | 12 .9 | 72 5.6 | 132 10.2 | | 12 | 11 48.0 | 11 50.0 | 11 15.7 | 12 1.0 | 72 5.7 | 132 10.5 | |
| 13 | 11 33.3 | 11 35.2 | 11 1.7 | 13 1.0 | 73 5.7 | 133 10.3 | | 13 | 11 48.3 | 11 50.2 | 11 16.0 | 13 1.0 | 73 5.8 | 133 10.5 | |
| 14 | 11 33.5 | 11 35.4 | 11 1.9 | 14 1.1 | 74 5.7 | 134 10.4 | | 14 | 11 48.5 | 11 50.5 | 11 16.2 | 14 1.1 | 74 5.9 | 134 10.6 | |
| 15 | 11 33.8 | 11 35.7 | 11 2.1 | 15 1.2 | 75 5.8 | 135 10.5 | | 15 | 11 48.8 | 11 50.7 | 11 16.5 | 15 1.2 | 75 5.9 | 135 10.7 | |
| 16 | 11 34.0 | 11 35.9 | 11 2.4 | 16 1.2 | 76 5.9 | 136 10.5 | | 16 | 11 49.0 | 11 51.0 | 11 16.7 | 16 1.3 | 76 6.0 | 136 10.8 | |
| 17 | 11 34.3 | 11 36.2 | 11 2.6 | 17 1.3 | 77 6.0 | 137 10.6 | | 17 | 11 49.3 | 11 51.2 | 11 16.9 | 17 1.3 | 77 6.1 | 137 10.8 | |
| 18 | 11 34.5 | 11 36.4 | 11 2.9 | 18 1.4 | 78 6.0 | 138 10.7 | | 18 | 11 49.5 | 11 51.5 | 11 17.2 | 18 1.4 | 78 6.2 | 138 10.9 | |
| 19 | 11 34.8 | 11 36.7 | 11 3.1 | 19 1.5 | 79 6.1 | 139 10.8 | | 19 | 11 49.8 | 11 51.7 | 11 17.4 | 19 1.5 | 79 6.3 | 139 11.0 | |
| 20 | 11 35.0 | 11 36.9 | 11 3.3 | 20 1.6 | 80 6.2 | 140 10.9 | | 20 | 11 50.0 | 11 52.0 | 11 17.7 | 20 1.6 | 80 6.3 | 140 11.1 | |
| 21 | 11 35.3 | 11 37.2 | 11 3.6 | 21 1.6 | 81 6.3 | 141 10.9 | | 21 | 11 50.3 | 11 52.2 | 11 17.9 | 21 1.7 | 81 6.4 | 141 11.2 | |
| 22 | 11 35.5 | 11 37.4 | 11 3.8 | 22 1.7 | 82 6.4 | 142 11.0 | | 22 | 11 50.5 | 11 52.5 | 11 18.1 | 22 1.7 | 82 6.5 | 142 11.2 | |
| 23 | 11 35.8 | 11 37.7 | 11 4.1 | 23 1.8 | 83 6.4 | 143 11.1 | | 23 | 11 50.8 | 11 52.7 | 11 18.4 | 23 1.8 | 83 6.6 | 143 11.3 | |
| 24 | 11 36.0 | 11 37.9 | 11 4.3 | 24 1.9 | 84 6.5 | 144 11.2 | | 24 | 11 51.0 | 11 53.0 | 11 18.6 | 24 1.9 | 84 6.7 | 144 11.4 | |
| 25 | 11 36.3 | 11 38.2 | 11 4.5 | 25 1.9 | 85 6.6 | 145 11.2 | | 25 | 11 51.3 | 11 53.2 | 11 18.8 | 25 2.0 | 85 6.7 | 145 11.5 | |
| 26 | 11 36.5 | 11 38.4 | 11 4.8 | 26 2.0 | 86 6.7 | 146 11.3 | | 26 | 11 51.5 | 11 53.5 | 11 19.1 | 26 2.1 | 86 6.8 | 146 11.6 | |
| 27 | 11 36.8 | 11 38.7 | 11 5.0 | 27 2.1 | 87 6.7 | 147 11.4 | | 27 | 11 51.8 | 11 53.7 | 11 19.3 | 27 2.1 | 87 6.9 | 147 11.6 | |
| 28 | 11 37.0 | 11 38.9 | 11 5.2 | 28 2.2 | 88 6.8 | 148 11.5 | | 28 | 11 52.0 | 11 54.0 | 11 19.6 | 28 2.2 | 88 7.0 | 148 11.7 | |
| 29 | 11 37.3 | 11 39.2 | 11 5.5 | 29 2.2 | 89 6.9 | 149 11.5 | | 29 | 11 52.3 | 11 54.2 | 11 19.8 | 29 2.3 | 89 7.0 | 149 11.8 | |
| 30 | 11 37.5 | 11 39.4 | 11 5.7 | 30 2.3 | 90 7.0 | 150 11.6 | | 30 | 11 52.5 | 11 55.7 | 11 20.0 | 30 2.4 | 90 7.1 | 150 11.9 | |
| 31 | 11 37.8 | 11 39.7 | 11 6.0 | 31 2.4 | 91 7.1 | 151 11.7 | | 31 | 11 52.8 | 11 54.7 | 11 20.3 | 31 2.5 | 91 7.2 | 151 12.0 | |
| 32 | 11 38.0 | 11 39.9 | 11 6.2 | 32 2.5 | 92 7.1 | 152 11.8 | | 32 | 11 53.0 | 11 55.0 | 11 20.5 | 32 2.5 | 92 7.3 | 152 12.0 | |
| 33 | 11 38.3 | 11 40.2 | 11 6.4 | 33 2.6 | 93 7.2 | 153 11.9 | | 33 | 11 53.3 | 11 55.2 | 11 20.8 | 33 2.6 | 93 7.4 | 153 12.1 | |
| 34 | 11 38.5 | 11 40.4 | 11 6.7 | 34 2.6 | 94 7.3 | 154 11.9 | | 34 | 11 53.5 | 11 55.5 | 11 21.0 | 34 2.7 | 94 7.4 | 154 12.2 | |
| 35 | 11 38.8 | 11 40.7 | 11 6.9 | 35 2.7 | 95 7.4 | 155 12.0 | | 35 | 11 53.8 | 11 55.7 | 11 21.2 | 35 2.8 | 95 7.5 | 155 12.3 | |
| 36 | 11 39.0 | 11 40.9 | 11 7.2 | 36 2.8 | 96 7.4 | 156 12.1 | | 36 | 11 54.0 | 11 56.0 | 11 21.5 | 36 2.9 | 96 7.6 | 156 12.4 | |
| 37 | 11 39.3 | 11 41.2 | 11 7.4 | 37 2.9 | 97 7.5 | 157 12.2 | | 37 | 11 54.3 | 11 56.2 | 11 21.7 | 37 2.9 | 97 7.7 | 157 12.4 | |
| 38 | 11 39.5 | 11 41.4 | 11 7.6 | 38 2.9 | 98 7.6 | 158 12.2 | | 38 | 11 54.5 | 11 56.5 | 11 22.0 | 38 3.0 | 98 7.8 | 158 12.5 | |
| 39 | 11 39.8 | 11 41.7 | 11 7.9 | 39 3.0 | 99 7.7 | 159 12.3 | | 39 | 11 54.8 | 11 56.7 | 11 22.2 | 39 3.1 | 99 7.8 | 159 12.6 | |
| 40 | 11 40.0 | 11 41.9 | 11 8.1 | 40 3.1 | 100 7.8 | 160 12.4 | | 40 | 11 55.0 | 11 57.0 | 11 22.4 | 40 3.2 | 100 7.9 | 160 12.7 | |
| 41 | 11 40.3 | 11 42.2 | 11 8.3 | 41 3.2 | 101 7.8 | 161 12.5 | | 41 | 11 55.3 | 11 57.2 | 11 22.7 | 41 3.2 | 101 8.0 | 161 12.7 | |
| 42 | 11 40.5 | 11 42.4 | 11 8.6 | 42 3.3 | 102 7.9 | 162 12.6 | | 42 | 11 55.5 | 11 57.5 | 11 22.9 | 42 3.3 | 102 8.1 | 162 12.8 | |
| 43 | 11 40.8 | 11 42.7 | 11 8.8 | 43 3.3 | 103 8.0 | 163 12.6 | | 43 | 11 55.8 | 11 57.7 | 11 23.1 | 43 3.4 | 103 8.2 | 163 12.9 | |
| 44 | 11 41.0 | 11 42.9 | 11 9.1 | 44 3.4 | 104 8.1 | 164 12.7 | | 44 | 11 56.0 | 11 58.0 | 11 23.4 | 44 3.5 | 104 8.2 | 164 13.0 | |
| 45 | 11 41.3 | 11 43.2 | 11 9.3 | 45 3.5 | 105 8.1 | 165 12.8 | | 45 | 11 56.3 | 11 58.2 | 11 23.6 | 45 3.6 | 105 8.3 | 165 13.1 | |
| 46 | 11 41.5 | 11 43.4 | 11 9.5 | 46 3.6 | 106 8.2 | 166 12.9 | | 46 | 11 56.5 | 11 58.5 | 11 23.9 | 46 3.6 | 106 8.4 | 166 13.1 | |
| 47 | 11 41.8 | 11 43.7 | 11 9.8 | 47 3.6 | 107 8.3 | 167 12.9 | | 47 | 11 56.8 | 11 58.7 | 11 24.1 | 47 3.7 | 107 8.5 | 167 13.2 | |
| 48 | 11 42.0 | 11 44.0 | 11 10.0 | 48 3.7 | 108 8.4 | 168 13.0 | | 48 | 11 57.0 | 11 59.0 | 11 24.3 | 48 3.8 | 108 8.6 | 168 13.3 | |
| 49 | 11 42.3 | 11 44.2 | 11 10.3 | 49 3.8 | 109 8.4 | 169 13.1 | | 49 | 11 57.3 | 11 59.2 | 11 24.6 | 49 3.9 | 109 8.6 | 169 13.4 | |
| 50 | 11 42.5 | 11 44.5 | 11 10.5 | 50 3.9 | 110 8.5 | 170 13.2 | | 50 | 11 57.5 | 11 59.5 | 11 24.8 | 50 4.0 | 110 8.7 | 170 13.5 | |
| 51 | 11 42.8 | 11 44.7 | 11 10.7 | 51 4.0 | 111 8.6 | 171 13.3 | | 51 | 11 57.8 | 11 59.7 | 11 25.1 | 51 4.0 | 111 8.8 | 171 13.5 | |
| 52 | 11 43.0 | 11 45.0 | 11 11.0 | 52 4.0 | 112 8.7 | 172 13.3 | | 52 | 11 58.0 | 11 60.0 | 11 25.3 | 52 4.1 | 112 8.9 | 172 13.6 | |
| 53 | 11 43.3 | 11 45.2 | 11 11.2 | 53 4.1 | 113 8.8 | 173 13.4 | | 53 | 11 58.3 | 11 62.2 | 11 25.5 | 53 4.2 | 113 8.9 | 173 13.7 | |
| 54 | 11 43.5 | 11 45.5 | 11 11.5 | 54 4.2 | 114 8.8 | 174 13.5 | | 54 | 11 58.5 | 11 65.5 | 11 25.8 | 54 4.3 | 114 9.0 | 174 13.8 | |
| 55 | 11 43.8 | 11 45.7 | 11 11.7 | 55 4.3 | 115 8.9 | 175 13.6 | | 55 | 11 58.8 | 11 67.7 | 11 26.0 | 55 4.4 | 115 9.1 | 175 13.9 | |
| 56 | 11 44.0 | 11 46.0 | 11 11.9 | 56 4.3 | 116 9.0 | 176 13.6 | | 56 | 11 59.0 | 11 69.0 | 11 26.2 | 56 4.4 | 116 9.2 | 176 13.9 | |
| 57 | 11 44.3 | 11 46.2 | 11 12.2 | 57 4.4 | 117 9.1 | 177 13.7 | | 57 | 11 59.3 | 11 70.2 | 11 26.5 | 57 4.5 | 117 9.3 | 177 14.0 | |
| 58 | 11 44.5 | 11 46.5 | 11 12.4 | 58 4.5 | 118 9.1 | 178 13.8 | | 58 | 11 59.5 | 11 71.5 | 11 26.7 | 58 4.6 | 118 9.3 | 178 14.1 | |
| 59 | 11 44.8 | 11 46.7 | 11 12.6 | 59 4.6 | 119 9.2 | 179 13.9 | | 59 | 11 59.8 | 11 72.7 | 11 27.0 | 59 4.7 | 119 9.4 | 179 14.2 | |
| 60 | 11 45.0 | 11 47.0 | 11 12.9 | 60 4.7 | 120 9.3 | 180 14.0 | | 60 | 12 0 | 12 2.0 | 11 27.2 | 60 4.8 | 120 9.5 | 180 14.3 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeti | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ pop |

0 h 48 min

0 h 49 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o | ' | o | ' | o | ' | |
| 0 | 12 .0 | 12 2.0 | 11 27.2 | 0 .0 | 60 4.9 | 120 9.7 | |
| 1 | 12 2.3 | 12 2.3 | 11 27.4 | 1 .1 | 61 4.9 | 121 9.8 | |
| 2 | 12 .5 | 12 2.5 | 11 27.7 | 2 .2 | 62 5.0 | 122 9.9 | |
| 3 | 12 .8 | 12 2.8 | 11 27.9 | 3 .2 | 63 5.1 | 123 9.9 | |
| 4 | 12 1.0 | 12 3.0 | 11 28.2 | 4 .3 | 64 5.2 | 124 10.0 | |
| 5 | 12 1.3 | 12 3.3 | 11 28.4 | 5 .4 | 65 5.3 | 125 10.1 | |
| 6 | 12 1.5 | 12 3.5 | 11 28.6 | 6 .5 | 66 5.3 | 126 10.2 | |
| 7 | 12 1.8 | 12 3.8 | 11 28.9 | 7 .6 | 67 5.4 | 127 10.3 | |
| 8 | 12 2.0 | 12 4.0 | 11 29.1 | 8 .6 | 68 5.5 | 128 10.3 | |
| 9 | 12 2.3 | 12 4.3 | 11 29.3 | 9 .7 | 69 5.6 | 129 10.4 | |
| 10 | 12 2.5 | 12 4.5 | 11 29.6 | 10 .8 | 70 5.7 | 130 10.5 | |
| 11 | 12 2.8 | 12 4.8 | 11 29.8 | 11 .9 | 71 5.7 | 131 10.6 | |
| 12 | 12 3.0 | 12 5.0 | 11 30.1 | 12 .0 | 72 5.8 | 132 10.7 | |
| 13 | 12 3.3 | 12 5.3 | 11 30.3 | 13 .1 | 73 5.9 | 133 10.8 | |
| 14 | 12 3.5 | 12 5.5 | 11 30.5 | 14 .1 | 74 6.0 | 134 10.8 | |
| 15 | 12 3.8 | 12 5.8 | 11 30.8 | 15 .2 | 75 6.1 | 135 10.9 | |
| 16 | 12 4.0 | 12 6.0 | 11 31.0 | 16 .3 | 76 6.1 | 136 11.0 | |
| 17 | 12 4.3 | 12 6.3 | 11 31.3 | 17 .4 | 77 6.2 | 137 11.1 | |
| 18 | 12 4.5 | 12 6.5 | 11 31.5 | 18 .5 | 78 6.3 | 138 11.2 | |
| 19 | 12 4.8 | 12 6.8 | 11 31.7 | 19 .5 | 79 6.4 | 139 11.2 | |
| 20 | 12 5.0 | 12 7.0 | 11 32.0 | 20 .6 | 80 6.5 | 140 11.3 | |
| 21 | 12 5.3 | 12 7.3 | 11 32.2 | 21 .7 | 81 6.5 | 141 11.4 | |
| 22 | 12 5.5 | 12 7.5 | 11 32.4 | 22 .8 | 82 6.6 | 142 11.5 | |
| 23 | 12 5.8 | 12 7.8 | 11 32.7 | 23 .9 | 83 6.7 | 143 11.6 | |
| 24 | 12 6.0 | 12 8.0 | 11 32.9 | 24 .9 | 84 6.8 | 144 11.6 | |
| 25 | 12 6.3 | 12 8.3 | 11 33.2 | 25 .2 | 85 6.9 | 145 11.7 | |
| 26 | 12 6.5 | 12 8.5 | 11 33.4 | 26 .2 | 86 7.0 | 146 11.8 | |
| 27 | 12 6.8 | 12 8.8 | 11 33.6 | 27 .2 | 87 7.0 | 147 11.9 | |
| 28 | 12 7.0 | 12 9.0 | 11 33.9 | 28 .3 | 88 7.1 | 148 12.0 | |
| 29 | 12 7.3 | 12 9.3 | 11 34.1 | 29 .3 | 89 7.2 | 149 12.0 | |
| 30 | 12 7.5 | 12 9.5 | 11 34.4 | 30 .2 | 90 7.3 | 150 12.1 | |
| 31 | 12 7.8 | 12 9.8 | 11 34.6 | 31 .2 | 91 7.4 | 151 12.2 | |
| 32 | 12 8.0 | 12 10.0 | 11 34.8 | 32 .2 | 92 7.4 | 152 12.3 | |
| 33 | 12 8.3 | 12 10.3 | 11 35.1 | 33 .2 | 93 7.5 | 153 12.4 | |
| 34 | 12 8.5 | 12 10.5 | 11 35.3 | 34 .2 | 94 7.6 | 154 12.4 | |
| 35 | 12 8.8 | 12 10.8 | 11 35.6 | 35 .2 | 95 7.7 | 155 12.5 | |
| 36 | 12 9.0 | 12 11.0 | 11 35.8 | 36 .2 | 96 7.8 | 156 12.6 | |
| 37 | 12 9.3 | 12 11.3 | 11 36.0 | 37 .3 | 97 7.8 | 157 12.7 | |
| 38 | 12 9.5 | 12 11.5 | 11 36.3 | 38 .3 | 98 7.9 | 158 12.8 | |
| 39 | 12 9.8 | 12 11.8 | 11 36.5 | 39 .3 | 99 8.0 | 159 12.9 | |
| 40 | 12 10.0 | 12 12.0 | 11 36.7 | 40 .3 | 100 8.1 | 160 12.9 | |
| 41 | 12 10.3 | 12 12.3 | 11 37.0 | 41 .3 | 101 8.2 | 161 13.0 | |
| 42 | 12 10.5 | 12 12.5 | 11 37.2 | 42 .4 | 102 8.2 | 162 13.1 | |
| 43 | 12 10.8 | 12 12.8 | 11 37.5 | 43 .5 | 103 8.3 | 163 13.2 | |
| 44 | 12 11.0 | 12 13.0 | 11 37.7 | 44 .6 | 104 8.4 | 164 13.3 | |
| 45 | 12 11.3 | 12 13.3 | 11 37.9 | 45 .6 | 105 8.5 | 165 13.3 | |
| 46 | 12 11.5 | 12 13.5 | 11 38.2 | 46 .7 | 106 8.6 | 166 13.4 | |
| 47 | 12 11.8 | 12 13.8 | 11 38.4 | 47 .8 | 107 8.6 | 167 13.5 | |
| 48 | 12 12.0 | 12 14.0 | 11 38.7 | 48 .9 | 108 8.7 | 168 13.6 | |
| 49 | 12 12.3 | 12 14.3 | 11 38.9 | 49 .0 | 109 8.8 | 169 13.7 | |
| 50 | 12 12.5 | 12 14.5 | 11 39.1 | 50 .4 | 110 8.9 | 170 13.7 | |
| 51 | 12 12.8 | 12 14.8 | 11 39.4 | 51 .4 | 111 9.0 | 171 13.8 | |
| 52 | 12 13.0 | 12 15.0 | 11 39.6 | 52 .4 | 112 9.1 | 172 13.9 | |
| 53 | 12 13.3 | 12 15.3 | 11 39.8 | 53 .4 | 113 9.1 | 173 14.0 | |
| 54 | 12 13.5 | 12 15.5 | 11 40.1 | 54 .4 | 114 9.2 | 174 14.1 | |
| 55 | 12 13.8 | 12 15.8 | 11 40.3 | 55 .4 | 115 9.3 | 175 14.1 | |
| 56 | 12 14.0 | 12 16.0 | 11 40.6 | 56 .4 | 116 9.4 | 176 14.2 | |
| 57 | 12 14.3 | 12 16.3 | 11 40.8 | 57 .4 | 117 9.5 | 177 14.3 | |
| 58 | 12 14.5 | 12 16.5 | 11 41.0 | 58 .4 | 118 9.5 | 178 14.4 | |
| 59 | 12 14.8 | 12 16.8 | 11 41.3 | 59 .4 | 119 9.6 | 179 14.5 | |
| 60 | 12 15.0 | 12 17.0 | 11 41.5 | 60 .4 | 120 9.7 | 180 14.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o | ' | o | ' | o | ' | |
| 0 | 12 15.0 | 12 17.0 | 11 41.5 | 0 .0 | 60 5.0 | 120 9.9 | |
| 1 | 12 15.3 | 12 17.3 | 11 41.8 | 1 .1 | 61 5.0 | 121 10.0 | |
| 2 | 12 15.5 | 12 17.5 | 11 42.0 | 2 .2 | 62 5.1 | 122 10.1 | |
| 3 | 12 15.8 | 12 17.8 | 11 42.2 | 3 .2 | 63 5.2 | 123 10.1 | |
| 4 | 12 16.0 | 12 18.0 | 11 42.5 | 4 .3 | 64 5.3 | 124 10.2 | |
| 5 | 12 16.3 | 12 18.3 | 11 42.7 | 5 .4 | 65 5.4 | 125 10.3 | |
| 6 | 12 16.5 | 12 18.5 | 11 42.9 | 6 .5 | 66 5.4 | 126 10.4 | |
| 7 | 12 16.8 | 12 18.8 | 11 43.2 | 7 .6 | 67 5.5 | 127 10.5 | |
| 8 | 12 17.0 | 12 19.0 | 11 43.4 | 8 .7 | 68 5.6 | 128 10.6 | |
| 9 | 12 17.3 | 12 19.3 | 11 43.7 | 9 .7 | 69 5.7 | 129 10.6 | |
| 10 | 12 17.5 | 12 19.5 | 11 43.9 | 10 .8 | 70 5.8 | 130 10.7 | |
| 11 | 12 17.8 | 12 19.8 | 11 44.1 | 11 .9 | 71 5.9 | 131 10.8 | |
| 12 | 12 18.0 | 12 20.1 | 11 44.4 | 12 .0 | 72 5.9 | 132 10.9 | |
| 13 | 12 18.3 | 12 20.3 | 11 44.6 | 13 .1 | 73 6.0 | 133 11.0 | |
| 14 | 12 18.5 | 12 20.6 | 11 44.9 | 14 .2 | 74 6.1 | 134 11.1 | |
| 15 | 12 18.8 | 12 20.8 | 11 45.1 | 15 .2 | 75 6.2 | 135 11.1 | |
| 16 | 12 19.0 | 12 21.1 | 11 45.3 | 16 .3 | 76 6.3 | 136 11.2 | |
| 17 | 12 19.3 | 12 21.3 | 11 45.6 | 17 .4 | 77 6.4 | 137 11.3 | |
| 18 | 12 19.5 | 12 21.6 | 11 45.8 | 18 .5 | 78 6.4 | 138 11.4 | |
| 19 | 12 19.8 | 12 21.8 | 11 46.1 | 19 .6 | 79 6.5 | 139 11.5 | |
| 20 | 12 20.0 | 12 22.1 | 11 46.3 | 20 .7 | 80 6.6 | 140 11.6 | |
| 21 | 12 20.3 | 12 22.3 | 11 46.5 | 21 .7 | 81 6.7 | 141 11.6 | |
| 22 | 12 20.5 | 12 22.6 | 11 46.8 | 22 .8 | 82 6.8 | 142 11.7 | |
| 23 | 12 20.8 | 12 22.8 | 11 47.0 | 23 .9 | 83 6.8 | 143 11.8 | |
| 24 | 12 21.0 | 12 23.1 | 11 47.2 | 24 .0 | 84 6.9 | 144 11.9 | |
| 25 | 12 21.3 | 12 23.3 | 11 47.5 | 25 .1 | 85 7.0 | 145 12.0 | |
| 26 | 12 21.5 | 12 23.6 | 11 47.7 | 26 .2 | 86 7.1 | 146 12.0 | |
| 27 | 12 21.8 | 12 23.8 | 11 48.0 | 27 .2 | 87 7.2 | 147 12.1 | |
| 28 | 12 22.0 | 12 24.1 | 11 48.2 | 28 .3 | 88 7.3 | 148 12.2 | |
| 29 | 12 22.3 | 12 24.3 | 11 48.4 | 29 .4 | 89 7.3 | 149 12.3 | |
| 30 | 12 22.5 | 12 24.6 | 11 48.7 | 30 .5 | 90 7.4 | 150 12.4 | |
| 31 | 12 22.8 | 12 24.8 | 11 48.9 | 31 .6 | 91 7.5 | 151 12.5 | |
| 32 | 12 23.0 | 12 25.1 | 11 49.2 | 32 .6 | 92 7.6 | 152 12.5 | |
| 33 | 12 23.3 | 12 25.3 | 11 49.4 | 33 .7 | 93 7.7 | 153 12.6 | |
| 34 | 12 23.5 | 12 25.6 | 11 49.6 | 34 .8 | 94 7.8 | 154 12.7 | |
| 35 | 12 23.8 | 12 25.8 | 11 49.9 | 35 .9 | 95 7.8 | 155 12.8 | |
| 36 | 12 24.0 | 12 26.1 | 11 50.1 | 36 .0 | 96 7.9 | 156 12.9 | |
| 37 | 12 24.3 | 12 26.3 | 11 50.3 | 37 .1 | 97 8.0 | 157 13.0 | |
| 38 | 12 24.5 | 12 26.6 | 11 50.6 | 38 .1 | 98 8.1 | 158 13.0 | |
| 39 | 12 24.8 | 12 26.8 | 11 50.8 | 39 .2 | 99 8.2 | 159 13.1 | |
| 40 | 12 25.0 | 12 27.1 | 11 51.1 | 40 .3 | 100 8.3 | 160 13.2 | |
| 41 | 12 25.3 | 12 27.3 | 11 51.3 | 41 .4 | 101 8.3 | 161 13.3 | |
| 42 | 12 25.5 | 12 27.6 | 11 51.5 | 42 .5 | 102 8.4 | 162 13.4 | |
| 43 | 12 25.8 | 12 27.8 | 11 51.8 | 43 .5 | 103 8.5 | 163 13.4 | |
| 44 | 12 26.0 | 12 28.1 | 11 52.0 | 44 .6 | 104 8.6 | 164 13.5 | |
| 45 | 12 26.3 | 12 28.3 | 11 52.3 | 45 .7 | 105 8.7 | 165 13.6 | |
| 46 | 12 26.5 | 12 28.6 | 11 52.5 | 46 .8 | 106 8.7 | 166 13.7 | |
| 47 | 12 26.8 | 12 28.8 | 11 52.7 | 47 .9 | 107 8.8 | 167 13.8 | |
| 48 | 12 27.0 | 12 29.1 | 11 53.0 | 48 .0 | 108 8.9 | 168 13.9 | |
| 49 | 12 27.3 | 12 29.3 | 11 53.2 | 49 .0 | 109 9.0 | 169 13.9 | |
| 50 | 12 27.5 | 12 29.6 | 11 53.4 | 50 .1 | 110 9.1 | 170 14.0 | |
| 51 | 12 27.8 | 12 29.8 | 11 53.7 | 51 .2 | 111 9.2 | 171 14.1 | |
| 52 | 12 28.0 | 12 30.1 | 11 53.9 | 52 .3 | 112 9.2 | 172 14.2 | |
| 53 | 12 28.3 | 12 30.3 | 11 54.2 | 53 .4 | 113 9.3 | 173 14.3 | |
| 54 | 12 28.5 | 12 30.6 | 11 54.4 | 54 .5 | 114 9.4 | 174 14.4 | |
| 55 | 12 28.8 | 12 30.8 | 11 54.6 | 55 .4 | 115 9.5 | 175 14.4 | |
| 56 | 12 29.0 | 12 31.1 | 11 54.9 | 56 .4 | 116 9.6 | 176 14.5 | |
| 57 | 12 29.3 | 12 31.3 | 11 55.1 | 57 .4 | 117 9.7 | 177 14.6 | |
| 58 | 12 29.5 | 12 31.6 | 11 55.4 | 58 .4 | 118 | | |

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| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 12 30.0 | 12 32.1 | 11 55.8 | 0 .0 | 60 5.1 | 120 10.1 | | 0 | 12 45.0 | 12 47.1 | 12 10.2 | 0 .0 | 60 5.2 | 120 10.3 | |
| 1 | 12 30.3 | 12 32.3 | 11 56.1 | 1 .1 | 61 5.1 | 121 10.2 | | 1 | 12 45.3 | 12 47.4 | 12 10.4 | 1 .1 | 61 5.2 | 121 10.4 | |
| 2 | 12 30.5 | 12 32.6 | 11 56.3 | 2 .2 | 62 5.2 | 122 10.3 | | 2 | 12 45.5 | 12 47.6 | 12 10.6 | 2 .2 | 62 5.3 | 122 10.5 | |
| 3 | 12 30.8 | 12 32.8 | 11 56.5 | 3 .3 | 63 5.3 | 123 10.4 | | 3 | 12 45.8 | 12 47.9 | 12 10.9 | 3 .3 | 63 5.4 | 123 10.6 | |
| 4 | 12 31.0 | 12 33.1 | 11 56.8 | 4 .3 | 64 5.4 | 124 10.4 | | 4 | 12 46.0 | 12 48.1 | 12 11.1 | 4 .3 | 64 5.5 | 124 10.6 | |
| 5 | 12 31.3 | 12 33.3 | 11 57.0 | 5 .4 | 65 5.5 | 125 10.5 | | 5 | 12 46.3 | 12 48.4 | 12 11.3 | 5 .4 | 65 5.6 | 125 10.7 | |
| 6 | 12 31.5 | 12 33.6 | 11 57.3 | 6 .5 | 66 5.6 | 126 10.6 | | 6 | 12 46.5 | 12 48.6 | 12 11.6 | 6 .5 | 66 5.7 | 126 10.8 | |
| 7 | 12 31.8 | 12 33.8 | 11 57.5 | 7 .6 | 67 5.6 | 127 10.7 | | 7 | 12 46.8 | 12 48.9 | 12 11.8 | 7 .6 | 67 5.8 | 127 10.9 | |
| 8 | 12 32.0 | 12 34.1 | 11 57.7 | 8 .7 | 68 5.7 | 128 10.8 | | 8 | 12 47.0 | 12 49.1 | 12 12.1 | 8 .7 | 68 5.8 | 128 11.0 | |
| 9 | 12 32.3 | 12 34.3 | 11 58.0 | 9 .8 | 69 5.8 | 129 10.9 | | 9 | 12 47.3 | 12 49.4 | 12 12.3 | 9 .8 | 69 5.9 | 129 11.1 | |
| 10 | 12 32.5 | 12 34.6 | 11 58.2 | 10 .8 | 70 5.9 | 130 10.9 | | 10 | 12 47.5 | 12 49.6 | 12 12.5 | 10 .9 | 70 6.0 | 130 11.2 | |
| 11 | 12 32.8 | 12 34.8 | 11 58.5 | 11 .9 | 71 6.0 | 131 11.0 | | 11 | 12 47.8 | 12 49.9 | 12 12.8 | 11 .9 | 71 6.1 | 131 11.2 | |
| 12 | 12 33.0 | 12 35.1 | 11 58.7 | 12 .0 | 72 6.1 | 132 11.1 | | 12 | 12 48.0 | 12 50.1 | 12 13.0 | 12 .0 | 72 6.2 | 132 11.3 | |
| 13 | 12 33.3 | 12 35.3 | 11 58.9 | 13 .1 | 73 6.1 | 133 11.2 | | 13 | 12 48.3 | 12 50.4 | 12 13.3 | 13 .1 | 73 6.3 | 133 11.4 | |
| 14 | 12 33.5 | 12 35.6 | 11 59.2 | 14 .2 | 74 6.2 | 134 11.3 | | 14 | 12 48.5 | 12 50.6 | 12 13.5 | 14 .2 | 74 6.4 | 134 11.5 | |
| 15 | 12 33.8 | 12 35.8 | 11 59.4 | 15 .3 | 75 6.3 | 135 11.4 | | 15 | 12 48.8 | 12 50.9 | 12 13.7 | 15 .3 | 75 6.4 | 135 11.6 | |
| 16 | 12 34.0 | 12 36.1 | 11 59.7 | 16 .3 | 76 6.4 | 136 11.4 | | 16 | 12 49.0 | 12 51.1 | 12 14.0 | 16 .4 | 76 6.5 | 136 11.7 | |
| 17 | 12 34.3 | 12 36.3 | 11 59.9 | 17 .4 | 77 6.5 | 137 11.5 | | 17 | 12 49.3 | 12 51.4 | 12 14.2 | 17 .5 | 77 6.6 | 137 11.8 | |
| 18 | 12 34.5 | 12 36.6 | 12 .1 | 18 .5 | 78 6.6 | 138 11.6 | | 18 | 12 49.5 | 12 51.6 | 12 14.4 | 18 .5 | 78 6.7 | 138 11.8 | |
| 19 | 12 34.8 | 12 36.8 | 12 .4 | 19 .6 | 79 6.6 | 139 11.7 | | 19 | 12 49.8 | 12 51.9 | 12 14.7 | 19 .6 | 79 6.8 | 139 11.9 | |
| 20 | 12 35.0 | 12 37.1 | 12 .6 | 20 .7 | 80 6.7 | 140 11.8 | | 20 | 12 50.0 | 12 52.1 | 12 14.9 | 20 .7 | 80 6.9 | 140 12.0 | |
| 21 | 12 35.3 | 12 37.3 | 12 .8 | 21 .8 | 81 6.8 | 141 11.9 | | 21 | 12 50.3 | 12 52.4 | 12 15.2 | 21 .8 | 81 7.0 | 141 12.1 | |
| 22 | 12 35.5 | 12 37.6 | 12 .1 | 22 .9 | 82 6.9 | 142 12.0 | | 22 | 12 50.5 | 12 52.6 | 12 15.4 | 22 .9 | 82 7.0 | 142 12.2 | |
| 23 | 12 35.8 | 12 37.8 | 12 .3 | 23 .9 | 83 7.0 | 143 12.0 | | 23 | 12 50.8 | 12 52.9 | 12 15.6 | 23 .0 | 83 7.1 | 143 12.3 | |
| 24 | 12 36.0 | 12 38.1 | 12 .6 | 24 .0 | 84 7.1 | 144 12.1 | | 24 | 12 51.0 | 12 53.1 | 12 15.9 | 24 .1 | 84 7.2 | 144 12.4 | |
| 25 | 12 36.3 | 12 38.4 | 12 .8 | 25 .1 | 85 7.2 | 145 12.2 | | 25 | 12 51.3 | 12 53.4 | 12 16.1 | 25 .1 | 85 7.3 | 145 12.4 | |
| 26 | 12 36.5 | 12 38.6 | 12 .0 | 26 .2 | 86 7.2 | 146 12.3 | | 26 | 12 51.5 | 12 53.6 | 12 16.4 | 26 .2 | 86 7.4 | 146 12.5 | |
| 27 | 12 36.8 | 12 38.9 | 12 .3 | 27 .3 | 87 7.3 | 147 12.4 | | 27 | 12 51.8 | 12 53.9 | 12 16.6 | 27 .3 | 87 7.5 | 147 12.6 | |
| 28 | 12 37.0 | 12 39.1 | 12 .5 | 28 .4 | 88 7.4 | 148 12.5 | | 28 | 12 52.0 | 12 54.1 | 12 16.8 | 28 .4 | 88 7.6 | 148 12.7 | |
| 29 | 12 37.3 | 12 39.4 | 12 .8 | 29 .4 | 89 7.5 | 149 12.5 | | 29 | 12 52.3 | 12 54.4 | 12 17.1 | 29 .5 | 89 7.6 | 149 12.8 | |
| 30 | 12 37.5 | 12 39.6 | 12 .3 | 30 .5 | 90 7.6 | 150 12.6 | | 30 | 12 52.5 | 12 54.6 | 12 17.3 | 30 .6 | 90 7.7 | 150 12.9 | |
| 31 | 12 37.8 | 12 39.9 | 12 .3 | 31 .6 | 91 7.7 | 151 12.7 | | 31 | 12 52.8 | 12 54.9 | 12 17.5 | 31 .7 | 91 7.8 | 151 13.0 | |
| 32 | 12 38.0 | 12 40.1 | 12 .5 | 32 .7 | 92 7.7 | 152 12.8 | | 32 | 12 53.0 | 12 55.1 | 12 17.8 | 32 .7 | 92 7.9 | 152 13.0 | |
| 33 | 12 38.3 | 12 40.4 | 12 .7 | 33 .8 | 93 7.8 | 153 12.9 | | 33 | 12 53.3 | 12 55.4 | 12 18.0 | 33 .8 | 93 8.0 | 153 13.1 | |
| 34 | 12 38.5 | 12 40.6 | 12 .9 | 34 .9 | 94 7.9 | 154 13.0 | | 34 | 12 53.5 | 12 55.6 | 12 18.3 | 34 .9 | 94 8.1 | 154 13.2 | |
| 35 | 12 38.8 | 12 40.9 | 12 .4 | 35 .2 | 95 8.0 | 155 13.0 | | 35 | 12 53.8 | 12 55.9 | 12 18.5 | 35 .3 | 95 8.2 | 155 13.3 | |
| 36 | 12 39.0 | 12 41.1 | 12 .4 | 36 .0 | 96 8.1 | 156 13.1 | | 36 | 12 54.0 | 12 56.2 | 12 18.7 | 36 .1 | 96 8.2 | 156 13.4 | |
| 37 | 12 39.3 | 12 41.4 | 12 .7 | 37 .1 | 97 8.2 | 157 13.2 | | 37 | 12 54.3 | 12 56.4 | 12 19.0 | 37 .2 | 97 8.3 | 157 13.5 | |
| 38 | 12 39.5 | 12 41.6 | 12 .9 | 38 .2 | 98 8.2 | 158 13.3 | | 38 | 12 54.5 | 12 56.7 | 12 19.2 | 38 .3 | 98 8.4 | 158 13.6 | |
| 39 | 12 39.8 | 12 41.9 | 12 .5 | 39 .3 | 99 8.3 | 159 13.4 | | 39 | 12 54.8 | 12 56.9 | 12 19.5 | 39 .3 | 99 8.5 | 159 13.6 | |
| 40 | 12 40.0 | 12 42.1 | 12 .5 | 40 .4 | 100 8.4 | 160 13.5 | | 40 | 12 55.0 | 12 57.2 | 12 19.7 | 40 .4 | 100 8.6 | 160 13.7 | |
| 41 | 12 40.3 | 12 42.4 | 12 .6 | 41 .5 | 101 8.5 | 161 13.6 | | 41 | 12 55.3 | 12 57.4 | 12 19.9 | 41 .5 | 101 8.7 | 161 13.8 | |
| 42 | 12 40.5 | 12 42.6 | 12 .9 | 42 .5 | 102 8.6 | 162 13.6 | | 42 | 12 55.5 | 12 57.7 | 12 20.2 | 42 .6 | 102 8.8 | 162 13.9 | |
| 43 | 12 40.8 | 12 42.9 | 12 .6 | 43 .6 | 103 8.7 | 163 13.7 | | 43 | 12 55.8 | 12 57.9 | 12 20.4 | 43 .7 | 103 8.8 | 163 14.0 | |
| 44 | 12 41.0 | 12 43.1 | 12 .6 | 44 .7 | 104 8.8 | 164 13.8 | | 44 | 12 56.0 | 12 58.2 | 12 20.6 | 44 .8 | 104 8.9 | 164 14.1 | |
| 45 | 12 41.3 | 12 43.4 | 12 .6 | 45 .8 | 105 8.8 | 165 13.9 | | 45 | 12 56.3 | 12 58.4 | 12 20.9 | 45 .9 | 105 9.0 | 165 14.2 | |
| 46 | 12 41.5 | 12 43.6 | 12 .6 | 46 .9 | 106 8.9 | 166 14.0 | | 46 | 12 56.5 | 12 58.7 | 12 21.1 | 46 .9 | 106 9.1 | 166 14.2 | |
| 47 | 12 41.8 | 12 43.9 | 12 .7 | 47 .0 | 107 9.0 | 167 14.1 | | 47 | 12 56.8 | 12 58.9 | 12 21.4 | 47 .0 | 107 9.2 | 167 14.3 | |
| 48 | 12 42.0 | 12 44.1 | 12 .7 | 48 .0 | 108 9.1 | 168 14.1 | | 48 | 12 57.0 | 12 59.2 | 12 21.6 | 48 .1 | 108 9.3 | 168 14.4 | |
| 49 | 12 42.3 | 12 44.4 | 12 .7 | 49 .1 | 109 9.2 | 169 14.2 | | 49 | 12 57.3 | 12 59.4 | 12 21.8 | 49 .2 | 109 9.4 | 169 14.5 | |
| 50 | 12 42.5 | 12 44.6 | 12 .8 | 50 .2 | 110 9.3 | 170 14.3 | | 50 | 12 57.5 | 12 59.7 | 12 22.1 | 50 .3 | 110 9.4 | 170 14.6 | |
| 51 | 12 42.8 | 12 44.9 | 12 .8 | 50 .5 | 111 9.3 | 171 14.4 | | 51 | 12 57.8 | 12 59.9 | 12 22.3 | 51 .4 | 111 9.5 | 171 14.7 | |
| 52 | 12 43.0 | 12 45.1 | 12 .8 | 52 .2 | 112 9.4 | 172 14.5 | | 52 | 12 58.0 | 12 .2 | 12 22.6 | 52 .5 | 112 9.6 | 172 14.8 | |
| 53 | 12 43.3 | 12 45.4 | 12 .8 | 53 .4 | 113 9.5 | 173 14.6 | | 53 | 12 58.3 | 12 .4 | 12 22.8 | 53 .5 | 113 9.7 | 173 14.8 | |
| 54 | 12 43.5 | 12 45.6 | 12 .8 | 54 .5 | 114 9.6 | 174 14.6 | | 54 | 12 58.5 | 12 .7 | 12 23.0 | 54 .6 | 114 9.8 | 174 14.9 | |
| 55 | 12 43.8 | 12 45.9 | 12 .9 | 55 .6 | 115 9.7 | 175 14.7 | | 55 | 12 58.8 | 12 .9 | 12 23.3 | 55 .7 | 115 9.9 | 175 15.0 | |
| 56 | 12 44.0 | 12 46.1 | 12 .9 | 56 .7 | 116 9.8 | 176 14.8 | | 56 | 12 59.0 | 12 .1 | 12 23.5 | 56 .8 | 116 10.0 | 176 15.1 | |
| 57 | 12 44.3 | 12 46.4 | 12 .9 | 57 .4 | 117 9.8 | 177 14.9 | | 57 | 12 59.3 | 12 .4 | 12 23.8 | 57 .9 | 117 10.0 | 177 15.2 | |
| 58 | 12 44.5 | 12 46.6 | 12 .9 | 58 .4 | 118 9.9 | 178 15.0 | | 58 | 12 59.5 | 12 .7 | 12 24.0 | 58 .0 | 118 10.1 | 178 15.3 | |
| 59 | 12 44.8 | 12 46.9 | 12 .9 | 59 .0 | 119 10.0 | 179 15.1 | | 59 | 12 59.8 | 12 .9 | 12 24.2 | 59 .1 | 119 10.2 | 179 15.4 | |
| 60 | 12 45.0 | 12 47.1 | 12 .9 | 60 .1 | 120 10.1 | 180 15.2 | | 60 | 13 .0 | 13 .2 | 12 24.5 | 60 .2 | 120 10.3 | 180 15.5 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
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| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 13 .0 | 13 2.2 | 12 24.5 | 0 .0 | 60 5.3 | 120 10.5 | | 0 | 13 15.0 | 13 17.2 | 12 38.8 | 0 .0 | 60 5.4 | 120 10.7 | |
| 1 | 13 .3 | 13 2.4 | 12 24.7 | 1 .1 | 61 5.3 | 121 10.6 | | 1 | 13 15.3 | 13 17.5 | 12 39.0 | 1 .1 | 61 5.4 | 121 10.8 | |
| 2 | 13 .6 | 13 2.7 | 12 24.9 | 2 .2 | 62 5.4 | 122 10.7 | | 2 | 13 15.5 | 13 17.7 | 12 39.3 | 2 .2 | 62 5.5 | 122 10.9 | |
| 3 | 13 .8 | 13 2.9 | 12 25.2 | 3 .3 | 63 5.5 | 123 10.8 | | 3 | 13 15.8 | 13 18.0 | 12 39.5 | 3 .3 | 63 5.6 | 123 11.0 | |
| 4 | 13 1.0 | 13 3.2 | 12 25.4 | 4 .4 | 64 5.6 | 124 10.9 | | 4 | 13 16.0 | 13 18.2 | 12 39.7 | 4 .4 | 64 5.7 | 124 11.1 | |
| 5 | 13 1.3 | 13 3.4 | 12 25.7 | 5 .4 | 65 5.7 | 125 10.9 | | 5 | 13 16.3 | 13 18.5 | 12 40.0 | 5 .4 | 65 5.8 | 125 11.1 | |
| 6 | 13 1.5 | 13 3.7 | 12 25.9 | 6 .5 | 66 5.8 | 126 11.0 | | 6 | 13 16.5 | 13 18.7 | 12 40.2 | 6 .5 | 66 5.9 | 126 11.2 | |
| 7 | 13 1.8 | 13 3.9 | 12 26.1 | 7 .6 | 67 5.9 | 127 11.1 | | 7 | 13 16.8 | 13 19.0 | 12 40.5 | 7 .6 | 67 6.0 | 127 11.3 | |
| 8 | 13 2.0 | 13 4.2 | 12 26.4 | 8 .7 | 68 6.0 | 128 11.2 | | 8 | 13 17.0 | 13 19.2 | 12 40.7 | 8 .7 | 68 6.1 | 128 11.4 | |
| 9 | 13 2.3 | 13 4.4 | 12 26.6 | 9 .8 | 69 6.0 | 129 11.3 | | 9 | 13 17.3 | 13 19.5 | 12 40.9 | 9 .8 | 69 6.2 | 129 11.5 | |
| 10 | 13 2.5 | 13 4.7 | 12 26.9 | 10 .9 | 70 6.1 | 130 11.4 | | 10 | 13 17.5 | 13 19.7 | 12 41.2 | 10 .9 | 70 6.2 | 130 11.6 | |
| 11 | 13 2.8 | 13 4.9 | 12 27.1 | 11 .0 | 71 6.2 | 131 11.5 | | 11 | 13 17.8 | 13 20.0 | 12 41.4 | 11 .0 | 71 6.3 | 131 11.7 | |
| 12 | 13 3.0 | 13 5.2 | 12 27.3 | 12 .1 | 72 6.3 | 132 11.6 | | 12 | 13 18.0 | 13 20.2 | 12 41.6 | 12 .1 | 72 6.4 | 132 11.8 | |
| 13 | 13 3.3 | 13 5.4 | 12 27.6 | 13 .1 | 73 6.4 | 133 11.6 | | 13 | 13 18.3 | 13 20.5 | 12 41.9 | 13 .2 | 73 6.5 | 133 11.9 | |
| 14 | 13 3.5 | 13 5.7 | 12 27.8 | 14 .2 | 74 6.5 | 134 11.7 | | 14 | 13 18.5 | 13 20.7 | 12 42.1 | 14 .2 | 74 6.6 | 134 11.9 | |
| 15 | 13 3.8 | 13 5.9 | 12 28.0 | 15 .3 | 75 6.6 | 135 11.8 | | 15 | 13 18.8 | 13 21.0 | 12 42.4 | 15 .3 | 75 6.7 | 135 12.0 | |
| 16 | 13 4.0 | 13 6.2 | 12 28.3 | 16 .4 | 76 6.7 | 136 11.9 | | 16 | 13 19.0 | 13 21.2 | 12 42.6 | 16 .4 | 76 6.8 | 136 12.1 | |
| 17 | 13 4.3 | 13 6.4 | 12 28.5 | 17 .5 | 77 6.7 | 137 12.0 | | 17 | 13 19.3 | 13 21.5 | 12 42.8 | 17 .5 | 77 6.9 | 137 12.2 | |
| 18 | 13 4.5 | 13 6.7 | 12 28.8 | 18 .6 | 78 6.8 | 138 12.1 | | 18 | 13 19.5 | 13 21.7 | 12 43.1 | 18 .6 | 78 7.0 | 138 12.3 | |
| 19 | 13 4.8 | 13 6.9 | 12 29.0 | 19 .7 | 79 6.9 | 139 12.2 | | 19 | 13 19.8 | 13 22.0 | 12 43.3 | 19 .7 | 79 7.0 | 139 12.4 | |
| 20 | 13 5.0 | 13 7.2 | 12 29.2 | 20 .8 | 80 7.0 | 140 12.3 | | 20 | 13 20.0 | 13 22.2 | 12 43.6 | 20 .8 | 80 7.1 | 140 12.5 | |
| 21 | 13 5.3 | 13 7.4 | 12 29.5 | 21 .8 | 81 7.1 | 141 12.3 | | 21 | 13 20.3 | 13 22.5 | 12 43.8 | 21 .9 | 81 7.2 | 141 12.6 | |
| 22 | 13 5.5 | 13 7.7 | 12 29.7 | 22 .9 | 82 7.2 | 142 12.4 | | 22 | 13 20.5 | 13 22.7 | 12 44.0 | 22 .0 | 82 7.3 | 142 12.7 | |
| 23 | 13 5.8 | 13 7.9 | 12 30.0 | 23 .0 | 83 7.3 | 143 12.5 | | 23 | 13 20.8 | 13 23.0 | 12 44.3 | 23 .1 | 83 7.4 | 143 12.8 | |
| 24 | 13 6.0 | 13 8.2 | 12 30.2 | 24 .1 | 84 7.4 | 144 12.6 | | 24 | 13 21.0 | 13 23.2 | 12 44.5 | 24 .1 | 84 7.5 | 144 12.8 | |
| 25 | 13 6.3 | 13 8.4 | 12 30.4 | 25 .2 | 85 7.4 | 145 12.7 | | 25 | 13 21.3 | 13 23.5 | 12 44.7 | 25 .2 | 85 7.6 | 145 12.9 | |
| 26 | 13 6.5 | 13 8.7 | 12 30.7 | 26 .3 | 86 7.5 | 146 12.8 | | 26 | 13 21.5 | 13 23.7 | 12 45.0 | 26 .3 | 86 7.7 | 146 13.0 | |
| 27 | 13 6.8 | 13 8.9 | 12 30.9 | 27 .4 | 87 7.6 | 147 12.9 | | 27 | 13 21.8 | 13 24.0 | 12 45.2 | 27 .4 | 87 7.8 | 147 13.1 | |
| 28 | 13 7.0 | 13 9.2 | 12 31.1 | 28 .5 | 88 7.7 | 148 13.0 | | 28 | 13 22.0 | 13 24.2 | 12 45.5 | 28 .5 | 88 7.8 | 148 13.2 | |
| 29 | 13 7.3 | 13 9.4 | 12 31.4 | 29 .5 | 89 7.8 | 149 13.0 | | 29 | 13 22.3 | 13 24.5 | 12 45.7 | 29 .6 | 89 7.9 | 149 13.3 | |
| 30 | 13 7.5 | 13 9.7 | 12 31.6 | 30 .6 | 90 7.9 | 150 13.1 | | 30 | 13 22.5 | 13 24.7 | 12 45.9 | 30 .7 | 90 8.0 | 150 13.4 | |
| 31 | 13 7.8 | 13 9.9 | 12 31.9 | 31 .7 | 91 8.0 | 151 13.2 | | 31 | 13 22.8 | 13 25.0 | 12 46.2 | 31 .8 | 91 8.1 | 151 13.5 | |
| 32 | 13 8.0 | 13 10.2 | 12 32.1 | 32 .8 | 92 8.1 | 152 13.3 | | 32 | 13 23.0 | 13 25.2 | 12 46.4 | 32 .9 | 92 8.2 | 152 13.6 | |
| 33 | 13 8.3 | 13 10.4 | 12 32.3 | 33 .9 | 93 8.1 | 153 13.4 | | 33 | 13 23.3 | 13 25.5 | 12 46.7 | 33 .9 | 93 8.3 | 153 13.6 | |
| 34 | 13 8.5 | 13 10.7 | 12 32.6 | 34 .0 | 94 8.2 | 154 13.5 | | 34 | 13 23.5 | 13 25.7 | 12 46.9 | 34 .0 | 94 8.4 | 154 13.7 | |
| 35 | 13 8.8 | 13 10.9 | 12 32.8 | 35 .1 | 95 8.3 | 155 13.6 | | 35 | 13 23.8 | 13 26.0 | 12 47.1 | 35 .1 | 95 8.5 | 155 13.8 | |
| 36 | 13 9.0 | 13 11.2 | 12 33.1 | 36 .2 | 96 8.4 | 156 13.7 | | 36 | 13 24.0 | 13 26.2 | 12 47.4 | 36 .2 | 96 8.6 | 156 13.9 | |
| 37 | 13 9.3 | 13 11.4 | 12 33.3 | 37 .3 | 97 8.5 | 157 13.7 | | 37 | 13 24.3 | 13 26.5 | 12 47.6 | 37 .3 | 97 8.6 | 157 14.0 | |
| 38 | 13 9.5 | 13 11.7 | 12 33.5 | 38 .3 | 98 8.6 | 158 13.8 | | 38 | 13 24.5 | 13 26.7 | 12 47.9 | 38 .4 | 98 8.7 | 158 14.1 | |
| 39 | 13 9.8 | 13 11.9 | 12 33.8 | 39 .4 | 99 8.7 | 159 13.9 | | 39 | 13 24.8 | 13 27.0 | 12 48.1 | 39 .5 | 99 8.8 | 159 14.2 | |
| 40 | 13 10.0 | 13 12.2 | 12 34.0 | 40 .5 | 100 8.8 | 160 14.0 | | 40 | 13 25.0 | 13 27.2 | 12 48.3 | 40 .6 | 100 8.9 | 160 14.3 | |
| 41 | 13 10.3 | 13 12.4 | 12 34.2 | 41 .6 | 101 8.8 | 161 14.1 | | 41 | 13 25.3 | 13 27.5 | 12 48.6 | 41 .7 | 101 9.0 | 161 14.4 | |
| 42 | 13 10.5 | 13 12.7 | 12 34.5 | 42 .7 | 102 8.9 | 162 14.2 | | 42 | 13 25.5 | 13 27.7 | 12 48.8 | 42 .7 | 102 9.1 | 162 14.4 | |
| 43 | 13 10.8 | 13 12.9 | 12 34.7 | 43 .8 | 103 9.0 | 163 14.3 | | 43 | 13 25.8 | 13 28.0 | 12 49.0 | 43 .8 | 103 9.2 | 163 14.5 | |
| 44 | 13 11.0 | 13 13.2 | 12 35.0 | 44 .9 | 104 9.1 | 164 14.4 | | 44 | 13 26.0 | 13 28.2 | 12 49.3 | 44 .9 | 104 9.3 | 164 14.6 | |
| 45 | 13 11.3 | 13 13.4 | 12 35.2 | 45 .9 | 105 9.2 | 165 14.4 | | 45 | 13 26.3 | 13 28.5 | 12 49.5 | 45 .9 | 105 9.4 | 165 14.7 | |
| 46 | 13 11.5 | 13 13.7 | 12 35.4 | 46 .0 | 106 9.3 | 166 14.5 | | 46 | 13 26.5 | 13 28.7 | 12 49.8 | 46 .1 | 106 9.5 | 166 14.8 | |
| 47 | 13 11.8 | 13 13.9 | 12 35.7 | 47 .1 | 107 9.4 | 167 14.6 | | 47 | 13 26.8 | 13 29.0 | 12 50.0 | 47 .2 | 107 9.5 | 167 14.9 | |
| 48 | 13 12.0 | 13 14.2 | 12 35.9 | 48 .2 | 108 9.5 | 168 14.7 | | 48 | 13 27.0 | 13 29.2 | 12 50.2 | 48 .3 | 108 9.6 | 168 15.0 | |
| 49 | 13 12.3 | 13 14.5 | 12 36.2 | 49 .3 | 109 9.5 | 169 14.8 | | 49 | 13 27.3 | 13 29.5 | 12 50.5 | 49 .4 | 109 9.7 | 169 15.1 | |
| 50 | 13 12.5 | 13 14.7 | 12 36.4 | 50 .4 | 110 9.6 | 170 14.9 | | 50 | 13 27.5 | 13 29.7 | 12 50.7 | 50 .4 | 110 9.8 | 170 15.2 | |
| 51 | 13 12.8 | 13 15.0 | 12 36.6 | 51 .4 | 111 9.7 | 171 15.0 | | 51 | 13 27.8 | 13 30.0 | 12 51.0 | 51 .4 | 111 9.9 | 171 15.2 | |
| 52 | 13 13.0 | 13 15.2 | 12 36.9 | 52 .4 | 112 9.8 | 172 15.1 | | 52 | 13 28.0 | 13 30.2 | 12 51.2 | 52 .4 | 112 10.0 | 172 15.3 | |
| 53 | 13 13.3 | 13 15.5 | 12 37.1 | 53 .4 | 113 9.9 | 173 15.1 | | 53 | 13 28.3 | 13 30.5 | 12 51.4 | 53 .4 | 113 10.1 | 173 15.4 | |
| 54 | 13 13.5 | 13 15.7 | 12 37.4 | 54 .4 | 114 10.0 | 174 15.2 | | 54 | 13 28.5 | 13 30.7 | 12 51.7 | 54 .4 | 114 10.2 | 174 15.5 | |
| 55 | 13 13.8 | 13 16.0 | 12 37.6 | 55 .4 | 115 10.1 | 175 15.3 | | 55 | 13 28.8 | 13 31.0 | 12 51.9 | 55 .4 | 115 10.3 | 175 15.6 | |
| 56 | 13 14.0 | 13 16.2 | 12 37.8 | 56 .4 | 116 10.2 | 176 15.4 | | 56 | 13 29.0 | 13 31.2 | 12 52.1 | 56 .5 | 116 10.3 | 176 15.7 | |
| 57 | 13 14.3 | 13 16.5 | 12 38.1 | 57 .5 | 117 10.2 | 177 15.5 | | 57 | 13 29.3 | 13 31.5 | 12 52.4 | 57 .5 | 117 10.4 | 177 15.8 | |
| 58 | 13 14.5 | 13 16.7 | 12 38.3 | 58 .5 | 118 10.3 | 178 15.6 | | 58 | 13 29.5 | 13 31.7 | 12 52.6 | 58 .5 | 118 10.5 | 178 15.9 | |
| 59 | 13 14.8 | 13 17.0 | 12 38.5 | 59 .5 | 119 10.4 | 179 15.7 | | 59 | 13 29.8 | 13 32.0 | 12 52.9 | 59 .5 | 119 10.6 | 179 16.0 | |
| 60 | 13 15.0 | 13 17.2 | 12 38.8 | 60 .5 | 120 10.5 | 180 15.8 | | 60 | 13 30.0 | 13 32.3 | 12 53.1 | 60 .5 | 120 10.7 | 180 16.1 | |

0 h 53 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planetu | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / | o | / | o | / | o | / | o | / |

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| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 13 30.0 | 13 32.3 | 12 53.1 | 0 .0 | 60 5.5 | 120 10.9 | |
| 1 | 13 30.3 | 13 32.5 | 12 53.3 | 1 .1 | 61 5.5 | 121 11.0 | |
| 2 | 13 30.5 | 13 32.8 | 12 53.6 | 2 .2 | 62 5.6 | 122 11.1 | |
| 3 | 13 30.8 | 13 33.0 | 12 53.8 | 3 .3 | 63 5.7 | 123 11.2 | |
| 4 | 13 31.0 | 13 33.3 | 12 54.1 | 4 .4 | 64 5.8 | 124 11.3 | |
| 5 | 13 31.3 | 13 33.5 | 12 54.3 | 5 .5 | 65 5.9 | 125 11.4 | |
| 6 | 13 31.5 | 13 33.8 | 12 54.5 | 6 .6 | 66 6.0 | 126 11.4 | |
| 7 | 13 31.8 | 13 34.0 | 12 54.8 | 7 .7 | 67 6.1 | 127 11.5 | |
| 8 | 13 32.0 | 13 34.3 | 12 55.0 | 8 .8 | 68 6.2 | 128 11.6 | |
| 9 | 13 32.3 | 13 34.5 | 12 55.2 | 9 .9 | 69 6.3 | 129 11.7 | |
| 10 | 13 32.5 | 13 34.8 | 12 55.5 | 10 .9 | 70 6.4 | 130 11.8 | |
| 11 | 13 32.8 | 13 35.0 | 12 55.7 | 11 .0 | 71 6.4 | 131 11.9 | |
| 12 | 13 33.0 | 13 35.3 | 12 56.0 | 12 .1 | 72 6.5 | 132 12.0 | |
| 13 | 13 33.3 | 13 35.5 | 12 56.2 | 13 .2 | 73 6.6 | 133 12.1 | |
| 14 | 13 33.5 | 13 35.8 | 12 56.4 | 14 .3 | 74 6.7 | 134 12.2 | |
| 15 | 13 33.8 | 13 36.0 | 12 56.7 | 15 .4 | 75 6.8 | 135 12.3 | |
| 16 | 13 34.0 | 13 36.3 | 12 56.9 | 16 .5 | 76 6.9 | 136 12.4 | |
| 17 | 13 34.3 | 13 36.5 | 12 57.2 | 17 .5 | 77 7.0 | 137 12.4 | |
| 18 | 13 34.5 | 13 36.8 | 12 57.4 | 18 .6 | 78 7.1 | 138 12.5 | |
| 19 | 13 34.8 | 13 37.0 | 12 57.6 | 19 .7 | 79 7.2 | 139 12.6 | |
| 20 | 13 35.0 | 13 37.3 | 12 57.9 | 20 .8 | 80 7.3 | 140 12.7 | |
| 21 | 13 35.3 | 13 37.5 | 12 58.1 | 21 .9 | 81 7.4 | 141 12.8 | |
| 22 | 13 35.5 | 13 37.8 | 12 58.3 | 22 .0 | 82 7.4 | 142 12.9 | |
| 23 | 13 35.8 | 13 38.0 | 12 58.6 | 23 .1 | 83 7.5 | 143 13.0 | |
| 24 | 13 36.0 | 13 38.3 | 12 58.8 | 24 .2 | 84 7.6 | 144 13.1 | |
| 25 | 13 36.3 | 13 38.5 | 12 59.1 | 25 .3 | 85 7.7 | 145 13.2 | |
| 26 | 13 36.5 | 13 38.8 | 12 59.3 | 26 .4 | 86 7.8 | 146 13.3 | |
| 27 | 13 36.8 | 13 39.0 | 12 59.5 | 27 .5 | 87 7.9 | 147 13.4 | |
| 28 | 13 37.0 | 13 39.3 | 12 59.8 | 28 .5 | 88 8.0 | 148 13.4 | |
| 29 | 13 37.3 | 13 39.5 | 13 .0 | 29 .6 | 89 8.1 | 149 13.5 | |
| 30 | 13 37.5 | 13 39.8 | 13 .3 | 30 .7 | 90 8.2 | 150 13.6 | |
| 31 | 13 37.8 | 13 40.0 | 13 .5 | 31 .8 | 91 8.3 | 151 13.7 | |
| 32 | 13 38.0 | 13 40.3 | 13 .7 | 32 .9 | 92 8.4 | 152 13.8 | |
| 33 | 13 38.3 | 13 40.5 | 13 .9 | 33 .0 | 93 8.4 | 153 13.9 | |
| 34 | 13 38.5 | 13 40.8 | 13 .1 | 34 .1 | 94 8.5 | 154 14.0 | |
| 35 | 13 38.8 | 13 41.0 | 13 .5 | 35 .2 | 95 8.6 | 155 14.1 | |
| 36 | 13 39.0 | 13 41.3 | 13 .7 | 36 .3 | 96 8.7 | 156 14.2 | |
| 37 | 13 39.3 | 13 41.5 | 13 .9 | 37 .4 | 97 8.8 | 157 14.3 | |
| 38 | 13 39.5 | 13 41.8 | 13 .2 | 38 .5 | 98 8.9 | 158 14.4 | |
| 39 | 13 39.8 | 13 42.0 | 13 .4 | 39 .5 | 99 9.0 | 159 14.4 | |
| 40 | 13 40.0 | 13 42.3 | 13 .6 | 40 .6 | 100 9.1 | 160 14.5 | |
| 41 | 13 40.3 | 13 42.5 | 13 .9 | 41 .7 | 101 9.2 | 161 14.6 | |
| 42 | 13 40.5 | 13 42.8 | 13 .1 | 42 .8 | 102 9.3 | 162 14.7 | |
| 43 | 13 40.8 | 13 43.0 | 13 .4 | 43 .9 | 103 9.4 | 163 14.8 | |
| 44 | 13 41.0 | 13 43.3 | 13 .6 | 44 .0 | 104 9.4 | 164 14.9 | |
| 45 | 13 41.3 | 13 43.5 | 13 .8 | 45 .1 | 105 9.5 | 165 15.0 | |
| 46 | 13 41.5 | 13 43.8 | 13 .4 | 46 .2 | 106 9.6 | 166 15.1 | |
| 47 | 13 41.8 | 13 44.0 | 13 .4 | 47 .3 | 107 9.7 | 167 15.2 | |
| 48 | 13 42.0 | 13 44.3 | 13 .4 | 48 .4 | 108 9.8 | 168 15.3 | |
| 49 | 13 42.3 | 13 44.5 | 13 .4 | 49 .5 | 109 9.9 | 169 15.4 | |
| 50 | 13 42.5 | 13 44.8 | 13 .5 | 50 .4 | 110 10.0 | 170 15.4 | |
| 51 | 13 42.8 | 13 45.0 | 13 .5 | 51 .4 | 111 10.1 | 171 15.5 | |
| 52 | 13 43.0 | 13 45.3 | 13 .5 | 52 .4 | 112 10.2 | 172 15.6 | |
| 53 | 13 43.3 | 13 45.5 | 13 .5 | 53 .4 | 113 10.3 | 173 15.7 | |
| 54 | 13 43.5 | 13 45.8 | 13 .6 | 54 .4 | 114 10.4 | 174 15.8 | |
| 55 | 13 43.8 | 13 46.0 | 13 .6 | 55 .4 | 115 10.4 | 175 15.9 | |
| 56 | 13 44.0 | 13 46.3 | 13 .6 | 56 .4 | 116 10.5 | 176 16.0 | |
| 57 | 13 44.3 | 13 46.5 | 13 .6 | 57 .4 | 117 10.6 | 177 16.1 | |
| 58 | 13 44.5 | 13 46.8 | 13 .6 | 58 .4 | 118 10.7 | 178 16.2 | |
| 59 | 13 44.8 | 13 47.0 | 13 .7 | 59 .4 | 119 10.8 | 179 16.3 | |
| 60 | 13 45.0 | 13 47.3 | 13 .7 | 60 .5 | 120 10.9 | 180 16.4 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 13 45.0 | 13 47.3 | 13 7.4 | 0 .0 | 60 5.6 | 120 11.1 | |
| 1 | 13 45.3 | 13 47.5 | 13 7.7 | 1 .1 | 61 5.6 | 121 11.2 | |
| 2 | 13 45.5 | 13 47.8 | 13 7.9 | 2 .2 | 62 5.7 | 122 11.3 | |
| 3 | 13 45.8 | 13 48.0 | 13 8.1 | 3 .3 | 63 5.8 | 123 11.4 | |
| 4 | 13 46.0 | 13 48.3 | 13 8.4 | 4 .4 | 64 5.9 | 124 11.5 | |
| 5 | 13 46.3 | 13 48.5 | 13 8.6 | 5 .5 | 65 6.0 | 125 11.6 | |
| 6 | 13 46.5 | 13 48.8 | 13 8.8 | 6 .6 | 66 6.1 | 126 11.7 | |
| 7 | 13 46.8 | 13 49.0 | 13 9.1 | 7 .7 | 67 6.2 | 127 11.7 | |
| 8 | 13 47.0 | 13 49.3 | 13 9.3 | 8 .8 | 68 6.3 | 128 11.8 | |
| 9 | 13 47.3 | 13 49.5 | 13 9.6 | 9 .9 | 69 6.4 | 129 11.9 | |
| 10 | 13 47.5 | 13 49.8 | 13 9.8 | 10 .9 | 70 6.5 | 130 12.0 | |
| 11 | 13 47.8 | 13 50.0 | 13 10.0 | 11 .0 | 71 6.6 | 131 12.1 | |
| 12 | 13 48.0 | 13 50.3 | 13 10.3 | 12 .1 | 72 6.7 | 132 12.2 | |
| 13 | 13 48.3 | 13 50.6 | 13 10.5 | 13 .2 | 73 6.8 | 133 12.3 | |
| 14 | 13 48.5 | 13 50.8 | 13 10.8 | 14 .3 | 74 6.8 | 134 12.4 | |
| 15 | 13 48.8 | 13 51.1 | 13 11.0 | 15 .4 | 75 6.9 | 135 12.5 | |
| 16 | 13 49.0 | 13 51.3 | 13 11.2 | 16 .5 | 76 7.0 | 136 12.6 | |
| 17 | 13 49.3 | 13 51.6 | 13 11.5 | 17 .6 | 77 7.1 | 137 12.7 | |
| 18 | 13 49.5 | 13 51.8 | 13 11.7 | 18 .7 | 78 7.2 | 138 12.8 | |
| 19 | 13 49.8 | 13 52.1 | 13 12.0 | 19 .8 | 79 7.3 | 139 12.9 | |
| 20 | 13 50.0 | 13 52.3 | 13 12.2 | 20 .9 | 80 7.4 | 140 13.0 | |
| 21 | 13 50.3 | 13 52.6 | 13 12.4 | 21 .9 | 81 7.5 | 141 13.0 | |
| 22 | 13 50.5 | 13 52.8 | 13 12.7 | 22 .0 | 82 7.6 | 142 13.1 | |
| 23 | 13 50.8 | 13 53.1 | 13 12.9 | 23 .1 | 83 7.7 | 143 13.2 | |
| 24 | 13 51.0 | 13 53.3 | 13 13.1 | 24 .2 | 84 7.8 | 144 13.3 | |
| 25 | 13 51.3 | 13 53.6 | 13 13.4 | 25 .3 | 85 7.9 | 145 13.4 | |
| 26 | 13 51.5 | 13 53.8 | 13 13.6 | 26 .4 | 86 8.0 | 146 13.5 | |
| 27 | 13 51.8 | 13 54.1 | 13 13.9 | 27 .5 | 87 8.0 | 147 13.6 | |
| 28 | 13 52.0 | 13 54.3 | 13 14.1 | 28 .6 | 88 8.1 | 148 13.7 | |
| 29 | 13 52.3 | 13 54.6 | 13 14.3 | 29 .7 | 89 8.2 | 149 13.8 | |
| 30 | 13 52.5 | 13 54.8 | 13 14.6 | 30 .8 | 90 8.3 | 150 13.9 | |
| 31 | 13 52.8 | 13 55.1 | 13 14.8 | 31 .9 | 91 8.4 | 151 14.0 | |
| 32 | 13 53.0 | 13 55.3 | 13 15.1 | 32 .0 | 92 8.5 | 152 14.1 | |
| 33 | 13 53.3 | 13 55.6 | 13 15.3 | 33 .1 | 93 8.6 | 153 14.2 | |
| 34 | 13 53.5 | 13 55.8 | 13 15.5 | 34 .2 | 94 8.7 | 154 14.2 | |
| 35 | 13 53.8 | 13 56.1 | 13 15.8 | 35 .3 | 95 8.8 | 155 14.3 | |
| 36 | 13 54.0 | 13 56.3 | 13 16.0 | 36 .3 | 96 8.9 | 156 14.4 | |
| 37 | 13 54.3 | 13 56.6 | 13 16.2 | 37 .4 | 97 9.0 | 157 14.5 | |
| 38 | 13 54.5 | 13 56.8 | 13 16.5 | 38 .5 | 98 9.1 | 158 14.6 | |
| 39 | 13 54.8 | 13 57.1 | 13 16.7 | 39 .6 | 99 9.2 | 159 14.7 | |
| 40 | 13 55.0 | 13 57.3 | 13 17.0 | 40 .7 | 100 9.3 | 160 14.8 | |
| 41 | 13 55.3 | 13 57.6 | 13 17.2 | 41 .8 | 101 9.3 | 161 14.9 | |
| 42 | 13 55.5 | 13 57.8 | 13 17.4 | 42 .9 | 102 9.4 | 162 15.0 | |
| 43 | 13 55.8 | 13 58.1 | 13 17.7 | 43 .0 | 103 9.5 | 163 15.1 | |
| 44 | 13 56.0 | 13 58.3 | 13 17.9 | 44 .1 | 104 9.6 | 164 15.2 | |
| 45 | 13 56.3 | 13 58.6 | 13 18.2 | 45 .2 | 105 9.7 | 165 15.3 | |
| 46 | 13 56.5 | 13 58.8 | 13 18.4 | 46 .3 | 106 9.8 | 166 15.4 | |
| 47 | 13 56.8 | 13 59.1 | 13 18.6 | 47 .4 | 107 9.9 | 167 15.4 | |
| 48 | 13 57.0 | 13 59.3 | 13 18.9 | 48 .4 | 108 10.0 | 168 15.5 | |
| 49 | 13 57.3 | 13 59.6 | 13 19.1 | 49 .5 | 109 10.1 | 169 15.6 | |
| 50 | 13 57.5 | 13 59.8 | 13 19.3 | 50 .6 | 110 10.2 | 170 15.7 | |
| 51 | 13 57.8 | 13 .4 | 13 19.6 | 51 .7 | 111 10.3 | 171 15.8 | |
| 52 | 13 58.0 | 13 .4 | 13 19.8 | 52 .8 | 112 10.4 | 172 15.9 | |
| 53 | 13 58.3 | 13 .6 | 13 20.1 | 53 .9 | 113 10.5 | 173 16.0 | |
| 54 | 13 58.5 | 13 .8 | 13 20.3 | 54 .0 | 114 10.5 | 174 16.1 | |
| 55 | 13 58.8 | 13 .4 | 13 20.5 | 55 .1 | 115 10.6 | 175 16.2 | |
| 56 | 13 59.0 | 13 .4 | 13 20.8 | 56 .2 | 116 10.7 | 176 16.3 | |
| 57 | 13 59.3 | 13 .6 | 13 21.0 | 57 .3 | 117 10.8 | 177 16.4 | |
| 58 | 13 59.5 | 13 .8 | 13 21.3 | 58 .4 | 118 10.9 | 1 | |

0 h 56 min

0 h 57 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | / | o | / | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 14 .0 | 14 2.3 | 13 21.7 | 0 .0 | 60 5.7 | 120 11.3 | | 0 | 14 15.0 | 14 17.4 | 13 36.1 | 0 .0 | 60 5.8 | 120 11.5 | |
| 1 | 14 .3 | 14 2.6 | 13 22.0 | 1 .1 | 61 5.7 | 121 11.4 | | 1 | 14 15.3 | 14 17.6 | 13 36.3 | 1 .1 | 61 5.8 | 121 11.6 | |
| 2 | 14 .5 | 14 2.8 | 13 22.2 | 2 .2 | 62 5.8 | 122 11.5 | | 2 | 14 15.5 | 14 17.9 | 13 36.5 | 2 .2 | 62 5.9 | 122 11.7 | |
| 3 | 14 .8 | 14 3.1 | 13 22.4 | 3 .3 | 63 5.9 | 123 11.6 | | 3 | 14 15.8 | 14 18.1 | 13 36.8 | 3 .3 | 63 6.0 | 123 11.8 | |
| 4 | 14 1.0 | 14 3.3 | 13 22.7 | 4 .4 | 64 6.0 | 124 11.7 | | 4 | 14 16.0 | 14 18.4 | 13 37.0 | 4 .4 | 64 6.1 | 124 11.9 | |
| 5 | 14 1.3 | 14 3.6 | 13 22.9 | 5 .5 | 65 6.1 | 125 11.8 | | 5 | 14 16.3 | 14 18.6 | 13 37.2 | 5 .5 | 65 6.2 | 125 12.0 | |
| 6 | 14 1.5 | 14 3.8 | 13 23.2 | 6 .6 | 66 6.2 | 126 11.9 | | 6 | 14 16.5 | 14 18.9 | 13 37.5 | 6 .6 | 66 6.3 | 126 12.1 | |
| 7 | 14 1.8 | 14 4.1 | 13 23.4 | 7 .7 | 67 6.3 | 127 12.0 | | 7 | 14 16.8 | 14 19.1 | 13 37.7 | 7 .7 | 67 6.4 | 127 12.2 | |
| 8 | 14 2.0 | 14 4.3 | 13 23.6 | 8 .8 | 68 6.4 | 128 12.1 | | 8 | 14 17.0 | 14 19.4 | 13 38.0 | 8 .8 | 68 6.5 | 128 12.3 | |
| 9 | 14 2.3 | 14 4.6 | 13 23.9 | 9 .8 | 69 6.5 | 129 12.1 | | 9 | 14 17.3 | 14 19.6 | 13 38.2 | 9 .9 | 69 6.6 | 129 12.4 | |
| 10 | 14 2.5 | 14 4.8 | 13 24.1 | 10 .9 | 70 6.6 | 130 12.2 | | 10 | 14 17.5 | 14 19.9 | 13 38.4 | 10 1.0 | 70 6.7 | 130 12.5 | |
| 11 | 14 2.8 | 14 5.1 | 13 24.4 | 11 .0 | 71 6.7 | 131 12.3 | | 11 | 14 17.8 | 14 20.1 | 13 38.7 | 11 1.1 | 71 6.8 | 131 12.6 | |
| 12 | 14 3.0 | 14 5.3 | 13 24.6 | 12 .1 | 72 6.8 | 132 12.4 | | 12 | 14 18.0 | 14 20.4 | 13 38.9 | 12 1.2 | 72 6.9 | 132 12.7 | |
| 13 | 14 3.3 | 14 5.6 | 13 24.8 | 13 1.2 | 73 6.9 | 133 12.5 | | 13 | 14 18.3 | 14 20.6 | 13 39.2 | 13 1.2 | 73 7.0 | 133 12.7 | |
| 14 | 14 3.5 | 14 5.8 | 13 25.1 | 14 1.3 | 74 7.0 | 134 12.6 | | 14 | 14 18.5 | 14 20.9 | 13 39.4 | 14 1.3 | 74 7.1 | 134 12.8 | |
| 15 | 14 3.8 | 14 6.1 | 13 25.3 | 15 1.4 | 75 7.1 | 135 12.7 | | 15 | 14 18.8 | 14 21.1 | 13 39.6 | 15 1.4 | 75 7.2 | 135 12.9 | |
| 16 | 14 4.0 | 14 6.3 | 13 25.6 | 16 1.5 | 76 7.2 | 136 12.8 | | 16 | 14 19.0 | 14 21.4 | 13 39.9 | 16 1.5 | 76 7.3 | 136 13.0 | |
| 17 | 14 4.3 | 14 6.6 | 13 25.8 | 17 1.6 | 77 7.3 | 137 12.9 | | 17 | 14 19.3 | 14 21.6 | 13 40.1 | 17 1.6 | 77 7.4 | 137 13.1 | |
| 18 | 14 4.5 | 14 6.8 | 13 26.0 | 18 1.7 | 78 7.3 | 138 13.0 | | 18 | 14 19.5 | 14 21.9 | 13 40.3 | 18 1.7 | 78 7.5 | 138 13.2 | |
| 19 | 14 4.8 | 14 7.1 | 13 26.3 | 19 1.8 | 79 7.4 | 139 13.1 | | 19 | 14 19.8 | 14 22.1 | 13 40.6 | 19 1.8 | 79 7.6 | 139 13.3 | |
| 20 | 14 5.0 | 14 7.3 | 13 26.5 | 20 1.9 | 80 7.5 | 140 13.2 | | 20 | 14 20.0 | 14 22.4 | 13 40.8 | 20 1.9 | 80 7.7 | 140 13.4 | |
| 21 | 14 5.3 | 14 7.6 | 13 26.7 | 21 2.0 | 81 7.6 | 141 13.3 | | 21 | 14 20.3 | 14 22.6 | 13 41.1 | 21 2.0 | 81 7.8 | 141 13.5 | |
| 22 | 14 5.5 | 14 7.8 | 13 27.0 | 22 2.1 | 82 7.7 | 142 13.4 | | 22 | 14 20.5 | 14 22.9 | 13 41.3 | 22 2.1 | 82 7.9 | 142 13.6 | |
| 23 | 14 5.8 | 14 8.1 | 13 27.2 | 23 2.2 | 83 7.8 | 143 13.5 | | 23 | 14 20.8 | 14 23.1 | 13 41.5 | 23 2.2 | 83 8.0 | 143 13.7 | |
| 24 | 14 6.0 | 14 8.4 | 13 27.5 | 24 2.3 | 84 7.9 | 144 13.6 | | 24 | 14 21.0 | 14 23.4 | 13 41.8 | 24 2.3 | 84 8.1 | 144 13.8 | |
| 25 | 14 6.3 | 14 8.6 | 13 27.7 | 25 2.4 | 85 8.0 | 145 13.7 | | 25 | 14 21.3 | 14 23.6 | 13 42.0 | 25 2.4 | 85 8.1 | 145 13.9 | |
| 26 | 14 6.5 | 14 8.9 | 13 27.9 | 26 2.4 | 86 8.1 | 146 13.7 | | 26 | 14 21.5 | 14 23.9 | 13 42.3 | 26 2.5 | 86 8.2 | 146 14.0 | |
| 27 | 14 6.8 | 14 9.1 | 13 28.2 | 27 2.5 | 87 8.2 | 147 13.8 | | 27 | 14 21.8 | 14 24.1 | 13 42.5 | 27 2.6 | 87 8.3 | 147 14.1 | |
| 28 | 14 7.0 | 14 9.4 | 13 28.4 | 28 2.6 | 88 8.3 | 148 13.9 | | 28 | 14 22.0 | 14 24.4 | 13 42.7 | 28 2.7 | 88 8.4 | 148 14.2 | |
| 29 | 14 7.3 | 14 9.6 | 13 28.7 | 29 2.7 | 89 8.4 | 149 14.0 | | 29 | 14 22.3 | 14 24.6 | 13 43.0 | 29 2.8 | 89 8.5 | 149 14.3 | |
| 30 | 14 7.5 | 14 9.9 | 13 28.9 | 30 2.8 | 90 8.5 | 150 14.1 | | 30 | 14 22.5 | 14 24.9 | 13 43.2 | 30 2.9 | 90 8.6 | 150 14.4 | |
| 31 | 14 7.8 | 14 10.1 | 13 29.1 | 31 2.9 | 91 8.6 | 151 14.2 | | 31 | 14 22.8 | 14 25.1 | 13 43.4 | 31 3.0 | 91 8.7 | 151 14.5 | |
| 32 | 14 8.0 | 14 10.4 | 13 29.4 | 32 3.0 | 92 8.7 | 152 14.3 | | 32 | 14 23.0 | 14 25.4 | 13 43.7 | 32 3.1 | 92 8.8 | 152 14.6 | |
| 33 | 14 8.3 | 14 10.6 | 13 29.6 | 33 3.1 | 93 8.8 | 153 14.4 | | 33 | 14 23.3 | 14 25.6 | 13 43.9 | 33 3.2 | 93 8.9 | 153 14.7 | |
| 34 | 14 8.5 | 14 10.9 | 13 29.8 | 34 3.2 | 94 8.9 | 154 14.5 | | 34 | 14 23.5 | 14 25.9 | 13 44.2 | 34 3.3 | 94 9.0 | 154 14.8 | |
| 35 | 14 8.8 | 14 11.1 | 13 30.1 | 35 3.3 | 95 8.9 | 155 14.6 | | 35 | 14 23.8 | 14 26.1 | 13 44.4 | 35 3.4 | 95 9.1 | 155 14.9 | |
| 36 | 14 9.0 | 14 11.4 | 13 30.3 | 36 3.4 | 96 9.0 | 156 14.7 | | 36 | 14 24.0 | 14 26.4 | 13 44.6 | 36 3.5 | 96 9.2 | 156 15.0 | |
| 37 | 14 9.3 | 14 11.6 | 13 30.6 | 37 3.5 | 97 9.1 | 157 14.8 | | 37 | 14 24.3 | 14 26.7 | 13 44.9 | 37 3.5 | 97 9.3 | 157 15.0 | |
| 38 | 14 9.5 | 14 11.9 | 13 30.8 | 38 3.6 | 98 9.2 | 158 14.9 | | 38 | 14 24.5 | 14 26.9 | 13 45.1 | 38 3.6 | 98 9.4 | 158 15.1 | |
| 39 | 14 9.8 | 14 12.1 | 13 31.0 | 39 3.7 | 99 9.3 | 159 15.0 | | 39 | 14 24.8 | 14 27.2 | 13 45.4 | 39 3.7 | 99 9.5 | 159 15.2 | |
| 40 | 14 10.0 | 14 12.4 | 13 31.3 | 40 3.8 | 100 9.4 | 160 15.1 | | 40 | 14 25.0 | 14 27.4 | 13 45.6 | 40 3.8 | 100 9.6 | 160 15.3 | |
| 41 | 14 10.3 | 14 12.6 | 13 31.5 | 41 3.9 | 101 9.5 | 161 15.2 | | 41 | 14 25.3 | 14 27.7 | 13 45.8 | 41 3.9 | 101 9.7 | 161 15.4 | |
| 42 | 14 10.5 | 14 12.9 | 13 31.8 | 42 4.0 | 102 9.6 | 162 15.3 | | 42 | 14 25.5 | 14 27.9 | 13 46.1 | 42 4.0 | 102 9.8 | 162 15.5 | |
| 43 | 14 10.8 | 14 13.1 | 13 32.0 | 43 4.0 | 103 9.7 | 163 15.3 | | 43 | 14 25.8 | 14 28.2 | 13 46.3 | 43 4.1 | 103 9.9 | 163 15.6 | |
| 44 | 14 11.0 | 14 13.4 | 13 32.2 | 44 4.1 | 104 9.8 | 164 15.4 | | 44 | 14 26.0 | 14 28.4 | 13 46.5 | 44 4.2 | 104 10.0 | 164 15.7 | |
| 45 | 14 11.3 | 14 13.6 | 13 32.5 | 45 4.2 | 105 9.9 | 165 15.5 | | 45 | 14 26.3 | 14 28.7 | 13 46.8 | 45 4.3 | 105 10.1 | 165 15.8 | |
| 46 | 14 11.5 | 14 13.9 | 13 32.7 | 46 4.3 | 106 10.0 | 166 15.6 | | 46 | 14 26.5 | 14 28.9 | 13 47.0 | 46 4.4 | 106 10.2 | 166 15.9 | |
| 47 | 14 11.8 | 14 14.1 | 13 32.9 | 47 4.4 | 107 10.1 | 167 15.7 | | 47 | 14 26.8 | 14 29.2 | 13 47.3 | 47 4.5 | 107 10.3 | 167 16.0 | |
| 48 | 14 12.0 | 14 14.4 | 13 33.2 | 48 4.5 | 108 10.2 | 168 15.8 | | 48 | 14 27.0 | 14 29.4 | 13 47.5 | 48 4.6 | 108 10.4 | 168 16.1 | |
| 49 | 14 12.3 | 14 14.6 | 13 33.4 | 49 4.6 | 109 10.3 | 169 15.9 | | 49 | 14 27.3 | 14 29.7 | 13 47.7 | 49 4.7 | 109 10.4 | 169 16.2 | |
| 50 | 14 12.5 | 14 14.9 | 13 33.7 | 50 4.7 | 110 10.4 | 170 16.0 | | 50 | 14 27.5 | 14 29.9 | 13 48.0 | 50 4.8 | 110 10.5 | 170 16.3 | |
| 51 | 14 12.8 | 14 15.1 | 13 33.9 | 51 4.8 | 111 10.5 | 171 16.1 | | 51 | 14 27.8 | 14 30.2 | 13 48.2 | 51 4.9 | 111 10.6 | 171 16.4 | |
| 52 | 14 13.0 | 14 15.4 | 13 34.1 | 52 4.9 | 112 10.5 | 172 16.2 | | 52 | 14 28.0 | 14 30.4 | 13 48.5 | 52 5.0 | 112 10.7 | 172 16.5 | |
| 53 | 14 13.3 | 14 15.6 | 13 34.4 | 53 5.0 | 113 10.6 | 173 16.3 | | 53 | 14 28.3 | 14 30.7 | 13 48.7 | 53 5.1 | 113 10.8 | 173 16.6 | |
| 54 | 14 13.5 | 14 15.9 | 13 34.6 | 54 5.1 | 114 10.7 | 174 16.4 | | 54 | 14 28.5 | 14 30.9 | 13 48.9 | 54 5.2 | 114 10.9 | 174 16.7 | |
| 55 | 14 13.8 | 14 16.1 | 13 34.9 | 55 5.2 | 115 10.8 | 175 16.5 | | 55 | 14 28.8 | 14 31.2 | 13 49.2 | 55 5.3 | 115 11.0 | 175 16.8 | |
| 56 | 14 14.0 | 14 16.4 | 13 35.1 | 56 5.3 | 116 10.9 | 176 16.6 | | 56 | 14 29.0 | 14 31.4 | 13 49.4 | 56 5.4 | 116 11.1 | 176 16.9 | |
| 57 | 14 14.3 | 14 16.6 | 13 35.3 | 57 5.4 | 117 11.0 | 177 16.7 | | 57 | 14 29.3 | 14 31.7 | 13 49.7 | 57 5.5 | 117 11.2 | 177 17.0 | |
| 58 | 14 14.5 | 14 16.9 | 13 35.6 | 58 5.5 | 118 11.1 | 178 16.8 | | 58 | 14 29.5 | 14 31.9 | 13 49.9 | 58 5.6 | 118 11.3 | 178 17.1 | |
| 59 | 14 14.8 | 14 17.1 | 13 35.8 | 59 5.6 | 119 11.2 | 179 16.9 | | 59 | 14 29.8 | 14 32.2 | 13 50.1 | 59 5.7 | 119 11.4 | 179 17.2 | |
| 60 | 14 15.0 | 14 17.4 | 13 36.1 | 60 5.7 | 120 11.3 | 180 17.0 | | 60 | 14 30.0 | 14 32.4 | 13 50.4 | 60 5.8 | 120 11.5 | 180 17.3 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planetu | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ |

0 h 58 min

0 h 59 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 14 30.0 | 14 32.4 | 13 50.4 | 0 .0 | 60 5.9 | 120 11.7 | |
| 1 | 14 30.3 | 14 32.7 | 13 50.6 | 1 .1 | 61 5.9 | 121 11.8 | |
| 2 | 14 30.5 | 14 32.9 | 13 50.8 | 2 .2 | 62 6.0 | 122 11.9 | |
| 3 | 14 30.8 | 14 33.2 | 13 51.1 | 3 .3 | 63 6.1 | 123 12.0 | |
| 4 | 14 31.0 | 14 33.4 | 13 51.3 | 4 .4 | 64 6.2 | 124 12.1 | |
| 5 | 14 31.3 | 14 33.7 | 13 51.6 | 5 .5 | 65 6.3 | 125 12.2 | |
| 6 | 14 31.5 | 14 33.9 | 13 51.8 | 6 .6 | 66 6.4 | 126 12.3 | |
| 7 | 14 31.8 | 14 34.2 | 13 52.0 | 7 .7 | 67 6.5 | 127 12.4 | |
| 8 | 14 32.0 | 14 34.4 | 13 52.3 | 8 .8 | 68 6.6 | 128 12.5 | |
| 9 | 14 32.3 | 14 34.7 | 13 52.5 | 9 .9 | 69 6.7 | 129 12.6 | |
| 10 | 14 32.5 | 14 34.9 | 13 52.8 | 10 1.0 | 70 6.8 | 130 12.7 | |
| 11 | 14 32.8 | 14 35.2 | 13 53.0 | 11 1.1 | 71 6.9 | 131 12.8 | |
| 12 | 14 33.0 | 14 35.4 | 13 53.2 | 12 1.2 | 72 7.0 | 132 12.9 | |
| 13 | 14 33.3 | 14 35.7 | 13 53.5 | 13 1.3 | 73 7.1 | 133 13.0 | |
| 14 | 14 33.5 | 14 35.9 | 13 53.7 | 14 1.4 | 74 7.2 | 134 13.1 | |
| 15 | 14 33.8 | 14 36.2 | 13 53.9 | 15 1.5 | 75 7.3 | 135 13.2 | |
| 16 | 14 34.0 | 14 36.4 | 13 54.2 | 16 1.6 | 76 7.4 | 136 13.3 | |
| 17 | 14 34.3 | 14 36.7 | 13 54.4 | 17 1.7 | 77 7.5 | 137 13.4 | |
| 18 | 14 34.5 | 14 36.9 | 13 54.7 | 18 1.8 | 78 7.6 | 138 13.5 | |
| 19 | 14 34.8 | 14 37.2 | 13 54.9 | 19 1.9 | 79 7.7 | 139 13.6 | |
| 20 | 14 35.0 | 14 37.4 | 13 55.1 | 20 2.0 | 80 7.8 | 140 13.7 | |
| 21 | 14 35.3 | 14 37.7 | 13 55.4 | 21 2.0 | 81 7.9 | 141 13.7 | |
| 22 | 14 35.5 | 14 37.9 | 13 55.6 | 22 2.1 | 82 8.0 | 142 13.8 | |
| 23 | 14 35.8 | 14 38.2 | 13 55.9 | 23 2.2 | 83 8.1 | 143 13.9 | |
| 24 | 14 36.0 | 14 38.4 | 13 56.1 | 24 2.3 | 84 8.2 | 144 14.0 | |
| 25 | 14 36.3 | 14 38.7 | 13 56.3 | 25 2.4 | 85 8.3 | 145 14.1 | |
| 26 | 14 36.5 | 14 38.9 | 13 56.6 | 26 2.5 | 86 8.4 | 146 14.2 | |
| 27 | 14 36.8 | 14 39.2 | 13 56.8 | 27 2.6 | 87 8.5 | 147 14.3 | |
| 28 | 14 37.0 | 14 39.4 | 13 57.0 | 28 2.7 | 88 8.6 | 148 14.4 | |
| 29 | 14 37.3 | 14 39.7 | 13 57.3 | 29 2.8 | 89 8.7 | 149 14.5 | |
| 30 | 14 37.5 | 14 39.9 | 13 57.5 | 30 2.9 | 90 8.8 | 150 14.6 | |
| 31 | 14 37.8 | 14 40.2 | 13 57.8 | 31 3.0 | 91 8.9 | 151 14.7 | |
| 32 | 14 38.0 | 14 40.4 | 13 58.0 | 32 3.1 | 92 9.0 | 152 14.8 | |
| 33 | 14 38.3 | 14 40.7 | 13 58.2 | 33 3.2 | 93 9.1 | 153 14.9 | |
| 34 | 14 38.5 | 14 40.9 | 13 58.4 | 34 3.3 | 94 9.2 | 154 15.0 | |
| 35 | 14 38.8 | 14 41.2 | 13 58.7 | 35 3.4 | 95 9.3 | 155 15.1 | |
| 36 | 14 39.0 | 14 41.4 | 13 59.0 | 36 3.5 | 96 9.4 | 156 15.2 | |
| 37 | 14 39.3 | 14 41.7 | 13 59.2 | 37 3.6 | 97 9.5 | 157 15.3 | |
| 38 | 14 39.5 | 14 41.9 | 13 59.4 | 38 3.7 | 98 9.6 | 158 15.4 | |
| 39 | 14 39.8 | 14 42.2 | 13 59.7 | 39 3.8 | 99 9.7 | 159 15.5 | |
| 40 | 14 40.0 | 14 42.4 | 13 59.9 | 40 3.9 | 100 9.8 | 160 15.6 | |
| 41 | 14 40.3 | 14 42.7 | 14 1.1 | 41 4.0 | 101 9.8 | 161 15.7 | |
| 42 | 14 40.5 | 14 42.9 | 14 1.4 | 42 4.1 | 102 9.9 | 162 15.8 | |
| 43 | 14 40.8 | 14 43.2 | 14 1.6 | 43 4.2 | 103 10.0 | 163 15.9 | |
| 44 | 14 41.0 | 14 43.4 | 14 1.9 | 44 4.3 | 104 10.1 | 164 16.0 | |
| 45 | 14 41.3 | 14 43.7 | 14 1.1 | 45 4.4 | 105 10.2 | 165 16.1 | |
| 46 | 14 41.5 | 14 43.9 | 14 1.3 | 46 4.5 | 106 10.3 | 166 16.2 | |
| 47 | 14 41.8 | 14 44.2 | 14 1.6 | 47 4.6 | 107 10.4 | 167 16.3 | |
| 48 | 14 42.0 | 14 44.5 | 14 1.8 | 48 4.7 | 108 10.5 | 168 16.4 | |
| 49 | 14 42.3 | 14 44.7 | 14 2.1 | 49 4.8 | 109 10.6 | 169 16.5 | |
| 50 | 14 42.5 | 14 45.0 | 14 2.3 | 50 4.9 | 110 10.7 | 170 16.6 | |
| 51 | 14 42.8 | 14 45.2 | 14 2.5 | 51 5.0 | 111 10.8 | 171 16.7 | |
| 52 | 14 43.0 | 14 45.5 | 14 2.8 | 52 5.1 | 112 10.9 | 172 16.8 | |
| 53 | 14 43.3 | 14 45.7 | 14 3.0 | 53 5.2 | 113 11.0 | 173 16.9 | |
| 54 | 14 43.5 | 14 46.0 | 14 3.3 | 54 5.3 | 114 11.1 | 174 17.0 | |
| 55 | 14 43.8 | 14 46.2 | 14 3.5 | 55 5.4 | 115 11.2 | 175 17.1 | |
| 56 | 14 44.0 | 14 46.5 | 14 3.7 | 56 5.5 | 116 11.3 | 176 17.2 | |
| 57 | 14 44.3 | 14 46.7 | 14 4.0 | 57 5.6 | 117 11.4 | 177 17.3 | |
| 58 | 14 44.5 | 14 47.0 | 14 4.2 | 58 5.7 | 118 11.5 | 178 17.4 | |
| 59 | 14 44.8 | 14 47.2 | 14 4.4 | 59 5.8 | 119 11.6 | 179 17.5 | |
| 60 | 14 45.0 | 14 47.5 | 14 4.7 | 60 5.9 | 120 11.7 | 180 17.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 14 45.0 | 14 47.5 | 14 4.7 | 0 .0 | 60 6.0 | 120 11.9 | |
| 1 | 14 45.3 | 14 47.7 | 14 4.9 | 1 .1 | 61 6.0 | 121 12.0 | |
| 2 | 14 45.5 | 14 48.0 | 14 5.2 | 2 .2 | 62 6.1 | 122 12.1 | |
| 3 | 14 45.8 | 14 48.2 | 14 5.4 | 3 .3 | 63 6.2 | 123 12.2 | |
| 4 | 14 46.0 | 14 48.5 | 14 5.6 | 4 .4 | 64 6.3 | 124 12.3 | |
| 5 | 14 46.3 | 14 48.7 | 14 5.9 | 5 .5 | 65 6.4 | 125 12.4 | |
| 6 | 14 46.5 | 14 49.0 | 14 6.1 | 6 .6 | 66 6.5 | 126 12.5 | |
| 7 | 14 46.8 | 14 49.2 | 14 6.4 | 7 .7 | 67 6.6 | 127 12.6 | |
| 8 | 14 47.0 | 14 49.5 | 14 6.6 | 8 .8 | 68 6.7 | 128 12.7 | |
| 9 | 14 47.3 | 14 49.7 | 14 6.8 | 9 .9 | 69 6.8 | 129 12.8 | |
| 10 | 14 47.5 | 14 50.0 | 14 7.1 | 10 1.0 | 70 6.9 | 130 12.9 | |
| 11 | 14 47.8 | 14 50.2 | 14 7.3 | 11 1.1 | 71 7.0 | 131 13.0 | |
| 12 | 14 48.0 | 14 50.5 | 14 7.5 | 12 1.2 | 72 7.1 | 132 13.1 | |
| 13 | 14 48.3 | 14 50.7 | 14 7.8 | 13 1.3 | 73 7.2 | 133 13.2 | |
| 14 | 14 48.5 | 14 51.0 | 14 8.0 | 14 1.4 | 74 7.3 | 134 13.3 | |
| 15 | 14 48.8 | 14 51.2 | 14 8.3 | 15 1.5 | 75 7.4 | 135 13.4 | |
| 16 | 14 49.0 | 14 51.5 | 14 8.5 | 16 1.6 | 76 7.5 | 136 13.5 | |
| 17 | 14 49.3 | 14 51.7 | 14 8.7 | 17 1.7 | 77 7.6 | 137 13.6 | |
| 18 | 14 49.5 | 14 52.0 | 14 9.0 | 18 1.8 | 78 7.7 | 138 13.7 | |
| 19 | 14 49.8 | 14 52.2 | 14 9.2 | 19 1.9 | 79 7.8 | 139 13.8 | |
| 20 | 14 50.0 | 14 52.5 | 14 9.5 | 20 2.0 | 80 7.9 | 140 13.9 | |
| 21 | 14 50.3 | 14 52.7 | 14 9.7 | 21 2.1 | 81 8.0 | 141 14.0 | |
| 22 | 14 50.5 | 14 53.0 | 14 9.9 | 22 2.2 | 82 8.1 | 142 14.1 | |
| 23 | 14 50.8 | 14 53.2 | 14 10.2 | 23 2.3 | 83 8.2 | 143 14.2 | |
| 24 | 14 51.0 | 14 53.5 | 14 10.4 | 24 2.4 | 84 8.3 | 144 14.3 | |
| 25 | 14 51.3 | 14 53.7 | 14 10.6 | 25 2.5 | 85 8.4 | 145 14.4 | |
| 26 | 14 51.5 | 14 54.0 | 14 10.9 | 26 2.6 | 86 8.5 | 146 14.5 | |
| 27 | 14 51.8 | 14 54.2 | 14 11.1 | 27 2.7 | 87 8.6 | 147 14.6 | |
| 28 | 14 52.0 | 14 54.5 | 14 11.4 | 28 2.8 | 88 8.7 | 148 14.7 | |
| 29 | 14 52.3 | 14 54.7 | 14 11.6 | 29 2.9 | 89 8.8 | 149 14.8 | |
| 30 | 14 52.5 | 14 55.0 | 14 11.8 | 30 3.0 | 90 8.9 | 150 14.9 | |
| 31 | 14 52.8 | 14 55.2 | 14 12.1 | 31 3.1 | 91 9.0 | 151 15.0 | |
| 32 | 14 53.0 | 14 55.5 | 14 12.3 | 32 3.2 | 92 9.1 | 152 15.1 | |
| 33 | 14 53.3 | 14 55.7 | 14 12.6 | 33 3.3 | 93 9.2 | 153 15.2 | |
| 34 | 14 53.5 | 14 56.0 | 14 12.8 | 34 3.4 | 94 9.3 | 154 15.3 | |
| 35 | 14 53.8 | 14 56.2 | 14 13.0 | 35 3.5 | 95 9.4 | 155 15.4 | |
| 36 | 14 54.0 | 14 56.5 | 14 13.3 | 36 3.6 | 96 9.5 | 156 15.5 | |
| 37 | 14 54.3 | 14 56.7 | 14 13.5 | 37 3.7 | 97 9.6 | 157 15.6 | |
| 38 | 14 54.5 | 14 57.0 | 14 13.8 | 38 3.8 | 98 9.7 | 158 15.7 | |
| 39 | 14 54.8 | 14 57.2 | 14 14.0 | 39 3.9 | 99 9.8 | 159 15.8 | |
| 40 | 14 55.0 | 14 57.5 | 14 14.2 | 40 4.0 | 100 9.9 | 160 15.9 | |
| 41 | 14 55.3 | 14 57.7 | 14 14.5 | 41 4.1 | 101 10.0 | 161 16.0 | |
| 42 | 14 55.5 | 14 58.0 | 14 14.7 | 42 4.2 | 102 10.1 | 162 16.1 | |
| 43 | 14 55.8 | 14 58.2 | 14 14.9 | 43 4.3 | 103 10.2 | 163 16.2 | |
| 44 | 14 56.0 | 14 58.5 | 14 15.2 | 44 4.4 | 104 10.3 | 164 16.3 | |
| 45 | 14 56.3 | 14 58.7 | 14 15.4 | 45 4.5 | 105 10.4 | 165 16.4 | |
| 46 | 14 56.5 | 14 59.0 | 14 15.7 | 46 4.6 | 106 10.5 | 166 16.5 | |
| 47 | 14 56.8 | 14 59.2 | 14 15.9 | 47 4.7 | 107 10.6 | 167 16.6 | |
| 48 | 14 57.0 | 14 59.5 | 14 16.1 | 48 4.8 | 108 10.7 | 168 16.7 | |
| 49 | 14 57.3 | 14 59.7 | 14 16.4 | 49 4.9 | 109 10.8 | 169 16.8 | |
| 50 | 14 57.5 | 14 60.0 | 14 16.6 | 50 5.0 | 110 10.9 | 170 16.9 | |
| 51 | 14 57.8 | 14 60.2 | 14 16.9 | 51 5.1 | 111 11.0 | 171 17.0 | |
| 52 | 14 58.0 | 14 60.5 | 14 17.1 | 52 5.2 | 112 11.1 | 172 17.1 | |
| 53 | 14 58.3 | 14 60.7 | 14 17.3 | 53 5.3 | 113 11.2 | 173 17.2 | |
| 54 | 14 58.5 | 14 60.9 | 14 17.6 | 54 5.4 | 114 11.3 | 174 17.3 | |
| 55 | 14 58.8 | 14 61.2 | 14 | | | | |

1 h 0 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 15 .0 | 15 2.5 | 14 19.0 | 0 .0 | 60 6.1 | 120 12.1 | |
| 1 | 15 .3 | 15 2.8 | 14 19.2 | 1 .1 | 61 6.2 | 121 12.2 | |
| 2 | 15 .5 | 15 3.0 | 14 19.5 | 2 .2 | 62 6.3 | 122 12.3 | |
| 3 | 15 .8 | 15 3.3 | 14 19.7 | 3 .3 | 63 6.4 | 123 12.4 | |
| 4 | 15 1.0 | 15 3.5 | 14 20.0 | 4 .4 | 64 6.5 | 124 12.5 | |
| 5 | 15 1.3 | 15 3.8 | 14 20.2 | 5 .5 | 65 6.6 | 125 12.6 | |
| 6 | 15 1.5 | 15 4.0 | 14 20.4 | 6 .6 | 66 6.7 | 126 12.7 | |
| 7 | 15 1.8 | 15 4.3 | 14 20.7 | 7 .7 | 67 6.8 | 127 12.8 | |
| 8 | 15 2.0 | 15 4.5 | 14 20.9 | 8 .8 | 68 6.9 | 128 12.9 | |
| 9 | 15 2.3 | 15 4.8 | 14 21.1 | 9 .9 | 69 7.0 | 129 13.0 | |
| 10 | 15 2.5 | 15 5.0 | 14 21.4 | 10 1.0 | 70 7.1 | 130 13.1 | |
| 11 | 15 2.8 | 15 5.3 | 14 21.6 | 11 1.1 | 71 7.2 | 131 13.2 | |
| 12 | 15 3.0 | 15 5.5 | 14 21.9 | 12 1.2 | 72 7.3 | 132 13.3 | |
| 13 | 15 3.3 | 15 5.8 | 14 22.1 | 13 1.3 | 73 7.4 | 133 13.4 | |
| 14 | 15 3.5 | 15 6.0 | 14 22.3 | 14 1.4 | 74 7.5 | 134 13.5 | |
| 15 | 15 3.8 | 15 6.3 | 14 22.6 | 15 1.5 | 75 7.6 | 135 13.6 | |
| 16 | 15 4.0 | 15 6.5 | 14 22.8 | 16 1.6 | 76 7.7 | 136 13.7 | |
| 17 | 15 4.3 | 15 6.8 | 14 23.1 | 17 1.7 | 77 7.8 | 137 13.8 | |
| 18 | 15 4.5 | 15 7.0 | 14 23.3 | 18 1.8 | 78 7.9 | 138 13.9 | |
| 19 | 15 4.8 | 15 7.3 | 14 23.5 | 19 1.9 | 79 8.0 | 139 14.0 | |
| 20 | 15 5.0 | 15 7.5 | 14 23.8 | 20 2.0 | 80 8.1 | 140 14.1 | |
| 21 | 15 5.3 | 15 7.8 | 14 24.0 | 21 2.1 | 81 8.2 | 141 14.2 | |
| 22 | 15 5.5 | 15 8.0 | 14 24.2 | 22 2.2 | 82 8.3 | 142 14.3 | |
| 23 | 15 5.8 | 15 8.3 | 14 24.5 | 23 2.3 | 83 8.4 | 143 14.4 | |
| 24 | 15 6.0 | 15 8.5 | 14 24.7 | 24 2.4 | 84 8.5 | 144 14.5 | |
| 25 | 15 6.3 | 15 8.8 | 14 25.0 | 25 2.5 | 85 8.6 | 145 14.6 | |
| 26 | 15 6.5 | 15 9.0 | 14 25.2 | 26 2.6 | 86 8.7 | 146 14.7 | |
| 27 | 15 6.8 | 15 9.3 | 14 25.4 | 27 2.7 | 87 8.8 | 147 14.8 | |
| 28 | 15 7.0 | 15 9.5 | 14 25.7 | 28 2.8 | 88 8.9 | 148 14.9 | |
| 29 | 15 7.3 | 15 9.8 | 14 25.9 | 29 2.9 | 89 9.0 | 149 15.0 | |
| 30 | 15 7.5 | 15 10.0 | 14 26.2 | 30 3.0 | 90 9.1 | 150 15.1 | |
| 31 | 15 7.8 | 15 10.3 | 14 26.4 | 31 3.1 | 91 9.2 | 151 15.2 | |
| 32 | 15 8.0 | 15 10.5 | 14 26.6 | 32 3.2 | 92 9.3 | 152 15.3 | |
| 33 | 15 8.3 | 15 10.8 | 14 26.9 | 33 3.3 | 93 9.4 | 153 15.4 | |
| 34 | 15 8.5 | 15 11.0 | 14 27.1 | 34 3.4 | 94 9.5 | 154 15.5 | |
| 35 | 15 8.8 | 15 11.3 | 14 27.4 | 35 3.5 | 95 9.6 | 155 15.6 | |
| 36 | 15 9.0 | 15 11.5 | 14 27.6 | 36 3.6 | 96 9.7 | 156 15.7 | |
| 37 | 15 9.3 | 15 11.8 | 14 27.8 | 37 3.7 | 97 9.8 | 157 15.8 | |
| 38 | 15 9.5 | 15 12.0 | 14 28.1 | 38 3.8 | 98 9.9 | 158 15.9 | |
| 39 | 15 9.8 | 15 12.3 | 14 28.3 | 39 3.9 | 99 10.0 | 159 16.0 | |
| 40 | 15 10.0 | 15 12.5 | 14 28.5 | 40 4.0 | 100 10.1 | 160 16.1 | |
| 41 | 15 10.3 | 15 12.8 | 14 28.8 | 41 4.1 | 101 10.2 | 161 16.2 | |
| 42 | 15 10.5 | 15 13.0 | 14 29.0 | 42 4.2 | 102 10.3 | 162 16.3 | |
| 43 | 15 10.8 | 15 13.3 | 14 29.3 | 43 4.3 | 103 10.4 | 163 16.4 | |
| 44 | 15 11.0 | 15 13.5 | 14 29.5 | 44 4.4 | 104 10.5 | 164 16.5 | |
| 45 | 15 11.3 | 15 13.8 | 14 29.7 | 45 4.5 | 105 10.6 | 165 16.6 | |
| 46 | 15 11.5 | 15 14.0 | 14 30.0 | 46 4.6 | 106 10.7 | 166 16.7 | |
| 47 | 15 11.8 | 15 14.3 | 14 30.2 | 47 4.7 | 107 10.8 | 167 16.8 | |
| 48 | 15 12.0 | 15 14.5 | 14 30.5 | 48 4.8 | 108 10.9 | 168 16.9 | |
| 49 | 15 12.3 | 15 14.8 | 14 30.7 | 49 4.9 | 109 11.0 | 169 17.0 | |
| 50 | 15 12.5 | 15 15.0 | 14 30.9 | 50 5.0 | 110 11.1 | 170 17.1 | |
| 51 | 15 12.8 | 15 15.3 | 14 31.2 | 51 5.1 | 111 11.2 | 171 17.2 | |
| 52 | 15 13.0 | 15 15.5 | 14 31.4 | 52 5.2 | 112 11.3 | 172 17.3 | |
| 53 | 15 13.3 | 15 15.8 | 14 31.6 | 53 5.3 | 113 11.4 | 173 17.4 | |
| 54 | 15 13.5 | 15 16.0 | 14 31.9 | 54 5.4 | 114 11.5 | 174 17.5 | |
| 55 | 15 13.8 | 15 16.3 | 14 32.1 | 55 5.5 | 115 11.6 | 175 17.6 | |
| 56 | 15 14.0 | 15 16.5 | 14 32.4 | 56 5.6 | 116 11.7 | 176 17.7 | |
| 57 | 15 14.3 | 15 16.8 | 14 32.6 | 57 5.7 | 117 11.8 | 177 17.8 | |
| 58 | 15 14.5 | 15 17.0 | 14 32.8 | 58 5.8 | 118 11.9 | 178 17.9 | |
| 59 | 15 14.8 | 15 17.3 | 14 33.1 | 59 5.9 | 119 12.0 | 179 18.0 | |
| 60 | 15 15.0 | 15 17.5 | 14 33.3 | 60 6.1 | 120 12.1 | 180 18.2 | |

1 h 1 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 15 15.0 | 15 17.5 | 14 33.3 | 0 .0 | 60 6.2 | 120 12.3 | |
| 1 | 15 15.3 | 15 17.8 | 14 33.6 | 1 .1 | 61 6.3 | 121 12.4 | |
| 2 | 15 15.5 | 15 18.0 | 14 33.8 | 2 .2 | 62 6.4 | 122 12.5 | |
| 3 | 15 15.8 | 15 18.3 | 14 34.0 | 3 .3 | 63 6.5 | 123 12.6 | |
| 4 | 15 16.0 | 15 18.5 | 14 34.3 | 4 .4 | 64 6.6 | 124 12.7 | |
| 5 | 15 16.3 | 15 18.8 | 14 34.5 | 5 .5 | 65 6.7 | 125 12.8 | |
| 6 | 15 16.5 | 15 19.0 | 14 34.7 | 6 .6 | 66 6.8 | 126 12.9 | |
| 7 | 15 16.8 | 15 19.3 | 14 35.0 | 7 .7 | 67 6.9 | 127 13.0 | |
| 8 | 15 17.0 | 15 19.5 | 14 35.2 | 8 .8 | 68 7.0 | 128 13.1 | |
| 9 | 15 17.3 | 15 19.8 | 14 35.5 | 9 .9 | 69 7.1 | 129 13.2 | |
| 10 | 15 17.5 | 15 20.0 | 14 35.7 | 10 1.0 | 70 7.2 | 130 13.3 | |
| 11 | 15 17.8 | 15 20.3 | 14 35.9 | 11 1.1 | 71 7.3 | 131 13.4 | |
| 12 | 15 18.0 | 15 20.6 | 14 36.2 | 12 1.2 | 72 7.4 | 132 13.5 | |
| 13 | 15 18.3 | 15 20.8 | 14 36.4 | 13 1.3 | 73 7.5 | 133 13.6 | |
| 14 | 15 18.5 | 15 21.1 | 14 36.7 | 14 1.4 | 74 7.6 | 134 13.7 | |
| 15 | 15 18.8 | 15 21.3 | 14 36.9 | 15 1.5 | 75 7.7 | 135 13.8 | |
| 16 | 15 19.0 | 15 21.6 | 14 37.1 | 16 1.6 | 76 7.8 | 136 13.9 | |
| 17 | 15 19.3 | 15 21.8 | 14 37.4 | 17 1.7 | 77 7.9 | 137 14.0 | |
| 18 | 15 19.5 | 15 22.1 | 14 37.6 | 18 1.8 | 78 8.0 | 138 14.1 | |
| 19 | 15 19.8 | 15 22.3 | 14 37.9 | 19 1.9 | 79 8.1 | 139 14.2 | |
| 20 | 15 20.0 | 15 22.6 | 14 38.1 | 20 2.1 | 80 8.2 | 140 14.4 | |
| 21 | 15 20.3 | 15 22.8 | 14 38.3 | 21 2.2 | 81 8.3 | 141 14.5 | |
| 22 | 15 20.5 | 15 23.1 | 14 38.6 | 22 2.3 | 82 8.4 | 142 14.6 | |
| 23 | 15 20.8 | 15 23.3 | 14 38.8 | 23 2.4 | 83 8.5 | 143 14.7 | |
| 24 | 15 21.0 | 15 23.6 | 14 39.0 | 24 2.5 | 84 8.6 | 144 14.8 | |
| 25 | 15 21.3 | 15 23.8 | 14 39.3 | 25 2.6 | 85 8.7 | 145 14.9 | |
| 26 | 15 21.5 | 15 24.1 | 14 39.5 | 26 2.7 | 86 8.8 | 146 15.0 | |
| 27 | 15 21.8 | 15 24.3 | 14 39.8 | 27 2.8 | 87 8.9 | 147 15.1 | |
| 28 | 15 22.0 | 15 24.6 | 14 40.0 | 28 2.9 | 88 9.0 | 148 15.2 | |
| 29 | 15 22.3 | 15 24.8 | 14 40.2 | 29 3.0 | 89 9.1 | 149 15.3 | |
| 30 | 15 22.5 | 15 25.1 | 14 40.5 | 30 3.1 | 90 9.2 | 150 15.4 | |
| 31 | 15 22.8 | 15 25.3 | 14 40.7 | 31 3.2 | 91 9.3 | 151 15.5 | |
| 32 | 15 23.0 | 15 25.6 | 14 41.0 | 32 3.3 | 92 9.4 | 152 15.6 | |
| 33 | 15 23.3 | 15 25.8 | 14 41.2 | 33 3.4 | 93 9.5 | 153 15.7 | |
| 34 | 15 23.5 | 15 26.1 | 14 41.4 | 34 3.5 | 94 9.6 | 154 15.8 | |
| 35 | 15 23.8 | 15 26.3 | 14 41.7 | 35 3.6 | 95 9.7 | 155 15.9 | |
| 36 | 15 24.0 | 15 26.6 | 14 41.9 | 36 3.7 | 96 9.8 | 156 16.0 | |
| 37 | 15 24.3 | 15 26.8 | 14 42.1 | 37 3.8 | 97 9.9 | 157 16.1 | |
| 38 | 15 24.5 | 15 27.1 | 14 42.4 | 38 3.9 | 98 10.0 | 158 16.2 | |
| 39 | 15 24.8 | 15 27.3 | 14 42.6 | 39 4.0 | 99 10.1 | 159 16.3 | |
| 40 | 15 25.0 | 15 27.6 | 14 42.9 | 40 4.1 | 100 10.3 | 160 16.4 | |
| 41 | 15 25.3 | 15 27.8 | 14 43.1 | 41 4.2 | 101 10.4 | 161 16.5 | |
| 42 | 15 25.5 | 15 28.1 | 14 43.3 | 42 4.3 | 102 10.5 | 162 16.6 | |
| 43 | 15 25.8 | 15 28.3 | 14 43.6 | 43 4.4 | 103 10.6 | 163 16.7 | |
| 44 | 15 26.0 | 15 28.6 | 14 43.8 | 44 4.5 | 104 10.7 | 164 16.8 | |
| 45 | 15 26.3 | 15 28.8 | 14 44.1 | 45 4.6 | 105 10.8 | 165 16.9 | |
| 46 | 15 26.5 | 15 29.1 | 14 44.3 | 46 4.7 | 106 10.9 | 166 17.0 | |
| 47 | 15 26.8 | 15 29.3 | 14 44.5 | 47 4.8 | 107 11.0 | 167 17.1 | |
| 48 | 15 27.0 | 15 29.6 | 14 44.8 | 48 4.9 | 108 11.1 | 168 17.2 | |
| 49 | 15 27.3 | 15 29.8 | 14 45.0 | 49 5.0 | 109 11.2 | 169 17.3 | |
| 50 | 15 27.5 | 15 30.1 | 14 45.2 | 50 5.1 | 110 11.3 | 170 17.4 | |
| 51 | 15 27.8 | 15 30.3 | 14 45.5 | 51 5.2 | 111 11.4 | 171 17.5 | |
| 52 | 15 28.0 | 15 30.6 | 14 45.7 | 52 5.3 | 112 11.5 | 172 17.6 | |
| 53 | 15 28.3 | 15 30.8 | 14 46.0 | 53 5.4 | 113 11.6 | 173 17.7 | |
| 54 | 15 28.5 | 15 31.1 | 14 46.2 | 54 5.5 | 114 11.7 | 174 17.8 | |
| 55 | 15 28.8 | 15 31.3 | 14 46.4 | 55 5.6 | | | |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ° | t ' | o ° | t ' | o ° |
| 0 | 15 30.0 | 15 32.6 | 14 47.6 | 0 .0 | 60 6.3 |
| 1 | 15 30.3 | 15 32.8 | 14 47.9 | 1 .1 | 61 6.4 |
| 2 | 15 30.5 | 15 33.1 | 14 48.1 | 2 .2 | 62 6.5 |
| 3 | 15 30.8 | 15 33.3 | 14 48.3 | 3 .3 | 63 6.6 |
| 4 | 15 31.0 | 15 33.6 | 14 48.6 | 4 .4 | 64 6.7 |
| 5 | 15 31.3 | 15 33.8 | 14 48.8 | 5 .5 | 65 6.8 |
| 6 | 15 31.5 | 15 34.1 | 14 49.1 | 6 .6 | 66 6.9 |
| 7 | 15 31.8 | 15 34.3 | 14 49.3 | 7 .7 | 67 7.0 |
| 8 | 15 32.0 | 15 34.6 | 14 49.5 | 8 .8 | 68 7.1 |
| 9 | 15 32.3 | 15 34.8 | 14 49.8 | 9 .9 | 69 7.2 |
| 10 | 15 32.5 | 15 35.1 | 14 50.0 | 10 1.0 | 70 7.3 |
| 11 | 15 32.8 | 15 35.3 | 14 50.3 | 11 1.1 | 71 7.4 |
| 12 | 15 33.0 | 15 35.6 | 14 50.5 | 12 1.3 | 72 7.5 |
| 13 | 15 33.3 | 15 35.8 | 14 50.7 | 13 1.4 | 73 7.6 |
| 14 | 15 33.5 | 15 36.1 | 14 51.0 | 14 1.5 | 74 7.7 |
| 15 | 15 33.8 | 15 36.3 | 14 51.2 | 15 1.6 | 75 7.8 |
| 16 | 15 34.0 | 15 36.6 | 14 51.5 | 16 1.7 | 76 7.9 |
| 17 | 15 34.3 | 15 36.8 | 14 51.7 | 17 1.8 | 77 8.0 |
| 18 | 15 34.5 | 15 37.1 | 14 51.9 | 18 1.9 | 78 8.1 |
| 19 | 15 34.8 | 15 37.3 | 14 52.2 | 19 2.0 | 79 8.2 |
| 20 | 15 35.0 | 15 37.6 | 14 52.4 | 20 2.1 | 80 8.3 |
| 21 | 15 35.3 | 15 37.8 | 14 52.6 | 21 2.2 | 81 8.4 |
| 22 | 15 35.5 | 15 38.1 | 14 52.9 | 22 2.3 | 82 8.5 |
| 23 | 15 35.8 | 15 38.3 | 14 53.1 | 23 2.4 | 83 8.6 |
| 24 | 15 36.0 | 15 38.6 | 14 53.4 | 24 2.5 | 84 8.8 |
| 25 | 15 36.3 | 15 38.9 | 14 53.6 | 25 2.6 | 85 8.9 |
| 26 | 15 36.5 | 15 39.1 | 14 53.8 | 26 2.7 | 86 9.0 |
| 27 | 15 36.8 | 15 39.4 | 14 54.1 | 27 2.8 | 87 9.1 |
| 28 | 15 37.0 | 15 39.6 | 14 54.3 | 28 2.9 | 88 9.2 |
| 29 | 15 37.3 | 15 39.9 | 14 54.6 | 29 3.0 | 89 9.3 |
| 30 | 15 37.5 | 15 40.1 | 14 54.8 | 30 3.1 | 90 9.4 |
| 31 | 15 37.8 | 15 40.4 | 14 55.0 | 31 3.2 | 91 9.5 |
| 32 | 15 38.0 | 15 40.6 | 14 55.3 | 32 3.3 | 92 9.6 |
| 33 | 15 38.3 | 15 40.9 | 14 55.5 | 33 3.4 | 93 9.7 |
| 34 | 15 38.5 | 15 41.1 | 14 55.7 | 34 3.5 | 94 9.8 |
| 35 | 15 38.8 | 15 41.4 | 14 56.0 | 35 3.6 | 95 9.9 |
| 36 | 15 39.0 | 15 41.6 | 14 56.2 | 36 3.8 | 96 10.0 |
| 37 | 15 39.3 | 15 41.9 | 14 56.5 | 37 3.9 | 97 10.1 |
| 38 | 15 39.5 | 15 42.1 | 14 56.7 | 38 4.0 | 98 10.2 |
| 39 | 15 39.8 | 15 42.4 | 14 56.9 | 39 4.1 | 99 10.3 |
| 40 | 15 40.0 | 15 42.6 | 14 57.2 | 40 4.2 | 100 10.4 |
| 41 | 15 40.3 | 15 42.9 | 14 57.4 | 41 4.3 | 101 10.5 |
| 42 | 15 40.5 | 15 43.1 | 14 57.7 | 42 4.4 | 102 10.6 |
| 43 | 15 40.8 | 15 43.4 | 14 57.9 | 43 4.5 | 103 10.7 |
| 44 | 15 41.0 | 15 43.6 | 14 58.1 | 44 4.6 | 104 10.8 |
| 45 | 15 41.3 | 15 43.9 | 14 58.4 | 45 4.7 | 105 10.9 |
| 46 | 15 41.5 | 15 44.1 | 14 58.6 | 46 4.8 | 106 11.0 |
| 47 | 15 41.8 | 15 44.4 | 14 58.8 | 47 4.9 | 107 11.1 |
| 48 | 15 42.0 | 15 44.6 | 14 59.1 | 48 5.0 | 108 11.3 |
| 49 | 15 42.3 | 15 44.9 | 14 59.3 | 49 5.1 | 109 11.4 |
| 50 | 15 42.5 | 15 45.1 | 14 59.6 | 50 5.2 | 110 11.5 |
| 51 | 15 42.8 | 15 45.4 | 14 59.8 | 51 5.3 | 111 11.6 |
| 52 | 15 43.0 | 15 45.6 | 15 0 | 52 5.4 | 112 11.7 |
| 53 | 15 43.3 | 15 45.9 | 15 3 | 53 5.5 | 113 11.8 |
| 54 | 15 43.5 | 15 46.1 | 15 5 | 54 5.6 | 114 11.9 |
| 55 | 15 43.8 | 15 46.4 | 15 8 | 55 5.7 | 115 12.0 |
| 56 | 15 44.0 | 15 46.6 | 15 1.0 | 56 5.8 | 116 12.1 |
| 57 | 15 44.3 | 15 46.9 | 15 1.2 | 57 5.9 | 117 12.2 |
| 58 | 15 44.5 | 15 47.1 | 15 1.5 | 58 6.0 | 118 12.3 |
| 59 | 15 44.8 | 15 47.4 | 15 1.7 | 59 6.1 | 119 12.4 |
| 60 | 15 45.0 | 15 47.6 | 15 2.0 | 60 6.3 | 120 12.5 |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ° | t ' | o ° | t ' | o ° |
| 0 | 15 45.0 | 15 47.6 | 15 2.0 | 0 .0 | 60 6.4 |
| 1 | 15 45.3 | 15 47.9 | 15 2.2 | 1 .1 | 61 6.5 |
| 2 | 15 45.5 | 15 48.1 | 15 2.4 | 2 .2 | 62 6.6 |
| 3 | 15 45.8 | 15 48.4 | 15 2.7 | 3 .3 | 63 6.7 |
| 4 | 15 46.0 | 15 48.6 | 15 2.9 | 4 .4 | 64 6.8 |
| 5 | 15 46.3 | 15 48.9 | 15 3.1 | 5 .5 | 65 6.9 |
| 6 | 15 46.5 | 15 49.1 | 15 3.4 | 6 .6 | 66 7.0 |
| 7 | 15 46.8 | 15 49.4 | 15 3.6 | 7 .7 | 67 7.1 |
| 8 | 15 47.0 | 15 49.6 | 15 3.9 | 8 .8 | 68 7.2 |
| 9 | 15 47.3 | 15 49.9 | 15 4.1 | 9 1.0 | 69 7.3 |
| 10 | 15 47.5 | 15 50.1 | 15 4.3 | 10 1.1 | 70 7.4 |
| 11 | 15 47.8 | 15 50.4 | 15 4.6 | 11 1.2 | 71 7.5 |
| 12 | 15 48.0 | 15 50.6 | 15 4.8 | 12 1.3 | 72 7.6 |
| 13 | 15 48.3 | 15 50.9 | 15 5.1 | 13 1.4 | 73 7.7 |
| 14 | 15 48.5 | 15 51.1 | 15 5.3 | 14 1.5 | 74 7.8 |
| 15 | 15 48.8 | 15 51.4 | 15 5.5 | 15 1.6 | 75 7.9 |
| 16 | 15 49.0 | 15 51.6 | 15 5.8 | 16 1.7 | 76 8.0 |
| 17 | 15 49.3 | 15 51.9 | 15 6.0 | 17 1.8 | 77 8.1 |
| 18 | 15 49.5 | 15 52.1 | 15 6.2 | 18 1.9 | 78 8.3 |
| 19 | 15 49.8 | 15 52.4 | 15 6.5 | 19 2.0 | 79 8.4 |
| 20 | 15 50.0 | 15 52.6 | 15 6.7 | 20 2.1 | 80 8.5 |
| 21 | 15 50.3 | 15 52.9 | 15 7.0 | 21 2.2 | 81 8.6 |
| 22 | 15 50.5 | 15 53.1 | 15 7.2 | 22 2.3 | 82 8.7 |
| 23 | 15 50.8 | 15 53.4 | 15 7.4 | 23 2.4 | 83 8.8 |
| 24 | 15 51.0 | 15 53.6 | 15 7.7 | 24 2.5 | 84 8.9 |
| 25 | 15 51.3 | 15 53.9 | 15 7.9 | 25 2.6 | 85 9.0 |
| 26 | 15 51.5 | 15 54.1 | 15 8.2 | 26 2.8 | 86 9.1 |
| 27 | 15 51.8 | 15 54.4 | 15 8.4 | 27 2.9 | 87 9.2 |
| 28 | 15 52.0 | 15 54.6 | 15 8.6 | 28 3.0 | 88 9.3 |
| 29 | 15 52.3 | 15 54.9 | 15 8.9 | 29 3.1 | 89 9.4 |
| 30 | 15 52.5 | 15 55.1 | 15 9.1 | 30 3.2 | 90 9.5 |
| 31 | 15 52.8 | 15 55.4 | 15 9.3 | 31 3.3 | 91 9.6 |
| 32 | 15 53.0 | 15 55.6 | 15 9.6 | 32 3.4 | 92 9.7 |
| 33 | 15 53.3 | 15 55.9 | 15 9.8 | 33 3.5 | 93 9.8 |
| 34 | 15 53.5 | 15 56.1 | 15 10.1 | 34 3.6 | 94 9.9 |
| 35 | 15 53.8 | 15 56.4 | 15 10.3 | 35 3.7 | 95 10.1 |
| 36 | 15 54.0 | 15 56.7 | 15 10.5 | 36 3.8 | 96 10.2 |
| 37 | 15 54.3 | 15 56.9 | 15 10.8 | 37 3.9 | 97 10.3 |
| 38 | 15 54.5 | 15 57.2 | 15 11.0 | 38 4.0 | 98 10.4 |
| 39 | 15 54.8 | 15 57.4 | 15 11.3 | 39 4.1 | 99 10.5 |
| 40 | 15 55.0 | 15 57.7 | 15 11.5 | 40 4.2 | 100 10.6 |
| 41 | 15 55.3 | 15 57.9 | 15 11.7 | 41 4.3 | 101 10.7 |
| 42 | 15 55.5 | 15 58.2 | 15 12.0 | 42 4.4 | 102 10.8 |
| 43 | 15 55.8 | 15 58.4 | 15 12.2 | 43 4.6 | 103 10.9 |
| 44 | 15 56.0 | 15 58.7 | 15 12.4 | 44 4.7 | 104 11.0 |
| 45 | 15 56.3 | 15 58.9 | 15 12.7 | 45 4.8 | 105 11.1 |
| 46 | 15 56.5 | 15 59.2 | 15 12.9 | 46 4.9 | 106 11.2 |
| 47 | 15 56.8 | 15 59.4 | 15 13.2 | 47 5.0 | 107 11.3 |
| 48 | 15 57.0 | 15 59.7 | 15 13.4 | 48 5.1 | 108 11.4 |
| 49 | 15 57.3 | 15 59.9 | 15 13.6 | 49 5.2 | 109 11.5 |
| 50 | 15 57.5 | 16 .2 | 15 13.9 | 50 5.3 | 110 11.6 |
| 51 | 15 57.8 | 16 .4 | 15 14.1 | 51 5.4 | 111 11.7 |
| 52 | 15 58.0 | 16 .7 | 15 14.4 | 52 5.5 | 112 11.9 |
| 53 | 15 58.3 | 16 .9 | 15 14.6 | 53 5.6 | 113 12.0 |
| 54 | 15 58.5 | 16 1.2 | 15 14.8 | 54 5.7 | 114 12.1 |
| 55 | 15 58.8 | 16 1.4 | 15 15.1 | 55 5.8 | 115 12.2 |
| 56 | 15 59.0 | 16 1.7 | 15 15.3 | 56 5.9 | 116 12.3 |
| 57 | 15 59.3 | 16 1.9 | 15 15.6 | 57 6.0 | 117 12.4 |
| 58 | 15 59.5 | 16 2.2 | 15 15.8 | 58 6.1 | 118 12.5 |
| 59 | 15 59.8 | 16 2.4 | 15 16.0 | 59 6.2 | 119 12.6 |
| 60 | 16 .0 | 16 2.7 | 15 16.3 | 60 6.4 | 120 12.7 |

1 h 4 min

1 h 5 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 16 .0 | 16 2.7 | 15 16.3 | 0 .0 | 60 6.5 | 120 12.9 | |
| 1 | 16 .3 | 16 2.9 | 15 16.5 | 1 .1 | 61 6.6 | 121 13.0 | |
| 2 | 16 .5 | 16 3.2 | 15 16.7 | 2 .2 | 62 6.7 | 122 13.1 | |
| 3 | 16 .8 | 16 3.4 | 15 17.0 | 3 .3 | 63 6.8 | 123 13.2 | |
| 4 | 16 1.0 | 16 3.7 | 15 17.2 | 4 .4 | 64 6.9 | 124 13.3 | |
| 5 | 16 1.3 | 16 3.9 | 15 17.5 | 5 .5 | 65 7.0 | 125 13.4 | |
| 6 | 16 1.5 | 16 4.2 | 15 17.7 | 6 .6 | 66 7.1 | 126 13.5 | |
| 7 | 16 1.8 | 16 4.4 | 15 17.9 | 7 .8 | 67 7.2 | 127 13.7 | |
| 8 | 16 2.0 | 16 4.7 | 15 18.2 | 8 .9 | 68 7.3 | 128 13.8 | |
| 9 | 16 2.3 | 16 4.9 | 15 18.4 | 9 1.0 | 69 7.4 | 129 13.9 | |
| 10 | 16 2.5 | 16 5.2 | 15 18.7 | 10 1.1 | 70 7.5 | 130 14.0 | |
| 11 | 16 2.8 | 16 5.4 | 15 18.9 | 11 1.2 | 71 7.6 | 131 14.1 | |
| 12 | 16 3.0 | 16 5.7 | 15 19.1 | 12 1.3 | 72 7.7 | 132 14.2 | |
| 13 | 16 3.3 | 16 5.9 | 15 19.4 | 13 1.4 | 73 7.8 | 133 14.3 | |
| 14 | 16 3.5 | 16 6.2 | 15 19.6 | 14 1.5 | 74 8.0 | 134 14.4 | |
| 15 | 16 3.8 | 16 6.4 | 15 19.8 | 15 1.6 | 75 8.1 | 135 14.5 | |
| 16 | 16 4.0 | 16 6.7 | 15 20.1 | 16 1.7 | 76 8.2 | 136 14.6 | |
| 17 | 16 4.3 | 16 6.9 | 15 20.3 | 17 1.8 | 77 8.3 | 137 14.7 | |
| 18 | 16 4.5 | 16 7.2 | 15 20.6 | 18 1.9 | 78 8.4 | 138 14.8 | |
| 19 | 16 4.8 | 16 7.4 | 15 20.8 | 19 2.0 | 79 8.5 | 139 14.9 | |
| 20 | 16 5.0 | 16 7.7 | 15 21.0 | 20 2.2 | 80 8.6 | 140 15.1 | |
| 21 | 16 5.3 | 16 7.9 | 15 21.3 | 21 2.3 | 81 8.7 | 141 15.2 | |
| 22 | 16 5.5 | 16 8.2 | 15 21.5 | 22 2.4 | 82 8.8 | 142 15.3 | |
| 23 | 16 5.8 | 16 8.4 | 15 21.8 | 23 2.5 | 83 8.9 | 143 15.4 | |
| 24 | 16 6.0 | 16 8.7 | 15 22.0 | 24 2.6 | 84 9.0 | 144 15.5 | |
| 25 | 16 6.3 | 16 8.9 | 15 22.2 | 25 2.7 | 85 9.1 | 145 15.6 | |
| 26 | 16 6.5 | 16 9.2 | 15 22.5 | 26 2.8 | 86 9.2 | 146 15.7 | |
| 27 | 16 6.8 | 16 9.4 | 15 22.7 | 27 2.9 | 87 9.4 | 147 15.8 | |
| 28 | 16 7.0 | 16 9.7 | 15 22.9 | 28 3.0 | 88 9.5 | 148 15.9 | |
| 29 | 16 7.3 | 16 9.9 | 15 23.2 | 29 3.1 | 89 9.6 | 149 16.0 | |
| 30 | 16 7.5 | 16 10.2 | 15 23.4 | 30 3.2 | 90 9.7 | 150 16.1 | |
| 31 | 16 7.8 | 16 10.4 | 15 23.7 | 31 3.3 | 91 9.8 | 151 16.2 | |
| 32 | 16 8.0 | 16 10.7 | 15 23.9 | 32 3.4 | 92 9.9 | 152 16.3 | |
| 33 | 16 8.3 | 16 10.9 | 15 24.1 | 33 3.5 | 93 10.0 | 153 16.4 | |
| 34 | 16 8.5 | 16 11.2 | 15 24.4 | 34 3.7 | 94 10.1 | 154 16.6 | |
| 35 | 16 8.8 | 16 11.4 | 15 24.6 | 35 3.8 | 95 10.2 | 155 16.7 | |
| 36 | 16 9.0 | 16 11.7 | 15 24.9 | 36 3.9 | 96 10.3 | 156 16.8 | |
| 37 | 16 9.3 | 16 11.9 | 15 25.1 | 37 4.0 | 97 10.4 | 157 16.9 | |
| 38 | 16 9.5 | 16 12.2 | 15 25.3 | 38 4.1 | 98 10.5 | 158 17.0 | |
| 39 | 16 9.8 | 16 12.4 | 15 25.6 | 39 4.2 | 99 10.6 | 159 17.1 | |
| 40 | 16 10.0 | 16 12.7 | 15 25.8 | 40 4.3 | 100 10.8 | 160 17.2 | |
| 41 | 16 10.3 | 16 12.9 | 15 26.0 | 41 4.4 | 101 10.9 | 161 17.3 | |
| 42 | 16 10.5 | 16 13.2 | 15 26.3 | 42 4.5 | 102 11.0 | 162 17.4 | |
| 43 | 16 10.8 | 16 13.4 | 15 26.5 | 43 4.6 | 103 11.1 | 163 17.5 | |
| 44 | 16 11.0 | 16 13.7 | 15 26.8 | 44 4.7 | 104 11.2 | 164 17.6 | |
| 45 | 16 11.3 | 16 13.9 | 15 27.0 | 45 4.8 | 105 11.3 | 165 17.7 | |
| 46 | 16 11.5 | 16 14.2 | 15 27.2 | 46 4.9 | 106 11.4 | 166 17.8 | |
| 47 | 16 11.8 | 16 14.4 | 15 27.5 | 47 5.1 | 107 11.5 | 167 18.0 | |
| 48 | 16 12.0 | 16 14.7 | 15 27.7 | 48 5.2 | 108 11.6 | 168 18.1 | |
| 49 | 16 12.3 | 16 15.0 | 15 28.0 | 49 5.3 | 109 11.7 | 169 18.2 | |
| 50 | 16 12.5 | 16 15.2 | 15 28.2 | 50 5.4 | 110 11.8 | 170 18.3 | |
| 51 | 16 12.8 | 16 15.5 | 15 28.4 | 51 5.5 | 111 11.9 | 171 18.4 | |
| 52 | 16 13.0 | 16 15.7 | 15 28.7 | 52 5.6 | 112 12.0 | 172 18.5 | |
| 53 | 16 13.3 | 16 16.0 | 15 28.9 | 53 5.7 | 113 12.1 | 173 18.6 | |
| 54 | 16 13.5 | 16 16.2 | 15 29.2 | 54 5.8 | 114 12.3 | 174 18.7 | |
| 55 | 16 13.8 | 16 16.5 | 15 29.4 | 55 5.9 | 115 12.4 | 175 18.8 | |
| 56 | 16 14.0 | 16 16.7 | 15 29.6 | 56 6.0 | 116 12.5 | 176 18.9 | |
| 57 | 16 14.3 | 16 17.0 | 15 29.9 | 57 6.1 | 117 12.6 | 177 19.0 | |
| 58 | 16 14.5 | 16 17.2 | 15 30.1 | 58 6.2 | 118 12.7 | 178 19.1 | |
| 59 | 16 14.8 | 16 17.5 | 15 30.3 | 59 6.3 | 119 12.8 | 179 19.2 | |
| 60 | 16 15.0 | 16 17.7 | 15 30.6 | 60 6.5 | 120 12.9 | 180 19.4 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 16 15.0 | 16 17.7 | 15 30.6 | 0 .0 | 60 6.6 | 120 13.1 | |
| 1 | 16 15.3 | 16 18.0 | 15 30.8 | 1 .1 | 61 6.7 | 121 13.2 | |
| 2 | 16 15.5 | 16 18.2 | 15 31.1 | 2 .2 | 62 6.8 | 122 13.3 | |
| 3 | 16 15.8 | 16 18.5 | 15 31.3 | 3 .3 | 63 6.9 | 123 13.4 | |
| 4 | 16 16.0 | 16 18.7 | 15 31.5 | 4 .4 | 64 7.0 | 124 13.5 | |
| 5 | 16 16.3 | 16 19.0 | 15 31.8 | 5 .5 | 65 7.1 | 125 13.6 | |
| 6 | 16 16.5 | 16 19.2 | 15 32.0 | 6 .6 | 66 7.2 | 126 13.8 | |
| 7 | 16 16.8 | 16 19.5 | 15 32.3 | 7 .7 | 67 7.3 | 127 13.9 | |
| 8 | 16 17.0 | 16 19.7 | 15 32.5 | 8 .8 | 68 7.4 | 128 14.0 | |
| 9 | 16 17.3 | 16 20.0 | 15 32.7 | 9 1.0 | 69 7.5 | 129 14.1 | |
| 10 | 16 17.5 | 16 20.2 | 15 33.0 | 10 1.1 | 70 7.6 | 130 14.2 | |
| 11 | 16 17.8 | 16 20.5 | 15 33.2 | 11 1.2 | 71 7.8 | 131 14.3 | |
| 12 | 16 18.0 | 16 20.7 | 15 33.4 | 12 1.3 | 72 7.9 | 132 14.4 | |
| 13 | 16 18.3 | 16 21.0 | 15 33.7 | 13 1.4 | 73 8.0 | 133 14.5 | |
| 14 | 16 18.5 | 16 21.2 | 15 33.9 | 14 1.5 | 74 8.1 | 134 14.6 | |
| 15 | 16 18.8 | 16 21.5 | 15 34.2 | 15 1.6 | 75 8.2 | 135 14.7 | |
| 16 | 16 19.0 | 16 21.7 | 15 34.4 | 16 1.7 | 76 8.3 | 136 14.8 | |
| 17 | 16 19.3 | 16 22.0 | 15 34.6 | 17 1.9 | 77 8.4 | 137 15.0 | |
| 18 | 16 19.5 | 16 22.2 | 15 34.9 | 18 2.0 | 78 8.5 | 138 15.1 | |
| 19 | 16 19.8 | 16 22.5 | 15 35.1 | 19 2.1 | 79 8.6 | 139 15.2 | |
| 20 | 16 20.0 | 16 22.7 | 15 35.4 | 20 2.2 | 80 8.7 | 140 15.3 | |
| 21 | 16 20.3 | 16 23.0 | 15 35.6 | 21 2.3 | 81 8.8 | 141 15.4 | |
| 22 | 16 20.5 | 16 23.2 | 15 35.8 | 22 2.4 | 82 8.9 | 142 15.5 | |
| 23 | 16 20.8 | 16 23.5 | 15 36.1 | 23 2.5 | 83 9.1 | 143 15.6 | |
| 24 | 16 21.0 | 16 23.7 | 15 36.3 | 24 2.6 | 84 9.2 | 144 15.7 | |
| 25 | 16 21.3 | 16 24.0 | 15 36.5 | 25 2.7 | 85 9.3 | 145 15.8 | |
| 26 | 16 21.5 | 16 24.2 | 15 36.8 | 26 2.8 | 86 9.4 | 146 15.9 | |
| 27 | 16 21.8 | 16 24.5 | 15 37.0 | 27 2.9 | 87 9.5 | 147 16.0 | |
| 28 | 16 22.0 | 16 24.7 | 15 37.3 | 28 3.1 | 88 9.6 | 148 16.2 | |
| 29 | 16 22.3 | 16 25.0 | 15 37.5 | 29 3.2 | 89 9.7 | 149 16.3 | |
| 30 | 16 22.5 | 16 25.2 | 15 37.7 | 30 3.3 | 90 9.8 | 150 16.4 | |
| 31 | 16 22.8 | 16 25.5 | 15 38.0 | 31 3.4 | 91 9.9 | 151 16.5 | |
| 32 | 16 23.0 | 16 25.7 | 15 38.2 | 32 3.5 | 92 10.0 | 152 16.6 | |
| 33 | 16 23.3 | 16 26.0 | 15 38.5 | 33 3.6 | 93 10.2 | 153 16.7 | |
| 34 | 16 23.5 | 16 26.2 | 15 38.7 | 34 3.7 | 94 10.3 | 154 16.8 | |
| 35 | 16 23.8 | 16 26.5 | 15 38.9 | 35 3.8 | 95 10.4 | 155 16.9 | |
| 36 | 16 24.0 | 16 26.7 | 15 39.2 | 36 3.9 | 96 10.5 | 156 17.0 | |
| 37 | 16 24.3 | 16 27.0 | 15 39.4 | 37 4.0 | 97 10.6 | 157 17.1 | |
| 38 | 16 24.5 | 16 27.2 | 15 39.7 | 38 4.1 | 98 10.7 | 158 17.2 | |
| 39 | 16 24.8 | 16 27.5 | 15 39.9 | 39 4.3 | 99 10.8 | 159 17.4 | |
| 40 | 16 25.0 | 16 27.7 | 15 40.1 | 40 4.4 | 100 10.9 | 160 17.5 | |
| 41 | 16 25.3 | 16 28.0 | 15 40.4 | 41 4.5 | 101 11.0 | 161 17.6 | |
| 42 | 16 25.5 | 16 28.2 | 15 40.6 | 42 4.6 | 102 11.1 | 162 17.7 | |
| 43 | 16 25.8 | 16 28.5 | 15 40.8 | 43 4.7 | 103 11.2 | 163 17.8 | |
| 44 | 16 26.0 | 16 28.7 | 15 41.1 | 44 4.8 | 104 11.4 | 164 17.9 | |
| 45 | 16 26.3 | 16 29.0 | 15 41.3 | 45 4.9 | 105 11.5 | 165 18.0 | |
| 46 | 16 26.5 | 16 29.2 | 15 41.6 | 46 5.0 | 106 11.6 | 166 18.1 | |
| 47 | 16 26.8 | 16 29.5 | 15 41.8 | 47 5.1 | 107 11.7 | 167 18.2 | |
| 48 | 16 27.0 | 16 29.7 | 15 42.0 | 48 5.2 | 108 11.8 | 168 18.3 | |
| 49 | 16 27.3 | 16 30.0 | 15 42.3 | 49 5.3 | 109 11.9 | 169 18.4 | |
| 50 | 16 27.5 | 16 30.2 | 15 42.5 | 50 5.5 | 110 12.0 | 170 18.6 | |
| 51 | 16 27.8 | 16 30.5 | 15 42.8 | 51 5.6 | 111 12.1 | 171 18.7 | |
| 52 | 16 28.0 | 16 30.7 | 15 43.0 | 52 5.7 | 112 12.2 | 172 18.8 | |
| 53 | 16 28.3 | 16 31.0 | 15 43.2 | 53 5.8 | 113 12.3 | 173 18.9 | |
| 54 | 16 28.5 | 16 31.2 | 15 43.5 | 54 5.9 | 114 12.4 | 174 19.0 | |
| 55 | 16 28.8 | 16 31.5 | 15 43.7 | 55 6. | | | |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|---------|----------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. |
| | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ |
| 0 | 16 30.0 | 16 32.8 | 15 45.9 | 0 .0 | 60 6.7 |
| 1 | 16 30.3 | 16 33.0 | 15 45.1 | 1 .1 | 61 6.8 |
| 2 | 16 30.5 | 16 33.3 | 15 45.4 | 2 .2 | 62 6.9 |
| 3 | 16 30.8 | 16 33.5 | 15 45.6 | 3 .3 | 63 7.0 |
| 4 | 16 31.0 | 16 33.8 | 15 45.9 | 4 .4 | 64 7.1 |
| 5 | 16 31.3 | 16 34.0 | 15 46.1 | 5 .6 | 65 7.2 |
| 6 | 16 31.5 | 16 34.3 | 15 46.3 | 6 .7 | 66 7.3 |
| 7 | 16 31.8 | 16 34.5 | 15 46.6 | 7 .8 | 67 7.4 |
| 8 | 16 32.0 | 16 34.8 | 15 46.8 | 8 .9 | 68 7.5 |
| 9 | 16 32.3 | 16 35.0 | 15 47.0 | 9 1.0 | 69 7.6 |
| 10 | 16 32.5 | 16 35.3 | 15 47.3 | 10 1.1 | 70 7.8 |
| 11 | 16 32.8 | 16 35.5 | 15 47.5 | 11 1.2 | 71 7.9 |
| 12 | 16 33.0 | 16 35.8 | 15 47.8 | 12 1.3 | 72 8.0 |
| 13 | 16 33.3 | 16 36.0 | 15 48.0 | 13 1.4 | 73 8.1 |
| 14 | 16 33.5 | 16 36.3 | 15 48.2 | 14 1.6 | 74 8.2 |
| 15 | 16 33.8 | 16 36.5 | 15 48.5 | 15 1.7 | 75 8.3 |
| 16 | 16 34.0 | 16 36.8 | 15 48.7 | 16 1.8 | 76 8.4 |
| 17 | 16 34.3 | 16 37.0 | 15 49.0 | 17 1.9 | 77 8.5 |
| 18 | 16 34.5 | 16 37.3 | 15 49.2 | 18 2.0 | 78 8.6 |
| 19 | 16 34.8 | 16 37.5 | 15 49.4 | 19 2.1 | 79 8.8 |
| 20 | 16 35.0 | 16 37.8 | 15 49.7 | 20 2.2 | 80 8.9 |
| 21 | 16 35.3 | 16 38.0 | 15 49.9 | 21 2.3 | 81 9.0 |
| 22 | 16 35.5 | 16 38.3 | 15 50.1 | 22 2.4 | 82 9.1 |
| 23 | 16 35.8 | 16 38.5 | 15 50.4 | 23 2.5 | 83 9.2 |
| 24 | 16 36.0 | 16 38.8 | 15 50.6 | 24 2.7 | 84 9.3 |
| 25 | 16 36.3 | 16 39.0 | 15 50.9 | 25 2.8 | 85 9.4 |
| 26 | 16 36.5 | 16 39.3 | 15 51.1 | 26 2.9 | 86 9.5 |
| 27 | 16 36.8 | 16 39.5 | 15 51.3 | 27 3.0 | 87 9.6 |
| 28 | 16 37.0 | 16 39.8 | 15 51.6 | 28 3.1 | 88 9.8 |
| 29 | 16 37.3 | 16 40.0 | 15 51.8 | 29 3.2 | 89 9.9 |
| 30 | 16 37.5 | 16 40.3 | 15 52.1 | 30 3.3 | 90 10.0 |
| 31 | 16 37.8 | 16 40.5 | 15 52.3 | 31 3.4 | 91 10.1 |
| 32 | 16 38.0 | 16 40.8 | 15 52.5 | 32 3.5 | 92 10.2 |
| 33 | 16 38.3 | 16 41.0 | 15 52.8 | 33 3.7 | 93 10.3 |
| 34 | 16 38.5 | 16 41.3 | 15 53.0 | 34 3.8 | 94 10.4 |
| 35 | 16 38.8 | 16 41.5 | 15 53.3 | 35 3.9 | 95 10.5 |
| 36 | 16 39.0 | 16 41.8 | 15 53.5 | 36 4.0 | 96 10.6 |
| 37 | 16 39.3 | 16 42.0 | 15 53.7 | 37 4.1 | 97 10.8 |
| 38 | 16 39.5 | 16 42.3 | 15 54.0 | 38 4.2 | 98 10.9 |
| 39 | 16 39.8 | 16 42.5 | 15 54.2 | 39 4.3 | 99 11.0 |
| 40 | 16 40.0 | 16 42.8 | 15 54.4 | 40 4.4 | 100 11.1 |
| 41 | 16 40.3 | 16 43.0 | 15 54.7 | 41 4.5 | 101 11.2 |
| 42 | 16 40.5 | 16 43.3 | 15 54.9 | 42 4.7 | 102 11.3 |
| 43 | 16 40.8 | 16 43.5 | 15 55.2 | 43 4.8 | 103 11.4 |
| 44 | 16 41.0 | 16 43.8 | 15 55.4 | 44 4.9 | 104 11.5 |
| 45 | 16 41.3 | 16 44.0 | 15 55.6 | 45 5.0 | 105 11.6 |
| 46 | 16 41.5 | 16 44.3 | 15 55.9 | 46 5.1 | 106 11.7 |
| 47 | 16 41.8 | 16 44.5 | 15 56.1 | 47 5.2 | 107 11.9 |
| 48 | 16 42.0 | 16 44.8 | 15 56.4 | 48 5.3 | 108 12.0 |
| 49 | 16 42.3 | 16 45.0 | 15 56.6 | 49 5.4 | 109 12.1 |
| 50 | 16 42.5 | 16 45.3 | 15 56.8 | 50 5.5 | 110 12.2 |
| 51 | 16 42.8 | 16 45.5 | 15 57.1 | 51 5.7 | 111 12.3 |
| 52 | 16 43.0 | 16 45.8 | 15 57.3 | 52 5.8 | 112 12.4 |
| 53 | 16 43.3 | 16 46.0 | 15 57.5 | 53 5.9 | 113 12.5 |
| 54 | 16 43.5 | 16 46.3 | 15 57.8 | 54 6.0 | 114 12.6 |
| 55 | 16 43.8 | 16 46.5 | 15 58.0 | 55 6.1 | 115 12.7 |
| 56 | 16 44.0 | 16 46.8 | 15 58.3 | 56 6.2 | 116 12.9 |
| 57 | 16 44.3 | 16 47.0 | 15 58.5 | 57 6.3 | 117 13.0 |
| 58 | 16 44.5 | 16 47.3 | 15 58.7 | 58 6.4 | 118 13.1 |
| 59 | 16 44.8 | 16 47.5 | 15 59.0 | 59 6.5 | 119 13.2 |
| 60 | 16 45.0 | 16 47.8 | 15 59.2 | 60 6.7 | 120 13.3 |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|---------|----------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ∅ | Δ popr. | Δ popr. |
| | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ |
| 0 | 16 45.0 | 16 47.8 | 15 59.2 | 0 .0 | 60 6.8 |
| 1 | 16 45.3 | 16 48.0 | 15 59.5 | 1 .1 | 61 6.9 |
| 2 | 16 45.5 | 16 48.3 | 15 59.7 | 2 .2 | 62 7.0 |
| 3 | 16 45.8 | 16 48.5 | 15 59.9 | 3 .3 | 63 7.1 |
| 4 | 16 46.0 | 16 48.8 | 16 .2 | 4 .5 | 64 7.2 |
| 5 | 16 46.3 | 16 49.0 | 16 .4 | 5 .6 | 65 7.3 |
| 6 | 16 46.5 | 16 49.3 | 16 .6 | 6 .7 | 66 7.4 |
| 7 | 16 46.8 | 16 49.5 | 16 .9 | 7 .8 | 67 7.5 |
| 8 | 16 47.0 | 16 49.8 | 16 1.1 | 8 .9 | 68 7.7 |
| 9 | 16 47.3 | 16 50.0 | 16 1.4 | 9 1.0 | 69 7.8 |
| 10 | 16 47.5 | 16 50.3 | 16 1.6 | 10 1.1 | 70 7.9 |
| 11 | 16 47.8 | 16 50.5 | 16 1.8 | 11 1.2 | 71 8.0 |
| 12 | 16 48.0 | 16 50.8 | 16 2.1 | 12 1.4 | 72 8.1 |
| 13 | 16 48.3 | 16 51.1 | 16 2.3 | 13 1.5 | 73 8.2 |
| 14 | 16 48.5 | 16 51.3 | 16 2.6 | 14 1.6 | 74 8.3 |
| 15 | 16 48.8 | 16 51.6 | 16 2.8 | 15 1.7 | 75 8.4 |
| 16 | 16 49.0 | 16 51.8 | 16 3.0 | 16 1.8 | 76 8.6 |
| 17 | 16 49.3 | 16 52.1 | 16 3.3 | 17 1.9 | 77 8.7 |
| 18 | 16 49.5 | 16 52.3 | 16 3.5 | 18 2.0 | 78 8.8 |
| 19 | 16 49.8 | 16 52.6 | 16 3.8 | 19 2.1 | 79 8.9 |
| 20 | 16 50.0 | 16 52.8 | 16 4.0 | 20 2.3 | 80 9.0 |
| 21 | 16 50.3 | 16 53.1 | 16 4.2 | 21 2.4 | 81 9.1 |
| 22 | 16 50.5 | 16 53.3 | 16 4.5 | 22 2.5 | 82 9.2 |
| 23 | 16 50.8 | 16 53.6 | 16 4.7 | 23 2.6 | 83 9.3 |
| 24 | 16 51.0 | 16 53.8 | 16 4.9 | 24 2.7 | 84 9.5 |
| 25 | 16 51.3 | 16 54.1 | 16 5.2 | 25 2.8 | 85 9.6 |
| 26 | 16 51.5 | 16 54.3 | 16 5.4 | 26 2.9 | 86 9.7 |
| 27 | 16 51.8 | 16 54.6 | 16 5.7 | 27 3.0 | 87 9.8 |
| 28 | 16 52.0 | 16 54.8 | 16 5.9 | 28 3.2 | 88 9.9 |
| 29 | 16 52.3 | 16 55.1 | 16 6.1 | 29 3.3 | 89 10.0 |
| 30 | 16 52.5 | 16 55.3 | 16 6.4 | 30 3.4 | 90 10.1 |
| 31 | 16 52.8 | 16 55.6 | 16 6.6 | 31 3.5 | 91 10.2 |
| 32 | 16 53.0 | 16 55.8 | 16 6.9 | 32 3.6 | 92 10.4 |
| 33 | 16 53.3 | 16 56.1 | 16 7.1 | 33 3.7 | 93 10.5 |
| 34 | 16 53.5 | 16 56.3 | 16 7.3 | 34 3.8 | 94 10.6 |
| 35 | 16 53.8 | 16 56.6 | 16 7.6 | 35 3.9 | 95 10.7 |
| 36 | 16 54.0 | 16 56.8 | 16 7.8 | 36 4.1 | 96 10.8 |
| 37 | 16 54.3 | 16 57.1 | 16 8.0 | 37 4.2 | 97 10.9 |
| 38 | 16 54.5 | 16 57.3 | 16 8.3 | 38 4.3 | 98 11.0 |
| 39 | 16 54.8 | 16 57.6 | 16 8.5 | 39 4.4 | 99 11.1 |
| 40 | 16 55.0 | 16 57.8 | 16 8.8 | 40 4.5 | 100 11.3 |
| 41 | 16 55.3 | 16 58.1 | 16 9.0 | 41 4.6 | 101 11.4 |
| 42 | 16 55.5 | 16 58.3 | 16 9.2 | 42 4.7 | 102 11.5 |
| 43 | 16 55.8 | 16 58.6 | 16 9.5 | 43 4.8 | 103 11.6 |
| 44 | 16 56.0 | 16 58.8 | 16 9.7 | 44 5.0 | 104 11.7 |
| 45 | 16 56.3 | 16 59.1 | 16 10.0 | 45 5.1 | 105 11.8 |
| 46 | 16 56.5 | 16 59.3 | 16 10.2 | 46 5.2 | 106 11.9 |
| 47 | 16 56.8 | 16 59.6 | 16 10.4 | 47 5.3 | 107 12.0 |
| 48 | 16 57.0 | 16 59.8 | 16 10.7 | 48 5.4 | 108 12.2 |
| 49 | 16 57.3 | 17 .1 | 16 10.9 | 49 5.5 | 109 12.3 |
| 50 | 16 57.5 | 17 .3 | 16 11.1 | 50 5.6 | 110 12.4 |
| 51 | 16 57.8 | 17 .6 | 16 11.4 | 51 5.7 | 111 12.5 |
| 52 | 16 58.0 | 17 .8 | 16 11.6 | 52 5.9 | 112 12.6 |
| 53 | 16 58.3 | 17 .1 | 16 11.9 | 53 6.0 | 113 12.7 |
| 54 | 16 58.5 | 17 .3 | 16 12.1 | 54 6.1 | 114 12.8 |
| 55 | 16 58.8 | 17 .6 | 16 12.3 | 55 6.2 | 115 12.9 |
| 56 | 16 59.0 | 17 .8 | 16 12.6 | 56 6.3 | 116 13.1 |
| 57 | 16 59.3 | 17 .2 | 16 12.8 | 57 6.4 | 117 13.2 |
| 58 | 16 59.5 | 17 .3 | 16 13.1 | 58 6.5 | 118 13.3 |
| 59 | 16 59.8 | 17 .6 | 16 13.3 | 59 6.6 | 119 13.4 |
| 60 | 17 .0 | 17 .8 | 16 13.5 | 60 6.8 | 120 13.5 |

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| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. |
| o | ' | o | ' | o | ' | o | o | ' | o | ' | o | ' | o |
| 0 | 17 .0 | 17 2.8 | 16 13.5 | 0 .0 | 60 6.9 | 120 13.7 | 0 | 17 15.0 | 17 17.9 | 16 27.9 | 0 .0 | 60 7.0 | 120 13.9 |
| 1 | 17 .3 | 17 3.1 | 16 13.8 | 1 .1 | 61 7.0 | 121 13.8 | 1 | 17 15.3 | 17 18.1 | 16 28.1 | 1 .1 | 61 7.1 | 121 14.0 |
| 2 | 17 .5 | 17 3.3 | 16 14.0 | 2 .2 | 62 7.1 | 122 13.9 | 2 | 17 15.5 | 17 18.4 | 16 28.3 | 2 .2 | 62 7.2 | 122 14.1 |
| 3 | 17 .8 | 17 3.6 | 16 14.2 | 3 .3 | 63 7.2 | 123 14.0 | 3 | 17 15.8 | 17 18.6 | 16 28.6 | 3 .3 | 63 7.3 | 123 14.2 |
| 4 | 17 1.0 | 17 3.8 | 16 14.5 | 4 .5 | 64 7.3 | 124 14.2 | 4 | 17 16.0 | 17 18.9 | 16 28.8 | 4 .5 | 64 7.4 | 124 14.4 |
| 5 | 17 1.3 | 17 4.1 | 16 14.7 | 5 .6 | 65 7.4 | 125 14.3 | 5 | 17 16.3 | 17 19.1 | 16 29.0 | 5 .6 | 65 7.5 | 125 14.5 |
| 6 | 17 1.5 | 17 4.3 | 16 15.0 | 6 .7 | 66 7.5 | 126 14.4 | 6 | 17 16.5 | 17 19.4 | 16 29.3 | 6 .7 | 66 7.6 | 126 14.6 |
| 7 | 17 1.8 | 17 4.6 | 16 15.2 | 7 .8 | 67 7.6 | 127 14.5 | 7 | 17 16.8 | 17 19.6 | 16 29.5 | 7 .8 | 67 7.8 | 127 14.7 |
| 8 | 17 2.0 | 17 4.8 | 16 15.4 | 8 .9 | 68 7.8 | 128 14.6 | 8 | 17 17.0 | 17 19.9 | 16 29.8 | 8 .9 | 68 7.9 | 128 14.8 |
| 9 | 17 2.3 | 17 5.1 | 16 15.7 | 9 1.0 | 69 7.9 | 129 14.7 | 9 | 17 17.3 | 17 20.1 | 16 30.0 | 9 1.0 | 69 8.0 | 129 14.9 |
| 10 | 17 2.5 | 17 5.3 | 16 15.9 | 10 1.1 | 70 8.0 | 130 14.8 | 10 | 17 17.5 | 17 20.4 | 16 30.2 | 10 1.2 | 70 8.1 | 130 15.1 |
| 11 | 17 2.8 | 17 5.6 | 16 16.2 | 11 1.3 | 71 8.1 | 131 15.0 | 11 | 17 17.8 | 17 20.6 | 16 30.5 | 11 1.3 | 71 8.2 | 131 15.2 |
| 12 | 17 3.0 | 17 5.8 | 16 16.4 | 12 1.4 | 72 8.2 | 132 15.1 | 12 | 17 18.0 | 17 20.9 | 16 30.7 | 12 1.4 | 72 8.3 | 132 15.3 |
| 13 | 17 3.3 | 17 6.1 | 16 16.6 | 13 1.5 | 73 8.3 | 133 15.2 | 13 | 17 18.3 | 17 21.1 | 16 31.0 | 13 1.5 | 73 8.5 | 133 15.4 |
| 14 | 17 3.5 | 17 6.3 | 16 16.9 | 14 1.6 | 74 8.4 | 134 15.3 | 14 | 17 18.5 | 17 21.4 | 16 31.2 | 14 1.6 | 74 8.6 | 134 15.5 |
| 15 | 17 3.8 | 17 6.6 | 16 17.1 | 15 1.7 | 75 8.6 | 135 15.4 | 15 | 17 18.8 | 17 21.6 | 16 31.4 | 15 1.7 | 75 8.7 | 135 15.6 |
| 16 | 17 4.0 | 17 6.8 | 16 17.4 | 16 1.8 | 76 8.7 | 136 15.5 | 16 | 17 19.0 | 17 21.9 | 16 31.7 | 16 1.9 | 76 8.8 | 136 15.8 |
| 17 | 17 4.3 | 17 7.1 | 16 17.6 | 17 1.9 | 77 8.8 | 137 15.6 | 17 | 17 19.3 | 17 22.1 | 16 31.9 | 17 2.0 | 77 8.9 | 137 15.9 |
| 18 | 17 4.5 | 17 7.3 | 16 17.8 | 18 2.1 | 78 8.9 | 138 15.8 | 18 | 17 19.5 | 17 22.4 | 16 32.1 | 18 2.1 | 78 9.0 | 138 16.0 |
| 19 | 17 4.8 | 17 7.6 | 16 18.1 | 19 2.2 | 79 9.0 | 139 15.9 | 19 | 17 19.8 | 17 22.6 | 16 32.4 | 19 2.2 | 79 9.2 | 139 16.1 |
| 20 | 17 5.0 | 17 7.8 | 16 18.3 | 20 2.3 | 80 9.1 | 140 16.0 | 20 | 17 20.0 | 17 22.9 | 16 32.6 | 20 2.3 | 80 9.3 | 140 16.2 |
| 21 | 17 5.3 | 17 8.1 | 16 18.5 | 21 2.4 | 81 9.2 | 141 16.1 | 21 | 17 20.3 | 17 23.1 | 16 32.9 | 21 2.4 | 81 9.4 | 141 16.3 |
| 22 | 17 5.5 | 17 8.3 | 16 18.8 | 22 2.5 | 82 9.4 | 142 16.2 | 22 | 17 20.5 | 17 23.4 | 16 33.1 | 22 2.5 | 82 9.5 | 142 16.4 |
| 23 | 17 5.8 | 17 8.6 | 16 19.0 | 23 2.6 | 83 9.5 | 143 16.3 | 23 | 17 20.8 | 17 23.6 | 16 33.3 | 23 2.7 | 83 9.6 | 143 16.6 |
| 24 | 17 6.0 | 17 8.9 | 16 19.3 | 24 2.7 | 84 9.6 | 144 16.4 | 24 | 17 21.0 | 17 23.9 | 16 33.6 | 24 2.8 | 84 9.7 | 144 16.7 |
| 25 | 17 6.3 | 17 9.1 | 16 19.5 | 25 2.9 | 85 9.7 | 145 16.6 | 25 | 17 21.3 | 17 24.1 | 16 33.8 | 25 2.9 | 85 9.8 | 145 16.8 |
| 26 | 17 6.5 | 17 9.4 | 16 19.7 | 26 3.0 | 86 9.8 | 146 16.7 | 26 | 17 21.5 | 17 24.4 | 16 34.1 | 26 3.0 | 86 10.0 | 146 16.9 |
| 27 | 17 6.8 | 17 9.6 | 16 20.0 | 27 3.1 | 87 9.9 | 147 16.8 | 27 | 17 21.8 | 17 24.6 | 16 34.3 | 27 3.1 | 87 10.1 | 147 17.0 |
| 28 | 17 7.0 | 17 9.9 | 16 20.2 | 28 3.2 | 88 10.0 | 148 16.9 | 28 | 17 22.0 | 17 24.9 | 16 34.5 | 28 3.2 | 88 10.2 | 148 17.1 |
| 29 | 17 7.3 | 17 10.1 | 16 20.5 | 29 3.3 | 89 10.2 | 149 17.0 | 29 | 17 22.3 | 17 25.1 | 16 34.8 | 29 3.4 | 89 10.3 | 149 17.3 |
| 30 | 17 7.5 | 17 10.4 | 16 20.7 | 30 3.4 | 90 10.3 | 150 17.1 | 30 | 17 22.5 | 17 25.4 | 16 35.0 | 30 3.5 | 90 10.4 | 150 17.4 |
| 31 | 17 7.8 | 17 10.6 | 16 20.9 | 31 3.5 | 91 10.4 | 151 17.2 | 31 | 17 22.8 | 17 25.6 | 16 35.2 | 31 3.6 | 91 10.5 | 151 17.5 |
| 32 | 17 8.0 | 17 10.9 | 16 21.2 | 32 3.7 | 92 10.5 | 152 17.4 | 32 | 17 23.0 | 17 25.9 | 16 35.5 | 32 3.7 | 92 10.7 | 152 17.6 |
| 33 | 17 8.3 | 17 11.1 | 16 21.4 | 33 3.8 | 93 10.6 | 153 17.5 | 33 | 17 23.3 | 17 26.1 | 16 35.7 | 33 3.8 | 93 10.8 | 153 17.7 |
| 34 | 17 8.5 | 17 11.4 | 16 21.6 | 34 3.9 | 94 10.7 | 154 17.6 | 34 | 17 23.5 | 17 26.4 | 16 36.0 | 34 3.9 | 94 10.9 | 154 17.8 |
| 35 | 17 8.8 | 17 11.6 | 16 21.9 | 35 4.0 | 95 10.8 | 155 17.7 | 35 | 17 23.8 | 17 26.6 | 16 36.2 | 35 4.1 | 95 11.0 | 155 18.0 |
| 36 | 17 9.0 | 17 11.9 | 16 22.1 | 36 4.1 | 96 11.0 | 156 17.8 | 36 | 17 24.0 | 17 26.9 | 16 36.4 | 36 4.2 | 96 11.1 | 156 18.1 |
| 37 | 17 9.3 | 17 12.1 | 16 22.4 | 37 4.2 | 97 11.1 | 157 17.9 | 37 | 17 24.3 | 17 27.2 | 16 36.7 | 37 4.3 | 97 11.2 | 157 18.2 |
| 38 | 17 9.5 | 17 12.4 | 16 22.6 | 38 4.3 | 98 11.2 | 158 18.0 | 38 | 17 24.5 | 17 27.4 | 16 36.9 | 38 4.4 | 98 11.4 | 158 18.3 |
| 39 | 17 9.8 | 17 12.6 | 16 22.8 | 39 4.5 | 99 11.3 | 159 18.2 | 39 | 17 24.8 | 17 27.7 | 16 37.2 | 39 4.5 | 99 11.5 | 159 18.4 |
| 40 | 17 10.0 | 17 12.9 | 16 23.1 | 40 4.6 | 100 11.4 | 160 18.3 | 40 | 17 25.0 | 17 27.9 | 16 37.4 | 40 4.6 | 100 11.6 | 160 18.5 |
| 41 | 17 10.3 | 17 13.1 | 16 23.3 | 41 4.7 | 101 11.5 | 161 18.4 | 41 | 17 25.3 | 17 28.2 | 16 37.6 | 41 4.7 | 101 11.7 | 161 18.6 |
| 42 | 17 10.5 | 17 13.4 | 16 23.6 | 42 4.8 | 102 11.6 | 162 18.5 | 42 | 17 25.5 | 17 28.4 | 16 37.9 | 42 4.9 | 102 11.8 | 162 18.8 |
| 43 | 17 10.8 | 17 13.6 | 16 23.8 | 43 4.9 | 103 11.8 | 163 18.6 | 43 | 17 25.8 | 17 28.7 | 16 38.1 | 43 5.0 | 103 11.9 | 163 18.9 |
| 44 | 17 11.0 | 17 13.9 | 16 24.0 | 44 5.0 | 104 11.9 | 164 18.7 | 44 | 17 26.0 | 17 28.9 | 16 38.3 | 44 5.1 | 104 12.0 | 164 19.0 |
| 45 | 17 11.3 | 17 14.1 | 16 24.3 | 45 5.1 | 105 12.0 | 165 18.8 | 45 | 17 26.3 | 17 29.2 | 16 38.6 | 45 5.2 | 105 12.2 | 165 19.1 |
| 46 | 17 11.5 | 17 14.4 | 16 24.5 | 46 5.3 | 106 12.1 | 166 19.0 | 46 | 17 26.5 | 17 29.4 | 16 38.8 | 46 5.3 | 106 12.3 | 166 19.2 |
| 47 | 17 11.8 | 17 14.6 | 16 24.7 | 47 5.4 | 107 12.2 | 167 19.1 | 47 | 17 26.8 | 17 29.7 | 16 39.1 | 47 5.4 | 107 12.4 | 167 19.3 |
| 48 | 17 12.0 | 17 14.9 | 16 25.0 | 48 5.5 | 108 12.3 | 168 19.2 | 48 | 17 27.0 | 17 29.9 | 16 39.3 | 48 5.6 | 108 12.5 | 168 19.5 |
| 49 | 17 12.3 | 17 15.1 | 16 25.2 | 49 5.6 | 109 12.4 | 169 19.3 | 49 | 17 27.3 | 17 30.2 | 16 39.5 | 49 5.7 | 109 12.6 | 169 19.6 |
| 50 | 17 12.5 | 17 15.4 | 16 25.5 | 50 5.7 | 110 12.6 | 170 19.4 | 50 | 17 27.5 | 17 30.4 | 16 39.8 | 50 5.8 | 110 12.7 | 170 19.7 |
| 51 | 17 12.8 | 17 15.6 | 16 25.7 | 51 5.8 | 111 12.7 | 171 19.5 | 51 | 17 27.8 | 17 30.7 | 16 40.0 | 51 5.9 | 111 12.9 | 171 19.8 |
| 52 | 17 13.0 | 17 15.9 | 16 25.9 | 52 5.9 | 112 12.8 | 172 19.6 | 52 | 17 28.0 | 17 30.9 | 16 40.3 | 52 6.0 | 112 13.0 | 172 19.9 |
| 53 | 17 13.3 | 17 16.1 | 16 26.2 | 53 6.1 | 113 12.9 | 173 19.8 | 53 | 17 28.3 | 17 31.2 | 16 40.5 | 53 6.1 | 113 13.1 | 173 20.0 |
| 54 | 17 13.5 | 17 16.4 | 16 26.4 | 54 6.2 | 114 13.0 | 174 19.9 | 54 | 17 28.5 | 17 31.4 | 16 40.7 | 54 6.3 | 114 13.2 | 174 20.2 |
| 55 | 17 13.8 | 17 16.6 | 16 26.7 | 55 6.3 | 115 13.1 | 175 20.0 | 55 | 17 28.8 | 17 31.7 | 16 41.0 | 55 6.4 | 115 13.3 | 175 20.3 |
| 56 | 17 14.0 | 17 16.9 | 16 26.9 | 56 6.4 | 116 13.2 | 176 20.1 | 56 | 17 29.0 | 17 31.9 | 16 41.2 | 56 6.5 | 116 13.4 | 176 20.4 |
| 57 | 17 14.3 | 17 17.1 | 16 27.1 | 57 6.5 | 117 13.4 | 177 20.2 | 57 | 17 29.3 | 17 32.2 | 16 41.5 | 57 6.6 | 117 13.6 | 177 20.5 |
| 58 | 17 14.5 | 17 17.4 | 16 27.4 | 58 6.6 | 118 13.5 | 178 20.3 | 58 | 17 29.5 | 17 32.4 | 16 41.7 | 58 6.7 | 118 13.7 | 178 20.6 |
| 59 | 17 14.8 | 17 17.6 | 16 27.6 | 59 6.7 | 119 13.6 | 179 20.4 | 59 | 17 29.8 | 17 32.7 | 16 41.9 | 59 6.8 | 119 13.8 | 179 20.7 |
| 60 | 17 15.0 | 17 17.9 | 16 27.9 | 60 6.9 | 120 13.7 | 180 20.6 | 60 | 17 30.0 | 17 32.9 | 16 42.2 | 60 7.0 | 120 13.9 | 180 20.9 |

1 h 9 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeti | | | | | | |
|------------------------|--------------------|--------------------------|--|--|--|--|---|--|--|--|--|--|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE °</th | | | | | | | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|---------|----------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ |
| 0 | 17 30.0 | 17 32.9 | 16 42.2 | 0 .0 | 60 7.1 |
| 1 | 17 30.3 | 17 33.2 | 16 42.4 | 1 .1 | 61 7.2 |
| 2 | 17 30.5 | 17 33.4 | 16 42.6 | 2 .2 | 62 7.3 |
| 3 | 17 30.8 | 17 33.7 | 16 42.9 | 3 .4 | 63 7.4 |
| 4 | 17 31.0 | 17 33.9 | 16 43.1 | 4 .5 | 64 7.5 |
| 5 | 17 31.3 | 17 34.2 | 16 43.4 | 5 .6 | 65 7.6 |
| 6 | 17 31.5 | 17 34.4 | 16 43.6 | 6 .7 | 66 7.8 |
| 7 | 17 31.8 | 17 34.7 | 16 43.8 | 7 .8 | 67 7.9 |
| 8 | 17 32.0 | 17 34.9 | 16 44.1 | 8 .9 | 68 8.0 |
| 9 | 17 32.3 | 17 35.2 | 16 44.3 | 9 1.1 | 69 8.1 |
| 10 | 17 32.5 | 17 35.4 | 16 44.6 | 10 1.2 | 70 8.2 |
| 11 | 17 32.8 | 17 35.7 | 16 44.8 | 11 1.3 | 71 8.3 |
| 12 | 17 33.0 | 17 35.9 | 16 45.0 | 12 1.4 | 72 8.5 |
| 13 | 17 33.3 | 17 36.2 | 16 45.3 | 13 1.5 | 73 8.6 |
| 14 | 17 33.5 | 17 36.4 | 16 45.5 | 14 1.6 | 74 8.7 |
| 15 | 17 33.8 | 17 36.7 | 16 45.7 | 15 1.8 | 75 8.8 |
| 16 | 17 34.0 | 17 36.9 | 16 46.0 | 16 1.9 | 76 8.9 |
| 17 | 17 34.3 | 17 37.2 | 16 46.2 | 17 2.0 | 77 9.0 |
| 18 | 17 34.5 | 17 37.4 | 16 46.5 | 18 2.1 | 78 9.2 |
| 19 | 17 34.8 | 17 37.7 | 16 46.7 | 19 2.2 | 79 9.3 |
| 20 | 17 35.0 | 17 37.9 | 16 46.9 | 20 2.4 | 80 9.4 |
| 21 | 17 35.3 | 17 38.2 | 16 47.2 | 21 2.5 | 81 9.5 |
| 22 | 17 35.5 | 17 38.4 | 16 47.4 | 22 2.6 | 82 9.6 |
| 23 | 17 35.8 | 17 38.7 | 16 47.7 | 23 2.7 | 83 9.8 |
| 24 | 17 36.0 | 17 38.9 | 16 47.9 | 24 2.8 | 84 9.9 |
| 25 | 17 36.3 | 17 39.2 | 16 48.1 | 25 2.9 | 85 10.0 |
| 26 | 17 36.5 | 17 39.4 | 16 48.4 | 26 3.1 | 86 10.1 |
| 27 | 17 36.8 | 17 39.7 | 16 48.6 | 27 3.2 | 87 10.2 |
| 28 | 17 37.0 | 17 39.9 | 16 48.8 | 28 3.3 | 88 10.3 |
| 29 | 17 37.3 | 17 40.2 | 16 49.1 | 29 3.4 | 89 10.5 |
| 30 | 17 37.5 | 17 40.4 | 16 49.3 | 30 3.5 | 90 10.6 |
| 31 | 17 37.8 | 17 40.7 | 16 49.6 | 31 3.6 | 91 10.7 |
| 32 | 17 38.0 | 17 40.9 | 16 49.8 | 32 3.8 | 92 10.8 |
| 33 | 17 38.3 | 17 41.2 | 16 50.0 | 33 3.9 | 93 10.9 |
| 34 | 17 38.5 | 17 41.4 | 16 50.3 | 34 4.0 | 94 11.0 |
| 35 | 17 38.8 | 17 41.7 | 16 50.5 | 35 4.1 | 95 11.2 |
| 36 | 17 39.0 | 17 41.9 | 16 50.8 | 36 4.2 | 96 11.3 |
| 37 | 17 39.3 | 17 42.2 | 16 51.0 | 37 4.3 | 97 11.4 |
| 38 | 17 39.5 | 17 42.4 | 16 51.2 | 38 4.5 | 98 11.5 |
| 39 | 17 39.8 | 17 42.7 | 16 51.5 | 39 4.6 | 99 11.6 |
| 40 | 17 40.0 | 17 42.9 | 16 51.7 | 40 4.7 | 100 11.8 |
| 41 | 17 40.3 | 17 43.2 | 16 51.9 | 41 4.8 | 101 11.9 |
| 42 | 17 40.5 | 17 43.4 | 16 52.2 | 42 4.9 | 102 12.0 |
| 43 | 17 40.8 | 17 43.7 | 16 52.4 | 43 5.1 | 103 12.1 |
| 44 | 17 41.0 | 17 43.9 | 16 52.7 | 44 5.2 | 104 12.2 |
| 45 | 17 41.3 | 17 44.2 | 16 52.9 | 45 5.3 | 105 12.3 |
| 46 | 17 41.5 | 17 44.4 | 16 53.1 | 46 5.4 | 106 12.5 |
| 47 | 17 41.8 | 17 44.7 | 16 53.4 | 47 5.5 | 107 12.6 |
| 48 | 17 42.0 | 17 45.0 | 16 53.6 | 48 5.6 | 108 12.7 |
| 49 | 17 42.3 | 17 45.2 | 16 53.9 | 49 5.8 | 109 12.8 |
| 50 | 17 42.5 | 17 45.5 | 16 54.1 | 50 5.9 | 110 12.9 |
| 51 | 17 42.8 | 17 45.7 | 16 54.3 | 51 6.0 | 111 13.0 |
| 52 | 17 43.0 | 17 46.0 | 16 54.6 | 52 6.1 | 112 13.2 |
| 53 | 17 43.3 | 17 46.2 | 16 54.8 | 53 6.2 | 113 13.3 |
| 54 | 17 43.5 | 17 46.5 | 16 55.1 | 54 6.3 | 114 13.4 |
| 55 | 17 43.8 | 17 46.7 | 16 55.3 | 55 6.5 | 115 13.5 |
| 56 | 17 44.0 | 17 47.0 | 16 55.5 | 56 6.6 | 116 13.6 |
| 57 | 17 44.3 | 17 47.2 | 16 55.8 | 57 6.7 | 117 13.7 |
| 58 | 17 44.5 | 17 47.5 | 16 56.0 | 58 6.8 | 118 13.9 |
| 59 | 17 44.8 | 17 47.7 | 16 56.2 | 59 6.9 | 119 14.0 |
| 60 | 17 45.0 | 17 48.0 | 16 56.5 | 60 7.1 | 120 14.1 |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|---------|----------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ | o ′ ″ |
| 0 | 17 45.0 | 17 48.0 | 16 56.5 | 0 .0 | 60 7.2 |
| 1 | 17 45.3 | 17 48.2 | 16 56.7 | 1 .1 | 61 7.3 |
| 2 | 17 45.5 | 17 48.5 | 16 57.0 | 2 .2 | 62 7.4 |
| 3 | 17 45.8 | 17 48.7 | 16 57.2 | 3 .4 | 63 7.5 |
| 4 | 17 46.0 | 17 49.0 | 16 57.4 | 4 .5 | 64 7.6 |
| 5 | 17 46.3 | 17 49.2 | 16 57.7 | 5 .6 | 65 7.7 |
| 6 | 17 46.5 | 17 49.5 | 16 57.9 | 6 .7 | 66 7.9 |
| 7 | 17 46.8 | 17 49.7 | 16 58.2 | 7 .8 | 67 8.0 |
| 8 | 17 47.0 | 17 50.0 | 16 58.4 | 8 1.0 | 68 8.1 |
| 9 | 17 47.3 | 17 50.2 | 16 58.6 | 9 1.1 | 69 8.2 |
| 10 | 17 47.5 | 17 50.5 | 16 58.9 | 10 1.2 | 70 8.3 |
| 11 | 17 47.8 | 17 50.7 | 16 59.1 | 11 1.3 | 71 8.5 |
| 12 | 17 48.0 | 17 51.0 | 16 59.3 | 12 1.4 | 72 8.6 |
| 13 | 17 48.3 | 17 51.2 | 16 59.6 | 13 1.5 | 73 8.7 |
| 14 | 17 48.5 | 17 51.5 | 16 59.8 | 14 1.7 | 74 8.8 |
| 15 | 17 48.8 | 17 51.7 | 17 .1 | 15 1.8 | 75 8.9 |
| 16 | 17 49.0 | 17 52.0 | 17 .3 | 16 1.9 | 76 9.1 |
| 17 | 17 49.3 | 17 52.2 | 17 .5 | 17 2.0 | 77 9.2 |
| 18 | 17 49.5 | 17 52.5 | 17 .8 | 18 2.1 | 78 9.3 |
| 19 | 17 49.8 | 17 52.7 | 17 .0 | 19 2.3 | 79 9.4 |
| 20 | 17 50.0 | 17 53.0 | 17 .3 | 20 2.4 | 80 9.5 |
| 21 | 17 50.3 | 17 53.2 | 17 .5 | 21 2.5 | 81 9.7 |
| 22 | 17 50.5 | 17 53.5 | 17 .7 | 22 2.6 | 82 9.8 |
| 23 | 17 50.8 | 17 53.7 | 17 .9 | 23 2.7 | 83 9.9 |
| 24 | 17 51.0 | 17 54.0 | 17 .2 | 24 2.9 | 84 10.0 |
| 25 | 17 51.3 | 17 54.2 | 17 .4 | 25 3.0 | 85 10.1 |
| 26 | 17 51.5 | 17 54.5 | 17 .7 | 26 3.1 | 86 10.2 |
| 27 | 17 51.8 | 17 54.7 | 17 .9 | 27 3.2 | 87 10.4 |
| 28 | 17 52.0 | 17 55.0 | 17 .3 | 28 3.3 | 88 10.5 |
| 29 | 17 52.3 | 17 55.2 | 17 .4 | 29 3.5 | 89 10.6 |
| 30 | 17 52.5 | 17 55.7 | 17 .6 | 30 3.6 | 90 10.7 |
| 31 | 17 52.8 | 17 55.7 | 17 .9 | 31 3.7 | 91 10.8 |
| 32 | 17 53.0 | 17 56.0 | 17 .4 | 32 3.8 | 92 11.0 |
| 33 | 17 53.3 | 17 56.2 | 17 .4 | 33 3.9 | 93 11.1 |
| 34 | 17 53.5 | 17 56.5 | 17 .6 | 34 4.1 | 94 11.2 |
| 35 | 17 53.8 | 17 56.7 | 17 .8 | 35 4.2 | 95 11.3 |
| 36 | 17 54.0 | 17 57.0 | 17 .5 | 36 4.3 | 96 11.4 |
| 37 | 17 54.3 | 17 57.2 | 17 .5 | 37 4.4 | 97 11.6 |
| 38 | 17 54.5 | 17 57.5 | 17 .6 | 38 4.5 | 98 11.7 |
| 39 | 17 54.8 | 17 57.7 | 17 .8 | 39 4.6 | 99 11.8 |
| 40 | 17 55.0 | 17 58.0 | 17 .6 | 40 4.8 | 100 11.9 |
| 41 | 17 55.3 | 17 58.2 | 17 .3 | 41 4.9 | 101 12.0 |
| 42 | 17 55.5 | 17 58.5 | 17 .5 | 42 5.0 | 102 12.2 |
| 43 | 17 55.8 | 17 58.7 | 17 .7 | 43 5.1 | 103 12.3 |
| 44 | 17 56.0 | 17 59.0 | 17 .0 | 44 5.2 | 104 12.4 |
| 45 | 17 56.3 | 17 59.2 | 17 .2 | 45 5.4 | 105 12.5 |
| 46 | 17 56.5 | 17 59.5 | 17 .5 | 46 5.5 | 106 12.6 |
| 47 | 17 56.8 | 17 59.7 | 17 .7 | 47 5.6 | 107 12.8 |
| 48 | 17 57.0 | 17 60.0 | 17 .9 | 48 5.7 | 108 12.9 |
| 49 | 17 57.3 | 17 .2 | 17 8.2 | 49 5.8 | 109 13.0 |
| 50 | 17 57.5 | 17 .5 | 17 8.4 | 50 6.0 | 110 13.1 |
| 51 | 17 57.8 | 17 .7 | 17 8.7 | 51 6.1 | 111 13.2 |
| 52 | 17 58.0 | 18 .0 | 17 8.9 | 52 6.2 | 112 13.3 |
| 53 | 17 58.3 | 18 .2 | 17 9.1 | 53 6.3 | 113 13.5 |
| 54 | 17 58.5 | 18 .5 | 17 9.4 | 54 6.4 | 114 13.6 |
| 55 | 17 58.8 | 18 .7 | 17 9.6 | 55 6.6 | 115 13.7 |
| 56 | 17 59.0 | 18 .0 | 17 9.8 | 56 6.7 | 116 13.8 |
| 57 | 17 59.3 | 18 .2 | 17 10.1 | 57 6.8 | 117 13.9 |
| 58 | 17 59.5 | 18 .5 | 17 10.3 | 58 6.9 | 118 14.1 |
| 59 | 17 59.8 | 18 .7 | 17 10.6 | 59 7.0 | 119 14.2 |
| 60 | 18 .0 | 18 .3 | 17 10.8 | 60 7.2 | 120 14.3 |

1 h 12 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 18 .0 | 18 3.0 | 17 10.8 | 0 .0 | 60 7.3 | 120 14.5 | |
| 1 | 18 .3 | 18 3.3 | 17 11.0 | 1 .1 | 61 7.4 | 121 14.6 | |
| 2 | 18 .5 | 18 3.5 | 17 11.3 | 2 .2 | 62 7.5 | 122 14.7 | |
| 3 | 18 .8 | 18 3.8 | 17 11.5 | 3 .4 | 63 7.6 | 123 14.9 | |
| 4 | 18 1.0 | 18 4.0 | 17 11.8 | 4 .5 | 64 7.7 | 124 15.0 | |
| 5 | 18 1.3 | 18 4.3 | 17 12.0 | 5 .6 | 65 7.9 | 125 15.1 | |
| 6 | 18 1.5 | 18 4.5 | 17 12.2 | 6 .7 | 66 8.0 | 126 15.2 | |
| 7 | 18 1.8 | 18 4.8 | 17 12.5 | 7 .8 | 67 8.1 | 127 15.3 | |
| 8 | 18 2.0 | 18 5.0 | 17 12.7 | 8 .0 | 68 8.2 | 128 15.5 | |
| 9 | 18 2.3 | 18 5.3 | 17 12.9 | 9 1.1 | 69 8.3 | 129 15.6 | |
| 10 | 18 2.5 | 18 5.5 | 17 13.2 | 10 1.2 | 70 8.5 | 130 15.7 | |
| 11 | 18 2.8 | 18 5.8 | 17 13.4 | 11 1.3 | 71 8.6 | 131 15.8 | |
| 12 | 18 3.0 | 18 6.0 | 17 13.7 | 12 1.5 | 72 8.7 | 132 16.0 | |
| 13 | 18 3.3 | 18 6.3 | 17 13.9 | 13 1.6 | 73 8.8 | 133 16.1 | |
| 14 | 18 3.5 | 18 6.5 | 17 14.1 | 14 1.7 | 74 8.9 | 134 16.2 | |
| 15 | 18 3.8 | 18 6.8 | 17 14.4 | 15 1.8 | 75 9.1 | 135 16.3 | |
| 16 | 18 4.0 | 18 7.0 | 17 14.6 | 16 1.9 | 76 9.2 | 136 16.4 | |
| 17 | 18 4.3 | 18 7.3 | 17 14.9 | 17 2.1 | 77 9.3 | 137 16.6 | |
| 18 | 18 4.5 | 18 7.5 | 17 15.1 | 18 2.2 | 78 9.4 | 138 16.7 | |
| 19 | 18 4.8 | 18 7.8 | 17 15.3 | 19 2.3 | 79 9.5 | 139 16.8 | |
| 20 | 18 5.0 | 18 8.0 | 17 15.6 | 20 2.4 | 80 9.7 | 140 16.9 | |
| 21 | 18 5.3 | 18 8.3 | 17 15.8 | 21 2.5 | 81 9.8 | 141 17.0 | |
| 22 | 18 5.5 | 18 8.5 | 17 16.0 | 22 2.7 | 82 9.9 | 142 17.2 | |
| 23 | 18 5.8 | 18 8.8 | 17 16.3 | 23 2.8 | 83 10.0 | 143 17.3 | |
| 24 | 18 6.0 | 18 9.0 | 17 16.5 | 24 2.9 | 84 10.2 | 144 17.4 | |
| 25 | 18 6.3 | 18 9.3 | 17 16.8 | 25 3.0 | 85 10.3 | 145 17.5 | |
| 26 | 18 6.5 | 18 9.5 | 17 17.0 | 26 3.1 | 86 10.4 | 146 17.6 | |
| 27 | 18 6.8 | 18 9.8 | 17 17.2 | 27 3.3 | 87 10.5 | 147 17.8 | |
| 28 | 18 7.0 | 18 10.0 | 17 17.5 | 28 3.4 | 88 10.6 | 148 17.9 | |
| 29 | 18 7.3 | 18 10.3 | 17 17.7 | 29 3.5 | 89 10.8 | 149 18.0 | |
| 30 | 18 7.5 | 18 10.5 | 17 18.0 | 30 3.6 | 90 10.9 | 150 18.1 | |
| 31 | 18 7.8 | 18 10.8 | 17 18.2 | 31 3.7 | 91 11.0 | 151 18.2 | |
| 32 | 18 8.0 | 18 11.0 | 17 18.4 | 32 3.9 | 92 11.1 | 152 18.4 | |
| 33 | 18 8.3 | 18 11.3 | 17 18.7 | 33 4.0 | 93 11.2 | 153 18.5 | |
| 34 | 18 8.5 | 18 11.5 | 17 18.9 | 34 4.1 | 94 11.4 | 154 18.6 | |
| 35 | 18 8.8 | 18 11.8 | 17 19.2 | 35 4.2 | 95 11.5 | 155 18.7 | |
| 36 | 18 9.0 | 18 12.0 | 17 19.4 | 36 4.4 | 96 11.6 | 156 18.9 | |
| 37 | 18 9.3 | 18 12.3 | 17 19.6 | 37 4.5 | 97 11.7 | 157 19.0 | |
| 38 | 18 9.5 | 18 12.5 | 17 19.9 | 38 4.6 | 98 11.8 | 158 19.1 | |
| 39 | 18 9.8 | 18 12.8 | 17 20.1 | 39 4.7 | 99 12.0 | 159 19.2 | |
| 40 | 18 10.0 | 18 13.0 | 17 20.3 | 40 4.8 | 100 12.1 | 160 19.3 | |
| 41 | 18 10.3 | 18 13.3 | 17 20.6 | 41 5.0 | 101 12.2 | 161 19.5 | |
| 42 | 18 10.5 | 18 13.5 | 17 20.8 | 42 5.1 | 102 12.3 | 162 19.6 | |
| 43 | 18 10.8 | 18 13.8 | 17 21.1 | 43 5.2 | 103 12.4 | 163 19.7 | |
| 44 | 18 11.0 | 18 14.0 | 17 21.3 | 44 5.3 | 104 12.6 | 164 19.8 | |
| 45 | 18 11.3 | 18 14.3 | 17 21.5 | 45 5.4 | 105 12.7 | 165 19.9 | |
| 46 | 18 11.5 | 18 14.5 | 17 21.8 | 46 5.6 | 106 12.8 | 166 20.1 | |
| 47 | 18 11.8 | 18 14.8 | 17 22.0 | 47 5.7 | 107 12.9 | 167 20.2 | |
| 48 | 18 12.0 | 18 15.0 | 17 22.3 | 48 5.8 | 108 13.1 | 168 20.3 | |
| 49 | 18 12.3 | 18 15.3 | 17 22.5 | 49 5.9 | 109 13.2 | 169 20.4 | |
| 50 | 18 12.5 | 18 15.5 | 17 22.7 | 50 6.0 | 110 13.3 | 170 20.5 | |
| 51 | 18 12.8 | 18 15.8 | 17 23.0 | 51 6.2 | 111 13.4 | 171 20.7 | |
| 52 | 18 13.0 | 18 16.0 | 17 23.2 | 52 6.3 | 112 13.5 | 172 20.8 | |
| 53 | 18 13.3 | 18 16.3 | 17 23.4 | 53 6.4 | 113 13.7 | 173 20.9 | |
| 54 | 18 13.5 | 18 16.5 | 17 23.7 | 54 6.5 | 114 13.8 | 174 21.0 | |
| 55 | 18 13.8 | 18 16.8 | 17 23.9 | 55 6.6 | 115 13.9 | 175 21.1 | |
| 56 | 18 14.0 | 18 17.0 | 17 24.2 | 56 6.8 | 116 14.0 | 176 21.3 | |
| 57 | 18 14.3 | 18 17.3 | 17 24.4 | 57 6.9 | 117 14.1 | 177 21.4 | |
| 58 | 18 14.5 | 18 17.5 | 17 24.6 | 58 7.0 | 118 14.3 | 178 21.5 | |
| 59 | 18 14.8 | 18 17.8 | 17 24.9 | 59 7.1 | 119 14.4 | 179 21.6 | |
| 60 | 18 15.0 | 18 18.0 | 17 25.1 | 60 7.3 | 120 14.5 | 180 21.8 | |

1 h 13 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|----------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ ⟩ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 18 15.0 | 18 18.0 | 17 25.1 | 0 .0 | 60 7.4 | 120 14.7 | |
| 1 | 18 15.3 | 18 18.3 | 17 25.4 | 1 .1 | 61 7.5 | 121 14.8 | |
| 2 | 18 15.5 | 18 18.5 | 17 25.6 | 2 .2 | 62 7.6 | 122 14.9 | |
| 3 | 18 15.8 | 18 18.8 | 17 25.8 | 3 .4 | 63 7.7 | 123 15.1 | |
| 4 | 18 16.0 | 18 19.0 | 17 26.1 | 4 .5 | 64 7.8 | 124 15.2 | |
| 5 | 18 16.3 | 18 19.3 | 17 26.3 | 5 .6 | 65 8.0 | 125 15.3 | |
| 6 | 18 16.5 | 18 19.5 | 17 26.5 | 6 .7 | 66 8.1 | 126 15.4 | |
| 7 | 18 16.8 | 18 19.8 | 17 26.8 | 7 .9 | 67 8.2 | 127 15.6 | |
| 8 | 18 17.0 | 18 20.0 | 17 27.0 | 8 .0 | 68 8.3 | 128 15.7 | |
| 9 | 18 17.3 | 18 20.3 | 17 27.3 | 9 1.1 | 69 8.5 | 129 15.8 | |
| 10 | 18 17.5 | 18 20.5 | 17 27.5 | 10 1.2 | 70 8.6 | 130 15.9 | |
| 11 | 18 17.8 | 18 20.8 | 17 27.7 | 11 1.3 | 71 8.7 | 131 16.0 | |
| 12 | 18 18.0 | 18 21.1 | 17 28.0 | 12 1.5 | 72 8.8 | 132 16.2 | |
| 13 | 18 18.3 | 18 21.3 | 17 28.2 | 13 1.6 | 73 8.9 | 133 16.3 | |
| 14 | 18 18.5 | 18 21.6 | 17 28.5 | 14 1.7 | 74 9.1 | 134 16.4 | |
| 15 | 18 18.8 | 18 21.8 | 17 28.7 | 15 1.8 | 75 9.2 | 135 16.5 | |
| 16 | 18 19.0 | 18 22.1 | 17 28.9 | 16 2.0 | 76 9.3 | 136 16.7 | |
| 17 | 18 19.3 | 18 22.3 | 17 29.2 | 17 2.1 | 77 9.4 | 137 16.8 | |
| 18 | 18 19.5 | 18 22.6 | 17 29.4 | 18 2.2 | 78 9.6 | 138 16.9 | |
| 19 | 18 19.8 | 18 22.8 | 17 29.7 | 19 2.3 | 79 9.7 | 139 17.0 | |
| 20 | 18 20.0 | 18 23.1 | 17 29.9 | 20 2.5 | 80 9.8 | 140 17.2 | |
| 21 | 18 20.3 | 18 23.3 | 17 30.1 | 21 2.6 | 81 9.9 | 141 17.3 | |
| 22 | 18 20.5 | 18 23.6 | 17 30.4 | 22 2.7 | 82 10.0 | 142 17.4 | |
| 23 | 18 20.8 | 18 23.8 | 17 30.6 | 23 2.8 | 83 10.2 | 143 17.5 | |
| 24 | 18 21.0 | 18 24.1 | 17 30.8 | 24 2.9 | 84 10.3 | 144 17.6 | |
| 25 | 18 21.3 | 18 24.3 | 17 31.1 | 25 3.1 | 85 10.4 | 145 17.8 | |
| 26 | 18 21.5 | 18 24.6 | 17 31.3 | 26 3.2 | 86 10.5 | 146 17.9 | |
| 27 | 18 21.8 | 18 24.8 | 17 31.6 | 27 3.3 | 87 10.7 | 147 18.0 | |
| 28 | 18 22.0 | 18 25.1 | 17 31.8 | 28 3.4 | 88 10.8 | 148 18.1 | |
| 29 | 18 22.3 | 18 25.3 | 17 32.0 | 29 3.6 | 89 10.9 | 149 18.3 | |
| 30 | 18 22.5 | 18 25.6 | 17 32.3 | 30 3.7 | 90 11.0 | 150 18.4 | |
| 31 | 18 22.8 | 18 25.8 | 17 32.5 | 31 3.8 | 91 11.1 | 151 18.5 | |
| 32 | 18 23.0 | 18 26.1 | 17 32.8 | 32 3.9 | 92 11.3 | 152 18.6 | |
| 33 | 18 23.3 | 18 26.3 | 17 33.0 | 33 4.0 | 93 11.4 | 153 18.7 | |
| 34 | 18 23.5 | 18 26.6 | 17 33.2 | 34 4.2 | 94 11.5 | 154 18.9 | |
| 35 | 18 23.8 | 18 26.8 | 17 33.5 | 35 4.3 | 95 11.6 | 155 19.0 | |
| 36 | 18 24.0 | 18 27.1 | 17 33.7 | 36 4.4 | 96 11.8 | 156 19.1 | |
| 37 | 18 24.3 | 18 27.3 | 17 33.9 | 37 4.5 | 97 11.9 | 157 19.2 | |
| 38 | 18 24.5 | 18 27.6 | 17 34.2 | 38 4.7 | 98 12.0 | 158 19.4 | |
| 39 | 18 24.8 | 18 27.8 | 17 34.4 | 39 4.8 | 99 12.1 | 159 19.5 | |
| 40 | 18 25.0 | 18 28.1 | 17 34.7 | 40 4.9 | 100 12.3 | 160 19.6 | |
| 41 | 18 25.3 | 18 28.3 | 17 34.9 | 41 5.0 | 101 12.4 | 161 19.7 | |
| 42 | 18 25.5 | 18 28.6 | 17 35.1 | 42 5.1 | 102 12.5 | 162 19.8 | |
| 43 | 18 25.8 | 18 28.8 | 17 35.4 | 43 5.3 | 103 12.6 | 163 20.0 | |
| 44 | 18 26.0 | 18 29.1 | 17 35.6 | 44 5.4 | 104 12.7 | 164 20.1 | |
| 45 | 18 26.3 | 18 29.3 | 17 35.9 | 45 5.5 | 105 12.9 | 165 20.2 | |
| 46 | 18 26.5 | 18 29.6 | 17 36.1 | 46 5.6 | 106 13.0 | 166 20.3 | |
| 47 | 18 26.8 | 18 29.8 | 17 36.3 | 47 5.8 | 107 13.1 | 167 20.5 | |
| 48 | 18 27.0 | 18 30.1 | 17 36.6 | 48 5.9 | 108 13.2 | 168 20.6 | |
| 49 | 18 27.3 | 18 30.3 | 17 36.8 | 49 6.0 | 109 13.4 | 169 20.7 | |
| 50 | 18 27.5 | 18 30.6 | 17 37.0 | 50 6.1 | 110 13.5 | 170 20.8 | |
| 51 | 18 27.8 | 18 30.8 | 17 37.3 | 51 6.2 | 111 13.6 | 171 20.9 | |
| 52 | 18 28.0 | 18 31.1 | 17 37.5 | 52 6.4 | 112 13.7 | 172 21.1 | |
| 53 | 18 28.3 | 18 31.3 | 17 37.8 | 53 6.5 | 113 13.8 | 173 21.2 | |
| 54 | 18 28.5 | 18 31.6 | 17 38.0 | 54 6.6 | 114 14.0 | 174 21.3 | |
| 55 | 18 28.8</td | | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | ° | ° | ° | ° |
| 0 | 18 30.0 | 18 33.1 | 17 39.4 | 0 .0 | 60 7.5 | 120 14.9 | |
| 1 | 18 30.3 | 18 33.3 | 17 39.7 | 1 .1 | 61 7.6 | 121 15.0 | |
| 2 | 18 30.5 | 18 33.6 | 17 39.9 | 2 .2 | 62 7.7 | 122 15.1 | |
| 3 | 18 30.8 | 18 33.8 | 17 40.1 | 3 .4 | 63 7.8 | 123 15.3 | |
| 4 | 18 31.0 | 18 34.1 | 17 40.4 | 4 .5 | 64 7.9 | 124 15.4 | |
| 5 | 18 31.3 | 18 34.3 | 17 40.6 | 5 .6 | 65 8.1 | 125 15.5 | |
| 6 | 18 31.5 | 18 34.6 | 17 40.9 | 6 .7 | 66 8.2 | 126 15.6 | |
| 7 | 18 31.8 | 18 34.8 | 17 41.1 | 7 .9 | 67 8.3 | 127 15.8 | |
| 8 | 18 32.0 | 18 35.1 | 17 41.3 | 8 .1 | 68 8.4 | 128 15.9 | |
| 9 | 18 32.3 | 18 35.3 | 17 41.6 | 9 1.1 | 69 8.6 | 129 16.0 | |
| 10 | 18 32.5 | 18 35.6 | 17 41.8 | 10 1.2 | 70 8.7 | 130 16.1 | |
| 11 | 18 32.8 | 18 35.8 | 17 42.1 | 11 1.4 | 71 8.8 | 131 16.3 | |
| 12 | 18 33.0 | 18 36.1 | 17 42.3 | 12 1.5 | 72 8.9 | 132 16.4 | |
| 13 | 18 33.3 | 18 36.3 | 17 42.5 | 13 1.6 | 73 9.1 | 133 16.5 | |
| 14 | 18 33.5 | 18 36.6 | 17 42.8 | 14 1.7 | 74 9.2 | 134 16.6 | |
| 15 | 18 33.8 | 18 36.8 | 17 43.0 | 15 1.9 | 75 9.3 | 135 16.8 | |
| 16 | 18 34.0 | 18 37.1 | 17 43.3 | 16 2.0 | 76 9.4 | 136 16.9 | |
| 17 | 18 34.3 | 18 37.3 | 17 43.5 | 17 2.1 | 77 9.6 | 137 17.0 | |
| 18 | 18 34.5 | 18 37.6 | 17 43.7 | 18 2.2 | 78 9.7 | 138 17.1 | |
| 19 | 18 34.8 | 18 37.8 | 17 44.0 | 19 2.4 | 79 9.8 | 139 17.3 | |
| 20 | 18 35.0 | 18 38.1 | 17 44.2 | 20 2.5 | 80 9.9 | 140 17.4 | |
| 21 | 18 35.3 | 18 38.3 | 17 44.4 | 21 2.6 | 81 10.1 | 141 17.5 | |
| 22 | 18 35.5 | 18 38.6 | 17 44.7 | 22 2.7 | 82 10.2 | 142 17.6 | |
| 23 | 18 35.8 | 18 38.8 | 17 44.9 | 23 2.9 | 83 10.3 | 143 17.8 | |
| 24 | 18 36.0 | 18 39.1 | 17 45.2 | 24 3.0 | 84 10.4 | 144 17.9 | |
| 25 | 18 36.3 | 18 39.4 | 17 45.4 | 25 3.1 | 85 10.6 | 145 18.0 | |
| 26 | 18 36.5 | 18 39.6 | 17 45.6 | 26 3.2 | 86 10.7 | 146 18.1 | |
| 27 | 18 36.8 | 18 39.9 | 17 45.9 | 27 3.4 | 87 10.8 | 147 18.3 | |
| 28 | 18 37.0 | 18 40.1 | 17 46.1 | 28 3.5 | 88 10.9 | 148 18.4 | |
| 29 | 18 37.3 | 18 40.4 | 17 46.4 | 29 3.6 | 89 11.1 | 149 18.5 | |
| 30 | 18 37.5 | 18 40.6 | 17 46.6 | 30 3.7 | 90 11.2 | 150 18.6 | |
| 31 | 18 37.8 | 18 40.9 | 17 46.8 | 31 3.8 | 91 11.3 | 151 18.7 | |
| 32 | 18 38.0 | 18 41.1 | 17 47.1 | 32 4.0 | 92 11.4 | 152 18.9 | |
| 33 | 18 38.3 | 18 41.4 | 17 47.3 | 33 4.1 | 93 11.5 | 153 19.0 | |
| 34 | 18 38.5 | 18 41.6 | 17 47.5 | 34 4.2 | 94 11.7 | 154 19.1 | |
| 35 | 18 38.8 | 18 41.9 | 17 47.8 | 35 4.3 | 95 11.8 | 155 19.2 | |
| 36 | 18 39.0 | 18 42.1 | 17 48.0 | 36 4.5 | 96 11.9 | 156 19.4 | |
| 37 | 18 39.3 | 18 42.4 | 17 48.3 | 37 4.6 | 97 12.0 | 157 19.5 | |
| 38 | 18 39.5 | 18 42.6 | 17 48.5 | 38 4.7 | 98 12.2 | 158 19.6 | |
| 39 | 18 39.8 | 18 42.9 | 17 48.7 | 39 4.8 | 99 12.3 | 159 19.7 | |
| 40 | 18 40.0 | 18 43.1 | 17 49.0 | 40 5.0 | 100 12.4 | 160 19.9 | |
| 41 | 18 40.3 | 18 43.4 | 17 49.2 | 41 5.1 | 101 12.5 | 161 20.0 | |
| 42 | 18 40.5 | 18 43.6 | 17 49.5 | 42 5.2 | 102 12.7 | 162 20.1 | |
| 43 | 18 40.8 | 18 43.9 | 17 49.7 | 43 5.3 | 103 12.8 | 163 20.2 | |
| 44 | 18 41.0 | 18 44.1 | 17 49.9 | 44 5.5 | 104 12.9 | 164 20.4 | |
| 45 | 18 41.3 | 18 44.4 | 17 50.2 | 45 5.6 | 105 13.0 | 165 20.5 | |
| 46 | 18 41.5 | 18 44.6 | 17 50.4 | 46 5.7 | 106 13.2 | 166 20.6 | |
| 47 | 18 41.8 | 18 44.9 | 17 50.6 | 47 5.8 | 107 13.3 | 167 20.7 | |
| 48 | 18 42.0 | 18 45.1 | 17 50.9 | 48 6.0 | 108 13.4 | 168 20.9 | |
| 49 | 18 42.3 | 18 45.4 | 17 51.1 | 49 6.1 | 109 13.5 | 169 21.0 | |
| 50 | 18 42.5 | 18 45.6 | 17 51.4 | 50 6.2 | 110 13.7 | 170 21.1 | |
| 51 | 18 42.8 | 18 45.9 | 17 51.6 | 51 6.3 | 111 13.8 | 171 21.2 | |
| 52 | 18 43.0 | 18 46.1 | 17 51.8 | 52 6.5 | 112 13.9 | 172 21.4 | |
| 53 | 18 43.3 | 18 46.4 | 17 52.1 | 53 6.6 | 113 14.0 | 173 21.5 | |
| 54 | 18 43.5 | 18 46.6 | 17 52.3 | 54 6.7 | 114 14.2 | 174 21.6 | |
| 55 | 18 43.8 | 18 46.9 | 17 52.6 | 55 6.8 | 115 14.3 | 175 21.7 | |
| 56 | 18 44.0 | 18 47.1 | 17 52.8 | 56 7.0 | 116 14.4 | 176 21.9 | |
| 57 | 18 44.3 | 18 47.4 | 17 53.0 | 57 7.1 | 117 14.5 | 177 22.0 | |
| 58 | 18 44.5 | 18 47.6 | 17 53.3 | 58 7.2 | 118 14.7 | 178 22.1 | |
| 59 | 18 44.8 | 18 47.9 | 17 53.5 | 59 7.3 | 119 14.8 | 179 22.2 | |
| 60 | 18 45.0 | 18 48.1 | 17 53.8 | 60 7.5 | 120 14.9 | 180 22.4 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | ° | ° | ° | ° |
| 0 | 18 45.0 | 18 48.1 | 17 53.8 | 0 .0 | 60 7.6 | 120 15.1 | |
| 1 | 18 45.3 | 18 48.4 | 17 54.0 | 1 .1 | 61 7.7 | 121 15.2 | |
| 2 | 18 45.5 | 18 48.6 | 17 54.2 | 2 .2 | 62 7.8 | 122 15.4 | |
| 3 | 18 45.8 | 18 48.9 | 17 54.5 | 3 .4 | 63 7.9 | 123 15.5 | |
| 4 | 18 46.0 | 18 49.1 | 17 54.7 | 4 .5 | 64 8.1 | 124 15.6 | |
| 5 | 18 46.3 | 18 49.4 | 17 54.9 | 5 .6 | 65 8.2 | 125 15.7 | |
| 6 | 18 46.5 | 18 49.6 | 17 55.2 | 6 .8 | 66 8.3 | 126 15.9 | |
| 7 | 18 46.8 | 18 49.9 | 17 55.4 | 7 .9 | 67 8.4 | 127 16.0 | |
| 8 | 18 47.0 | 18 50.1 | 17 55.7 | 8 1.0 | 68 8.6 | 128 16.1 | |
| 9 | 18 47.3 | 18 50.4 | 17 55.9 | 9 1.1 | 69 8.7 | 129 16.2 | |
| 10 | 18 47.5 | 18 50.6 | 17 56.1 | 10 1.3 | 70 8.8 | 130 16.4 | |
| 11 | 18 47.8 | 18 50.9 | 17 56.4 | 11 1.4 | 71 8.9 | 131 16.5 | |
| 12 | 18 48.0 | 18 51.1 | 17 56.6 | 12 1.5 | 72 9.1 | 132 16.6 | |
| 13 | 18 48.3 | 18 51.4 | 17 56.9 | 13 1.6 | 73 9.2 | 133 16.7 | |
| 14 | 18 48.5 | 18 51.6 | 17 57.1 | 14 1.8 | 74 9.3 | 134 16.9 | |
| 15 | 18 48.8 | 18 51.9 | 17 57.3 | 15 1.9 | 75 9.4 | 135 17.0 | |
| 16 | 18 49.0 | 18 52.1 | 17 57.6 | 16 2.0 | 76 9.6 | 136 17.1 | |
| 17 | 18 49.3 | 18 52.4 | 17 57.8 | 17 2.1 | 77 9.7 | 137 17.2 | |
| 18 | 18 49.5 | 18 52.6 | 17 58.0 | 18 2.3 | 78 9.8 | 138 17.4 | |
| 19 | 18 49.8 | 18 52.9 | 17 58.3 | 19 2.4 | 79 9.9 | 139 17.5 | |
| 20 | 18 50.0 | 18 53.1 | 17 58.5 | 20 2.5 | 80 10.1 | 140 17.6 | |
| 21 | 18 50.3 | 18 53.4 | 17 58.8 | 21 2.6 | 81 10.2 | 141 17.7 | |
| 22 | 18 50.5 | 18 53.6 | 17 59.0 | 22 2.8 | 82 10.3 | 142 17.9 | |
| 23 | 18 50.8 | 18 53.9 | 17 59.2 | 23 2.9 | 83 10.4 | 143 18.0 | |
| 24 | 18 51.0 | 18 54.1 | 17 59.5 | 24 3.0 | 84 10.6 | 144 18.1 | |
| 25 | 18 51.3 | 18 54.4 | 17 59.7 | 25 3.1 | 85 10.7 | 145 18.2 | |
| 26 | 18 51.5 | 18 54.6 | 17 60.0 | 26 3.3 | 86 10.8 | 146 18.4 | |
| 27 | 18 51.8 | 18 54.9 | 17 60.2 | 27 3.4 | 87 10.9 | 147 18.5 | |
| 28 | 18 52.0 | 18 55.1 | 18 1.4 | 28 3.5 | 88 11.1 | 148 18.6 | |
| 29 | 18 52.3 | 18 55.4 | 18 1.7 | 29 3.6 | 89 11.2 | 149 18.7 | |
| 30 | 18 52.5 | 18 55.6 | 18 1.9 | 30 3.8 | 90 11.3 | 150 18.9 | |
| 31 | 18 52.8 | 18 55.9 | 18 1.1 | 31 3.9 | 91 11.5 | 151 19.0 | |
| 32 | 18 53.0 | 18 56.1 | 18 1.4 | 32 4.0 | 92 11.6 | 152 19.1 | |
| 33 | 18 53.3 | 18 56.4 | 18 1.6 | 33 4.2 | 93 11.7 | 153 19.3 | |
| 34 | 18 53.5 | 18 56.6 | 18 1.9 | 34 4.3 | 94 11.8 | 154 19.4 | |
| 35 | 18 53.8 | 18 56.9 | 18 2.1 | 35 4.4 | 95 12.0 | 155 19.5 | |
| 36 | 18 54.0 | 18 57.2 | 18 2.3 | 36 4.5 | 96 12.1 | 156 19.6 | |
| 37 | 18 54.3 | 18 57.4 | 18 2.6 | 37 4.7 | 97 12.2 | 157 19.8 | |
| 38 | 18 54.5 | 18 57.7 | 18 2.8 | 38 4.8 | 98 12.3 | 158 19.9 | |
| 39 | 18 54.8 | 18 57.9 | 18 3.1 | 39 4.9 | 99 12.5 | 159 20.0 | |
| 40 | 18 55.0 | 18 58.2 | 18 3.3 | 40 5.0 | 100 12.6 | 160 20.1 | |
| 41 | 18 55.3 | 18 58.4 | 18 3.5 | 41 5.2 | 101 12.7 | 161 20.3 | |
| 42 | 18 55.5 | 18 58.7 | 18 3.8 | 42 5.3 | 102 12.8 | 162 20.4 | |
| 43 | 18 55.8 | 18 58.9 | 18 4.0 | 43 5.4 | 103 13.0 | 163 20.5 | |
| 44 | 18 56.0 | 18 59.2 | 18 4.2 | 44 5.5 | 104 13.1 | 164 20.6 | |
| 45 | 18 56.3 | 18 59.4 | 18 4.5 | 45 5.7 | 105 13.2 | 165 20.8 | |
| 46 | 18 56.5 | 18 59.7 | 18 4.7 | 46 5.8 | 106 13.3 | 166 20.9 | |
| 47 | 18 56.8 | 18 59.9 | 18 5.0 | 47 5.9 | 107 13.5 | 167 21.0 | |
| 48 | 18 57.0 | 19 1.2 | 18 5.2 | 48 6.0 | 108 13.6 | 168 21.1 | |
| 49 | 18 57.3 | 19 1.4 | 18 5.4 | 49 6.2 | 109 13.7 | 169 21.3 | |
| 50 | 18 57.5 | 19 1.7 | 18 5.7 | 50 6.3 | 110 13.8 | 170 21.4 | |
| 51 | 18 57.8 | 19 1.9 | 18 5.9 | 51 6.4 | 111 14.0 | 171 21.5 | |
| 52 | 18 58.0 | 19 1.2 | 18 6.2 | 52 6.5 | 112 14.1 | 172 21.6 | |
| 53 | 18 58.3 | 19 1.4 | 18 6.4 | 53 6.7 | 113 14.2 | 173 21.8 | |
| 54 | 18 58.5 | | | | | | |

1 h 16 min

1 h 17 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | o ° | ' ° | o ° | ' ° | |
| 0 | 19 .0 | 19 3.2 | 18 8.1 | 0 .0 | 60 7.7 | 120 15.3 | |
| 1 | 19 .3 | 19 3.4 | 18 8.3 | 1 .1 | 61 7.8 | 121 15.4 | |
| 2 | 19 .5 | 19 3.7 | 18 8.5 | 2 .3 | 62 7.9 | 122 15.6 | |
| 3 | 19 .8 | 19 3.9 | 18 8.8 | 3 .4 | 63 8.0 | 123 15.7 | |
| 4 | 19 1.0 | 19 4.2 | 18 9.0 | 4 .5 | 64 8.2 | 124 15.8 | |
| 5 | 19 1.3 | 19 4.4 | 18 9.3 | 5 .6 | 65 8.3 | 125 15.9 | |
| 6 | 19 1.5 | 19 4.7 | 18 9.5 | 6 .8 | 66 8.4 | 126 16.1 | |
| 7 | 19 1.8 | 19 4.9 | 18 9.7 | 7 .9 | 67 8.5 | 127 16.2 | |
| 8 | 19 2.0 | 19 5.2 | 18 10.0 | 8 .1 | 68 8.7 | 128 16.3 | |
| 9 | 19 2.3 | 19 5.4 | 18 10.2 | 9 1.1 | 69 8.8 | 129 16.4 | |
| 10 | 19 2.5 | 19 5.7 | 18 10.5 | 10 1.3 | 70 8.9 | 130 16.6 | |
| 11 | 19 2.8 | 19 5.9 | 18 10.7 | 11 1.4 | 71 9.1 | 131 16.7 | |
| 12 | 19 3.0 | 19 6.2 | 18 10.9 | 12 1.5 | 72 9.2 | 132 16.8 | |
| 13 | 19 3.3 | 19 6.4 | 18 11.2 | 13 1.7 | 73 9.3 | 133 17.0 | |
| 14 | 19 3.5 | 19 6.7 | 18 11.4 | 14 1.8 | 74 9.4 | 134 17.1 | |
| 15 | 19 3.8 | 19 6.9 | 18 11.6 | 15 1.9 | 75 9.6 | 135 17.2 | |
| 16 | 19 4.0 | 19 7.2 | 18 11.9 | 16 2.0 | 76 9.7 | 136 17.3 | |
| 17 | 19 4.3 | 19 7.4 | 18 12.1 | 17 2.2 | 77 9.8 | 137 17.5 | |
| 18 | 19 4.5 | 19 7.7 | 18 12.4 | 18 2.3 | 78 9.9 | 138 17.6 | |
| 19 | 19 4.8 | 19 7.9 | 18 12.6 | 19 2.4 | 79 10.1 | 139 17.7 | |
| 20 | 19 5.0 | 19 8.2 | 18 12.8 | 20 2.6 | 80 10.2 | 140 17.9 | |
| 21 | 19 5.3 | 19 8.4 | 18 13.1 | 21 2.7 | 81 10.3 | 141 18.0 | |
| 22 | 19 5.5 | 19 8.7 | 18 13.3 | 22 2.8 | 82 10.5 | 142 18.1 | |
| 23 | 19 5.8 | 19 8.9 | 18 13.6 | 23 2.9 | 83 10.6 | 143 18.2 | |
| 24 | 19 6.0 | 19 9.2 | 18 13.8 | 24 3.1 | 84 10.7 | 144 18.4 | |
| 25 | 19 6.3 | 19 9.4 | 18 14.0 | 25 3.2 | 85 10.8 | 145 18.5 | |
| 26 | 19 6.5 | 19 9.7 | 18 14.3 | 26 3.3 | 86 11.0 | 146 18.6 | |
| 27 | 19 6.8 | 19 9.9 | 18 14.5 | 27 3.4 | 87 11.1 | 147 18.7 | |
| 28 | 19 7.0 | 19 10.2 | 18 14.7 | 28 3.6 | 88 11.2 | 148 18.9 | |
| 29 | 19 7.3 | 19 10.4 | 18 15.0 | 29 3.7 | 89 11.3 | 149 19.0 | |
| 30 | 19 7.5 | 19 10.7 | 18 15.2 | 30 3.8 | 90 11.5 | 150 19.1 | |
| 31 | 19 7.8 | 19 10.9 | 18 15.5 | 31 4.0 | 91 11.6 | 151 19.3 | |
| 32 | 19 8.0 | 19 11.2 | 18 15.7 | 32 4.1 | 92 11.7 | 152 19.4 | |
| 33 | 19 8.3 | 19 11.4 | 18 15.9 | 33 4.2 | 93 11.9 | 153 19.5 | |
| 34 | 19 8.5 | 19 11.7 | 18 16.2 | 34 4.3 | 94 12.0 | 154 19.6 | |
| 35 | 19 8.8 | 19 11.9 | 18 16.4 | 35 4.5 | 95 12.1 | 155 19.8 | |
| 36 | 19 9.0 | 19 12.2 | 18 16.7 | 36 4.6 | 96 12.2 | 156 19.9 | |
| 37 | 19 9.3 | 19 12.4 | 18 16.9 | 37 4.7 | 97 12.4 | 157 20.0 | |
| 38 | 19 9.5 | 19 12.7 | 18 17.1 | 38 4.8 | 98 12.5 | 158 20.1 | |
| 39 | 19 9.8 | 19 12.9 | 18 17.4 | 39 5.0 | 99 12.6 | 159 20.3 | |
| 40 | 19 10.0 | 19 13.2 | 18 17.6 | 40 5.1 | 100 12.8 | 160 20.4 | |
| 41 | 19 10.3 | 19 13.4 | 18 17.8 | 41 5.2 | 101 12.9 | 161 20.5 | |
| 42 | 19 10.5 | 19 13.7 | 18 18.1 | 42 5.4 | 102 13.0 | 162 20.7 | |
| 43 | 19 10.8 | 19 13.9 | 18 18.3 | 43 5.5 | 103 13.1 | 163 20.8 | |
| 44 | 19 11.0 | 19 14.2 | 18 18.6 | 44 5.6 | 104 13.3 | 164 20.9 | |
| 45 | 19 11.3 | 19 14.4 | 18 18.8 | 45 5.7 | 105 13.4 | 165 21.0 | |
| 46 | 19 11.5 | 19 14.7 | 18 19.0 | 46 5.9 | 106 13.5 | 166 21.2 | |
| 47 | 19 11.8 | 19 14.9 | 18 19.3 | 47 6.0 | 107 13.6 | 167 21.3 | |
| 48 | 19 12.0 | 19 15.2 | 18 19.5 | 48 6.1 | 108 13.8 | 168 21.4 | |
| 49 | 19 12.3 | 19 15.5 | 18 19.8 | 49 6.2 | 109 13.9 | 169 21.5 | |
| 50 | 19 12.5 | 19 15.7 | 18 20.0 | 50 6.4 | 110 14.0 | 170 21.7 | |
| 51 | 19 12.8 | 19 16.0 | 18 20.2 | 51 6.5 | 111 14.2 | 171 21.8 | |
| 52 | 19 13.0 | 19 16.2 | 18 20.5 | 52 6.6 | 112 14.3 | 172 21.9 | |
| 53 | 19 13.3 | 19 16.5 | 18 20.7 | 53 6.8 | 113 14.4 | 173 22.1 | |
| 54 | 19 13.5 | 19 16.7 | 18 21.0 | 54 6.9 | 114 14.5 | 174 22.2 | |
| 55 | 19 13.8 | 19 17.0 | 18 21.2 | 55 7.0 | 115 14.7 | 175 22.3 | |
| 56 | 19 14.0 | 19 17.2 | 18 21.4 | 56 7.1 | 116 14.8 | 176 22.4 | |
| 57 | 19 14.3 | 19 17.5 | 18 21.7 | 57 7.3 | 117 14.9 | 177 22.6 | |
| 58 | 19 14.5 | 19 17.7 | 18 21.9 | 58 7.4 | 118 15.0 | 178 22.7 | |
| 59 | 19 14.8 | 19 18.0 | 18 22.1 | 59 7.5 | 119 15.2 | 179 22.8 | |
| 60 | 19 15.0 | 19 18.2 | 18 22.4 | 60 7.7 | 120 15.3 | 180 23.0 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | o ° | ' ° | o ° | ' ° | |
| 0 | 19 15.0 | 19 18.2 | 18 22.4 | 0 .0 | 60 7.8 | 120 15.5 | |
| 1 | 19 15.3 | 19 18.5 | 18 22.6 | 1 .1 | 61 7.9 | 121 15.6 | |
| 2 | 19 15.5 | 19 18.7 | 18 22.9 | 2 .3 | 62 8.0 | 122 15.8 | |
| 3 | 19 15.8 | 19 19.0 | 18 23.1 | 3 .4 | 63 8.1 | 123 15.9 | |
| 4 | 19 16.0 | 19 19.2 | 18 23.3 | 4 .5 | 64 8.3 | 124 16.0 | |
| 5 | 19 16.3 | 19 19.5 | 18 23.6 | 5 .6 | 65 8.4 | 125 16.1 | |
| 6 | 19 16.5 | 19 19.7 | 18 23.8 | 6 .8 | 66 8.5 | 126 16.3 | |
| 7 | 19 16.8 | 19 20.0 | 18 24.1 | 7 .9 | 67 8.7 | 127 16.4 | |
| 8 | 19 17.0 | 19 20.2 | 18 24.3 | 8 1.0 | 68 8.8 | 128 16.5 | |
| 9 | 19 17.3 | 19 20.5 | 18 24.5 | 9 1.2 | 69 8.9 | 129 16.7 | |
| 10 | 19 17.5 | 19 20.7 | 18 24.8 | 10 1.3 | 70 9.0 | 130 16.8 | |
| 11 | 19 17.8 | 19 21.0 | 18 25.0 | 11 1.4 | 71 9.2 | 131 16.9 | |
| 12 | 19 18.0 | 19 21.2 | 18 25.2 | 12 1.6 | 72 9.3 | 132 17.1 | |
| 13 | 19 18.3 | 19 21.5 | 18 25.5 | 13 1.7 | 73 9.4 | 133 17.2 | |
| 14 | 19 18.5 | 19 21.7 | 18 25.7 | 14 1.8 | 74 9.6 | 134 17.3 | |
| 15 | 19 18.8 | 19 22.0 | 18 26.0 | 15 1.9 | 75 9.7 | 135 17.4 | |
| 16 | 19 19.0 | 19 22.2 | 18 26.2 | 16 2.1 | 76 9.8 | 136 17.6 | |
| 17 | 19 19.3 | 19 22.5 | 18 26.4 | 17 2.2 | 77 9.9 | 137 17.7 | |
| 18 | 19 19.5 | 19 22.7 | 18 26.7 | 18 2.3 | 78 10.1 | 138 17.8 | |
| 19 | 19 19.8 | 19 23.0 | 18 26.9 | 19 2.5 | 79 10.2 | 139 18.0 | |
| 20 | 19 20.0 | 19 23.2 | 18 27.2 | 20 2.6 | 80 10.3 | 140 18.1 | |
| 21 | 19 20.3 | 19 23.5 | 18 27.4 | 21 2.7 | 81 10.5 | 141 18.2 | |
| 22 | 19 20.5 | 19 23.7 | 18 27.6 | 22 2.8 | 82 10.6 | 142 18.3 | |
| 23 | 19 20.8 | 19 24.0 | 18 27.9 | 23 3.0 | 83 10.7 | 143 18.5 | |
| 24 | 19 21.0 | 19 24.2 | 18 28.1 | 24 3.1 | 84 10.9 | 144 18.6 | |
| 25 | 19 21.3 | 19 24.5 | 18 28.3 | 25 3.2 | 85 11.0 | 145 18.7 | |
| 26 | 19 21.5 | 19 24.7 | 18 28.6 | 26 3.4 | 86 11.1 | 146 18.9 | |
| 27 | 19 21.8 | 19 25.0 | 18 28.8 | 27 3.5 | 87 11.2 | 147 19.0 | |
| 28 | 19 22.0 | 19 25.2 | 18 29.1 | 28 3.6 | 88 11.4 | 148 19.1 | |
| 29 | 19 22.3 | 19 25.5 | 18 29.3 | 29 3.7 | 89 11.5 | 149 19.2 | |
| 30 | 19 22.5 | 19 25.7 | 18 29.5 | 30 3.9 | 90 11.6 | 150 19.4 | |
| 31 | 19 22.8 | 19 26.0 | 18 29.8 | 31 4.0 | 91 11.8 | 151 19.5 | |
| 32 | 19 23.0 | 19 26.2 | 18 30.0 | 32 4.1 | 92 11.9 | 152 19.6 | |
| 33 | 19 23.3 | 19 26.5 | 18 30.3 | 33 4.3 | 93 12.0 | 153 19.8 | |
| 34 | 19 23.5 | 19 26.7 | 18 30.5 | 34 4.4 | 94 12.1 | 154 19.9 | |
| 35 | 19 23.8 | 19 27.0 | 18 30.7 | 35 4.5 | 95 12.3 | 155 20.0 | |
| 36 | 19 24.0 | 19 27.2 | 18 31.0 | 36 4.7 | 96 12.4 | 156 20.2 | |
| 37 | 19 24.3 | 19 27.5 | 18 31.2 | 37 4.8 | 97 12.5 | 157 20.3 | |
| 38 | 19 24.5 | 19 27.7 | 18 31.4 | 38 4.9 | 98 12.7 | 158 20.4 | |
| 39 | 19 24.8 | 19 28.0 | 18 31.7 | 39 5.0 | 99 12.8 | 159 20.5 | |
| 40 | 19 25.0 | 19 28.2 | 18 31.9 | 40 5.2 | 100 12.9 | 160 20.7 | |
| 41 | 19 25.3 | 19 28.5 | 18 32.2 | 41 5.3 | 101 13.0 | 161 20.8 | |
| 42 | 19 25.5 | 19 28.7 | 18 32.4 | 42 5.4 | 102 13.2 | 162 20.9 | |
| 43 | 19 25.8 | 19 29.0 | 18 32.6 | 43 5.6 | 103 13.3 | 163 21.1 | |
| 44 | 19 26.0 | 19 29.2 | 18 32.9 | 44 5.7 | 104 13.4 | 164 21.2 | |
| 45 | 19 26.3 | 19 29.5 | 18 33.1 | 45 5.8 | 105 13.6 | 165 21.3 | |
| 46 | 19 26.5 | 19 29.7 | 18 33.4 | 46 5.9 | 106 13.7 | 166 21.4 | |
| 47 | 19 26.8 | 19 30.0 | 18 33.6 | 47 6.1 | 107 13.8 | 167 21.6 | |
| 48 | 19 27.0 | 19 30.2 | 18 33.8 | 48 6.2 | 108 14.0 | 168 21.7 | |
| 49 | 19 27.3 | 19 30.5 | 18 34.1 | 49 6.3 | 109 14.1 | 169 21.8 | |
| 50 | 19 27.5 | 19 30.7 | 18 34.3 | 50 6.5 | 110 14.2 | 170 22.0 | |
| 51 | 19 27.8 | 19 31.0 | 18 34.6 | 51 6.6 | 111 14.3 | 171 22.1 | |
| 52 | 19 28.0 | 19 31.2 | 18 34.8 | 52 6.7 | 112 14.5 | 172 22.2 | |
| 53 | 19 28.3 | 19 31.5 | 18 35.0 | 53 6.8 | 113 14.6 | 173 22.3 | |
| 54 | 19 28.5 | 19 31.7 | 18 35.3 | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | ° | ° | ° | ° |
| 0 | 19 30.0 | 19 33.3 | 18 36.7 | 0 .0 | 60 7.9 | 120 15.7 | |
| 1 | 19 30.3 | 19 33.5 | 18 36.9 | 1 .1 | 61 8.0 | 121 15.8 | |
| 2 | 19 30.5 | 19 33.8 | 18 37.2 | 2 .3 | 62 8.1 | 122 16.0 | |
| 3 | 19 30.8 | 19 34.0 | 18 37.4 | 3 .4 | 63 8.2 | 123 16.1 | |
| 4 | 19 31.0 | 19 34.3 | 18 37.7 | 4 .5 | 64 8.4 | 124 16.2 | |
| 5 | 19 31.3 | 19 34.5 | 18 37.9 | 5 .7 | 65 8.5 | 125 16.4 | |
| 6 | 19 31.5 | 19 34.8 | 18 38.1 | 6 .8 | 66 8.6 | 126 16.5 | |
| 7 | 19 31.8 | 19 35.0 | 18 38.4 | 7 .9 | 67 8.8 | 127 16.6 | |
| 8 | 19 32.0 | 19 35.3 | 18 38.6 | 8 .0 | 68 8.9 | 128 16.7 | |
| 9 | 19 32.3 | 19 35.5 | 18 38.8 | 9 1.2 | 69 9.0 | 129 16.9 | |
| 10 | 19 32.5 | 19 35.8 | 18 39.1 | 10 1.3 | 70 9.2 | 130 17.0 | |
| 11 | 19 32.8 | 19 36.0 | 18 39.3 | 11 1.4 | 71 9.3 | 131 17.1 | |
| 12 | 19 33.0 | 19 36.3 | 18 39.6 | 12 1.6 | 72 9.4 | 132 17.3 | |
| 13 | 19 33.3 | 19 36.5 | 18 39.8 | 13 1.7 | 73 9.6 | 133 17.4 | |
| 14 | 19 33.5 | 19 36.8 | 18 40.0 | 14 1.8 | 74 9.7 | 134 17.5 | |
| 15 | 19 33.8 | 19 37.0 | 18 40.3 | 15 2.0 | 75 9.8 | 135 17.7 | |
| 16 | 19 34.0 | 19 37.3 | 18 40.5 | 16 2.1 | 76 9.9 | 136 17.8 | |
| 17 | 19 34.3 | 19 37.5 | 18 40.8 | 17 2.2 | 77 10.1 | 137 17.9 | |
| 18 | 19 34.5 | 19 37.8 | 18 41.0 | 18 2.4 | 78 10.2 | 138 18.1 | |
| 19 | 19 34.8 | 19 38.0 | 18 41.2 | 19 2.5 | 79 10.3 | 139 18.2 | |
| 20 | 19 35.0 | 19 38.3 | 18 41.5 | 20 2.6 | 80 10.5 | 140 18.3 | |
| 21 | 19 35.3 | 19 38.5 | 18 41.7 | 21 2.7 | 81 10.6 | 141 18.4 | |
| 22 | 19 35.5 | 19 38.8 | 18 41.9 | 22 2.9 | 82 10.7 | 142 18.6 | |
| 23 | 19 35.8 | 19 39.0 | 18 42.2 | 23 3.0 | 83 10.9 | 143 18.7 | |
| 24 | 19 36.0 | 19 39.3 | 18 42.4 | 24 3.1 | 84 11.0 | 144 18.8 | |
| 25 | 19 36.3 | 19 39.5 | 18 42.7 | 25 3.3 | 85 11.1 | 145 19.0 | |
| 26 | 19 36.5 | 19 39.8 | 18 42.9 | 26 3.4 | 86 11.3 | 146 19.1 | |
| 27 | 19 36.8 | 19 40.0 | 18 43.1 | 27 3.5 | 87 11.4 | 147 19.2 | |
| 28 | 19 37.0 | 19 40.3 | 18 43.4 | 28 3.7 | 88 11.5 | 148 19.4 | |
| 29 | 19 37.3 | 19 40.5 | 18 43.6 | 29 3.8 | 89 11.6 | 149 19.5 | |
| 30 | 19 37.5 | 19 40.8 | 18 43.9 | 30 3.9 | 90 11.8 | 150 19.6 | |
| 31 | 19 37.8 | 19 41.0 | 18 44.1 | 31 4.1 | 91 11.9 | 151 19.8 | |
| 32 | 19 38.0 | 19 41.3 | 18 44.3 | 32 4.2 | 92 12.0 | 152 19.9 | |
| 33 | 19 38.3 | 19 41.5 | 18 44.6 | 33 4.3 | 93 12.2 | 153 20.0 | |
| 34 | 19 38.5 | 19 41.8 | 18 44.8 | 34 4.4 | 94 12.3 | 154 20.1 | |
| 35 | 19 38.8 | 19 42.0 | 18 45.1 | 35 4.6 | 95 12.4 | 155 20.3 | |
| 36 | 19 39.0 | 19 42.3 | 18 45.3 | 36 4.7 | 96 12.6 | 156 20.4 | |
| 37 | 19 39.3 | 19 42.5 | 18 45.5 | 37 4.8 | 97 12.7 | 157 20.5 | |
| 38 | 19 39.5 | 19 42.8 | 18 45.8 | 38 5.0 | 98 12.8 | 158 20.7 | |
| 39 | 19 39.8 | 19 43.0 | 18 46.0 | 39 5.1 | 99 13.0 | 159 20.8 | |
| 40 | 19 40.0 | 19 43.3 | 18 46.2 | 40 5.2 | 100 13.1 | 160 20.9 | |
| 41 | 19 40.3 | 19 43.5 | 18 46.5 | 41 5.4 | 101 13.2 | 161 21.1 | |
| 42 | 19 40.5 | 19 43.8 | 18 46.7 | 42 5.5 | 102 13.3 | 162 21.2 | |
| 43 | 19 40.8 | 19 44.0 | 18 47.0 | 43 5.6 | 103 13.5 | 163 21.3 | |
| 44 | 19 41.0 | 19 44.3 | 18 47.2 | 44 5.8 | 104 13.6 | 164 21.5 | |
| 45 | 19 41.3 | 19 44.5 | 18 47.4 | 45 5.9 | 105 13.7 | 165 21.6 | |
| 46 | 19 41.5 | 19 44.8 | 18 47.7 | 46 6.0 | 106 13.9 | 166 21.7 | |
| 47 | 19 41.8 | 19 45.0 | 18 47.9 | 47 6.1 | 107 14.0 | 167 21.8 | |
| 48 | 19 42.0 | 19 45.3 | 18 48.2 | 48 6.3 | 108 14.1 | 168 22.0 | |
| 49 | 19 42.3 | 19 45.5 | 18 48.4 | 49 6.4 | 109 14.3 | 169 22.1 | |
| 50 | 19 42.5 | 19 45.8 | 18 48.6 | 50 6.5 | 110 14.4 | 170 22.2 | |
| 51 | 19 42.8 | 19 46.0 | 18 48.9 | 51 6.7 | 111 14.5 | 171 22.4 | |
| 52 | 19 43.0 | 19 46.3 | 18 49.1 | 52 6.8 | 112 14.7 | 172 22.5 | |
| 53 | 19 43.3 | 19 46.5 | 18 49.3 | 53 6.9 | 113 14.8 | 173 22.6 | |
| 54 | 19 43.5 | 19 46.8 | 18 49.6 | 54 7.1 | 114 14.9 | 174 22.8 | |
| 55 | 19 43.8 | 19 47.0 | 18 49.8 | 55 7.2 | 115 15.0 | 175 22.9 | |
| 56 | 19 44.0 | 19 47.3 | 18 50.1 | 56 7.3 | 116 15.2 | 176 23.0 | |
| 57 | 19 44.3 | 19 47.5 | 18 50.3 | 57 7.5 | 117 15.3 | 177 23.2 | |
| 58 | 19 44.5 | 19 47.8 | 18 50.5 | 58 7.6 | 118 15.4 | 178 23.3 | |
| 59 | 19 44.8 | 19 48.0 | 18 50.8 | 59 7.7 | 119 15.6 | 179 23.4 | |
| 60 | 19 45.0 | 19 48.3 | 18 51.0 | 60 7.9 | 120 15.7 | 180 23.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | ° | ° | ° | ° |
| 0 | 19 45.0 | 19 48.3 | 18 51.0 | 0 .0 | 60 8.0 | 120 15.9 | |
| 1 | 19 45.3 | 19 48.5 | 18 51.3 | 1 .1 | 61 8.1 | 121 16.0 | |
| 2 | 19 45.5 | 19 48.8 | 18 51.5 | 2 .3 | 62 8.2 | 122 16.2 | |
| 3 | 19 45.8 | 19 49.0 | 18 51.7 | 3 .4 | 63 8.3 | 123 16.3 | |
| 4 | 19 46.0 | 19 49.3 | 18 52.0 | 4 .5 | 64 8.5 | 124 16.4 | |
| 5 | 19 46.3 | 19 49.5 | 18 52.2 | 5 .7 | 65 8.6 | 125 16.6 | |
| 6 | 19 46.5 | 19 49.8 | 18 52.4 | 6 .8 | 66 8.7 | 126 16.7 | |
| 7 | 19 46.8 | 19 50.0 | 18 52.7 | 7 .9 | 67 8.9 | 127 16.8 | |
| 8 | 19 47.0 | 19 50.3 | 18 52.9 | 8 1.1 | 68 9.0 | 128 17.0 | |
| 9 | 19 47.3 | 19 50.5 | 18 53.2 | 9 1.2 | 69 9.1 | 129 17.1 | |
| 10 | 19 47.5 | 19 50.8 | 18 53.4 | 10 1.3 | 70 9.3 | 130 17.2 | |
| 11 | 19 47.8 | 19 51.0 | 18 53.6 | 11 1.5 | 71 9.4 | 131 17.4 | |
| 12 | 19 48.0 | 19 51.3 | 18 53.9 | 12 1.6 | 72 9.5 | 132 17.5 | |
| 13 | 19 48.3 | 19 51.6 | 18 54.1 | 13 1.7 | 73 9.7 | 133 17.6 | |
| 14 | 19 48.5 | 19 51.8 | 18 54.4 | 14 1.9 | 74 9.8 | 134 17.8 | |
| 15 | 19 48.8 | 19 52.1 | 18 54.6 | 15 2.0 | 75 9.9 | 135 17.9 | |
| 16 | 19 49.0 | 19 52.3 | 18 54.8 | 16 2.1 | 76 10.1 | 136 18.0 | |
| 17 | 19 49.3 | 19 52.6 | 18 55.1 | 17 2.3 | 77 10.2 | 137 18.2 | |
| 18 | 19 49.5 | 19 52.8 | 18 55.3 | 18 2.4 | 78 10.3 | 138 18.3 | |
| 19 | 19 49.8 | 19 53.1 | 18 55.6 | 19 2.5 | 79 10.5 | 139 18.4 | |
| 20 | 19 50.0 | 19 53.3 | 18 55.8 | 20 2.7 | 80 10.6 | 140 18.6 | |
| 21 | 19 50.3 | 19 53.6 | 18 56.0 | 21 2.8 | 81 10.7 | 141 18.7 | |
| 22 | 19 50.5 | 19 53.8 | 18 56.3 | 22 2.9 | 82 10.9 | 142 18.8 | |
| 23 | 19 50.8 | 19 54.1 | 18 56.5 | 23 3.0 | 83 11.0 | 143 18.9 | |
| 24 | 19 51.0 | 19 54.3 | 18 56.7 | 24 3.2 | 84 11.1 | 144 19.1 | |
| 25 | 19 51.3 | 19 54.6 | 18 57.0 | 25 3.3 | 85 11.3 | 145 19.2 | |
| 26 | 19 51.5 | 19 54.8 | 18 57.2 | 26 3.4 | 86 11.4 | 146 19.3 | |
| 27 | 19 51.8 | 19 55.1 | 18 57.5 | 27 3.6 | 87 11.5 | 147 19.5 | |
| 28 | 19 52.0 | 19 55.3 | 18 57.7 | 28 3.7 | 88 11.7 | 148 19.6 | |
| 29 | 19 52.3 | 19 55.6 | 18 57.9 | 29 3.8 | 89 11.8 | 149 19.7 | |
| 30 | 19 52.5 | 19 55.8 | 18 58.2 | 30 4.0 | 90 11.9 | 150 19.9 | |
| 31 | 19 52.8 | 19 56.1 | 18 58.4 | 31 4.1 | 91 12.1 | 151 20.0 | |
| 32 | 19 53.0 | 19 56.3 | 18 58.7 | 32 4.2 | 92 12.2 | 152 20.1 | |
| 33 | 19 53.3 | 19 56.6 | 18 58.9 | 33 4.4 | 93 12.3 | 153 20.3 | |
| 34 | 19 53.5 | 19 56.8 | 18 59.1 | 34 4.5 | 94 12.5 | 154 20.4 | |
| 35 | 19 53.8 | 19 57.1 | 18 59.4 | 35 4.6 | 95 12.6 | 155 20.5 | |
| 36 | 19 54.0 | 19 57.3 | 18 59.6 | 36 4.8 | 96 12.7 | 156 20.7 | |
| 37 | 19 54.3 | 19 57.6 | 18 59.8 | 37 4.9 | 97 12.9 | 157 20.8 | |
| 38 | 19 54.5 | 19 57.8 | 19 1 . | 38 5.0 | 98 13.0 | 158 20.9 | |
| 39 | 19 54.8 | 19 58.1 | 19 1 . | 39 5.2 | 99 13.1 | 159 21.1 | |
| 40 | 19 55.0 | 19 58.3 | 19 1 . | 40 5.3 | 100 13.3 | 160 21.2 | |
| 41 | 19 55.3 | 19 58.6 | 19 1 . | 41 5.4 | 101 13.4 | 161 21.3 | |
| 42 | 19 55.5 | 19 58.8 | 19 1 . | 42 5.6 | 102 13.5 | 162 21.5 | |
| 43 | 19 55.8 | 19 59.1 | 19 1 . | 43 5.7 | 103 13.6 | 163 21.6 | |
| 44 | 19 56.0 | 19 59.3 | 19 1 . | 44 5.8 | 104 13.8 | 164 21.7 | |
| 45 | 19 56.3 | 19 59.6 | 19 1 . | 45 6.0 | 105 13.9 | 165 21.9 | |
| 46 | 19 56.5 | 19 59.8 | 19 2 . | 46 6.1 | 106 14.0 | 166 22.0 | |
| 47 | 19 56.8 | 19 60.1 | 19 2 . | 47 6.2 | 107 14.2 | 167 22.1 | |
| 48 | 19 57.0 | 19 60.3 | 19 2 . | 48 6.4 | 108 14.3 | 168 22.3 | |
| 49 | 19 57.3 | 19 60.6 | 19 2 . | 49 6.5 | 109 14.4 | 169 22.4 | |
| 50 | 19 57.5 | 19 60.8 | 19 2 . | 50 6.6 | 110 14.6 | 170 22.5 | |
| 51 | 19 57.8 | 19 61.0 | 19 3 . | 51 6.8 | 111 14.7 | 171 22.7 | |
| 52 | 19 58.0 | 19 61.3 | 19 3 . | 52 6.9 | 112 14.8 | 172 22.8 | |
| 53 | 19 58.3 | 19 61.5 | 19 3 . | 53 7.0 | 113 15.0 | 173 22.9 | |
| 54 | | | | | | | |

1 h 20 min

1 h 21 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | o ° | ' ° | o ° | ' ° | |
| 0 | 20 .0 | 20 3.3 | 19 5.3 | 0 .0 | 60 8.1 | 120 16.1 | |
| 1 | 20 .3 | 20 3.6 | 19 5.6 | 1 .1 | 61 8.2 | 121 16.2 | |
| 2 | 20 .5 | 20 3.8 | 19 5.8 | 2 .3 | 62 8.3 | 122 16.4 | |
| 3 | 20 .8 | 20 4.1 | 19 6.0 | 3 .4 | 63 8.5 | 123 16.5 | |
| 4 | 20 1.0 | 20 4.3 | 19 6.3 | 4 .5 | 64 8.6 | 124 16.6 | |
| 5 | 20 1.3 | 20 4.6 | 19 6.5 | 5 .7 | 65 8.7 | 125 16.8 | |
| 6 | 20 1.5 | 20 4.8 | 19 6.8 | 6 .8 | 66 8.9 | 126 16.9 | |
| 7 | 20 1.8 | 20 5.1 | 19 7.0 | 7 .9 | 67 9.0 | 127 17.0 | |
| 8 | 20 2.0 | 20 5.3 | 19 7.2 | 8 .1 | 68 9.1 | 128 17.2 | |
| 9 | 20 2.3 | 20 5.6 | 19 7.5 | 9 1.2 | 69 9.3 | 129 17.3 | |
| 10 | 20 2.5 | 20 5.8 | 19 7.7 | 10 1.3 | 70 9.4 | 130 17.4 | |
| 11 | 20 2.8 | 20 6.1 | 19 8.0 | 11 1.5 | 71 9.5 | 131 17.6 | |
| 12 | 20 3.0 | 20 6.3 | 19 8.2 | 12 1.6 | 72 9.7 | 132 17.7 | |
| 13 | 20 3.3 | 20 6.6 | 19 8.4 | 13 1.7 | 73 9.8 | 133 17.8 | |
| 14 | 20 3.5 | 20 6.8 | 19 8.7 | 14 1.9 | 74 9.9 | 134 18.0 | |
| 15 | 20 3.8 | 20 7.1 | 19 8.9 | 15 2.0 | 75 10.1 | 135 18.1 | |
| 16 | 20 4.0 | 20 7.3 | 19 9.2 | 16 2.1 | 76 10.2 | 136 18.2 | |
| 17 | 20 4.3 | 20 7.6 | 19 9.4 | 17 2.3 | 77 10.3 | 137 18.4 | |
| 18 | 20 4.5 | 20 7.8 | 19 9.6 | 18 2.4 | 78 10.5 | 138 18.5 | |
| 19 | 20 4.8 | 20 8.1 | 19 9.9 | 19 2.5 | 79 10.6 | 139 18.6 | |
| 20 | 20 5.0 | 20 8.3 | 19 10.1 | 20 2.7 | 80 10.7 | 140 18.8 | |
| 21 | 20 5.3 | 20 8.6 | 19 10.3 | 21 2.8 | 81 10.9 | 141 18.9 | |
| 22 | 20 5.5 | 20 8.8 | 19 10.6 | 22 3.0 | 82 11.0 | 142 19.1 | |
| 23 | 20 5.8 | 20 9.1 | 19 10.8 | 23 3.1 | 83 11.1 | 143 19.2 | |
| 24 | 20 6.0 | 20 9.4 | 19 11.1 | 24 3.2 | 84 11.3 | 144 19.3 | |
| 25 | 20 6.3 | 20 9.6 | 19 11.3 | 25 3.4 | 85 11.4 | 145 19.5 | |
| 26 | 20 6.5 | 20 9.9 | 19 11.5 | 26 3.5 | 86 11.5 | 146 19.6 | |
| 27 | 20 6.8 | 20 10.1 | 19 11.8 | 27 3.6 | 87 11.7 | 147 19.7 | |
| 28 | 20 7.0 | 20 10.4 | 19 12.0 | 28 3.8 | 88 11.8 | 148 19.9 | |
| 29 | 20 7.3 | 20 10.6 | 19 12.3 | 29 3.9 | 89 11.9 | 149 20.0 | |
| 30 | 20 7.5 | 20 10.9 | 19 12.5 | 30 4.0 | 90 12.1 | 150 20.1 | |
| 31 | 20 7.8 | 20 11.1 | 19 12.7 | 31 4.2 | 91 12.2 | 151 20.3 | |
| 32 | 20 8.0 | 20 11.4 | 19 13.0 | 32 4.3 | 92 12.3 | 152 20.4 | |
| 33 | 20 8.3 | 20 11.6 | 19 13.2 | 33 4.4 | 93 12.5 | 153 20.5 | |
| 34 | 20 8.5 | 20 11.9 | 19 13.4 | 34 4.6 | 94 12.6 | 154 20.7 | |
| 35 | 20 8.8 | 20 12.1 | 19 13.7 | 35 4.7 | 95 12.7 | 155 20.8 | |
| 36 | 20 9.0 | 20 12.4 | 19 13.9 | 36 4.8 | 96 12.9 | 156 20.9 | |
| 37 | 20 9.3 | 20 12.6 | 19 14.2 | 37 5.0 | 97 13.0 | 157 21.1 | |
| 38 | 20 9.5 | 20 12.9 | 19 14.4 | 38 5.1 | 98 13.1 | 158 21.2 | |
| 39 | 20 9.8 | 20 13.1 | 19 14.6 | 39 5.2 | 99 13.3 | 159 21.3 | |
| 40 | 20 10.0 | 20 13.4 | 19 14.9 | 40 5.4 | 100 13.4 | 160 21.5 | |
| 41 | 20 10.3 | 20 13.6 | 19 15.1 | 41 5.5 | 101 13.6 | 161 21.6 | |
| 42 | 20 10.5 | 20 13.9 | 19 15.4 | 42 5.6 | 102 13.7 | 162 21.7 | |
| 43 | 20 10.8 | 20 14.1 | 19 15.6 | 43 5.8 | 103 13.8 | 163 21.9 | |
| 44 | 20 11.0 | 20 14.4 | 19 15.8 | 44 5.9 | 104 14.0 | 164 22.0 | |
| 45 | 20 11.3 | 20 14.6 | 19 16.1 | 45 6.0 | 105 14.1 | 165 22.1 | |
| 46 | 20 11.5 | 20 14.9 | 19 16.3 | 46 6.2 | 106 14.2 | 166 22.3 | |
| 47 | 20 11.8 | 20 15.1 | 19 16.5 | 47 6.3 | 107 14.4 | 167 22.4 | |
| 48 | 20 12.0 | 20 15.4 | 19 16.8 | 48 6.4 | 108 14.5 | 168 22.5 | |
| 49 | 20 12.3 | 20 15.6 | 19 17.0 | 49 6.6 | 109 14.6 | 169 22.7 | |
| 50 | 20 12.5 | 20 15.9 | 19 17.3 | 50 6.7 | 110 14.8 | 170 22.8 | |
| 51 | 20 12.8 | 20 16.1 | 19 17.5 | 51 6.8 | 111 14.9 | 171 22.9 | |
| 52 | 20 13.0 | 20 16.4 | 19 17.7 | 52 7.0 | 112 15.0 | 172 23.1 | |
| 53 | 20 13.3 | 20 16.6 | 19 18.0 | 53 7.1 | 113 15.2 | 173 23.2 | |
| 54 | 20 13.5 | 20 16.9 | 19 18.2 | 54 7.2 | 114 15.3 | 174 23.3 | |
| 55 | 20 13.8 | 20 17.1 | 19 18.5 | 55 7.4 | 115 15.4 | 175 23.5 | |
| 56 | 20 14.0 | 20 17.4 | 19 18.7 | 56 7.5 | 116 15.6 | 176 23.6 | |
| 57 | 20 14.3 | 20 17.6 | 19 18.9 | 57 7.6 | 117 15.7 | 177 23.7 | |
| 58 | 20 14.5 | 20 17.9 | 19 19.2 | 58 7.8 | 118 15.8 | 178 23.9 | |
| 59 | 20 14.8 | 20 18.1 | 19 19.4 | 59 7.9 | 119 16.0 | 179 24.0 | |
| 60 | 20 15.0 | 20 18.4 | 19 19.7 | 60 8.1 | 120 16.1 | 180 24.2 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | o ° | ' ° | o ° | ' ° | |
| 0 | 20 15.0 | 20 18.4 | 19 19.7 | 0 .0 | 60 8.2 | 120 16.3 | |
| 1 | 20 15.3 | 20 18.6 | 19 19.9 | 1 .1 | 61 8.3 | 121 16.4 | |
| 2 | 20 15.5 | 20 18.9 | 19 20.1 | 2 .3 | 62 8.4 | 122 16.6 | |
| 3 | 20 15.8 | 20 19.1 | 19 20.4 | 3 .4 | 63 8.6 | 123 16.7 | |
| 4 | 20 16.0 | 20 19.4 | 19 20.6 | 4 .5 | 64 8.7 | 124 16.8 | |
| 5 | 20 16.3 | 20 19.6 | 19 20.8 | 5 .7 | 65 8.8 | 125 17.0 | |
| 6 | 20 16.5 | 20 19.9 | 19 21.1 | 6 .8 | 66 9.0 | 126 17.1 | |
| 7 | 20 16.8 | 20 20.1 | 19 21.3 | 7 .0 | 67 9.1 | 127 17.3 | |
| 8 | 20 17.0 | 20 20.4 | 19 21.6 | 8 .1 | 68 9.2 | 128 17.4 | |
| 9 | 20 17.3 | 20 20.6 | 19 21.8 | 9 .2 | 69 9.4 | 129 17.5 | |
| 10 | 20 17.5 | 20 20.9 | 19 22.0 | 10 1.4 | 70 9.5 | 130 17.7 | |
| 11 | 20 17.8 | 20 21.1 | 19 22.3 | 11 1.5 | 71 9.6 | 131 17.8 | |
| 12 | 20 18.0 | 20 21.4 | 19 22.5 | 12 1.6 | 72 9.8 | 132 17.9 | |
| 13 | 20 18.3 | 20 21.6 | 19 22.8 | 13 1.8 | 73 9.9 | 133 18.1 | |
| 14 | 20 18.5 | 20 21.9 | 19 23.0 | 14 1.9 | 74 10.1 | 134 18.2 | |
| 15 | 20 18.8 | 20 22.1 | 19 23.2 | 15 2.0 | 75 10.2 | 135 18.3 | |
| 16 | 20 19.0 | 20 22.4 | 19 23.5 | 16 2.2 | 76 10.3 | 136 18.5 | |
| 17 | 20 19.3 | 20 22.6 | 19 23.7 | 17 2.3 | 77 10.5 | 137 18.6 | |
| 18 | 20 19.5 | 20 22.9 | 19 23.9 | 18 2.4 | 78 10.6 | 138 18.7 | |
| 19 | 20 19.8 | 20 23.1 | 19 24.2 | 19 2.6 | 79 10.7 | 139 18.9 | |
| 20 | 20 20.0 | 20 23.4 | 19 24.4 | 20 2.7 | 80 10.9 | 140 19.0 | |
| 21 | 20 20.3 | 20 23.6 | 19 24.7 | 21 2.9 | 81 11.0 | 141 19.2 | |
| 22 | 20 20.5 | 20 23.9 | 19 24.9 | 22 3.0 | 82 11.1 | 142 19.3 | |
| 23 | 20 20.8 | 20 24.1 | 19 25.1 | 23 3.1 | 83 11.3 | 143 19.4 | |
| 24 | 20 21.0 | 20 24.4 | 19 25.4 | 24 3.3 | 84 11.4 | 144 19.6 | |
| 25 | 20 21.3 | 20 24.6 | 19 25.6 | 25 3.4 | 85 11.5 | 145 19.7 | |
| 26 | 20 21.5 | 20 24.9 | 19 25.9 | 26 3.5 | 86 11.7 | 146 19.8 | |
| 27 | 20 21.8 | 20 25.1 | 19 26.1 | 27 3.7 | 87 11.8 | 147 20.0 | |
| 28 | 20 22.0 | 20 25.4 | 19 26.3 | 28 3.8 | 88 12.0 | 148 20.1 | |
| 29 | 20 22.3 | 20 25.6 | 19 26.6 | 29 3.9 | 89 12.1 | 149 20.2 | |
| 30 | 20 22.5 | 20 25.9 | 19 26.8 | 30 4.1 | 90 12.2 | 150 20.4 | |
| 31 | 20 22.8 | 20 26.1 | 19 27.0 | 31 4.2 | 91 12.4 | 151 20.5 | |
| 32 | 20 23.0 | 20 26.4 | 19 27.3 | 32 4.3 | 92 12.5 | 152 20.6 | |
| 33 | 20 23.3 | 20 26.6 | 19 27.5 | 33 4.5 | 93 12.6 | 153 20.8 | |
| 34 | 20 23.5 | 20 26.9 | 19 27.8 | 34 4.6 | 94 12.8 | 154 20.9 | |
| 35 | 20 23.8 | 20 27.1 | 19 28.0 | 35 4.8 | 95 12.9 | 155 21.1 | |
| 36 | 20 24.0 | 20 27.4 | 19 28.2 | 36 4.9 | 96 13.0 | 156 21.2 | |
| 37 | 20 24.3 | 20 27.7 | 19 28.5 | 37 5.0 | 97 13.2 | 157 21.3 | |
| 38 | 20 24.5 | 20 27.9 | 19 28.7 | 38 5.2 | 98 13.3 | 158 21.5 | |
| 39 | 20 24.8 | 20 28.2 | 19 29.0 | 39 5.3 | 99 13.4 | 159 21.6 | |
| 40 | 20 25.0 | 20 28.4 | 19 29.2 | 40 5.4 | 100 13.6 | 160 21.7 | |
| 41 | 20 25.3 | 20 28.7 | 19 29.4 | 41 5.6 | 101 13.7 | 161 21.9 | |
| 42 | 20 25.5 | 20 28.9 | 19 29.7 | 42 5.7 | 102 13.9 | 162 22.0 | |
| 43 | 20 25.8 | 20 29.2 | 19 29.9 | 43 5.8 | 103 14.0 | 163 22.1 | |
| 44 | 20 26.0 | 20 29.4 | 19 30.1 | 44 6.0 | 104 14.1 | 164 22.3 | |
| 45 | 20 26.3 | 20 29.7 | 19 30.4 | 45 6.1 | 105 14.3 | 165 22.4 | |
| 46 | 20 26.5 | 20 29.9 | 19 30.6 | 46 6.2 | 106 14.4 | 166 22.5 | |
| 47 | 20 26.8 | 20 30.2 | 19 30.9 | 47 6.4 | 107 14.5 | 167 22.7 | |
| 48 | 20 27.0 | 20 30.4 | 19 31.1 | 48 6.5 | 108 14.7 | 168 22.8 | |
| 49 | 20 27.3 | 20 30.7 | 19 31.3 | 49 6.7 | 109 14.8 | 169 23.0 | |
| 50 | 20 27.5 | 20 30.9 | 19 31.6 | 50 6.8 | 110 14.9 | 170 23.1 | |
| 51 | 20 27.8 | 20 31.2 | 19 31.8 | 51 6.9 | 111 15.1 | 171 23.2 | |
| 52 | 20 28.0 | 20 31.4 | 19 32.1 | 52 7.1 | 112 15.2 | 172 23.4 | |
| 53 | 20 28.3 | 20 31.7 | 19 32.3 | 53 7.2 | 113 15.3 | 173 23.5 | |
| 54 | 20 28.5 | 20 31.9 | 19 32.5 | 54 | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | '' ° | o ° | ' ° | '' ° | |
| 0 | 20 30.0 | 20 33.4 | 19 34.0 | 0 .0 | 60 8.3 | 120 16.5 | |
| 1 | 20 30.3 | 20 33.7 | 19 34.2 | 1 .1 | 61 8.4 | 121 16.6 | |
| 2 | 20 30.5 | 20 33.9 | 19 34.4 | 2 .3 | 62 8.5 | 122 16.8 | |
| 3 | 20 30.8 | 20 34.2 | 19 34.7 | 3 .4 | 63 8.7 | 123 16.9 | |
| 4 | 20 31.0 | 20 34.4 | 19 34.9 | 4 .6 | 64 8.8 | 124 17.1 | |
| 5 | 20 31.3 | 20 34.7 | 19 35.2 | 5 .7 | 65 8.9 | 125 17.2 | |
| 6 | 20 31.5 | 20 34.9 | 19 35.4 | 6 .8 | 66 9.1 | 126 17.3 | |
| 7 | 20 31.8 | 20 35.2 | 19 35.6 | 7 .0 | 67 9.2 | 127 17.5 | |
| 8 | 20 32.0 | 20 35.4 | 19 35.9 | 8 .1 | 68 9.4 | 128 17.6 | |
| 9 | 20 32.3 | 20 35.7 | 19 36.1 | 9 .2 | 69 9.5 | 129 17.7 | |
| 10 | 20 32.5 | 20 35.9 | 19 36.4 | 10 .4 | 70 9.6 | 130 17.9 | |
| 11 | 20 32.8 | 20 36.2 | 19 36.6 | 11 .5 | 71 9.8 | 131 18.0 | |
| 12 | 20 33.0 | 20 36.4 | 19 36.8 | 12 .7 | 72 9.9 | 132 18.2 | |
| 13 | 20 33.3 | 20 36.7 | 19 37.1 | 13 .8 | 73 10.0 | 133 18.3 | |
| 14 | 20 33.5 | 20 36.9 | 19 37.3 | 14 .9 | 74 10.2 | 134 18.4 | |
| 15 | 20 33.8 | 20 37.2 | 19 37.5 | 15 .1 | 75 10.3 | 135 18.6 | |
| 16 | 20 34.0 | 20 37.4 | 19 37.8 | 16 .2 | 76 10.5 | 136 18.7 | |
| 17 | 20 34.3 | 20 37.7 | 19 38.0 | 17 .3 | 77 10.6 | 137 18.8 | |
| 18 | 20 34.5 | 20 37.9 | 19 38.3 | 18 .5 | 78 10.7 | 138 19.0 | |
| 19 | 20 34.8 | 20 38.2 | 19 38.5 | 19 .6 | 79 10.9 | 139 19.1 | |
| 20 | 20 35.0 | 20 38.4 | 19 38.7 | 20 .8 | 80 11.0 | 140 19.3 | |
| 21 | 20 35.3 | 20 38.7 | 19 39.0 | 21 .9 | 81 11.1 | 141 19.4 | |
| 22 | 20 35.5 | 20 38.9 | 19 39.2 | 22 .0 | 82 11.3 | 142 19.5 | |
| 23 | 20 35.8 | 20 39.2 | 19 39.5 | 23 .2 | 83 11.4 | 143 19.7 | |
| 24 | 20 36.0 | 20 39.4 | 19 39.7 | 24 .3 | 84 11.6 | 144 19.8 | |
| 25 | 20 36.3 | 20 39.7 | 19 39.9 | 25 .4 | 85 11.7 | 145 19.9 | |
| 26 | 20 36.5 | 20 39.9 | 19 40.2 | 26 .6 | 86 11.8 | 146 20.1 | |
| 27 | 20 36.8 | 20 40.2 | 19 40.4 | 27 .7 | 87 12.0 | 147 20.2 | |
| 28 | 20 37.0 | 20 40.4 | 19 40.6 | 28 .9 | 88 12.1 | 148 20.4 | |
| 29 | 20 37.3 | 20 40.7 | 19 40.9 | 29 .4 | 89 12.2 | 149 20.5 | |
| 30 | 20 37.5 | 20 40.9 | 19 41.1 | 30 .4 | 90 12.4 | 150 20.6 | |
| 31 | 20 37.8 | 20 41.2 | 19 41.4 | 31 .4 | 91 12.5 | 151 20.8 | |
| 32 | 20 38.0 | 20 41.4 | 19 41.6 | 32 .4 | 92 12.7 | 152 20.9 | |
| 33 | 20 38.3 | 20 41.7 | 19 41.8 | 33 .5 | 93 12.8 | 153 21.0 | |
| 34 | 20 38.5 | 20 41.9 | 19 42.1 | 34 .7 | 94 12.9 | 154 21.2 | |
| 35 | 20 38.8 | 20 42.2 | 19 42.3 | 35 .8 | 95 13.1 | 155 21.3 | |
| 36 | 20 39.0 | 20 42.4 | 19 42.6 | 36 .0 | 96 13.2 | 156 21.5 | |
| 37 | 20 39.3 | 20 42.7 | 19 42.8 | 37 .1 | 97 13.3 | 157 21.6 | |
| 38 | 20 39.5 | 20 42.9 | 19 43.0 | 38 .2 | 98 13.5 | 158 21.7 | |
| 39 | 20 39.8 | 20 43.2 | 19 43.3 | 39 .4 | 99 13.6 | 159 21.9 | |
| 40 | 20 40.0 | 20 43.4 | 19 43.5 | 40 .5 | 100 13.8 | 160 22.0 | |
| 41 | 20 40.3 | 20 43.7 | 19 43.7 | 41 .6 | 101 13.9 | 161 22.1 | |
| 42 | 20 40.5 | 20 43.9 | 19 44.0 | 42 .8 | 102 14.0 | 162 22.3 | |
| 43 | 20 40.8 | 20 44.2 | 19 44.2 | 43 .9 | 103 14.2 | 163 22.4 | |
| 44 | 20 41.0 | 20 44.4 | 19 44.5 | 44 .6 | 104 14.3 | 164 22.6 | |
| 45 | 20 41.3 | 20 44.7 | 19 44.7 | 45 .6 | 105 14.4 | 165 22.7 | |
| 46 | 20 41.5 | 20 44.9 | 19 44.9 | 46 .6 | 106 14.6 | 166 22.8 | |
| 47 | 20 41.8 | 20 45.2 | 19 45.2 | 47 .6 | 107 14.7 | 167 23.0 | |
| 48 | 20 42.0 | 20 45.5 | 19 45.4 | 48 .6 | 108 14.9 | 168 23.1 | |
| 49 | 20 42.3 | 20 45.7 | 19 45.7 | 49 .7 | 109 15.0 | 169 23.2 | |
| 50 | 20 42.5 | 20 46.0 | 19 45.9 | 50 .9 | 110 15.1 | 170 23.4 | |
| 51 | 20 42.8 | 20 46.2 | 19 46.1 | 51 .0 | 111 15.3 | 171 23.5 | |
| 52 | 20 43.0 | 20 46.5 | 19 46.4 | 52 .2 | 112 15.4 | 172 23.7 | |
| 53 | 20 43.3 | 20 46.7 | 19 46.6 | 53 .3 | 113 15.5 | 173 23.8 | |
| 54 | 20 43.5 | 20 47.0 | 19 46.9 | 54 .4 | 114 15.7 | 174 23.9 | |
| 55 | 20 43.8 | 20 47.2 | 19 47.1 | 55 .6 | 115 15.8 | 175 24.1 | |
| 56 | 20 44.0 | 20 47.5 | 19 47.3 | 56 .7 | 116 16.0 | 176 24.2 | |
| 57 | 20 44.3 | 20 47.7 | 19 47.6 | 57 .8 | 117 16.1 | 177 24.3 | |
| 58 | 20 44.5 | 20 48.0 | 19 47.8 | 58 .8 | 118 16.2 | 178 24.5 | |
| 59 | 20 44.8 | 20 48.2 | 19 48.0 | 59 .8 | 119 16.4 | 179 24.6 | |
| 60 | 20 45.0 | 20 48.5 | 19 48.3 | 60 .8 | 120 16.5 | 180 24.8 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | ' ° | '' ° | o ° | ' ° | '' ° | |
| 0 | 20 45.0 | 20 48.5 | 19 48.3 | 0 .0 | 60 8.4 | 120 16.7 | |
| 1 | 20 45.3 | 20 48.7 | 19 48.5 | 1 .1 | 61 8.5 | 121 16.8 | |
| 2 | 20 45.5 | 20 49.0 | 19 48.8 | 2 .3 | 62 8.6 | 122 17.0 | |
| 3 | 20 45.8 | 20 49.2 | 19 49.0 | 3 .4 | 63 8.8 | 123 17.1 | |
| 4 | 20 46.0 | 20 49.5 | 19 49.2 | 4 .6 | 64 8.9 | 124 17.3 | |
| 5 | 20 46.3 | 20 49.7 | 19 49.5 | 5 .7 | 65 9.0 | 125 17.4 | |
| 6 | 20 46.5 | 20 50.0 | 19 49.7 | 6 .8 | 66 9.2 | 126 17.5 | |
| 7 | 20 46.8 | 20 50.2 | 19 50.0 | 7 .0 | 67 9.3 | 127 17.7 | |
| 8 | 20 47.0 | 20 50.5 | 19 50.2 | 8 .1 | 68 9.5 | 128 17.8 | |
| 9 | 20 47.3 | 20 50.7 | 19 50.4 | 9 .3 | 69 9.6 | 129 18.0 | |
| 10 | 20 47.5 | 20 51.0 | 19 50.7 | 10 .4 | 70 9.7 | 130 18.1 | |
| 11 | 20 47.8 | 20 51.2 | 19 50.9 | 11 .5 | 71 9.9 | 131 18.2 | |
| 12 | 20 48.0 | 20 51.5 | 19 51.1 | 12 .7 | 72 10.0 | 132 18.4 | |
| 13 | 20 48.3 | 20 51.7 | 19 51.4 | 13 .8 | 73 10.2 | 133 18.5 | |
| 14 | 20 48.5 | 20 52.0 | 19 51.6 | 14 .9 | 74 10.3 | 134 18.6 | |
| 15 | 20 48.8 | 20 52.2 | 19 51.9 | 15 .1 | 75 10.4 | 135 18.8 | |
| 16 | 20 49.0 | 20 52.5 | 19 52.1 | 16 .2 | 76 10.6 | 136 18.9 | |
| 17 | 20 49.3 | 20 52.7 | 19 52.3 | 17 .4 | 77 10.7 | 137 19.1 | |
| 18 | 20 49.5 | 20 53.0 | 19 52.6 | 18 .5 | 78 10.9 | 138 19.2 | |
| 19 | 20 49.8 | 20 53.2 | 19 52.8 | 19 .6 | 79 11.0 | 139 19.3 | |
| 20 | 20 50.0 | 20 53.5 | 19 53.1 | 20 .8 | 80 11.1 | 140 19.5 | |
| 21 | 20 50.3 | 20 53.7 | 19 53.3 | 21 .9 | 81 11.3 | 141 19.6 | |
| 22 | 20 50.5 | 20 54.0 | 19 53.5 | 22 .1 | 82 11.4 | 142 19.8 | |
| 23 | 20 50.8 | 20 54.2 | 19 53.8 | 23 .2 | 83 11.6 | 143 19.9 | |
| 24 | 20 51.0 | 20 54.5 | 19 54.0 | 24 .3 | 84 11.7 | 144 20.0 | |
| 25 | 20 51.3 | 20 54.7 | 19 54.2 | 25 .5 | 85 11.8 | 145 20.2 | |
| 26 | 20 51.5 | 20 55.0 | 19 54.5 | 26 .6 | 86 12.0 | 146 20.3 | |
| 27 | 20 51.8 | 20 55.2 | 19 54.7 | 27 .8 | 87 12.1 | 147 20.5 | |
| 28 | 20 52.0 | 20 55.5 | 19 55.0 | 28 .9 | 88 12.2 | 148 20.6 | |
| 29 | 20 52.3 | 20 55.7 | 19 55.2 | 29 .0 | 89 12.4 | 149 20.7 | |
| 30 | 20 52.5 | 20 56.0 | 19 55.4 | 30 .2 | 90 12.5 | 150 20.9 | |
| 31 | 20 52.8 | 20 56.2 | 19 55.7 | 31 .3 | 91 12.7 | 151 21.0 | |
| 32 | 20 53.0 | 20 56.5 | 19 55.9 | 32 .4 | 92 12.8 | 152 21.2 | |
| 33 | 20 53.3 | 20 56.7 | 19 56.2 | 33 .6 | 93 12.9 | 153 21.3 | |
| 34 | 20 53.5 | 20 57.0 | 19 56.4 | 34 .7 | 94 13.1 | 154 21.4 | |
| 35 | 20 53.8 | 20 57.2 | 19 56.6 | 35 .8 | 95 13.2 | 155 21.6 | |
| 36 | 20 54.0 | 20 57.5 | 19 56.9 | 36 .0 | 96 13.4 | 156 21.7 | |
| 37 | 20 54.3 | 20 57.7 | 19 57.1 | 37 .1 | 97 13.5 | 157 21.8 | |
| 38 | 20 54.5 | 20 58.0 | 19 57.4 | 38 .2 | 98 13.6 | 158 22.0 | |
| 39 | 20 54.8 | 20 58.2 | 19 57.6 | 39 .3 | 99 13.8 | 159 22.1 | |
| 40 | 20 55.0 | 20 58.5 | 19 57.8 | 40 .5 | 100 13.9 | 160 22.3 | |
| 41 | 20 55.3 | 20 58.7 | 19 58.1 | 41 .6 | 101 14.1 | 161 22.4 | |
| 42 | 20 55.5 | 20 59.0 | 19 58.3 | 42 .8 | 102 14.2 | 162 22.5 | |
| 43 | 20 55.8 | 20 59.2 | 19 58.5 | 43 .0 | 103 14.3 | 163 22.7 | |
| 44 | 20 56.0 | 20 59.5 | 19 58.8 | 44 .1 | 104 14.5 | 164 22.8 | |
| 45 | 20 56.3 | 20 59.7 | 19 59.0 | 45 .6 | 105 14.6 | 165 23.0 | |
| 46 | 20 56.5 | 20 60.0 | 19 59.3 | 46 .4 | 106 14.8 | 166 23.1 | |
| 47 | 20 56.8 | 21 .2 | 19 59.5 | 47 .5 | 107 14.9 | 167 23.2 | |
| 48 | 20 57.0 | 21 .5 | 19 59.7 | 48 .6 | 108 15.0 | 168 23.4 | |
| 49 | 20 57.3 | 21 .7 | 19 60.0 | 49 .8 | 109 15.2 | 169 23.5 | |
| 50 | 20 57.5 | 21 .0 | 19 60.2 | 50 .7 | 110 15.3 | 170 23.7 | |
| 51 | 20 57.8 | 21 .2 | 19 60.5 | 51 .1 | 111 15.4 | 171 23.8 | |
| 52 | 20 58.0 | 21 .5 | 19 60.7 | 52 .2 | 112 15.6 | 172 23.9 | |
| 53 | 20 58.3 | 21 .7 | 19 60.9 | 53 .4 | 113 15.7 | 173 24.1 | |
| 54 | 20 58.5 | 21 .0 | 19 61.2 | 54 .5 | 114 15.9 | 174 24.2 | |
| 55 | 20 58.8 | 21 .2 | 19 61.4 | 55 .7 | 115 16.0 | 17 | |

1 h 24 min

1 h 25 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 21 .0 | 21 3.5 | 20 2.6 | 0 .0 | 60 8.5 | 120 16.9 | | 0 | 21 15.0 | 21 18.5 | 20 16.9 | 0 .0 | 60 8.6 | 120 17.1 | |
| 1 | 21 .3 | 21 3.8 | 20 2.8 | 1 .1 | 61 8.6 | 121 17.0 | | 1 | 21 15.3 | 21 18.8 | 20 17.2 | 1 .1 | 61 8.7 | 121 17.2 | |
| 2 | 21 .5 | 21 4.0 | 20 3.1 | 2 .3 | 62 8.7 | 122 17.2 | | 2 | 21 15.5 | 21 19.0 | 20 17.4 | 2 .3 | 62 8.8 | 122 17.4 | |
| 3 | 21 .8 | 21 4.3 | 20 3.3 | 3 .4 | 63 8.9 | 123 17.3 | | 3 | 21 15.8 | 21 19.3 | 20 17.6 | 3 .4 | 63 9.0 | 123 17.5 | |
| 4 | 21 1.0 | 21 4.5 | 20 3.6 | 4 .6 | 64 9.0 | 124 17.5 | | 4 | 21 16.0 | 21 19.5 | 20 17.9 | 4 .6 | 64 9.1 | 124 17.7 | |
| 5 | 21 1.3 | 21 4.8 | 20 3.8 | 5 .7 | 65 9.2 | 125 17.6 | | 5 | 21 16.3 | 21 19.8 | 20 18.1 | 5 .7 | 65 9.3 | 125 17.8 | |
| 6 | 21 1.5 | 21 5.0 | 20 4.0 | 6 .8 | 66 9.3 | 126 17.7 | | 6 | 21 16.5 | 21 20.0 | 20 18.3 | 6 .9 | 66 9.4 | 126 18.0 | |
| 7 | 21 1.8 | 21 5.3 | 20 4.3 | 7 .0 | 67 9.4 | 127 17.9 | | 7 | 21 16.8 | 21 20.3 | 20 18.6 | 7 .0 | 67 9.5 | 127 18.1 | |
| 8 | 21 2.0 | 21 5.5 | 20 4.5 | 8 .1 | 68 9.6 | 128 18.0 | | 8 | 21 17.0 | 21 20.5 | 20 18.8 | 8 .1 | 68 9.7 | 128 18.2 | |
| 9 | 21 2.3 | 21 5.8 | 20 4.7 | 9 1.3 | 69 9.7 | 129 18.2 | | 9 | 21 17.3 | 21 20.8 | 20 19.1 | 9 1.3 | 69 9.8 | 129 18.4 | |
| 10 | 21 2.5 | 21 6.0 | 20 5.0 | 10 1.4 | 70 9.9 | 130 18.3 | | 10 | 21 17.5 | 21 21.0 | 20 19.3 | 10 1.4 | 70 10.0 | 130 18.5 | |
| 11 | 21 2.8 | 21 6.3 | 20 5.2 | 11 1.5 | 71 10.0 | 131 18.4 | | 11 | 21 17.8 | 21 21.3 | 20 19.5 | 11 1.6 | 71 10.1 | 131 18.7 | |
| 12 | 21 3.0 | 21 6.5 | 20 5.5 | 12 1.7 | 72 10.1 | 132 18.6 | | 12 | 21 18.0 | 21 21.6 | 20 19.8 | 12 1.7 | 72 10.3 | 132 18.8 | |
| 13 | 21 3.3 | 21 6.8 | 20 5.7 | 13 1.8 | 73 10.3 | 133 18.7 | | 13 | 21 18.3 | 21 21.8 | 20 20.0 | 13 1.9 | 73 10.4 | 133 19.0 | |
| 14 | 21 3.5 | 21 7.0 | 20 5.9 | 14 2.0 | 74 10.4 | 134 18.9 | | 14 | 21 18.5 | 21 22.1 | 20 20.3 | 14 2.0 | 74 10.5 | 134 19.1 | |
| 15 | 21 3.8 | 21 7.3 | 20 6.2 | 15 2.1 | 75 10.6 | 135 19.0 | | 15 | 21 18.8 | 21 22.3 | 20 20.5 | 15 2.1 | 75 10.7 | 135 19.2 | |
| 16 | 21 4.0 | 21 7.5 | 20 6.4 | 16 2.3 | 76 10.7 | 136 19.2 | | 16 | 21 19.0 | 21 22.6 | 20 20.7 | 16 2.3 | 76 10.8 | 136 19.4 | |
| 17 | 21 4.3 | 21 7.8 | 20 6.7 | 17 2.4 | 77 10.8 | 137 19.3 | | 17 | 21 19.3 | 21 22.8 | 20 21.0 | 17 2.4 | 77 11.0 | 137 19.5 | |
| 18 | 21 4.5 | 21 8.0 | 20 6.9 | 18 2.5 | 78 11.0 | 138 19.4 | | 18 | 21 19.5 | 21 23.1 | 20 21.2 | 18 2.6 | 78 11.1 | 138 19.7 | |
| 19 | 21 4.8 | 21 8.3 | 20 7.1 | 19 2.7 | 79 11.1 | 139 19.6 | | 19 | 21 19.8 | 21 23.3 | 20 21.5 | 19 2.7 | 79 11.3 | 139 19.8 | |
| 20 | 21 5.0 | 21 8.5 | 20 7.4 | 20 2.8 | 80 11.3 | 140 19.7 | | 20 | 21 20.0 | 21 23.6 | 20 21.7 | 20 2.9 | 80 11.4 | 140 20.0 | |
| 21 | 21 5.3 | 21 8.8 | 20 7.6 | 21 3.0 | 81 11.4 | 141 19.9 | | 21 | 21 20.3 | 21 23.8 | 20 21.9 | 21 3.0 | 81 11.5 | 141 20.1 | |
| 22 | 21 5.5 | 21 9.0 | 20 7.8 | 22 3.1 | 82 11.5 | 142 20.0 | | 22 | 21 20.5 | 21 24.1 | 20 22.2 | 22 3.1 | 82 11.7 | 142 20.2 | |
| 23 | 21 5.8 | 21 9.3 | 20 8.1 | 23 3.2 | 83 11.7 | 143 20.1 | | 23 | 21 20.8 | 21 24.3 | 20 22.4 | 23 3.3 | 83 11.8 | 143 20.4 | |
| 24 | 21 6.0 | 21 9.5 | 20 8.3 | 24 3.4 | 84 11.8 | 144 20.3 | | 24 | 21 21.0 | 21 24.6 | 20 22.6 | 24 3.4 | 84 12.0 | 144 20.5 | |
| 25 | 21 6.3 | 21 9.8 | 20 8.6 | 25 3.5 | 85 12.0 | 145 20.4 | | 25 | 21 21.3 | 21 24.8 | 20 22.9 | 25 3.6 | 85 12.1 | 145 20.7 | |
| 26 | 21 6.5 | 21 10.0 | 20 8.8 | 26 3.7 | 86 12.1 | 146 20.6 | | 26 | 21 21.5 | 21 25.1 | 20 23.1 | 26 3.7 | 86 12.3 | 146 20.8 | |
| 27 | 21 6.8 | 21 10.3 | 20 9.0 | 27 3.8 | 87 12.3 | 147 20.7 | | 27 | 21 21.8 | 21 25.3 | 20 23.4 | 27 3.8 | 87 12.4 | 147 20.9 | |
| 28 | 21 7.0 | 21 10.5 | 20 9.3 | 28 3.9 | 88 12.4 | 148 20.8 | | 28 | 21 22.0 | 21 25.6 | 20 23.6 | 28 4.0 | 88 12.5 | 148 21.1 | |
| 29 | 21 7.3 | 21 10.8 | 20 9.5 | 29 4.1 | 89 12.5 | 149 21.0 | | 29 | 21 22.3 | 21 25.8 | 20 23.8 | 29 4.1 | 89 12.7 | 149 21.2 | |
| 30 | 21 7.5 | 21 11.0 | 20 9.8 | 30 4.2 | 90 12.7 | 150 21.1 | | 30 | 21 22.5 | 21 26.1 | 20 24.1 | 30 4.3 | 90 12.8 | 150 21.4 | |
| 31 | 21 7.8 | 21 11.3 | 20 10.0 | 31 4.4 | 91 12.8 | 151 21.3 | | 31 | 21 22.8 | 21 26.3 | 20 24.3 | 31 4.4 | 91 13.0 | 151 21.5 | |
| 32 | 21 8.0 | 21 11.5 | 20 10.2 | 32 4.5 | 92 13.0 | 152 21.4 | | 32 | 21 23.0 | 21 26.6 | 20 24.6 | 32 4.6 | 92 13.1 | 152 21.7 | |
| 33 | 21 8.3 | 21 11.8 | 20 10.5 | 33 4.6 | 93 13.1 | 153 21.5 | | 33 | 21 23.3 | 21 26.8 | 20 24.8 | 33 4.7 | 93 13.3 | 153 21.8 | |
| 34 | 21 8.5 | 21 12.0 | 20 10.7 | 34 4.8 | 94 13.2 | 154 21.7 | | 34 | 21 23.5 | 21 27.1 | 20 25.0 | 34 4.8 | 94 13.4 | 154 21.9 | |
| 35 | 21 8.8 | 21 12.3 | 20 11.0 | 35 4.9 | 95 13.4 | 155 21.8 | | 35 | 21 23.8 | 21 27.3 | 20 25.3 | 35 5.0 | 95 13.5 | 155 22.1 | |
| 36 | 21 9.0 | 21 12.5 | 20 11.2 | 36 5.1 | 96 13.5 | 156 22.0 | | 36 | 21 24.0 | 21 27.6 | 20 25.5 | 36 5.1 | 96 13.7 | 156 22.2 | |
| 37 | 21 9.3 | 21 12.8 | 20 11.4 | 37 5.2 | 97 13.7 | 157 22.1 | | 37 | 21 24.3 | 21 27.8 | 20 25.7 | 37 5.3 | 97 13.8 | 157 22.4 | |
| 38 | 21 9.5 | 21 13.0 | 20 11.7 | 38 5.4 | 98 13.8 | 158 22.3 | | 38 | 21 24.5 | 21 28.1 | 20 26.0 | 38 5.4 | 98 14.0 | 158 22.5 | |
| 39 | 21 9.8 | 21 13.3 | 20 11.9 | 39 5.5 | 99 13.9 | 159 22.4 | | 39 | 21 24.8 | 21 28.3 | 20 26.2 | 39 5.6 | 99 14.1 | 159 22.7 | |
| 40 | 21 10.0 | 21 13.5 | 20 12.1 | 40 5.6 | 100 14.1 | 160 22.5 | | 40 | 21 25.0 | 21 28.6 | 20 26.5 | 40 5.7 | 100 14.3 | 160 22.8 | |
| 41 | 21 10.3 | 21 13.8 | 20 12.4 | 41 5.8 | 101 14.2 | 161 22.7 | | 41 | 21 25.3 | 21 28.8 | 20 26.7 | 41 5.8 | 101 14.4 | 161 22.9 | |
| 42 | 21 10.5 | 21 14.0 | 20 12.6 | 42 5.9 | 102 14.4 | 162 22.8 | | 42 | 21 25.5 | 21 29.1 | 20 26.9 | 42 6.0 | 102 14.5 | 162 23.1 | |
| 43 | 21 10.8 | 21 14.3 | 20 12.9 | 43 6.1 | 103 14.5 | 163 23.0 | | 43 | 21 25.8 | 21 29.3 | 20 27.2 | 43 6.1 | 103 14.7 | 163 23.2 | |
| 44 | 21 11.0 | 21 14.5 | 20 13.1 | 44 6.2 | 104 14.6 | 164 23.1 | | 44 | 21 26.0 | 21 29.6 | 20 27.4 | 44 6.3 | 104 14.8 | 164 23.4 | |
| 45 | 21 11.3 | 21 14.8 | 20 13.3 | 45 6.3 | 105 14.8 | 165 23.2 | | 45 | 21 26.3 | 21 29.8 | 20 27.7 | 45 6.4 | 105 15.0 | 165 23.5 | |
| 46 | 21 11.5 | 21 15.0 | 20 13.6 | 46 6.5 | 106 14.9 | 166 23.4 | | 46 | 21 26.5 | 21 30.1 | 20 27.9 | 46 6.6 | 106 15.1 | 166 23.7 | |
| 47 | 21 11.8 | 21 15.3 | 20 13.8 | 47 6.6 | 107 15.1 | 167 23.5 | | 47 | 21 26.8 | 21 30.3 | 20 28.1 | 47 6.7 | 107 15.2 | 167 23.8 | |
| 48 | 21 12.0 | 21 15.5 | 20 14.1 | 48 6.8 | 108 15.2 | 168 23.7 | | 48 | 21 27.0 | 21 30.6 | 20 28.4 | 48 6.8 | 108 15.4 | 168 23.9 | |
| 49 | 21 12.3 | 21 15.8 | 20 14.3 | 49 6.9 | 109 15.4 | 169 23.8 | | 49 | 21 27.3 | 21 30.8 | 20 28.6 | 49 7.0 | 109 15.5 | 169 24.1 | |
| 50 | 21 12.5 | 21 16.0 | 20 14.5 | 50 7.0 | 110 15.5 | 170 23.9 | | 50 | 21 27.5 | 21 31.1 | 20 28.8 | 50 7.1 | 110 15.7 | 170 24.2 | |
| 51 | 21 12.8 | 21 16.3 | 20 14.8 | 51 7.2 | 111 15.6 | 171 24.1 | | 51 | 21 27.8 | 21 31.3 | 20 29.1 | 51 7.3 | 111 15.8 | 171 24.4 | |
| 52 | 21 13.0 | 21 16.5 | 20 15.0 | 52 7.3 | 112 15.8 | 172 24.2 | | 52 | 21 28.0 | 21 31.6 | 20 29.3 | 52 7.4 | 112 16.0 | 172 24.5 | |
| 53 | 21 13.3 | 21 16.8 | 20 15.2 | 53 7.5 | 113 15.9 | 173 24.4 | | 53 | 21 28.3 | 21 31.8 | 20 29.6 | 53 7.6 | 113 16.1 | 173 24.7 | |
| 54 | 21 13.5 | 21 17.0 | 20 15.5 | 54 7.6 | 114 16.1 | 174 24.5 | | 54 | 21 28.5 | 21 32.1 | 20 29.8 | 54 7.7 | 114 16.2 | 174 24.8 | |
| 55 | 21 13.8 | 21 17.3 | 20 15.7 | 55 7.7 | 115 16.2 | 175 24.6 | | 55 | 21 28.8 | 21 32.3 | 20 30.0 | 55 7.8 | 115 16.4 | 175 24.9 | |
| 56 | 21 14.0 | 21 17.5 | 20 16.0 | 56 7.9 | 116 16.3 | 176 24.8 | | 56 | 21 29.0 | 21 32.6 | 20 30.3 | 56 8.0 | 116 16.5 | 176 25.1 | |
| 57 | 21 14.3 | 21 17.8 | 20 16.2 | 57 8.0 | 117 16.5 | 177 24.9 | | 57 | 21 29.3 | 21 32.8 | 20 30.5 | 57 8.1 | 117 16.7 | 177 25.2 | |
| 58 | 21 14.5 | 21 18.0 | 20 16.4 | 58 8.2 | 118 16.6 | 178 25.1 | | 58 | 21 29.5 | 21 33.1 | 20 30.8 | 58 8.3 | 118 16.8 | 178 25.4 | |
| 59 | 21 14.8 | 21 18.3 | 20 16.7 | 59 8.3 | 119 16.8 | 179 25.2 | | 59 | 21 29.8 | 21 33.3 | 20 31.0 | 59 8.4 | 119 17.0 | 179 25.5 | |
| 60 | 21 15.0 | 21 18.5 | 20 16.9 | 60 8.5 | 120 16.9 | 180 25.4 | | 60 | 21 30.0 | 21 33.6 | 20 31.2 | 60 8.6 | 120 17.1 | 180 25.7 | |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ° | o ' | o " | o ' | o " |
| 0 | 21 30.0 | 21 33.6 | 20 31.2 | 0 .0 | 60 8.7 |
| 1 | 21 30.3 | 21 33.8 | 20 31.5 | 1 .1 | 61 8.8 |
| 2 | 21 30.5 | 21 34.1 | 20 31.7 | 2 .3 | 62 8.9 |
| 3 | 21 30.8 | 21 34.3 | 20 31.9 | 3 .4 | 63 9.1 |
| 4 | 21 31.0 | 21 34.6 | 20 32.2 | 4 .6 | 64 9.2 |
| 5 | 21 31.3 | 21 34.8 | 20 32.4 | 5 .7 | 65 9.4 |
| 6 | 21 31.5 | 21 35.1 | 20 32.7 | 6 .9 | 66 9.5 |
| 7 | 21 31.8 | 21 35.3 | 20 32.9 | 7 .0 | 67 9.7 |
| 8 | 21 32.0 | 21 35.6 | 20 33.1 | 8 .2 | 68 9.8 |
| 9 | 21 32.3 | 21 35.8 | 20 33.4 | 9 1.3 | 69 9.9 |
| 10 | 21 32.5 | 21 36.1 | 20 33.6 | 10 1.4 | 70 10.1 |
| 11 | 21 32.8 | 21 36.3 | 20 33.9 | 11 1.6 | 71 10.2 |
| 12 | 21 33.0 | 21 36.6 | 20 34.1 | 12 1.7 | 72 10.4 |
| 13 | 21 33.3 | 21 36.8 | 20 34.3 | 13 1.9 | 73 10.5 |
| 14 | 21 33.5 | 21 37.1 | 20 34.6 | 14 2.0 | 74 10.7 |
| 15 | 21 33.8 | 21 37.3 | 20 34.8 | 15 2.2 | 75 10.8 |
| 16 | 21 34.0 | 21 37.6 | 20 35.1 | 16 2.3 | 76 11.0 |
| 17 | 21 34.3 | 21 37.8 | 20 35.3 | 17 2.5 | 77 11.1 |
| 18 | 21 34.5 | 21 38.1 | 20 35.5 | 18 2.6 | 78 11.2 |
| 19 | 21 34.8 | 21 38.3 | 20 35.8 | 19 2.7 | 79 11.4 |
| 20 | 21 35.0 | 21 38.6 | 20 36.0 | 20 2.9 | 80 11.5 |
| 21 | 21 35.3 | 21 38.8 | 20 36.2 | 21 3.0 | 81 11.7 |
| 22 | 21 35.5 | 21 39.1 | 20 36.5 | 22 3.2 | 82 11.8 |
| 23 | 21 35.8 | 21 39.3 | 20 36.7 | 23 3.3 | 83 12.0 |
| 24 | 21 36.0 | 21 39.6 | 20 37.0 | 24 3.5 | 84 12.1 |
| 25 | 21 36.3 | 21 39.9 | 20 37.2 | 25 3.6 | 85 12.3 |
| 26 | 21 36.5 | 21 40.1 | 20 37.4 | 26 3.7 | 86 12.4 |
| 27 | 21 36.8 | 21 40.4 | 20 37.7 | 27 3.9 | 87 12.5 |
| 28 | 21 37.0 | 21 40.6 | 20 37.9 | 28 4.0 | 88 12.7 |
| 29 | 21 37.3 | 21 40.9 | 20 38.2 | 29 4.2 | 89 12.8 |
| 30 | 21 37.5 | 21 41.1 | 20 38.4 | 30 4.3 | 90 13.0 |
| 31 | 21 37.8 | 21 41.4 | 20 38.6 | 31 4.5 | 91 13.1 |
| 32 | 21 38.0 | 21 41.6 | 20 38.9 | 32 4.6 | 92 13.3 |
| 33 | 21 38.3 | 21 41.9 | 20 39.1 | 33 4.8 | 93 13.4 |
| 34 | 21 38.5 | 21 42.1 | 20 39.3 | 34 4.9 | 94 13.6 |
| 35 | 21 38.8 | 21 42.4 | 20 39.6 | 35 5.0 | 95 13.7 |
| 36 | 21 39.0 | 21 42.6 | 20 39.8 | 36 5.2 | 96 13.8 |
| 37 | 21 39.3 | 21 42.9 | 20 40.1 | 37 5.3 | 97 14.0 |
| 38 | 21 39.5 | 21 43.1 | 20 40.3 | 38 5.5 | 98 14.1 |
| 39 | 21 39.8 | 21 43.4 | 20 40.5 | 39 5.6 | 99 14.3 |
| 40 | 21 40.0 | 21 43.6 | 20 40.8 | 40 5.8 | 100 14.4 |
| 41 | 21 40.3 | 21 43.9 | 20 41.0 | 41 5.9 | 101 14.6 |
| 42 | 21 40.5 | 21 44.1 | 20 41.3 | 42 6.1 | 102 14.7 |
| 43 | 21 40.8 | 21 44.4 | 20 41.5 | 43 6.2 | 103 14.8 |
| 44 | 21 41.0 | 21 44.6 | 20 41.7 | 44 6.3 | 104 15.0 |
| 45 | 21 41.3 | 21 44.9 | 20 42.0 | 45 6.5 | 105 15.1 |
| 46 | 21 41.5 | 21 45.1 | 20 42.2 | 46 6.6 | 106 15.3 |
| 47 | 21 41.8 | 21 45.4 | 20 42.4 | 47 6.8 | 107 15.4 |
| 48 | 21 42.0 | 21 45.6 | 20 42.7 | 48 6.9 | 108 15.6 |
| 49 | 21 42.3 | 21 45.9 | 20 42.9 | 49 7.1 | 109 15.7 |
| 50 | 21 42.5 | 21 46.1 | 20 43.2 | 50 7.2 | 110 15.9 |
| 51 | 21 42.8 | 21 46.4 | 20 43.4 | 51 7.4 | 111 16.0 |
| 52 | 21 43.0 | 21 46.6 | 20 43.6 | 52 7.5 | 112 16.1 |
| 53 | 21 43.3 | 21 46.9 | 20 43.9 | 53 7.6 | 113 16.3 |
| 54 | 21 43.5 | 21 47.1 | 20 44.1 | 54 7.8 | 114 16.4 |
| 55 | 21 43.8 | 21 47.4 | 20 44.4 | 55 7.9 | 115 16.6 |
| 56 | 21 44.0 | 21 47.6 | 20 44.6 | 56 8.1 | 116 16.7 |
| 57 | 21 44.3 | 21 47.9 | 20 44.8 | 57 8.2 | 117 16.9 |
| 58 | 21 44.5 | 21 48.1 | 20 45.1 | 58 8.4 | 118 17.0 |
| 59 | 21 44.8 | 21 48.4 | 20 45.3 | 59 8.5 | 119 17.2 |
| 60 | 21 45.0 | 21 48.6 | 20 45.6 | 60 8.7 | 120 17.3 |

| POPRAVKA ČASOVNOG UGLA | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | |
|------------------------|--------------------|----------------------|---|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. |
| | o ° | o ' | o " | o ' | o " |
| 0 | 21 45.0 | 21 48.6 | 20 45.6 | 0 .0 | 60 8.8 |
| 1 | 21 45.3 | 21 48.9 | 20 45.8 | 1 .1 | 61 8.9 |
| 2 | 21 45.5 | 21 49.1 | 20 46.0 | 2 .3 | 62 9.0 |
| 3 | 21 45.8 | 21 49.4 | 20 46.3 | 3 .4 | 63 9.2 |
| 4 | 21 46.0 | 21 49.6 | 20 46.5 | 4 .6 | 64 9.3 |
| 5 | 21 46.3 | 21 49.9 | 20 46.7 | 5 .7 | 65 9.5 |
| 6 | 21 46.5 | 21 50.1 | 20 47.0 | 6 .9 | 66 9.6 |
| 7 | 21 46.8 | 21 50.4 | 20 47.2 | 7 .0 | 67 9.8 |
| 8 | 21 47.0 | 21 50.6 | 20 47.5 | 8 .2 | 68 9.9 |
| 9 | 21 47.3 | 21 50.9 | 20 47.7 | 9 .3 | 69 10.1 |
| 10 | 21 47.5 | 21 51.1 | 20 47.9 | 10 1.5 | 70 10.2 |
| 11 | 21 47.8 | 21 51.4 | 20 48.2 | 11 1.6 | 71 10.4 |
| 12 | 21 48.0 | 21 51.6 | 20 48.4 | 12 1.8 | 72 10.5 |
| 13 | 21 48.3 | 21 51.9 | 20 48.7 | 13 1.9 | 73 10.6 |
| 14 | 21 48.5 | 21 52.1 | 20 48.9 | 14 2.0 | 74 10.8 |
| 15 | 21 48.8 | 21 52.4 | 20 49.1 | 15 2.2 | 75 10.9 |
| 16 | 21 49.0 | 21 52.6 | 20 49.4 | 16 2.3 | 76 11.1 |
| 17 | 21 49.3 | 21 52.9 | 20 49.6 | 17 2.5 | 77 11.2 |
| 18 | 21 49.5 | 21 53.1 | 20 49.8 | 18 2.6 | 78 11.4 |
| 19 | 21 49.8 | 21 53.4 | 20 50.1 | 19 2.8 | 79 11.5 |
| 20 | 21 50.0 | 21 53.6 | 20 50.3 | 20 2.9 | 80 11.7 |
| 21 | 21 50.3 | 21 53.9 | 20 50.6 | 21 3.1 | 81 11.8 |
| 22 | 21 50.5 | 21 54.1 | 20 50.8 | 22 3.2 | 82 12.0 |
| 23 | 21 50.8 | 21 54.4 | 20 51.0 | 23 3.4 | 83 12.1 |
| 24 | 21 51.0 | 21 54.6 | 20 51.3 | 24 3.5 | 84 12.3 |
| 25 | 21 51.3 | 21 54.9 | 20 51.5 | 25 3.6 | 85 12.4 |
| 26 | 21 51.5 | 21 55.1 | 20 51.8 | 26 3.8 | 86 12.5 |
| 27 | 21 51.8 | 21 55.4 | 20 52.0 | 27 3.9 | 87 12.7 |
| 28 | 21 52.0 | 21 55.6 | 20 52.2 | 28 4.1 | 88 12.8 |
| 29 | 21 52.3 | 21 55.9 | 20 52.5 | 29 4.2 | 89 13.0 |
| 30 | 21 52.5 | 21 56.1 | 20 52.7 | 30 4.4 | 90 13.1 |
| 31 | 21 52.8 | 21 56.4 | 20 52.9 | 31 4.5 | 91 13.3 |
| 32 | 21 53.0 | 21 56.6 | 20 53.2 | 32 4.7 | 92 13.4 |
| 33 | 21 53.3 | 21 56.9 | 20 53.4 | 33 4.8 | 93 13.6 |
| 34 | 21 53.5 | 21 57.1 | 20 53.7 | 34 5.0 | 94 13.7 |
| 35 | 21 53.8 | 21 57.4 | 20 53.9 | 35 5.1 | 95 13.9 |
| 36 | 21 54.0 | 21 57.7 | 20 54.1 | 36 5.3 | 96 14.0 |
| 37 | 21 54.3 | 21 57.9 | 20 54.4 | 37 5.4 | 97 14.1 |
| 38 | 21 54.5 | 21 58.2 | 20 54.6 | 38 5.5 | 98 14.3 |
| 39 | 21 54.8 | 21 58.4 | 20 54.9 | 39 5.7 | 99 14.4 |
| 40 | 21 55.0 | 21 58.7 | 20 55.1 | 40 5.8 | 100 14.6 |
| 41 | 21 55.3 | 21 58.9 | 20 55.3 | 41 6.0 | 101 14.7 |
| 42 | 21 55.5 | 21 59.2 | 20 55.6 | 42 6.1 | 102 14.9 |
| 43 | 21 55.8 | 21 59.4 | 20 55.8 | 43 6.3 | 103 15.0 |
| 44 | 21 56.0 | 21 59.7 | 20 56.0 | 44 6.4 | 104 15.2 |
| 45 | 21 56.3 | 21 59.9 | 20 56.3 | 45 6.6 | 105 15.3 |
| 46 | 21 56.5 | 22 1 .2 | 20 56.5 | 46 6.7 | 106 15.5 |
| 47 | 21 56.8 | 22 1 .4 | 20 56.8 | 47 6.9 | 107 15.6 |
| 48 | 21 57.0 | 22 1 .7 | 20 57.0 | 48 7.0 | 108 15.8 |
| 49 | 21 57.3 | 22 1 .9 | 20 57.2 | 49 7.1 | 109 15.9 |
| 50 | 21 57.5 | 22 1 .2 | 20 57.5 | 50 7.3 | 110 16.0 |
| 51 | 21 57.8 | 22 1 .4 | 20 57.7 | 51 7.4 | 111 16.2 |
| 52 | 21 58.0 | 22 1 .7 | 20 58.0 | 52 7.6 | 112 16.3 |
| 53 | 21 58.3 | 22 1 .9 | 20 58.2 | 53 7.7 | 113 16.5 |
| 54 | 21 58.5 | 22 2 .2 | 20 58.4 | 54 7.9 | 114 16.6 |
| 55 | 21 58.8 | 22 2 .4 | 20 58.7 | 55 8.0 | 115 16.8 |
| 56 | 21 59.0 | 22 2 .7 | 20 58.9 | 56 8.2 | 116 16.9 |
| 57 | 21 59.3 | 22 2 .9 | 20 59.2 | 57 8.3 | 117 17.1 |
| 58 | 21 59.5 | 22 3 .2 | 20 59.4 | 58 8.5 | 118 17.2 |
| 59 | 21 59.8 | 22 3 .4 | 20 59.6 | 59 8.6 | 119 17.4 |
| 60 | 22 0 .0 | 22 3 .7 | 20 59.9 | 60 8.8 | 120 17.5 |

1 h 28 min

1 h 29 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 22 .0 | 22 3.7 | 20 59.9 | 0 .0 | 60 8.9 | 120 17.7 | |
| 1 | 22 .3 | 22 3.9 | 21 .1 | 1 .1 | 61 9.0 | 121 17.8 | |
| 2 | 22 .5 | 22 4.2 | 21 .3 | 2 .3 | 62 9.1 | 122 18.0 | |
| 3 | 22 .8 | 22 4.4 | 21 .6 | 3 .4 | 63 9.3 | 123 18.1 | |
| 4 | 22 1.0 | 22 4.7 | 21 .8 | 4 .6 | 64 9.4 | 124 18.3 | |
| 5 | 22 1.3 | 22 4.9 | 21 1.1 | 5 .7 | 65 9.6 | 125 18.4 | |
| 6 | 22 1.5 | 22 5.2 | 21 1.3 | 6 .9 | 66 9.7 | 126 18.6 | |
| 7 | 22 1.8 | 22 5.4 | 21 1.5 | 7 .0 | 67 9.9 | 127 18.7 | |
| 8 | 22 2.0 | 22 5.7 | 21 1.8 | 8 .2 | 68 10.0 | 128 18.9 | |
| 9 | 22 2.3 | 22 5.9 | 21 2.0 | 9 1.3 | 69 10.2 | 129 19.0 | |
| 10 | 22 2.5 | 22 6.2 | 21 2.3 | 10 1.5 | 70 10.3 | 130 19.2 | |
| 11 | 22 2.8 | 22 6.4 | 21 2.5 | 11 1.6 | 71 10.5 | 131 19.3 | |
| 12 | 22 3.0 | 22 6.7 | 21 2.7 | 12 1.8 | 72 10.6 | 132 19.5 | |
| 13 | 22 3.3 | 22 6.9 | 21 3.0 | 13 1.9 | 73 10.8 | 133 19.6 | |
| 14 | 22 3.5 | 22 7.2 | 21 3.2 | 14 2.1 | 74 10.9 | 134 19.8 | |
| 15 | 22 3.8 | 22 7.4 | 21 3.4 | 15 2.2 | 75 11.1 | 135 19.9 | |
| 16 | 22 4.0 | 22 7.7 | 21 3.7 | 16 2.4 | 76 11.2 | 136 20.1 | |
| 17 | 22 4.3 | 22 7.9 | 21 3.9 | 17 2.5 | 77 11.4 | 137 20.2 | |
| 18 | 22 4.5 | 22 8.2 | 21 4.2 | 18 2.7 | 78 11.5 | 138 20.4 | |
| 19 | 22 4.8 | 22 8.4 | 21 4.4 | 19 2.8 | 79 11.7 | 139 20.5 | |
| 20 | 22 5.0 | 22 8.7 | 21 4.6 | 20 3.0 | 80 11.8 | 140 20.7 | |
| 21 | 22 5.3 | 22 8.9 | 21 4.9 | 21 3.1 | 81 11.9 | 141 20.8 | |
| 22 | 22 5.5 | 22 9.2 | 21 5.1 | 22 3.2 | 82 12.1 | 142 20.9 | |
| 23 | 22 5.8 | 22 9.4 | 21 5.4 | 23 3.4 | 83 12.2 | 143 21.1 | |
| 24 | 22 6.0 | 22 9.7 | 21 5.6 | 24 3.5 | 84 12.4 | 144 21.2 | |
| 25 | 22 6.3 | 22 9.9 | 21 5.8 | 25 3.7 | 85 12.5 | 145 21.4 | |
| 26 | 22 6.5 | 22 10.2 | 21 6.1 | 26 3.8 | 86 12.7 | 146 21.5 | |
| 27 | 22 6.8 | 22 10.4 | 21 6.3 | 27 4.0 | 87 12.8 | 147 21.7 | |
| 28 | 22 7.0 | 22 10.7 | 21 6.5 | 28 4.1 | 88 13.0 | 148 21.8 | |
| 29 | 22 7.3 | 22 10.9 | 21 6.8 | 29 4.3 | 89 13.1 | 149 22.0 | |
| 30 | 22 7.5 | 22 11.2 | 21 7.0 | 30 4.4 | 90 13.3 | 150 22.1 | |
| 31 | 22 7.8 | 22 11.4 | 21 7.3 | 31 4.6 | 91 13.4 | 151 22.3 | |
| 32 | 22 8.0 | 22 11.7 | 21 7.5 | 32 4.7 | 92 13.6 | 152 22.4 | |
| 33 | 22 8.3 | 22 11.9 | 21 7.7 | 33 4.9 | 93 13.7 | 153 22.6 | |
| 34 | 22 8.5 | 22 12.2 | 21 8.0 | 34 5.0 | 94 13.9 | 154 22.7 | |
| 35 | 22 8.8 | 22 12.4 | 21 8.2 | 35 5.2 | 95 14.0 | 155 22.9 | |
| 36 | 22 9.0 | 22 12.7 | 21 8.5 | 36 5.3 | 96 14.2 | 156 23.0 | |
| 37 | 22 9.3 | 22 12.9 | 21 8.7 | 37 5.5 | 97 14.3 | 157 23.2 | |
| 38 | 22 9.5 | 22 13.2 | 21 8.9 | 38 5.6 | 98 14.5 | 158 23.3 | |
| 39 | 22 9.8 | 22 13.4 | 21 9.2 | 39 5.8 | 99 14.6 | 159 23.5 | |
| 40 | 22 10.0 | 22 13.7 | 21 9.4 | 40 5.9 | 100 14.8 | 160 23.6 | |
| 41 | 22 10.3 | 22 13.9 | 21 9.6 | 41 6.0 | 101 14.9 | 161 23.7 | |
| 42 | 22 10.5 | 22 14.2 | 21 9.9 | 42 6.2 | 102 15.0 | 162 23.9 | |
| 43 | 22 10.8 | 22 14.4 | 21 10.1 | 43 6.3 | 103 15.2 | 163 24.0 | |
| 44 | 22 11.0 | 22 14.7 | 21 10.4 | 44 6.5 | 104 15.3 | 164 24.2 | |
| 45 | 22 11.3 | 22 14.9 | 21 10.6 | 45 6.6 | 105 15.5 | 165 24.3 | |
| 46 | 22 11.5 | 22 15.2 | 21 10.8 | 46 6.8 | 106 15.6 | 166 24.5 | |
| 47 | 22 11.8 | 22 15.4 | 21 11.1 | 47 6.9 | 107 15.8 | 167 24.6 | |
| 48 | 22 12.0 | 22 15.7 | 21 11.3 | 48 7.1 | 108 15.9 | 168 24.8 | |
| 49 | 22 12.3 | 22 16.0 | 21 11.6 | 49 7.2 | 109 16.1 | 169 24.9 | |
| 50 | 22 12.5 | 22 16.2 | 21 11.8 | 50 7.4 | 110 16.2 | 170 25.1 | |
| 51 | 22 12.8 | 22 16.5 | 21 12.0 | 51 7.5 | 111 16.4 | 171 25.2 | |
| 52 | 22 13.0 | 22 16.7 | 21 12.3 | 52 7.7 | 112 16.5 | 172 25.4 | |
| 53 | 22 13.3 | 22 17.0 | 21 12.5 | 53 7.8 | 113 16.7 | 173 25.5 | |
| 54 | 22 13.5 | 22 17.2 | 21 12.8 | 54 8.0 | 114 16.8 | 174 25.7 | |
| 55 | 22 13.8 | 22 17.5 | 21 13.0 | 55 8.1 | 115 17.0 | 175 25.8 | |
| 56 | 22 14.0 | 22 17.7 | 21 13.2 | 56 8.3 | 116 17.1 | 176 26.0 | |
| 57 | 22 14.3 | 22 18.0 | 21 13.5 | 57 8.4 | 117 17.3 | 177 26.1 | |
| 58 | 22 14.5 | 22 18.2 | 21 13.7 | 58 8.6 | 118 17.4 | 178 26.3 | |
| 59 | 22 14.8 | 22 18.5 | 21 13.9 | 59 8.7 | 119 17.6 | 179 26.4 | |
| 60 | 22 15.0 | 22 18.7 | 21 14.2 | 60 8.9 | 120 17.7 | 180 26.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 22 15.0 | 22 18.7 | 21 14.2 | 0 .0 | 60 9.0 | 120 17.9 | |
| 1 | 22 15.3 | 22 19.0 | 21 14.4 | 1 .1 | 61 9.1 | 121 18.0 | |
| 2 | 22 15.5 | 22 19.2 | 21 14.7 | 2 .3 | 62 9.2 | 122 18.2 | |
| 3 | 22 15.8 | 22 19.5 | 21 14.9 | 3 .4 | 63 9.4 | 123 18.3 | |
| 4 | 22 16.0 | 22 19.7 | 21 15.1 | 4 .6 | 64 9.5 | 124 18.5 | |
| 5 | 22 16.3 | 22 20.0 | 21 15.4 | 5 .7 | 65 9.7 | 125 18.6 | |
| 6 | 22 16.5 | 22 20.2 | 21 15.6 | 6 .9 | 66 9.8 | 126 18.8 | |
| 7 | 22 16.8 | 22 20.5 | 21 15.9 | 7 .0 | 67 10.0 | 127 18.9 | |
| 8 | 22 17.0 | 22 20.7 | 21 16.1 | 8 .2 | 68 10.1 | 128 19.1 | |
| 9 | 22 17.3 | 22 21.0 | 21 16.3 | 9 1.3 | 69 10.3 | 129 19.2 | |
| 10 | 22 17.5 | 22 21.2 | 21 16.6 | 10 1.5 | 70 10.4 | 130 19.4 | |
| 11 | 22 17.8 | 22 21.5 | 21 16.8 | 11 1.6 | 71 10.6 | 131 19.5 | |
| 12 | 22 18.0 | 22 21.7 | 21 17.0 | 12 1.8 | 72 10.7 | 132 19.7 | |
| 13 | 22 18.3 | 22 22.0 | 21 17.3 | 13 1.9 | 73 10.9 | 133 19.8 | |
| 14 | 22 18.5 | 22 22.2 | 21 17.5 | 14 2.1 | 74 11.0 | 134 20.0 | |
| 15 | 22 18.8 | 22 22.5 | 21 17.8 | 15 2.2 | 75 11.2 | 135 20.1 | |
| 16 | 22 19.0 | 22 22.7 | 21 18.0 | 16 2.4 | 76 11.3 | 136 20.3 | |
| 17 | 22 19.3 | 22 23.0 | 21 18.2 | 17 2.5 | 77 11.5 | 137 20.4 | |
| 18 | 22 19.5 | 22 23.2 | 21 18.5 | 18 2.7 | 78 11.6 | 138 20.6 | |
| 19 | 22 19.8 | 22 23.5 | 21 18.7 | 19 2.8 | 79 11.8 | 139 20.7 | |
| 20 | 22 20.0 | 22 23.7 | 21 19.0 | 20 3.0 | 80 11.9 | 140 20.9 | |
| 21 | 22 20.3 | 22 24.0 | 21 19.2 | 21 3.1 | 81 12.1 | 141 21.0 | |
| 22 | 22 20.5 | 22 24.2 | 21 19.4 | 22 3.3 | 82 12.2 | 142 21.2 | |
| 23 | 22 20.8 | 22 24.5 | 21 19.7 | 23 3.4 | 83 12.4 | 143 21.3 | |
| 24 | 22 21.0 | 22 24.7 | 21 19.9 | 24 3.6 | 84 12.5 | 144 21.5 | |
| 25 | 22 21.3 | 22 25.0 | 21 20.1 | 25 3.7 | 85 12.7 | 145 21.6 | |
| 26 | 22 21.5 | 22 25.2 | 21 20.4 | 26 3.9 | 86 12.8 | 146 21.8 | |
| 27 | 22 21.8 | 22 25.5 | 21 20.6 | 27 4.0 | 87 13.0 | 147 21.9 | |
| 28 | 22 22.0 | 22 25.7 | 21 20.9 | 28 4.2 | 88 13.1 | 148 22.1 | |
| 29 | 22 22.3 | 22 26.0 | 21 21.1 | 29 4.3 | 89 13.3 | 149 22.2 | |
| 30 | 22 22.5 | 22 26.2 | 21 21.3 | 30 4.5 | 90 13.4 | 150 22.4 | |
| 31 | 22 22.8 | 22 26.5 | 21 21.6 | 31 4.6 | 91 13.6 | 151 22.5 | |
| 32 | 22 23.0 | 22 26.7 | 21 21.8 | 32 4.8 | 92 13.7 | 152 22.7 | |
| 33 | 22 23.3 | 22 27.0 | 21 22.1 | 33 4.9 | 93 13.9 | 153 22.8 | |
| 34 | 22 23.5 | 22 27.2 | 21 22.3 | 34 5.1 | 94 14.0 | 154 23.0 | |
| 35 | 22 23.8 | 22 27.5 | 21 22.5 | 35 5.2 | 95 14.2 | 155 23.1 | |
| 36 | 22 24.0 | 22 27.7 | 21 22.8 | 36 5.4 | 96 14.3 | 156 23.3 | |
| 37 | 22 24.3 | 22 28.0 | 21 23.0 | 37 5.5 | 97 14.5 | 157 23.4 | |
| 38 | 22 24.5 | 22 28.2 | 21 23.3 | 38 5.7 | 98 14.6 | 158 23.6 | |
| 39 | 22 24.8 | 22 28.5 | 21 23.5 | 39 5.8 | 99 14.8 | 159 23.7 | |
| 40 | 22 25.0 | 22 28.7 | 21 23.7 | 40 6.0 | 100 14.9 | 160 23.9 | |
| 41 | 22 25.3 | 22 29.0 | 21 24.0 | 41 6.1 | 101 15.1 | 161 24.0 | |
| 42 | 22 25.5 | 22 29.2 | 21 24.2 | 42 6.3 | 102 15.2 | 162 24.2 | |
| 43 | 22 25.8 | 22 29.5 | 21 24.4 | 43 6.4 | 103 15.4 | 163 24.3 | |
| 44 | 22 26.0 | 22 29.7 | 21 24.7 | 44 6.6 | 104 15.5 | 164 24.5 | |
| 45 | 22 26.3 | 22 30.0 | 21 24.9 | 45 6.7 | 105 15.7 | 165 24.6 | |
| 46 | 22 26.5 | 22 30.2 | 21 25.2 | 46 6.9 | 106 15.8 | 166 24.8 | |
| 47 | 22 26.8 | 22 30.5 | 21 25.4 | 47 7.0 | 107 16.0 | 167 24.9 | |
| 48 | 22 27.0 | 22 30.7 | 21 25.6 | 48 7.2 | 108 16.1 | 168 25.1 | |
| 49 | 22 27.3 | 22 31.0 | 21 25.9 | 49 7.3 | 109 16.3 | 169 25.2 | |
| 50 | 22 27.5 | 22 31.2 | 21 26.1 | 50 7.5 | 110 16.4 | 170 25.4 | |
| 51 | 22 27.8 | 22 31.5 | 21 26.4 | 51 7.6 | 111 16.6 | 171 25.5 | |
| 52 | 22 28.0 | 22 31.7 | 21 26.6 | 52 7.8 | 112 16.7 | 172 25.7 | |
| 53 | 22 28.3 | 22 32.0 | 21 26.8 | 53 7.9 | 113 16.9 | 173 25.8 | |
| 54 | 22 28.5 | 22 32.2 | 21 27.1 | 54 8.1 | 114 17.0 | 174 26.0 | |
| 55 | 22 28.8 | 22 32.5 | 21 27.3 | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | o ' | o ' | o ' | |
| 0 | 22 30.0 | 22 33.8 | 21 28.5 | 0 .0 | 60 9.1 | 120 18.1 | |
| 1 | 22 30.3 | 22 34.0 | 21 28.7 | 1 .2 | 61 9.2 | 121 18.3 | |
| 2 | 22 30.5 | 22 34.3 | 21 29.0 | 2 .3 | 62 9.4 | 122 18.4 | |
| 3 | 22 30.8 | 22 34.5 | 21 29.2 | 3 .5 | 63 9.5 | 123 18.6 | |
| 4 | 22 31.0 | 22 34.8 | 21 29.5 | 4 .6 | 64 9.7 | 124 18.7 | |
| 5 | 22 31.3 | 22 35.0 | 21 29.7 | 5 .8 | 65 9.8 | 125 18.9 | |
| 6 | 22 31.5 | 22 35.3 | 21 29.9 | 6 .9 | 66 10.0 | 126 19.0 | |
| 7 | 22 31.8 | 22 35.5 | 21 30.2 | 7 1.1 | 67 10.1 | 127 19.2 | |
| 8 | 22 32.0 | 22 35.8 | 21 30.4 | 8 1.2 | 68 10.3 | 128 19.3 | |
| 9 | 22 32.3 | 22 36.0 | 21 30.6 | 9 1.4 | 69 10.4 | 129 19.5 | |
| 10 | 22 32.5 | 22 36.3 | 21 30.9 | 10 1.5 | 70 10.6 | 130 19.6 | |
| 11 | 22 32.8 | 22 36.5 | 21 31.1 | 11 1.7 | 71 10.7 | 131 19.8 | |
| 12 | 22 33.0 | 22 36.8 | 21 31.4 | 12 1.8 | 72 10.9 | 132 19.9 | |
| 13 | 22 33.3 | 22 37.0 | 21 31.6 | 13 2.0 | 73 11.0 | 133 20.1 | |
| 14 | 22 33.5 | 22 37.3 | 21 31.8 | 14 2.1 | 74 11.2 | 134 20.2 | |
| 15 | 22 33.8 | 22 37.5 | 21 32.1 | 15 2.3 | 75 11.3 | 135 20.4 | |
| 16 | 22 34.0 | 22 37.8 | 21 32.3 | 16 2.4 | 76 11.5 | 136 20.5 | |
| 17 | 22 34.3 | 22 38.0 | 21 32.6 | 17 2.6 | 77 11.6 | 137 20.7 | |
| 18 | 22 34.5 | 22 38.3 | 21 32.8 | 18 2.7 | 78 11.8 | 138 20.8 | |
| 19 | 22 34.8 | 22 38.5 | 21 33.0 | 19 2.9 | 79 11.9 | 139 21.0 | |
| 20 | 22 35.0 | 22 38.8 | 21 33.3 | 20 3.0 | 80 12.1 | 140 21.1 | |
| 21 | 22 35.3 | 22 39.0 | 21 33.5 | 21 3.2 | 81 12.2 | 141 21.3 | |
| 22 | 22 35.5 | 22 39.3 | 21 33.7 | 22 3.3 | 82 12.4 | 142 21.4 | |
| 23 | 22 35.8 | 22 39.5 | 21 34.0 | 23 3.5 | 83 12.5 | 143 21.6 | |
| 24 | 22 36.0 | 22 39.8 | 21 34.2 | 24 3.6 | 84 12.7 | 144 21.7 | |
| 25 | 22 36.3 | 22 40.0 | 21 34.5 | 25 3.8 | 85 12.8 | 145 21.9 | |
| 26 | 22 36.5 | 22 40.3 | 21 34.7 | 26 3.9 | 86 13.0 | 146 22.0 | |
| 27 | 22 36.8 | 22 40.5 | 21 34.9 | 27 4.1 | 87 13.1 | 147 22.2 | |
| 28 | 22 37.0 | 22 40.8 | 21 35.2 | 28 4.2 | 88 13.3 | 148 22.3 | |
| 29 | 22 37.3 | 22 41.0 | 21 35.4 | 29 4.4 | 89 13.4 | 149 22.5 | |
| 30 | 22 37.5 | 22 41.3 | 21 35.7 | 30 4.5 | 90 13.6 | 150 22.6 | |
| 31 | 22 37.8 | 22 41.5 | 21 35.9 | 31 4.7 | 91 13.7 | 151 22.8 | |
| 32 | 22 38.0 | 22 41.8 | 21 36.1 | 32 4.8 | 92 13.9 | 152 22.9 | |
| 33 | 22 38.3 | 22 42.0 | 21 36.4 | 33 5.0 | 93 14.0 | 153 23.1 | |
| 34 | 22 38.5 | 22 42.3 | 21 36.6 | 34 5.1 | 94 14.2 | 154 23.2 | |
| 35 | 22 38.8 | 22 42.5 | 21 36.9 | 35 5.3 | 95 14.3 | 155 23.4 | |
| 36 | 22 39.0 | 22 42.8 | 21 37.1 | 36 5.4 | 96 14.5 | 156 23.5 | |
| 37 | 22 39.3 | 22 43.0 | 21 37.3 | 37 5.6 | 97 14.6 | 157 23.7 | |
| 38 | 22 39.5 | 22 43.3 | 21 37.6 | 38 5.7 | 98 14.8 | 158 23.8 | |
| 39 | 22 39.8 | 22 43.5 | 21 37.8 | 39 5.9 | 99 14.9 | 159 24.0 | |
| 40 | 22 40.0 | 22 43.8 | 21 38.0 | 40 6.0 | 100 15.1 | 160 24.1 | |
| 41 | 22 40.3 | 22 44.0 | 21 38.3 | 41 6.2 | 101 15.2 | 161 24.3 | |
| 42 | 22 40.5 | 22 44.3 | 21 38.5 | 42 6.3 | 102 15.4 | 162 24.4 | |
| 43 | 22 40.8 | 22 44.5 | 21 38.8 | 43 6.5 | 103 15.5 | 163 24.6 | |
| 44 | 22 41.0 | 22 44.8 | 21 39.0 | 44 6.6 | 104 15.7 | 164 24.7 | |
| 45 | 22 41.3 | 22 45.0 | 21 39.2 | 45 6.8 | 105 15.8 | 165 24.9 | |
| 46 | 22 41.5 | 22 45.3 | 21 39.5 | 46 6.9 | 106 16.0 | 166 25.0 | |
| 47 | 22 41.8 | 22 45.5 | 21 39.7 | 47 7.1 | 107 16.1 | 167 25.2 | |
| 48 | 22 42.0 | 22 45.8 | 21 40.0 | 48 7.2 | 108 16.3 | 168 25.3 | |
| 49 | 22 42.3 | 22 46.0 | 21 40.2 | 49 7.4 | 109 16.4 | 169 25.5 | |
| 50 | 22 42.5 | 22 46.3 | 21 40.4 | 50 7.5 | 110 16.6 | 170 25.6 | |
| 51 | 22 42.8 | 22 46.5 | 21 40.7 | 51 7.7 | 111 16.7 | 171 25.8 | |
| 52 | 22 43.0 | 22 46.8 | 21 40.9 | 52 7.8 | 112 16.9 | 172 25.9 | |
| 53 | 22 43.3 | 22 47.0 | 21 41.1 | 53 8.0 | 113 17.0 | 173 26.1 | |
| 54 | 22 43.5 | 22 47.3 | 21 41.4 | 54 8.1 | 114 17.2 | 174 26.2 | |
| 55 | 22 43.8 | 22 47.5 | 21 41.6 | 55 8.3 | 115 17.3 | 175 26.4 | |
| 56 | 22 44.0 | 22 47.8 | 21 41.9 | 56 8.4 | 116 17.5 | 176 26.5 | |
| 57 | 22 44.3 | 22 48.0 | 21 42.1 | 57 8.6 | 117 17.6 | 177 26.7 | |
| 58 | 22 44.5 | 22 48.3 | 21 42.3 | 58 8.7 | 118 17.8 | 178 26.8 | |
| 59 | 22 44.8 | 22 48.5 | 21 42.6 | 59 8.9 | 119 17.9 | 179 27.0 | |
| 60 | 22 45.0 | 22 48.8 | 21 42.8 | 60 9.1 | 120 18.1 | 180 27.2 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o ° | o ° | o ° | o ' | o ' | o ' | |
| 0 | 22 45.0 | 22 48.8 | 21 42.8 | 0 .0 | 60 9.2 | 120 18.3 | |
| 1 | 22 45.3 | 22 49.0 | 21 43.1 | 1 .2 | 61 9.3 | 121 18.5 | |
| 2 | 22 45.5 | 22 49.3 | 21 43.3 | 2 .3 | 62 9.5 | 122 18.6 | |
| 3 | 22 45.8 | 22 49.5 | 21 43.5 | 3 .5 | 63 9.6 | 123 18.8 | |
| 4 | 22 46.0 | 22 49.8 | 21 43.8 | 4 .6 | 64 9.8 | 124 18.9 | |
| 5 | 22 46.3 | 22 50.0 | 21 44.0 | 5 .8 | 65 9.9 | 125 19.1 | |
| 6 | 22 46.5 | 22 50.3 | 21 44.2 | 6 .9 | 66 10.1 | 126 19.2 | |
| 7 | 22 46.8 | 22 50.5 | 21 44.5 | 7 1.1 | 67 10.2 | 127 19.4 | |
| 8 | 22 47.0 | 22 50.8 | 21 44.7 | 8 1.2 | 68 10.4 | 128 19.5 | |
| 9 | 22 47.3 | 22 51.0 | 21 45.0 | 9 1.4 | 69 10.5 | 129 19.7 | |
| 10 | 22 47.5 | 22 51.3 | 21 45.2 | 10 1.5 | 70 10.7 | 130 19.8 | |
| 11 | 22 47.8 | 22 51.5 | 21 45.4 | 11 1.7 | 71 10.8 | 131 20.0 | |
| 12 | 22 48.0 | 22 51.8 | 21 45.7 | 12 1.8 | 72 11.0 | 132 20.1 | |
| 13 | 22 48.3 | 22 52.1 | 21 45.9 | 13 2.0 | 73 11.1 | 133 20.3 | |
| 14 | 22 48.5 | 22 52.3 | 21 46.2 | 14 2.1 | 74 11.3 | 134 20.4 | |
| 15 | 22 48.8 | 22 52.6 | 21 46.4 | 15 2.3 | 75 11.4 | 135 20.6 | |
| 16 | 22 49.0 | 22 52.8 | 21 46.6 | 16 2.4 | 76 11.6 | 136 20.7 | |
| 17 | 22 49.3 | 22 53.1 | 21 46.9 | 17 2.6 | 77 11.7 | 137 20.9 | |
| 18 | 22 49.5 | 22 53.3 | 21 47.1 | 18 2.7 | 78 11.9 | 138 21.0 | |
| 19 | 22 49.8 | 22 53.6 | 21 47.4 | 19 2.9 | 79 12.0 | 139 21.2 | |
| 20 | 22 50.0 | 22 53.8 | 21 47.6 | 20 3.1 | 80 12.2 | 140 21.4 | |
| 21 | 22 50.3 | 22 54.1 | 21 47.8 | 21 3.2 | 81 12.4 | 141 21.5 | |
| 22 | 22 50.5 | 22 54.3 | 21 48.0 | 22 3.4 | 82 12.5 | 142 21.7 | |
| 23 | 22 50.8 | 22 54.6 | 21 48.3 | 23 3.5 | 83 12.7 | 143 21.8 | |
| 24 | 22 51.0 | 22 54.8 | 21 48.5 | 24 3.7 | 84 12.8 | 144 22.0 | |
| 25 | 22 51.3 | 22 55.1 | 21 48.8 | 25 3.8 | 85 13.0 | 145 22.1 | |
| 26 | 22 51.5 | 22 55.3 | 21 49.0 | 26 4.0 | 86 13.1 | 146 22.3 | |
| 27 | 22 51.8 | 22 55.6 | 21 49.3 | 27 4.1 | 87 13.3 | 147 22.4 | |
| 28 | 22 52.0 | 22 55.8 | 21 49.5 | 28 4.3 | 88 13.4 | 148 22.6 | |
| 29 | 22 52.3 | 22 56.1 | 21 49.7 | 29 4.4 | 89 13.6 | 149 22.7 | |
| 30 | 22 52.5 | 22 56.3 | 21 50.0 | 30 4.6 | 90 13.7 | 150 22.9 | |
| 31 | 22 52.8 | 22 56.6 | 21 50.2 | 31 4.7 | 91 13.9 | 151 23.0 | |
| 32 | 22 53.0 | 22 56.8 | 21 50.5 | 32 4.9 | 92 14.0 | 152 23.2 | |
| 33 | 22 53.3 | 22 57.1 | 21 50.7 | 33 5.0 | 93 14.2 | 153 23.3 | |
| 34 | 22 53.5 | 22 57.3 | 21 50.9 | 34 5.2 | 94 14.3 | 154 23.5 | |
| 35 | 22 53.8 | 22 57.6 | 21 51.2 | 35 5.3 | 95 14.5 | 155 23.6 | |
| 36 | 22 54.0 | 22 57.8 | 21 51.4 | 36 5.5 | 96 14.6 | 156 23.8 | |
| 37 | 22 54.3 | 22 58.1 | 21 51.6 | 37 5.6 | 97 14.8 | 157 23.9 | |
| 38 | 22 54.5 | 22 58.3 | 21 51.9 | 38 5.8 | 98 14.9 | 158 24.1 | |
| 39 | 22 54.8 | 22 58.6 | 21 52.1 | 39 5.9 | 99 15.1 | 159 24.2 | |
| 40 | 22 55.0 | 22 58.8 | 21 52.4 | 40 6.1 | 100 15.3 | 160 24.4 | |
| 41 | 22 55.3 | 22 59.1 | 21 52.6 | 41 6.3 | 101 15.4 | 161 24.6 | |
| 42 | 22 55.5 | 22 59.3 | 21 52.8 | 42 6.4 | 102 15.6 | 162 24.7 | |
| 43 | 22 55.8 | 22 59.6 | 21 53.1 | 43 6.6 | 103 15.7 | 163 24.9 | |
| 44 | 22 56.0 | 22 59.8 | 21 53.3 | 44 6.7 | 104 15.9 | 164 25.0 | |
| 45 | 22 56.3 | 23 .1 | 21 53.6 | 45 6.9 | 105 16.0 | 165 25.2 | |
| 46 | 22 56.5 | 23 .3 | 21 53.8 | 46 7.0 | 106 16.2 | 166 25.3 | |
| 47 | 22 56.8 | 23 .6 | 21 54.0 | 47 7.2 | 107 16.3 | 167 25.5 | |
| 48 | 22 57.0 | 23 .8 | 21 54.3 | 48 7.3 | 108 16.5 | 168 25.6 | |
| 49 | 22 57.3 | 23 1.1 | 21 54.5 | 49 7.5 | 109 16.6 | 169 25.8 | |
| 50 | 22 57.5 | 23 1.3 | 21 54.7 | 50 7.6 | 110 16.8 | 170 25.9 | |
| 51 | 22 57.8 | 23 1.6 | 21 55.0 | 51 7.8 | 111 16.9 | 171 26.1 | |
| 52 | 22 58.0 | 23 1.8 | 21 55.2 | 52 7.9 | 112 17.1 | 172 26.2 | |
| 53 | 22 58.3 | 23 2.1 | 21 55 | | | | |

1 h 32 min

1 h 33 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o | ' | o | ' | o | ' | |
| 0 | 23 .0 | 23 3.8 | 21 57.1 | 0 .0 | 60 9.3 | 120 18.5 | |
| 1 | 23 .3 | 23 4.1 | 21 57.4 | 1 .2 | 61 9.4 | 121 18.7 | |
| 2 | 23 .5 | 23 4.3 | 21 57.6 | 2 .3 | 62 9.6 | 122 18.8 | |
| 3 | 23 .8 | 23 4.6 | 21 57.8 | 3 .5 | 63 9.7 | 123 19.0 | |
| 4 | 23 1.0 | 23 4.8 | 21 58.1 | 4 .6 | 64 9.9 | 124 19.1 | |
| 5 | 23 1.3 | 23 5.1 | 21 58.3 | 5 .8 | 65 10.0 | 125 19.3 | |
| 6 | 23 1.5 | 23 5.3 | 21 58.6 | 6 .9 | 66 10.2 | 126 19.4 | |
| 7 | 23 1.8 | 23 5.6 | 21 58.8 | 7 1.1 | 67 10.3 | 127 19.6 | |
| 8 | 23 2.0 | 23 5.8 | 21 59.0 | 8 1.2 | 68 10.5 | 128 19.7 | |
| 9 | 23 2.3 | 23 6.1 | 21 59.3 | 9 1.4 | 69 10.6 | 129 19.9 | |
| 10 | 23 2.5 | 23 6.3 | 21 59.5 | 10 1.5 | 70 10.8 | 130 20.0 | |
| 11 | 23 2.8 | 23 6.6 | 21 59.8 | 11 1.7 | 71 10.9 | 131 20.2 | |
| 12 | 23 3.0 | 23 6.8 | 21 60.0 | 12 1.9 | 72 11.1 | 132 20.4 | |
| 13 | 23 3.3 | 23 7.1 | 22 .2 | 13 2.0 | 73 11.3 | 133 20.5 | |
| 14 | 23 3.5 | 23 7.3 | 22 .5 | 14 2.2 | 74 11.4 | 134 20.7 | |
| 15 | 23 3.8 | 23 7.6 | 22 .7 | 15 2.3 | 75 11.6 | 135 20.8 | |
| 16 | 23 4.0 | 23 7.8 | 22 1.0 | 16 2.5 | 76 11.7 | 136 21.0 | |
| 17 | 23 4.3 | 23 8.1 | 22 1.2 | 17 2.6 | 77 11.9 | 137 21.1 | |
| 18 | 23 4.5 | 23 8.3 | 22 1.4 | 18 2.8 | 78 12.0 | 138 21.3 | |
| 19 | 23 4.8 | 23 8.6 | 22 1.7 | 19 2.9 | 79 12.2 | 139 21.4 | |
| 20 | 23 5.0 | 23 8.8 | 22 1.9 | 20 3.1 | 80 12.3 | 140 21.6 | |
| 21 | 23 5.3 | 23 9.1 | 22 2.1 | 21 3.2 | 81 12.5 | 141 21.7 | |
| 22 | 23 5.5 | 23 9.3 | 22 2.4 | 22 3.4 | 82 12.6 | 142 21.9 | |
| 23 | 23 5.8 | 23 9.6 | 22 2.6 | 23 3.5 | 83 12.8 | 143 22.0 | |
| 24 | 23 6.0 | 23 9.9 | 22 2.9 | 24 3.7 | 84 13.0 | 144 22.2 | |
| 25 | 23 6.3 | 23 10.1 | 22 3.1 | 25 3.9 | 85 13.1 | 145 22.4 | |
| 26 | 23 6.5 | 23 10.4 | 22 3.3 | 26 4.0 | 86 13.3 | 146 22.5 | |
| 27 | 23 6.8 | 23 10.6 | 22 3.6 | 27 4.2 | 87 13.4 | 147 22.7 | |
| 28 | 23 7.0 | 23 10.9 | 22 3.8 | 28 4.3 | 88 13.6 | 148 22.8 | |
| 29 | 23 7.3 | 23 11.1 | 22 4.1 | 29 4.5 | 89 13.7 | 149 23.0 | |
| 30 | 23 7.5 | 23 11.4 | 22 4.3 | 30 4.6 | 90 13.9 | 150 23.1 | |
| 31 | 23 7.8 | 23 11.6 | 22 4.5 | 31 4.8 | 91 14.0 | 151 23.3 | |
| 32 | 23 8.0 | 23 11.9 | 22 4.8 | 32 4.9 | 92 14.2 | 152 23.4 | |
| 33 | 23 8.3 | 23 12.1 | 22 5.0 | 33 5.1 | 93 14.3 | 153 23.6 | |
| 34 | 23 8.5 | 23 12.4 | 22 5.2 | 34 5.2 | 94 14.5 | 154 23.7 | |
| 35 | 23 8.8 | 23 12.6 | 22 5.5 | 35 5.4 | 95 14.6 | 155 23.9 | |
| 36 | 23 9.0 | 23 12.9 | 22 5.7 | 36 5.6 | 96 14.8 | 156 24.1 | |
| 37 | 23 9.3 | 23 13.1 | 22 6.0 | 37 5.7 | 97 15.0 | 157 24.2 | |
| 38 | 23 9.5 | 23 13.4 | 22 6.2 | 38 5.9 | 98 15.1 | 158 24.4 | |
| 39 | 23 9.8 | 23 13.6 | 22 6.4 | 39 6.0 | 99 15.3 | 159 24.5 | |
| 40 | 23 10.0 | 23 13.9 | 22 6.7 | 40 6.2 | 100 15.4 | 160 24.7 | |
| 41 | 23 10.3 | 23 14.1 | 22 6.9 | 41 6.3 | 101 15.6 | 161 24.8 | |
| 42 | 23 10.5 | 23 14.4 | 22 7.2 | 42 6.5 | 102 15.7 | 162 25.0 | |
| 43 | 23 10.8 | 23 14.6 | 22 7.4 | 43 6.6 | 103 15.9 | 163 25.1 | |
| 44 | 23 11.0 | 23 14.9 | 22 7.6 | 44 6.8 | 104 16.0 | 164 25.3 | |
| 45 | 23 11.3 | 23 15.1 | 22 7.9 | 45 6.9 | 105 16.2 | 165 25.4 | |
| 46 | 23 11.5 | 23 15.4 | 22 8.1 | 46 7.1 | 106 16.3 | 166 25.6 | |
| 47 | 23 11.8 | 23 15.6 | 22 8.3 | 47 7.2 | 107 16.5 | 167 25.7 | |
| 48 | 23 12.0 | 23 15.9 | 22 8.6 | 48 7.4 | 108 16.7 | 168 25.9 | |
| 49 | 23 12.3 | 23 16.1 | 22 8.8 | 49 7.6 | 109 16.8 | 169 26.1 | |
| 50 | 23 12.5 | 23 16.4 | 22 9.1 | 50 7.7 | 110 17.0 | 170 26.2 | |
| 51 | 23 12.8 | 23 16.6 | 22 9.3 | 51 7.9 | 111 17.1 | 171 26.4 | |
| 52 | 23 13.0 | 23 16.9 | 22 9.5 | 52 8.0 | 112 17.3 | 172 26.5 | |
| 53 | 23 13.3 | 23 17.1 | 22 9.8 | 53 8.2 | 113 17.4 | 173 26.7 | |
| 54 | 23 13.5 | 23 17.4 | 22 10.0 | 54 8.3 | 114 17.6 | 174 26.8 | |
| 55 | 23 13.8 | 23 17.6 | 22 10.3 | 55 8.5 | 115 17.7 | 175 27.0 | |
| 56 | 23 14.0 | 23 17.9 | 22 10.5 | 56 8.6 | 116 17.9 | 176 27.1 | |
| 57 | 23 14.3 | 23 18.1 | 22 10.7 | 57 8.8 | 117 18.0 | 177 27.3 | |
| 58 | 23 14.5 | 23 18.4 | 22 11.0 | 58 8.9 | 118 18.2 | 178 27.4 | |
| 59 | 23 14.8 | 23 18.6 | 22 11.2 | 59 9.1 | 119 18.3 | 179 27.6 | |
| 60 | 23 15.0 | 23 18.9 | 22 11.5 | 60 9.3 | 120 18.5 | 180 27.8 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|--|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| | o | ' | o | ' | o | ' | |
| 0 | 23 15.0 | 23 18.9 | 22 11.5 | 0 .0 | 60 9.4 | 120 18.7 | |
| 1 | 23 15.3 | 23 19.1 | 22 11.7 | 1 .2 | 61 9.5 | 121 18.9 | |
| 2 | 23 15.5 | 23 19.4 | 22 11.9 | 2 .3 | 62 9.7 | 122 19.0 | |
| 3 | 23 15.8 | 23 19.6 | 22 12.2 | 3 .5 | 63 9.8 | 123 19.2 | |
| 4 | 23 16.0 | 23 19.9 | 22 12.4 | 4 .6 | 64 10.0 | 124 19.3 | |
| 5 | 23 16.3 | 23 20.1 | 22 12.6 | 5 .8 | 65 10.1 | 125 19.5 | |
| 6 | 23 16.5 | 23 20.4 | 22 12.9 | 6 .9 | 66 10.3 | 126 19.6 | |
| 7 | 23 16.8 | 23 20.6 | 22 13.1 | 7 1.1 | 67 10.4 | 127 19.8 | |
| 8 | 23 17.0 | 23 20.9 | 22 13.4 | 8 1.2 | 68 10.6 | 128 19.9 | |
| 9 | 23 17.3 | 23 21.1 | 22 13.6 | 9 1.4 | 69 10.8 | 129 20.1 | |
| 10 | 23 17.5 | 23 21.4 | 22 13.8 | 10 1.6 | 70 10.9 | 130 20.3 | |
| 11 | 23 17.8 | 23 21.6 | 22 14.1 | 11 1.7 | 71 11.1 | 131 20.4 | |
| 12 | 23 18.0 | 23 21.9 | 22 14.3 | 12 1.9 | 72 11.2 | 132 20.6 | |
| 13 | 23 18.3 | 23 22.1 | 22 14.6 | 13 2.0 | 73 11.4 | 133 20.7 | |
| 14 | 23 18.5 | 23 22.4 | 22 14.8 | 14 2.2 | 74 11.5 | 134 20.9 | |
| 15 | 23 18.8 | 23 22.6 | 22 15.0 | 15 2.3 | 75 11.7 | 135 21.0 | |
| 16 | 23 19.0 | 23 22.9 | 22 15.3 | 16 2.5 | 76 11.8 | 136 21.2 | |
| 17 | 23 19.3 | 23 23.1 | 22 15.5 | 17 2.6 | 77 12.0 | 137 21.3 | |
| 18 | 23 19.5 | 23 23.4 | 22 15.7 | 18 2.8 | 78 12.2 | 138 21.5 | |
| 19 | 23 19.8 | 23 23.6 | 22 16.0 | 19 3.0 | 79 12.3 | 139 21.7 | |
| 20 | 23 20.0 | 23 23.9 | 22 16.2 | 20 3.1 | 80 12.5 | 140 21.8 | |
| 21 | 23 20.3 | 23 24.1 | 22 16.5 | 21 3.3 | 81 12.6 | 141 22.0 | |
| 22 | 23 20.5 | 23 24.4 | 22 16.7 | 22 3.4 | 82 12.8 | 142 22.1 | |
| 23 | 23 20.8 | 23 24.6 | 22 16.9 | 23 3.6 | 83 12.9 | 143 22.3 | |
| 24 | 23 21.0 | 23 24.9 | 22 17.2 | 24 3.7 | 84 13.1 | 144 22.4 | |
| 25 | 23 21.3 | 23 25.1 | 22 17.4 | 25 3.9 | 85 13.2 | 145 22.6 | |
| 26 | 23 21.5 | 23 25.4 | 22 17.7 | 26 4.1 | 86 13.4 | 146 22.8 | |
| 27 | 23 21.8 | 23 25.6 | 22 17.9 | 27 4.2 | 87 13.6 | 147 22.9 | |
| 28 | 23 22.0 | 23 25.9 | 22 18.1 | 28 4.4 | 88 13.7 | 148 23.1 | |
| 29 | 23 22.3 | 23 26.1 | 22 18.4 | 29 4.5 | 89 13.9 | 149 23.2 | |
| 30 | 23 22.5 | 23 26.4 | 22 18.6 | 30 4.7 | 90 14.0 | 150 23.4 | |
| 31 | 23 22.8 | 23 26.6 | 22 18.8 | 31 4.8 | 91 14.2 | 151 23.5 | |
| 32 | 23 23.0 | 23 26.9 | 22 19.1 | 32 5.0 | 92 14.3 | 152 23.7 | |
| 33 | 23 23.3 | 23 27.1 | 22 19.3 | 33 5.1 | 93 14.5 | 153 23.8 | |
| 34 | 23 23.5 | 23 27.4 | 22 19.6 | 34 5.3 | 94 14.6 | 154 24.0 | |
| 35 | 23 23.8 | 23 27.6 | 22 19.8 | 35 5.5 | 95 14.8 | 155 24.2 | |
| 36 | 23 24.0 | 23 27.9 | 22 20.0 | 36 5.6 | 96 15.0 | 156 24.3 | |
| 37 | 23 24.3 | 23 28.2 | 22 20.3 | 37 5.8 | 97 15.1 | 157 24.5 | |
| 38 | 23 24.5 | 23 28.4 | 22 20.5 | 38 5.9 | 98 15.3 | 158 24.6 | |
| 39 | 23 24.8 | 23 28.7 | 22 20.8 | 39 6.1 | 99 15.4 | 159 24.8 | |
| 40 | 23 25.0 | 23 28.9 | 22 21.0 | 40 6.2 | 100 15.6 | 160 24.9 | |
| 41 | 23 25.3 | 23 29.2 | 22 21.2 | 41 6.4 | 101 15.7 | 161 25.1 | |
| 42 | 23 25.5 | 23 29.4 | 22 21.5 | 42 6.5 | 102 15.9 | 162 25.2 | |
| 43 | 23 25.8 | 23 29.7 | 22 21.7 | 43 6.7 | 103 16.1 | 163 25.4 | |
| 44 | 23 26.0 | 23 29.9 | 22 21.9 | 44 6.9 | 104 16.2 | 164 25.6 | |
| 45 | 23 26.3 | 23 30.2 | 22 22.2 | 45 7.0 | 105 16.4 | 165 25.7 | |
| 46 | 23 26.5 | 23 30.4 | 22 22.4 | 46 7.2 | 106 16.5 | 166 25.9 | |
| 47 | 23 26.8 | 23 30.7 | 22 22.7 | 47 7.3 | 107 16.7 | 167 26.0 | |
| 48 | 23 27.0 | 23 30.9 | 22 22.9 | 48 7.5 | 108 16.8 | 168 26.2 | |
| 49 | 23 27.3 | 23 31.2 | 22 23.1 | 49 7.6 | 109 17.0 | 169 26.3 | |
| 50 | 23 27.5 | 23 31.4 | 22 23.4 | 50 7.8 | 110 17.1 | 170 26.5 | |
| 51 | 23 27.8 | 23 31.7 | 22 23.6 | 51 7.9 | 111 17.3 | 171 26.6 | |
| 52 | 23 28.0 | 23 31.9 | 22 23.9 | 52 8.1 | 112 17.5 | 172 26.8 | |
| 53 | 23 28.3 | 23 32.2 | 22 24.1 | 53 8.3 | 113 17.6 | 173 27.0 | |
| 54 | 23 28.5 | 23 32.4 | 22 24.3 | 54 8.4 | 114 17.8 | 174 27.1 | |
| 55 | 23 28.8 | 23 32.7 | 22 24 | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / | o | / | o | / | o | / | o | / |
| 0 | 23 30.0 | 23 33.9 | 22 25.8 | 0 .0 | 60 9.5 | 120 18.9 | | 0 | 23 45.0 | 23 49.0 | 22 40.1 | 0 .0 | 60 9.6 | 120 19.1 | |
| 1 | 23 30.3 | 23 34.2 | 22 26.0 | 1 .2 | 61 9.6 | 121 19.1 | | 1 | 23 45.3 | 23 49.2 | 22 40.3 | 1 .2 | 61 9.7 | 121 19.3 | |
| 2 | 23 30.5 | 23 34.4 | 22 26.2 | 2 .3 | 62 9.8 | 122 19.2 | | 2 | 23 45.5 | 23 49.5 | 22 40.6 | 2 .3 | 62 9.9 | 122 19.4 | |
| 3 | 23 30.8 | 23 34.7 | 22 26.5 | 3 .5 | 63 9.9 | 123 19.4 | | 3 | 23 45.8 | 23 49.7 | 22 40.8 | 3 .5 | 63 10.0 | 123 19.6 | |
| 4 | 23 31.0 | 23 34.9 | 22 26.7 | 4 .6 | 64 10.1 | 124 19.5 | | 4 | 23 46.0 | 23 50.0 | 22 41.0 | 4 .6 | 64 10.2 | 124 19.7 | |
| 5 | 23 31.3 | 23 35.2 | 22 27.0 | 5 .8 | 65 10.2 | 125 19.7 | | 5 | 23 46.3 | 23 50.2 | 22 41.3 | 5 .8 | 65 10.3 | 125 19.9 | |
| 6 | 23 31.5 | 23 35.4 | 22 27.2 | 6 .9 | 66 10.4 | 126 19.8 | | 6 | 23 46.5 | 23 50.5 | 22 41.5 | 6 .0 | 66 10.5 | 126 20.1 | |
| 7 | 23 31.8 | 23 35.7 | 22 27.4 | 7 .1 | 67 10.6 | 127 20.0 | | 7 | 23 46.8 | 23 50.7 | 22 41.8 | 7 .1 | 67 10.7 | 127 20.2 | |
| 8 | 23 32.0 | 23 35.9 | 22 27.7 | 8 .3 | 68 10.7 | 128 20.2 | | 8 | 23 47.0 | 23 51.0 | 22 42.0 | 8 .3 | 68 10.8 | 128 20.4 | |
| 9 | 23 32.3 | 23 36.2 | 22 27.9 | 9 .4 | 69 10.9 | 129 20.3 | | 9 | 23 47.3 | 23 51.2 | 22 42.2 | 9 .4 | 69 11.0 | 129 20.5 | |
| 10 | 23 32.5 | 23 36.4 | 22 28.2 | 10 .6 | 70 11.0 | 130 20.5 | | 10 | 23 47.5 | 23 51.5 | 22 42.5 | 10 .6 | 70 11.1 | 130 20.7 | |
| 11 | 23 32.8 | 23 36.7 | 22 28.4 | 11 .7 | 71 11.2 | 131 20.6 | | 11 | 23 47.8 | 23 51.7 | 22 42.7 | 11 .8 | 71 11.3 | 131 20.9 | |
| 12 | 23 33.0 | 23 36.9 | 22 28.6 | 12 .9 | 72 11.3 | 132 20.8 | | 12 | 23 48.0 | 23 52.0 | 22 42.9 | 12 .9 | 72 11.5 | 132 21.0 | |
| 13 | 23 33.3 | 23 37.2 | 22 28.9 | 13 .0 | 73 11.5 | 133 20.9 | | 13 | 23 48.3 | 23 52.2 | 22 43.2 | 13 .1 | 73 11.6 | 133 21.2 | |
| 14 | 23 33.5 | 23 37.4 | 22 29.1 | 14 .2 | 74 11.7 | 134 21.1 | | 14 | 23 48.5 | 23 52.5 | 22 43.4 | 14 .2 | 74 11.8 | 134 21.3 | |
| 15 | 23 33.8 | 23 37.7 | 22 29.3 | 15 .4 | 75 11.8 | 135 21.3 | | 15 | 23 48.8 | 23 52.7 | 22 43.7 | 15 .4 | 75 11.9 | 135 21.5 | |
| 16 | 23 34.0 | 23 37.9 | 22 29.6 | 16 .5 | 76 12.0 | 136 21.4 | | 16 | 23 49.0 | 23 53.0 | 22 43.9 | 16 .5 | 76 12.1 | 136 21.6 | |
| 17 | 23 34.3 | 23 38.2 | 22 29.8 | 17 .7 | 77 12.1 | 137 21.6 | | 17 | 23 49.3 | 23 53.2 | 22 44.1 | 17 .7 | 77 12.3 | 137 21.8 | |
| 18 | 23 34.5 | 23 38.4 | 22 30.1 | 18 .8 | 78 12.3 | 138 21.7 | | 18 | 23 49.5 | 23 53.5 | 22 44.4 | 18 .8 | 78 12.4 | 138 22.0 | |
| 19 | 23 34.8 | 23 38.7 | 22 30.3 | 19 .0 | 79 12.4 | 139 21.9 | | 19 | 23 49.8 | 23 53.7 | 22 44.6 | 19 .0 | 79 12.6 | 139 22.1 | |
| 20 | 23 35.0 | 23 38.9 | 22 30.5 | 20 .3 | 80 12.6 | 140 22.1 | | 20 | 23 50.0 | 23 54.0 | 22 44.9 | 20 .3 | 80 12.7 | 140 22.3 | |
| 21 | 23 35.3 | 23 39.2 | 22 30.8 | 21 .3 | 81 12.8 | 141 22.2 | | 21 | 23 50.3 | 23 54.2 | 22 45.1 | 21 .3 | 81 12.9 | 141 22.4 | |
| 22 | 23 35.5 | 23 39.4 | 22 31.0 | 22 .5 | 82 12.9 | 142 22.4 | | 22 | 23 50.5 | 23 54.5 | 22 45.3 | 22 .5 | 82 13.1 | 142 22.6 | |
| 23 | 23 35.8 | 23 39.7 | 22 31.3 | 23 .6 | 83 13.1 | 143 22.5 | | 23 | 23 50.8 | 23 54.7 | 22 45.6 | 23 .6 | 83 13.2 | 143 22.8 | |
| 24 | 23 36.0 | 23 39.9 | 22 31.5 | 24 .8 | 84 13.2 | 144 22.7 | | 24 | 23 51.0 | 23 55.0 | 22 45.8 | 24 .8 | 84 13.4 | 144 22.9 | |
| 25 | 23 36.3 | 23 40.2 | 22 31.7 | 25 .9 | 85 13.4 | 145 22.8 | | 25 | 23 51.3 | 23 55.2 | 22 46.0 | 25 .9 | 85 13.5 | 145 23.1 | |
| 26 | 23 36.5 | 23 40.4 | 22 32.0 | 26 .1 | 86 13.5 | 146 23.0 | | 26 | 23 51.5 | 23 55.5 | 22 46.3 | 26 .1 | 86 13.7 | 146 23.2 | |
| 27 | 23 36.8 | 23 40.7 | 22 32.2 | 27 .3 | 87 13.7 | 147 23.2 | | 27 | 23 51.8 | 23 55.7 | 22 46.5 | 27 .3 | 87 13.8 | 147 23.4 | |
| 28 | 23 37.0 | 23 40.9 | 22 32.4 | 28 .4 | 88 13.9 | 148 23.3 | | 28 | 23 52.0 | 23 56.0 | 22 46.8 | 28 .4 | 88 14.0 | 148 23.6 | |
| 29 | 23 37.3 | 23 41.2 | 22 32.7 | 29 .6 | 89 14.0 | 149 23.5 | | 29 | 23 52.3 | 23 56.2 | 22 47.0 | 29 .6 | 89 14.2 | 149 23.7 | |
| 30 | 23 37.5 | 23 41.4 | 22 32.9 | 30 .7 | 90 14.2 | 150 23.6 | | 30 | 23 52.5 | 23 56.5 | 22 47.2 | 30 .7 | 90 14.3 | 150 23.9 | |
| 31 | 23 37.8 | 23 41.7 | 22 33.2 | 31 .9 | 91 14.3 | 151 23.8 | | 31 | 23 52.8 | 23 56.7 | 22 47.5 | 31 .9 | 91 14.5 | 151 24.0 | |
| 32 | 23 38.0 | 23 41.9 | 22 33.4 | 32 .0 | 92 14.5 | 152 23.9 | | 32 | 23 53.0 | 23 57.0 | 22 47.7 | 32 .0 | 92 14.6 | 152 24.2 | |
| 33 | 23 38.3 | 23 42.2 | 22 33.6 | 33 .2 | 93 14.6 | 153 24.1 | | 33 | 23 53.3 | 23 57.2 | 22 48.0 | 33 .2 | 93 14.8 | 153 24.4 | |
| 34 | 23 38.5 | 23 42.4 | 22 33.9 | 34 .4 | 94 14.8 | 154 24.3 | | 34 | 23 53.5 | 23 57.5 | 22 48.2 | 34 .4 | 94 15.0 | 154 24.5 | |
| 35 | 23 38.8 | 23 42.7 | 22 34.1 | 35 .5 | 95 15.0 | 155 24.4 | | 35 | 23 53.8 | 23 57.7 | 22 48.4 | 35 .5 | 95 15.1 | 155 24.7 | |
| 36 | 23 39.0 | 23 42.9 | 22 34.4 | 36 .7 | 96 15.1 | 156 24.6 | | 36 | 23 54.0 | 23 58.0 | 22 48.7 | 36 .7 | 96 15.3 | 156 24.8 | |
| 37 | 23 39.3 | 23 43.2 | 22 34.6 | 37 .8 | 97 15.3 | 157 24.7 | | 37 | 23 54.3 | 23 58.2 | 22 48.9 | 37 .8 | 97 15.4 | 157 25.0 | |
| 38 | 23 39.5 | 23 43.4 | 22 34.8 | 38 .0 | 98 15.4 | 158 24.9 | | 38 | 23 54.5 | 23 58.5 | 22 49.2 | 38 .0 | 98 15.6 | 158 25.1 | |
| 39 | 23 39.8 | 23 43.7 | 22 35.1 | 39 .1 | 99 15.6 | 159 25.0 | | 39 | 23 54.8 | 23 58.7 | 22 49.4 | 39 .1 | 99 15.8 | 159 25.3 | |
| 40 | 23 40.0 | 23 43.9 | 22 35.3 | 40 .3 | 100 15.8 | 160 25.2 | | 40 | 23 55.0 | 23 59.0 | 22 49.6 | 40 .3 | 100 15.9 | 160 25.5 | |
| 41 | 23 40.3 | 23 44.2 | 22 35.5 | 41 .5 | 101 15.9 | 161 25.4 | | 41 | 23 55.3 | 23 59.2 | 22 49.9 | 41 .5 | 101 16.1 | 161 25.6 | |
| 42 | 23 40.5 | 23 44.4 | 22 35.8 | 42 .6 | 102 16.1 | 162 25.5 | | 42 | 23 55.5 | 23 59.5 | 22 50.1 | 42 .6 | 102 16.2 | 162 25.8 | |
| 43 | 23 40.8 | 23 44.7 | 22 36.0 | 43 .8 | 103 16.2 | 163 25.7 | | 43 | 23 55.8 | 23 59.7 | 22 50.3 | 43 .8 | 103 16.4 | 163 25.9 | |
| 44 | 23 41.0 | 23 44.9 | 22 36.3 | 44 .9 | 104 16.4 | 164 25.8 | | 44 | 23 56.0 | 23 60.0 | 22 50.6 | 44 .9 | 104 16.6 | 164 26.1 | |
| 45 | 23 41.3 | 23 45.2 | 22 36.5 | 45 .1 | 105 16.5 | 165 26.0 | | 45 | 23 56.3 | 24 .2 | 22 50.8 | 45 .1 | 105 16.7 | 165 26.3 | |
| 46 | 23 41.5 | 23 45.4 | 22 36.7 | 46 .2 | 106 16.7 | 166 26.1 | | 46 | 23 56.5 | 24 .5 | 22 51.1 | 46 .2 | 106 16.9 | 166 26.4 | |
| 47 | 23 41.8 | 23 45.7 | 22 37.0 | 47 .4 | 107 16.9 | 167 26.3 | | 47 | 23 56.8 | 24 .7 | 22 51.3 | 47 .4 | 107 17.0 | 167 26.6 | |
| 48 | 23 42.0 | 23 46.0 | 22 37.2 | 48 .6 | 108 17.0 | 168 26.5 | | 48 | 23 57.0 | 24 .1 | 22 51.5 | 48 .6 | 108 17.2 | 168 26.7 | |
| 49 | 23 42.3 | 23 46.2 | 22 37.5 | 49 .7 | 109 17.2 | 169 26.6 | | 49 | 23 57.3 | 24 .1 | 22 51.8 | 49 .7 | 109 17.3 | 169 26.9 | |
| 50 | 23 42.5 | 23 46.5 | 22 37.7 | 50 .9 | 110 17.3 | 170 26.8 | | 50 | 23 57.5 | 24 .1 | 22 52.0 | 50 .9 | 110 17.5 | 170 27.1 | |
| 51 | 23 42.8 | 23 46.7 | 22 37.9 | 51 .0 | 111 17.5 | 171 26.9 | | 51 | 23 57.8 | 24 .1 | 22 52.3 | 51 .0 | 111 17.7 | 171 27.2 | |
| 52 | 23 43.0 | 23 47.0 | 22 38.2 | 52 .2 | 112 17.6 | 172 27.1 | | 52 | 23 58.0 | 24 .2 | 22 52.5 | 52 .2 | 112 17.8 | 172 27.4 | |
| 53 | 23 43.3 | 23 47.2 | 22 38.4 | 53 .3 | 113 17.8 | 173 27.2 | | 53 | 23 58.3 | 24 .2 | 22 52.7 | 53 .3 | 113 18.0 | 173 27.5 | |
| 54 | 23 43.5 | 23 47.5 | 22 38.7 | 54 .5 | 114 18.0 | 174 27.4 | | 54 | 23 58.5 | 24 .2 | 22 53.0 | 54 .5 | 114 18.1 | 174 27.7 | |
| 55 | 23 43.8 | 23 47.7 | 22 38.9 | 55 .7 | 115 18.1 | 175 27.6 | | 55 | 23 58.8 | 24 .2 | 22 53.2 | 55 .7 | 115 18.3 | 175 27.9 | |
| 56 | 23 44.0 | 23 48.0 | 22 39.1 | 56 .8 | 116 18.3 | 176 27.7 | | 56 | 23 59.0 | 24 .3 | 22 53.4 | 56 .8 | 116 18.5 | 176 28.0 | |
| 57 | 23 44.3 | 23 48.2 | 22 39.4 | 57 .9 | 117 18.4 | 177 27.9 | | 57 | 23 59.3 | 24 .3 | 22 53.7 | 57 .9 | 117 18.6 | 177 28.2 | |
| 58 | 23 44.5 | 23 48.5 | 22 39.6 | 58 .9 | 118 18.6 | 178 28.0 | | 58 | 23 59.5 | 24 .3 | 22 53.9 | 58 .9 | 118 18.8 | 178 28.3 | |
| 59 | 23 44.8 | 23 48.7 | 22 39.8 | 59 .9 | 119 18.7 | 179 28.2 | | 59 | 23 59.8 | 24 .3 | 22 54.2 | 59 .9 | 119 18.9 | 179 28.5 | |
| 60 | 23 45.0 | 23 49.0 | 22 40.1 | 60 .9 | 120 18.9 | 180 28.4 | | 60 | 24 .0 | 24 .0 | 22 54.4 | 60 .9 | 120 19.1 | 180 28.7 | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE T | MJESECA C | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE T | MJESECA C | Δ popr. | Δ popr. | Δ popr. |
| o | ' | o | ' | o | ' | o | o | ' | o | ' | o | ' | o |
| 0 | 24 .0 | 24 4.0 | 22 54.4 | 0 .0 | 60 9.7 | 120 19.3 | 0 | 24 15.0 | 24 19.0 | 23 8.7 | 0 .0 | 60 9.8 | 120 19.5 |
| 1 | 24 .3 | 24 4.3 | 22 54.6 | 1 .2 | 61 9.8 | 121 19.5 | 1 | 24 15.3 | 24 19.3 | 23 9.0 | 1 .2 | 61 9.9 | 121 19.7 |
| 2 | 24 .5 | 24 4.5 | 22 54.9 | 2 .3 | 62 10.0 | 122 19.6 | 2 | 24 15.5 | 24 19.5 | 23 9.2 | 2 .3 | 62 10.1 | 122 19.8 |
| 3 | 24 .8 | 24 4.8 | 22 55.1 | 3 .5 | 63 10.1 | 123 19.8 | 3 | 24 15.8 | 24 19.8 | 23 9.4 | 3 .5 | 63 10.2 | 123 20.0 |
| 4 | 24 1.0 | 24 5.0 | 22 55.4 | 4 .6 | 64 10.3 | 124 19.9 | 4 | 24 16.0 | 24 20.0 | 23 9.7 | 4 .7 | 64 10.4 | 124 20.2 |
| 5 | 24 1.3 | 24 5.3 | 22 55.6 | 5 .8 | 65 10.5 | 125 20.1 | 5 | 24 16.3 | 24 20.3 | 23 9.9 | 5 .8 | 65 10.6 | 125 20.3 |
| 6 | 24 1.5 | 24 5.5 | 22 55.8 | 6 1.0 | 66 10.6 | 126 20.3 | 6 | 24 16.5 | 24 20.5 | 23 10.1 | 6 1.0 | 66 10.7 | 126 20.5 |
| 7 | 24 1.8 | 24 5.8 | 22 56.1 | 7 1.1 | 67 10.8 | 127 20.4 | 7 | 24 16.8 | 24 20.8 | 23 10.4 | 7 1.1 | 67 10.9 | 127 20.6 |
| 8 | 24 2.0 | 24 6.0 | 22 56.3 | 8 1.3 | 68 10.9 | 128 20.6 | 8 | 24 17.0 | 24 21.0 | 23 10.6 | 8 1.3 | 68 11.1 | 128 20.8 |
| 9 | 24 2.3 | 24 6.3 | 22 56.5 | 9 1.4 | 69 11.1 | 129 20.7 | 9 | 24 17.3 | 24 21.3 | 23 10.9 | 9 1.5 | 69 11.2 | 129 21.0 |
| 10 | 24 2.5 | 24 6.5 | 22 56.8 | 10 1.6 | 70 11.3 | 130 20.9 | 10 | 24 17.5 | 24 21.5 | 23 11.1 | 10 1.6 | 70 11.4 | 130 21.1 |
| 11 | 24 2.8 | 24 6.8 | 22 57.0 | 11 1.8 | 71 11.4 | 131 21.1 | 11 | 24 17.8 | 24 21.8 | 23 11.3 | 11 1.8 | 71 11.5 | 131 21.3 |
| 12 | 24 3.0 | 24 7.0 | 22 57.3 | 12 1.9 | 72 11.6 | 132 21.2 | 12 | 24 18.0 | 24 22.1 | 23 11.6 | 12 2.0 | 72 11.7 | 132 21.5 |
| 13 | 24 3.3 | 24 7.3 | 22 57.5 | 13 2.1 | 73 11.7 | 133 21.4 | 13 | 24 18.3 | 24 22.3 | 23 11.8 | 13 2.1 | 73 11.9 | 133 21.6 |
| 14 | 24 3.5 | 24 7.5 | 22 57.7 | 14 2.3 | 74 11.9 | 134 21.6 | 14 | 24 18.5 | 24 22.6 | 23 12.1 | 14 2.3 | 74 12.0 | 134 21.8 |
| 15 | 24 3.8 | 24 7.8 | 22 58.0 | 15 2.4 | 75 12.1 | 135 21.7 | 15 | 24 18.8 | 24 22.8 | 23 12.3 | 15 2.4 | 75 12.2 | 135 21.9 |
| 16 | 24 4.0 | 24 8.0 | 22 58.2 | 16 2.6 | 76 12.2 | 136 21.9 | 16 | 24 19.0 | 24 23.1 | 23 12.5 | 16 2.6 | 76 12.4 | 136 22.1 |
| 17 | 24 4.3 | 24 8.3 | 22 58.5 | 17 2.7 | 77 12.4 | 137 22.0 | 17 | 24 19.3 | 24 23.3 | 23 12.8 | 17 2.8 | 77 12.5 | 137 22.3 |
| 18 | 24 4.5 | 24 8.5 | 22 58.7 | 18 2.9 | 78 12.5 | 138 22.2 | 18 | 24 19.5 | 24 23.6 | 23 13.0 | 18 2.9 | 78 12.7 | 138 22.4 |
| 19 | 24 4.8 | 24 8.8 | 22 58.9 | 19 3.1 | 79 12.7 | 139 22.4 | 19 | 24 19.8 | 24 23.8 | 23 13.3 | 19 3.1 | 79 12.8 | 139 22.6 |
| 20 | 24 5.0 | 24 9.0 | 22 59.2 | 20 3.2 | 80 12.9 | 140 22.5 | 20 | 24 20.0 | 24 24.1 | 23 13.5 | 20 3.3 | 80 13.0 | 140 22.8 |
| 21 | 24 5.3 | 24 9.3 | 22 59.4 | 21 3.4 | 81 13.0 | 141 22.7 | 21 | 24 20.3 | 24 24.3 | 23 13.7 | 21 3.4 | 81 13.2 | 141 22.9 |
| 22 | 24 5.5 | 24 9.5 | 22 59.6 | 22 3.5 | 82 13.2 | 142 22.8 | 22 | 24 20.5 | 24 24.6 | 23 14.0 | 22 3.6 | 82 13.3 | 142 23.1 |
| 23 | 24 5.8 | 24 9.8 | 22 59.9 | 23 3.7 | 83 13.3 | 143 23.0 | 23 | 24 20.8 | 24 24.8 | 23 14.2 | 23 3.7 | 83 13.5 | 143 23.2 |
| 24 | 24 6.0 | 24 10.0 | 23 .1 | 24 3.9 | 84 13.5 | 144 23.2 | 24 | 24 21.0 | 24 25.1 | 23 14.4 | 24 3.9 | 84 13.7 | 144 23.4 |
| 25 | 24 6.3 | 24 10.3 | 23 .4 | 25 4.0 | 85 13.7 | 145 23.3 | 25 | 24 21.3 | 24 25.3 | 23 14.7 | 25 4.1 | 85 13.8 | 145 23.6 |
| 26 | 24 6.5 | 24 10.5 | 23 .6 | 26 4.2 | 86 13.8 | 146 23.5 | 26 | 24 21.5 | 24 25.6 | 23 14.9 | 26 4.2 | 86 14.0 | 146 23.7 |
| 27 | 24 6.8 | 24 10.8 | 23 .8 | 27 4.3 | 87 14.0 | 147 23.6 | 27 | 24 21.8 | 24 25.8 | 23 15.2 | 27 4.4 | 87 14.1 | 147 23.9 |
| 28 | 24 7.0 | 24 11.0 | 23 1.1 | 28 4.5 | 88 14.2 | 148 23.8 | 28 | 24 22.0 | 24 26.1 | 23 15.4 | 28 4.6 | 88 14.3 | 148 24.1 |
| 29 | 24 7.3 | 24 11.3 | 23 1.3 | 29 4.7 | 89 14.3 | 149 24.0 | 29 | 24 22.3 | 24 26.3 | 23 15.6 | 29 4.7 | 89 14.5 | 149 24.2 |
| 30 | 24 7.5 | 24 11.5 | 23 1.6 | 30 4.8 | 90 14.5 | 150 24.1 | 30 | 24 22.5 | 24 26.6 | 23 15.9 | 30 4.9 | 90 14.6 | 150 24.4 |
| 31 | 24 7.8 | 24 11.8 | 23 1.8 | 31 5.0 | 91 14.6 | 151 24.3 | 31 | 24 22.8 | 24 26.8 | 23 16.1 | 31 5.0 | 91 14.8 | 151 24.5 |
| 32 | 24 8.0 | 24 12.0 | 23 2.0 | 32 5.1 | 92 14.8 | 152 24.4 | 32 | 24 23.0 | 24 27.1 | 23 16.4 | 32 5.2 | 92 15.0 | 152 24.7 |
| 33 | 24 8.3 | 24 12.3 | 23 2.3 | 33 5.3 | 93 15.0 | 153 24.6 | 33 | 24 23.3 | 24 27.3 | 23 16.6 | 33 5.4 | 93 15.1 | 153 24.9 |
| 34 | 24 8.5 | 24 12.5 | 23 2.5 | 34 5.5 | 94 15.1 | 154 24.8 | 34 | 24 23.5 | 24 27.6 | 23 16.8 | 34 5.5 | 94 15.3 | 154 25.0 |
| 35 | 24 8.8 | 24 12.8 | 23 2.8 | 35 5.6 | 95 15.3 | 155 24.9 | 35 | 24 23.8 | 24 27.8 | 23 17.1 | 35 5.7 | 95 15.4 | 155 25.2 |
| 36 | 24 9.0 | 24 13.0 | 23 3.0 | 36 5.8 | 96 15.4 | 156 25.1 | 36 | 24 24.0 | 24 28.1 | 23 17.3 | 36 5.9 | 96 15.6 | 156 25.4 |
| 37 | 24 9.3 | 24 13.3 | 23 3.2 | 37 6.0 | 97 15.6 | 157 25.3 | 37 | 24 24.3 | 24 28.3 | 23 17.5 | 37 6.0 | 97 15.8 | 157 25.5 |
| 38 | 24 9.5 | 24 13.5 | 23 3.5 | 38 6.1 | 98 15.8 | 158 25.4 | 38 | 24 24.5 | 24 28.6 | 23 17.8 | 38 6.2 | 98 15.9 | 158 25.7 |
| 39 | 24 9.8 | 24 13.8 | 23 3.7 | 39 6.3 | 99 15.9 | 159 25.6 | 39 | 24 24.8 | 24 28.8 | 23 18.0 | 39 6.3 | 99 16.1 | 159 25.8 |
| 40 | 24 10.0 | 24 14.0 | 23 3.9 | 40 6.4 | 100 16.1 | 160 25.7 | 40 | 24 25.0 | 24 29.1 | 23 18.3 | 40 6.5 | 100 16.3 | 160 26.0 |
| 41 | 24 10.3 | 24 14.3 | 23 4.2 | 41 6.6 | 101 16.2 | 161 25.9 | 41 | 24 25.3 | 24 29.3 | 23 18.5 | 41 6.7 | 101 16.4 | 161 26.2 |
| 42 | 24 10.5 | 24 14.5 | 23 4.4 | 42 6.8 | 102 16.4 | 162 26.1 | 42 | 24 25.5 | 24 29.6 | 23 18.7 | 42 6.8 | 102 16.6 | 162 26.3 |
| 43 | 24 10.8 | 24 14.8 | 23 4.7 | 43 6.9 | 103 16.6 | 163 26.2 | 43 | 24 25.8 | 24 29.8 | 23 19.0 | 43 7.0 | 103 16.7 | 163 26.5 |
| 44 | 24 11.0 | 24 15.0 | 23 4.9 | 44 7.1 | 104 16.7 | 164 26.4 | 44 | 24 26.0 | 24 30.1 | 23 19.2 | 44 7.2 | 104 16.9 | 164 26.7 |
| 45 | 24 11.3 | 24 15.3 | 23 5.1 | 45 7.2 | 105 16.9 | 165 26.5 | 45 | 24 26.3 | 24 30.3 | 23 19.5 | 45 7.3 | 105 17.1 | 165 26.8 |
| 46 | 24 11.5 | 24 15.5 | 23 5.4 | 46 7.4 | 106 17.0 | 166 26.7 | 46 | 24 26.5 | 24 30.6 | 23 19.7 | 46 7.5 | 106 17.2 | 166 27.0 |
| 47 | 24 11.8 | 24 15.8 | 23 5.6 | 47 7.6 | 107 17.2 | 167 26.9 | 47 | 24 26.8 | 24 30.8 | 23 19.9 | 47 7.6 | 107 17.4 | 167 27.1 |
| 48 | 24 12.0 | 24 16.0 | 23 5.9 | 48 7.7 | 108 17.4 | 168 27.0 | 48 | 24 27.0 | 24 31.1 | 23 20.2 | 48 7.8 | 108 17.6 | 168 27.3 |
| 49 | 24 12.3 | 24 16.3 | 23 6.1 | 49 7.9 | 109 17.5 | 169 27.2 | 49 | 24 27.3 | 24 31.3 | 23 20.4 | 49 8.0 | 109 17.7 | 169 27.5 |
| 50 | 24 12.5 | 24 16.5 | 23 6.3 | 50 8.0 | 110 17.7 | 170 27.3 | 50 | 24 27.5 | 24 31.6 | 23 20.6 | 50 8.1 | 110 17.9 | 170 27.6 |
| 51 | 24 12.8 | 24 16.8 | 23 6.6 | 51 8.2 | 111 17.9 | 171 27.5 | 51 | 24 27.8 | 24 31.8 | 23 20.9 | 51 8.3 | 111 18.0 | 171 27.8 |
| 52 | 24 13.0 | 24 17.0 | 23 6.8 | 52 8.4 | 112 18.0 | 172 27.7 | 52 | 24 28.0 | 24 32.1 | 23 21.1 | 52 8.5 | 112 18.2 | 172 28.0 |
| 53 | 24 13.3 | 24 17.3 | 23 7.0 | 53 8.5 | 113 18.2 | 173 27.8 | 53 | 24 28.3 | 24 32.3 | 23 21.4 | 53 8.6 | 113 18.4 | 173 28.1 |
| 54 | 24 13.5 | 24 17.5 | 23 7.3 | 54 8.7 | 114 18.3 | 174 28.0 | 54 | 24 28.5 | 24 32.6 | 23 21.6 | 54 8.8 | 114 18.5 | 174 28.3 |
| 55 | 24 13.8 | 24 17.8 | 23 7.5 | 55 8.8 | 115 18.5 | 175 28.1 | 55 | 24 28.8 | 24 32.8 | 23 21.8 | 55 8.9 | 115 18.7 | 175 28.4 |
| 56 | 24 14.0 | 24 18.0 | 23 7.8 | 56 9.0 | 116 18.7 | 176 28.3 | 56 | 24 29.0 | 24 33.1 | 23 22.1 | 56 9.1 | 116 18.9 | 176 28.6 |
| 57 | 24 14.3 | 24 18.3 | 23 8.0 | 57 9.2 | 117 18.8 | 177 28.5 | 57 | 24 29.3 | 24 33.3 | 23 22.3 | 57 9.3 | 117 19.0 | 177 28.8 |
| 58 | 24 14.5 | 24 18.5 | 23 8.2 | 58 9.3 | 118 19.0 | 178 28.6 | 58 | 24 29.5 | 24 33.6 | 23 22.6 | 58 9.4 | 118 19.2 | 178 28.9 |
| 59 | 24 14.8 | 24 18.8 | 23 8.5 | 59 9.5 | 119 19.1 | 179 28.8 | 59 | 24 29.8 | 24 33.8 | 23 22.8 | 59 9.6 | 119 19.3 | 179 29.1 |
| 60 | 24 15.0 | 24 19.0 | 23 8.7 | 60 9.7 | 120 19.3 | 180 29.0 | 60 | 24 30.0 | 24 34.1 | 23 23.0 | 60 9.8 | 120 19.5 | 180 29.3 |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 24 30.0 | 24 34.1 | 23 23.0 | 0 .0 | 60 9.9 | 120 19.7 | |
| 1 | 24 30.3 | 24 34.3 | 23 23.3 | 1 .2 | 61 10.0 | 121 19.9 | |
| 2 | 24 30.5 | 24 34.6 | 23 23.5 | 2 .3 | 62 10.2 | 122 20.0 | |
| 3 | 24 30.8 | 24 34.8 | 23 23.7 | 3 .5 | 63 10.3 | 123 20.2 | |
| 4 | 24 31.0 | 24 35.1 | 23 24.0 | 4 .7 | 64 10.5 | 124 20.4 | |
| 5 | 24 31.3 | 24 35.3 | 23 24.2 | 5 .8 | 65 10.7 | 125 20.5 | |
| 6 | 24 31.5 | 24 35.6 | 23 24.5 | 6 1.0 | 66 10.8 | 126 20.7 | |
| 7 | 24 31.8 | 24 35.8 | 23 24.7 | 7 1.1 | 67 11.0 | 127 20.8 | |
| 8 | 24 32.0 | 24 36.1 | 23 24.9 | 8 1.3 | 68 11.2 | 128 21.0 | |
| 9 | 24 32.3 | 24 36.3 | 23 25.2 | 9 1.5 | 69 11.3 | 129 21.2 | |
| 10 | 24 32.5 | 24 36.6 | 23 25.4 | 10 1.6 | 70 11.5 | 130 21.3 | |
| 11 | 24 32.8 | 24 36.8 | 23 25.7 | 11 1.8 | 71 11.7 | 131 21.5 | |
| 12 | 24 33.0 | 24 37.1 | 23 25.9 | 12 2.0 | 72 11.8 | 132 21.7 | |
| 13 | 24 33.3 | 24 37.3 | 23 26.1 | 13 2.1 | 73 12.0 | 133 21.8 | |
| 14 | 24 33.5 | 24 37.6 | 23 26.4 | 14 2.3 | 74 12.1 | 134 22.0 | |
| 15 | 24 33.8 | 24 37.8 | 23 26.6 | 15 2.5 | 75 12.3 | 135 22.2 | |
| 16 | 24 34.0 | 24 38.1 | 23 26.9 | 16 2.6 | 76 12.5 | 136 22.3 | |
| 17 | 24 34.3 | 24 38.3 | 23 27.1 | 17 2.8 | 77 12.6 | 137 22.5 | |
| 18 | 24 34.5 | 24 38.6 | 23 27.3 | 18 3.0 | 78 12.8 | 138 22.7 | |
| 19 | 24 34.8 | 24 38.8 | 23 27.6 | 19 3.1 | 79 13.0 | 139 22.8 | |
| 20 | 24 35.0 | 24 39.1 | 23 27.8 | 20 3.3 | 80 13.1 | 140 23.0 | |
| 21 | 24 35.3 | 24 39.3 | 23 28.0 | 21 3.4 | 81 13.3 | 141 23.1 | |
| 22 | 24 35.5 | 24 39.6 | 23 28.3 | 22 3.6 | 82 13.5 | 142 23.3 | |
| 23 | 24 35.8 | 24 39.8 | 23 28.5 | 23 3.8 | 83 13.6 | 143 23.5 | |
| 24 | 24 36.0 | 24 40.1 | 23 28.8 | 24 3.9 | 84 13.8 | 144 23.6 | |
| 25 | 24 36.3 | 24 40.4 | 23 29.0 | 25 4.1 | 85 14.0 | 145 23.8 | |
| 26 | 24 36.5 | 24 40.6 | 23 29.2 | 26 4.3 | 86 14.1 | 146 24.0 | |
| 27 | 24 36.8 | 24 40.9 | 23 29.5 | 27 4.4 | 87 14.3 | 147 24.1 | |
| 28 | 24 37.0 | 24 41.1 | 23 29.7 | 28 4.6 | 88 14.4 | 148 24.3 | |
| 29 | 24 37.3 | 24 41.4 | 23 30.0 | 29 4.8 | 89 14.6 | 149 24.5 | |
| 30 | 24 37.5 | 24 41.6 | 23 30.2 | 30 4.9 | 90 14.8 | 150 24.6 | |
| 31 | 24 37.8 | 24 41.9 | 23 30.4 | 31 5.1 | 91 14.9 | 151 24.8 | |
| 32 | 24 38.0 | 24 42.1 | 23 30.7 | 32 5.3 | 92 15.1 | 152 25.0 | |
| 33 | 24 38.3 | 24 42.4 | 23 30.9 | 33 5.4 | 93 15.3 | 153 25.1 | |
| 34 | 24 38.5 | 24 42.6 | 23 31.1 | 34 5.6 | 94 15.4 | 154 25.3 | |
| 35 | 24 38.8 | 24 42.9 | 23 31.4 | 35 5.7 | 95 15.6 | 155 25.4 | |
| 36 | 24 39.0 | 24 43.1 | 23 31.6 | 36 5.9 | 96 15.8 | 156 25.6 | |
| 37 | 24 39.3 | 24 43.4 | 23 31.9 | 37 6.1 | 97 15.9 | 157 25.8 | |
| 38 | 24 39.5 | 24 43.6 | 23 32.1 | 38 6.2 | 98 16.1 | 158 25.9 | |
| 39 | 24 39.8 | 24 43.9 | 23 32.3 | 39 6.4 | 99 16.3 | 159 26.1 | |
| 40 | 24 40.0 | 24 44.1 | 23 32.6 | 40 6.6 | 100 16.4 | 160 26.3 | |
| 41 | 24 40.3 | 24 44.4 | 23 32.8 | 41 6.7 | 101 16.6 | 161 26.4 | |
| 42 | 24 40.5 | 24 44.6 | 23 33.1 | 42 6.9 | 102 16.7 | 162 26.6 | |
| 43 | 24 40.8 | 24 44.9 | 23 33.3 | 43 7.1 | 103 16.9 | 163 26.8 | |
| 44 | 24 41.0 | 24 45.1 | 23 33.5 | 44 7.2 | 104 17.1 | 164 26.9 | |
| 45 | 24 41.3 | 24 45.4 | 23 33.8 | 45 7.4 | 105 17.2 | 165 27.1 | |
| 46 | 24 41.5 | 24 45.6 | 23 34.0 | 46 7.6 | 106 17.4 | 166 27.3 | |
| 47 | 24 41.8 | 24 45.9 | 23 34.2 | 47 7.7 | 107 17.6 | 167 27.4 | |
| 48 | 24 42.0 | 24 46.1 | 23 34.5 | 48 7.9 | 108 17.7 | 168 27.6 | |
| 49 | 24 42.3 | 24 46.4 | 23 34.7 | 49 8.0 | 109 17.9 | 169 27.7 | |
| 50 | 24 42.5 | 24 46.6 | 23 35.0 | 50 8.2 | 110 18.1 | 170 27.9 | |
| 51 | 24 42.8 | 24 46.9 | 23 35.2 | 51 8.4 | 111 18.2 | 171 28.1 | |
| 52 | 24 43.0 | 24 47.1 | 23 35.4 | 52 8.5 | 112 18.4 | 172 28.2 | |
| 53 | 24 43.3 | 24 47.4 | 23 35.7 | 53 8.7 | 113 18.6 | 173 28.4 | |
| 54 | 24 43.5 | 24 47.6 | 23 35.9 | 54 8.9 | 114 18.7 | 174 28.6 | |
| 55 | 24 43.8 | 24 47.9 | 23 36.2 | 55 9.0 | 115 18.9 | 175 28.7 | |
| 56 | 24 44.0 | 24 48.1 | 23 36.4 | 56 9.2 | 116 19.0 | 176 28.9 | |
| 57 | 24 44.3 | 24 48.4 | 23 36.6 | 57 9.4 | 117 19.2 | 177 29.1 | |
| 58 | 24 44.5 | 24 48.6 | 23 36.9 | 58 9.5 | 118 19.4 | 178 29.2 | |
| 59 | 24 44.8 | 24 48.9 | 23 37.1 | 59 9.7 | 119 19.5 | 179 29.4 | |
| 60 | 24 45.0 | 24 49.1 | 23 37.4 | 60 9.9 | 120 19.7 | 180 29.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 24 45.0 | 24 49.1 | 23 37.4 | 0 .0 | 60 10.0 | 120 19.9 | |
| 1 | 24 45.3 | 24 49.4 | 23 37.6 | 1 .2 | 61 10.1 | 121 20.1 | |
| 2 | 24 45.5 | 24 49.6 | 23 37.8 | 2 .3 | 62 10.3 | 122 20.2 | |
| 3 | 24 45.8 | 24 49.9 | 23 38.1 | 3 .5 | 63 10.4 | 123 20.4 | |
| 4 | 24 46.0 | 24 50.1 | 23 38.3 | 4 .7 | 64 10.6 | 124 20.6 | |
| 5 | 24 46.3 | 24 50.4 | 23 38.5 | 5 .8 | 65 10.8 | 125 20.7 | |
| 6 | 24 46.5 | 24 50.6 | 23 38.8 | 6 1.0 | 66 10.9 | 126 20.9 | |
| 7 | 24 46.8 | 24 50.9 | 23 39.0 | 7 1.2 | 67 11.1 | 127 21.1 | |
| 8 | 24 47.0 | 24 51.1 | 23 39.3 | 8 1.3 | 68 11.3 | 128 21.2 | |
| 9 | 24 47.3 | 24 51.4 | 23 39.5 | 9 1.5 | 69 11.4 | 129 21.4 | |
| 10 | 24 47.5 | 24 51.6 | 23 39.7 | 10 1.7 | 70 11.6 | 130 21.6 | |
| 11 | 24 47.8 | 24 51.9 | 23 40.0 | 11 1.8 | 71 11.8 | 131 21.7 | |
| 12 | 24 48.0 | 24 52.1 | 23 40.2 | 12 2.0 | 72 11.9 | 132 21.9 | |
| 13 | 24 48.3 | 24 52.4 | 23 40.5 | 13 2.2 | 73 12.1 | 133 22.1 | |
| 14 | 24 48.5 | 24 52.6 | 23 40.7 | 14 2.3 | 74 12.3 | 134 22.2 | |
| 15 | 24 48.8 | 24 52.9 | 23 40.9 | 15 2.5 | 75 12.4 | 135 22.4 | |
| 16 | 24 49.0 | 24 53.1 | 23 41.2 | 16 2.7 | 76 12.6 | 136 22.6 | |
| 17 | 24 49.3 | 24 53.4 | 23 41.4 | 17 2.8 | 77 12.8 | 137 22.7 | |
| 18 | 24 49.5 | 24 53.6 | 23 41.6 | 18 3.0 | 78 12.9 | 138 22.9 | |
| 19 | 24 49.8 | 24 53.9 | 23 41.9 | 19 3.2 | 79 13.1 | 139 23.1 | |
| 20 | 24 50.0 | 24 54.1 | 23 42.1 | 20 3.3 | 80 13.3 | 140 23.2 | |
| 21 | 24 50.3 | 24 54.4 | 23 42.4 | 21 3.5 | 81 13.4 | 141 23.4 | |
| 22 | 24 50.5 | 24 54.6 | 23 42.6 | 22 3.6 | 82 13.6 | 142 23.5 | |
| 23 | 24 50.8 | 24 54.9 | 23 42.8 | 23 3.8 | 83 13.8 | 143 23.7 | |
| 24 | 24 51.0 | 24 55.1 | 23 43.1 | 24 4.0 | 84 13.9 | 144 23.9 | |
| 25 | 24 51.3 | 24 55.4 | 23 43.3 | 25 4.1 | 85 14.1 | 145 24.0 | |
| 26 | 24 51.5 | 24 55.6 | 23 43.6 | 26 4.3 | 86 14.3 | 146 24.2 | |
| 27 | 24 51.8 | 24 55.9 | 23 43.8 | 27 4.5 | 87 14.4 | 147 24.4 | |
| 28 | 24 52.0 | 24 56.1 | 23 44.0 | 28 4.6 | 88 14.6 | 148 24.5 | |
| 29 | 24 52.3 | 24 56.4 | 23 44.3 | 29 4.8 | 89 14.8 | 149 24.7 | |
| 30 | 24 52.5 | 24 56.6 | 23 44.5 | 30 5.0 | 90 14.9 | 150 24.9 | |
| 31 | 24 52.8 | 24 56.9 | 23 44.7 | 31 5.1 | 91 15.1 | 151 25.0 | |
| 32 | 24 53.0 | 24 57.1 | 23 45.0 | 32 5.3 | 92 15.3 | 152 25.2 | |
| 33 | 24 53.3 | 24 57.4 | 23 45.2 | 33 5.5 | 93 15.4 | 153 25.4 | |
| 34 | 24 53.5 | 24 57.6 | 23 45.5 | 34 5.6 | 94 15.6 | 154 25.5 | |
| 35 | 24 53.8 | 24 57.9 | 23 45.7 | 35 5.8 | 95 15.8 | 155 25.7 | |
| 36 | 24 54.0 | 24 58.2 | 23 45.9 | 36 6.0 | 96 15.9 | 156 25.9 | |
| 37 | 24 54.3 | 24 58.4 | 23 46.2 | 37 6.1 | 97 16.1 | 157 26.0 | |
| 38 | 24 54.5 | 24 58.7 | 23 46.4 | 38 6.3 | 98 16.3 | 158 26.2 | |
| 39 | 24 54.8 | 24 58.9 | 23 46.7 | 39 6.5 | 99 16.4 | 159 26.4 | |
| 40 | 24 55.0 | 24 59.2 | 23 46.9 | 40 6.6 | 100 16.6 | 160 26.5 | |
| 41 | 24 55.3 | 24 59.4 | 23 47.1 | 41 6.8 | 101 16.7 | 161 26.7 | |
| 42 | 24 55.5 | 24 59.7 | 23 47.4 | 42 7.0 | 102 16.9 | 162 26.9 | |
| 43 | 24 55.8 | 24 59.9 | 23 47.6 | 43 7.1 | 103 17.1 | 163 27.0 | |
| 44 | 24 56.0 | 25 .2 | 23 47.8 | 44 7.3 | 104 17.2 | 164 27.2 | |
| 45 | 24 56.3 | 25 .4 | 23 48.1 | 45 7.5 | 105 17.4 | 165 27.4 | |
| 46 | 24 56.5 | 25 .7 | 23 48.3 | 46 7.6 | 106 17.6 | 166 27.5 | |
| 47 | 24 56.8 | 25 .9 | 23 48.6 | 47 7.8 | 107 17.7 | 167 27.7 | |
| 48 | 24 57.0 | 25 1.2 | 23 48.8 | 48 8.0 | 108 17.9 | 168 27.9 | |
| 49 | 24 57.3 | 25 1.4 | 23 49.0 | 49 8.1 | 109 18.1 | 169 28.0 | |
| 50 | 24 57.5 | 25 1.7 | 23 49.3 | 50 8.3 | 110 18.2 | 170 28.2 | |
| 51 | 24 57.8 | 25 1.9 | 23 49.5 | 51 8.5 | 111 18.4 | 171 28.4 | |
| 52 | 24 58.0 | 25 2.2 | 23 49.8 | 52 8.6 | 112 18.6 | 172 28.5 | |
| 53 | 24 58.3 | 25 2.4 | 23 50.0 | 53 8.8 | 113 18.7 | 173 28.7 | |

1 h 40 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 25 .0 | 25 4.2 | 23 51.7 | 0 .0 | 60 10.1 | 120 20.1 | | 0 | 25 15.0 | 25 19.2 | 24 6.0 | 0 .0 | 60 10.2 | 120 20.3 | |
| 1 | 25 .3 | 25 4.4 | 23 51.9 | 1 .2 | 61 10.2 | 121 20.3 | | 1 | 25 15.3 | 25 19.5 | 24 6.2 | 1 .2 | 61 10.3 | 121 20.5 | |
| 2 | 25 .5 | 25 4.7 | 23 52.1 | 2 .3 | 62 10.4 | 122 20.4 | | 2 | 25 15.5 | 25 19.7 | 24 6.5 | 2 .3 | 62 10.5 | 122 20.6 | |
| 3 | 25 .8 | 25 4.9 | 23 52.4 | 3 .5 | 63 10.6 | 123 20.6 | | 3 | 25 15.8 | 25 20.0 | 24 6.7 | 3 .5 | 63 10.7 | 123 20.8 | |
| 4 | 25 1.0 | 25 5.2 | 23 52.6 | 4 .7 | 64 10.7 | 124 20.8 | | 4 | 25 16.0 | 25 20.2 | 24 6.9 | 4 .7 | 64 10.8 | 124 21.0 | |
| 5 | 25 1.3 | 25 5.4 | 23 52.9 | 5 .8 | 65 10.9 | 125 20.9 | | 5 | 25 16.3 | 25 20.5 | 24 7.2 | 5 .8 | 65 11.0 | 125 21.1 | |
| 6 | 25 1.5 | 25 5.7 | 23 53.1 | 6 1.0 | 66 11.1 | 126 21.1 | | 6 | 25 16.5 | 25 20.7 | 24 7.4 | 6 1.0 | 66 11.2 | 126 21.3 | |
| 7 | 25 1.8 | 25 5.9 | 23 53.3 | 7 1.2 | 67 11.2 | 127 21.3 | | 7 | 25 16.8 | 25 21.0 | 24 7.7 | 7 1.2 | 67 11.3 | 127 21.5 | |
| 8 | 25 2.0 | 25 6.2 | 23 53.6 | 8 1.3 | 68 11.4 | 128 21.4 | | 8 | 25 17.0 | 25 21.2 | 24 7.9 | 8 1.4 | 68 11.5 | 128 21.7 | |
| 9 | 25 2.3 | 25 6.4 | 23 53.8 | 9 1.5 | 69 11.6 | 129 21.6 | | 9 | 25 17.3 | 25 21.5 | 24 8.1 | 9 1.5 | 69 11.7 | 129 21.8 | |
| 10 | 25 2.5 | 25 6.7 | 23 54.1 | 10 1.7 | 70 11.7 | 130 21.8 | | 10 | 25 17.5 | 25 21.7 | 24 8.4 | 10 1.7 | 70 11.8 | 130 22.0 | |
| 11 | 25 2.8 | 25 6.9 | 23 54.3 | 11 1.8 | 71 11.9 | 131 21.9 | | 11 | 25 17.8 | 25 22.0 | 24 8.6 | 11 1.9 | 71 12.0 | 131 22.2 | |
| 12 | 25 3.0 | 25 7.2 | 23 54.5 | 12 2.0 | 72 12.1 | 132 22.1 | | 12 | 25 18.0 | 25 22.2 | 24 8.8 | 12 2.0 | 72 12.2 | 132 22.3 | |
| 13 | 25 3.3 | 25 7.4 | 23 54.8 | 13 2.2 | 73 12.2 | 133 22.3 | | 13 | 25 18.3 | 25 22.5 | 24 9.1 | 13 2.2 | 73 12.3 | 133 22.5 | |
| 14 | 25 3.5 | 25 7.7 | 23 55.0 | 14 2.3 | 74 12.4 | 134 22.4 | | 14 | 25 18.5 | 25 22.7 | 24 9.3 | 14 2.4 | 74 12.5 | 134 22.7 | |
| 15 | 25 3.8 | 25 7.9 | 23 55.2 | 15 2.5 | 75 12.6 | 135 22.6 | | 15 | 25 18.8 | 25 23.0 | 24 9.6 | 15 2.5 | 75 12.7 | 135 22.8 | |
| 16 | 25 4.0 | 25 8.2 | 23 55.5 | 16 2.7 | 76 12.7 | 136 22.8 | | 16 | 25 19.0 | 25 23.2 | 24 9.8 | 16 2.7 | 76 12.9 | 136 23.0 | |
| 17 | 25 4.3 | 25 8.4 | 23 55.7 | 17 2.8 | 77 12.9 | 137 22.9 | | 17 | 25 19.3 | 25 23.5 | 24 10.0 | 17 2.9 | 77 13.0 | 137 23.2 | |
| 18 | 25 4.5 | 25 8.7 | 23 56.0 | 18 3.0 | 78 13.1 | 138 23.1 | | 18 | 25 19.5 | 25 23.7 | 24 10.3 | 18 3.0 | 78 13.2 | 138 23.3 | |
| 19 | 25 4.8 | 25 8.9 | 23 56.2 | 19 3.2 | 79 13.2 | 139 23.3 | | 19 | 25 19.8 | 25 24.0 | 24 10.5 | 19 3.2 | 79 13.4 | 139 23.5 | |
| 20 | 25 5.0 | 25 9.2 | 23 56.4 | 20 3.4 | 80 13.4 | 140 23.5 | | 20 | 25 20.0 | 25 24.2 | 24 10.8 | 20 3.4 | 80 13.5 | 140 23.7 | |
| 21 | 25 5.3 | 25 9.4 | 23 56.7 | 21 3.5 | 81 13.6 | 141 23.6 | | 21 | 25 20.3 | 25 24.5 | 24 11.0 | 21 3.6 | 81 13.7 | 141 23.9 | |
| 22 | 25 5.5 | 25 9.7 | 23 56.9 | 22 3.7 | 82 13.7 | 142 23.8 | | 22 | 25 20.5 | 25 24.7 | 24 11.2 | 22 3.7 | 82 13.9 | 142 24.0 | |
| 23 | 25 5.8 | 25 9.9 | 23 57.2 | 23 3.9 | 83 13.9 | 143 24.0 | | 23 | 25 20.8 | 25 25.0 | 24 11.5 | 23 3.9 | 83 14.0 | 143 24.2 | |
| 24 | 25 6.0 | 25 10.2 | 23 57.4 | 24 4.0 | 84 14.1 | 144 24.1 | | 24 | 25 21.0 | 25 25.2 | 24 11.7 | 24 4.1 | 84 14.2 | 144 24.4 | |
| 25 | 25 6.3 | 25 10.4 | 23 57.6 | 25 4.2 | 85 14.2 | 145 24.3 | | 25 | 25 21.3 | 25 25.5 | 24 11.9 | 25 4.2 | 85 14.4 | 145 24.5 | |
| 26 | 25 6.5 | 25 10.7 | 23 57.9 | 26 4.4 | 86 14.4 | 146 24.5 | | 26 | 25 21.5 | 25 25.7 | 24 12.2 | 26 4.4 | 86 14.5 | 146 24.7 | |
| 27 | 25 6.8 | 25 10.9 | 23 58.1 | 27 4.5 | 87 14.6 | 147 24.6 | | 27 | 25 21.8 | 25 26.0 | 24 12.4 | 27 4.6 | 87 14.7 | 147 24.9 | |
| 28 | 25 7.0 | 25 11.2 | 23 58.3 | 28 4.7 | 88 14.7 | 148 24.8 | | 28 | 25 22.0 | 25 26.2 | 24 12.7 | 28 4.7 | 88 14.9 | 148 25.0 | |
| 29 | 25 7.3 | 25 11.4 | 23 58.6 | 29 4.9 | 89 14.9 | 149 25.0 | | 29 | 25 22.3 | 25 26.5 | 24 12.9 | 29 4.9 | 89 15.1 | 149 25.2 | |
| 30 | 25 7.5 | 25 11.7 | 23 58.8 | 30 5.0 | 90 15.1 | 150 25.1 | | 30 | 25 22.5 | 25 26.7 | 24 13.1 | 30 5.1 | 90 15.2 | 150 25.4 | |
| 31 | 25 7.8 | 25 11.9 | 23 59.1 | 31 5.2 | 91 15.2 | 151 25.3 | | 31 | 25 22.8 | 25 27.0 | 24 13.4 | 31 5.2 | 91 15.4 | 151 25.5 | |
| 32 | 25 8.0 | 25 12.2 | 23 59.3 | 32 5.4 | 92 15.4 | 152 25.5 | | 32 | 25 23.0 | 25 27.2 | 24 13.6 | 32 5.4 | 92 15.6 | 152 25.7 | |
| 33 | 25 8.3 | 25 12.4 | 23 59.5 | 33 5.5 | 93 15.6 | 153 25.6 | | 33 | 25 23.3 | 25 27.5 | 24 13.9 | 33 5.6 | 93 15.7 | 153 25.9 | |
| 34 | 25 8.5 | 25 12.7 | 23 59.8 | 34 5.7 | 94 15.7 | 154 25.8 | | 34 | 25 23.5 | 25 27.7 | 24 14.1 | 34 5.8 | 94 15.9 | 154 26.1 | |
| 35 | 25 8.8 | 25 12.9 | 24 .0 | 35 5.9 | 95 15.9 | 155 26.0 | | 35 | 25 23.8 | 25 28.0 | 24 14.3 | 35 5.9 | 95 16.1 | 155 26.2 | |
| 36 | 25 9.0 | 25 13.2 | 24 .3 | 36 6.0 | 96 16.1 | 156 26.1 | | 36 | 25 24.0 | 25 28.2 | 24 14.6 | 36 6.1 | 96 16.2 | 156 26.4 | |
| 37 | 25 9.3 | 25 13.4 | 24 .5 | 37 6.2 | 97 16.2 | 157 26.3 | | 37 | 25 24.3 | 25 28.5 | 24 14.8 | 37 6.3 | 97 16.4 | 157 26.6 | |
| 38 | 25 9.5 | 25 13.7 | 24 .7 | 38 6.4 | 98 16.4 | 158 26.5 | | 38 | 25 24.5 | 25 28.7 | 24 15.1 | 38 6.4 | 98 16.6 | 158 26.7 | |
| 39 | 25 9.8 | 25 13.9 | 24 1.0 | 39 6.5 | 99 16.6 | 159 26.6 | | 39 | 25 24.8 | 25 29.0 | 24 15.3 | 39 6.6 | 99 16.7 | 159 26.9 | |
| 40 | 25 10.0 | 25 14.2 | 24 1.2 | 40 6.7 | 100 16.8 | 160 26.8 | | 40 | 25 25.0 | 25 29.2 | 24 15.5 | 40 6.8 | 100 16.9 | 160 27.1 | |
| 41 | 25 10.3 | 25 14.4 | 24 1.4 | 41 6.9 | 101 16.9 | 161 27.0 | | 41 | 25 25.3 | 25 29.5 | 24 15.8 | 41 6.9 | 101 17.1 | 161 27.2 | |
| 42 | 25 10.5 | 25 14.7 | 24 1.7 | 42 7.0 | 102 17.1 | 162 27.1 | | 42 | 25 25.5 | 25 29.7 | 24 16.0 | 42 7.1 | 102 17.3 | 162 27.4 | |
| 43 | 25 10.8 | 25 14.9 | 24 1.9 | 43 7.2 | 103 17.3 | 163 27.3 | | 43 | 25 25.8 | 25 30.0 | 24 16.2 | 43 7.3 | 103 17.4 | 163 27.6 | |
| 44 | 25 11.0 | 25 15.2 | 24 2.2 | 44 7.4 | 104 17.4 | 164 27.5 | | 44 | 25 26.0 | 25 30.2 | 24 16.5 | 44 7.4 | 104 17.6 | 164 27.7 | |
| 45 | 25 11.3 | 25 15.4 | 24 2.4 | 45 7.5 | 105 17.6 | 165 27.6 | | 45 | 25 26.3 | 25 30.5 | 24 16.7 | 45 7.6 | 105 17.8 | 165 27.9 | |
| 46 | 25 11.5 | 25 15.7 | 24 2.6 | 46 7.7 | 106 17.8 | 166 27.8 | | 46 | 25 26.5 | 25 30.7 | 24 17.0 | 46 7.8 | 106 17.9 | 166 28.1 | |
| 47 | 25 11.8 | 25 15.9 | 24 2.9 | 47 7.9 | 107 17.9 | 167 28.0 | | 47 | 25 26.8 | 25 31.0 | 24 17.2 | 47 8.0 | 107 18.1 | 167 28.3 | |
| 48 | 25 12.0 | 25 16.2 | 24 3.1 | 48 8.0 | 108 18.1 | 168 28.1 | | 48 | 25 27.0 | 25 31.2 | 24 17.4 | 48 8.1 | 108 18.3 | 168 28.4 | |
| 49 | 25 12.3 | 25 16.5 | 24 3.4 | 49 8.2 | 109 18.3 | 169 28.3 | | 49 | 25 27.3 | 25 31.5 | 24 17.7 | 49 8.3 | 109 18.4 | 169 28.6 | |
| 50 | 25 12.5 | 25 16.7 | 24 3.6 | 50 8.4 | 110 18.4 | 170 28.5 | | 50 | 25 27.5 | 25 31.7 | 24 17.9 | 50 8.5 | 110 18.6 | 170 28.8 | |
| 51 | 25 12.8 | 25 17.0 | 24 3.8 | 51 8.5 | 111 18.6 | 171 28.6 | | 51 | 25 27.8 | 25 32.0 | 24 18.2 | 51 8.6 | 111 18.8 | 171 28.9 | |
| 52 | 25 13.0 | 25 17.2 | 24 4.1 | 52 8.7 | 112 18.8 | 172 28.8 | | 52 | 25 28.0 | 25 32.2 | 24 18.4 | 52 8.8 | 112 18.9 | 172 29.1 | |
| 53 | 25 13.3 | 25 17.5 | 24 4.3 | 53 8.9 | 113 18.9 | 173 29.0 | | 53 | 25 28.3 | 25 32.5 | 24 18.6 | 53 9.0 | 113 19.1 | 173 29.3 | |
| 54 | 25 13.5 | 25 17.7 | 24 4.6 | 54 9.0 | 114 19.1 | 174 29.1 | | 54 | 25 28.5 | 25 32.7 | 24 18.9 | 54 9.1 | 114 19.3 | 174 29.4 | |
| 55 | 25 13.8 | 25 18.0 | 24 4.8 | 55 9.2 | 115 19.3 | 175 29.3 | | 55 | 25 28.8 | 25 33.0 | 24 19.1 | 55 9.3 | 115 19.5 | 175 29.6 | |
| 56 | 25 14.0 | 25 18.2 | 24 5.0 | 56 9.4 | 116 19.4 | 176 29.5 | | 56 | 25 29.0 | 25 33.2 | 24 19.3 | 56 9.5 | 116 19.6 | 176 29.8 | |
| 57 | 25 14.3 | 25 18.5 | 24 5.3 | 57 9.5 | 117 19.6 | 177 29.6 | | 57 | 25 29.3 | 25 33.5 | 24 19.6 | 57 9.6 | 117 19.8 | 177 29.9 | |
| 58 | 25 14.5 | 25 18.7 | 24 5.5 | 58 9.7 | 118 19.8 | 178 29.8 | | 58 | 25 29.5 | 25 33.7 | 24 19.8 | 58 9.8 | 118 20.0 | 178 30.1 | |
| 59 | 25 14.8 | 25 19.0 | 24 5.7 | 59 9.9 | 119 19.9 | 179 30.0 | | 59 | 25 29.8 | 25 34.0 | 24 20.1 | 59 10.0 | 119 20.1 | 179 30.3 | |
| 60 | 25 15.0 | 25 19.2 | 24 6.0 | 60 10.1 | 120 20.1 | 180 30.2 | | 60 | 25 30.0 | 25 34.3 | 24 20.3 | 60 10.2 | 120 20.3 | 180 30.5 | |

1 h 41 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planetu | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
<

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|----------------------|--------------|------------|------------|------------|----------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 25 30.0 | 25 34.3 | 24 20.3 | 0 .0 | 60 10.3 | 120 20.5 | | 0 | 25 45.0 | 25 49.3 | 24 34.6 | 0 .0 | 60 10.4 | 120 20.7 | |
| 1 | 25 30.3 | 25 34.5 | 24 20.5 | 1 .2 | 61 10.4 | 121 20.7 | | 1 | 25 45.3 | 25 49.5 | 24 34.9 | 1 .2 | 61 10.5 | 121 20.9 | |
| 2 | 25 30.5 | 25 34.8 | 24 20.8 | 2 .3 | 62 10.6 | 122 20.8 | | 2 | 25 45.5 | 25 49.8 | 24 35.1 | 2 .3 | 62 10.7 | 122 21.0 | |
| 3 | 25 30.8 | 25 35.0 | 24 21.0 | 3 .5 | 63 10.8 | 123 21.0 | | 3 | 25 45.8 | 25 50.0 | 24 35.3 | 3 .5 | 63 10.9 | 123 21.2 | |
| 4 | 25 31.0 | 25 35.3 | 24 21.3 | 4 .7 | 64 10.9 | 124 21.2 | | 4 | 25 46.0 | 25 50.3 | 24 35.6 | 4 .7 | 64 11.0 | 124 21.4 | |
| 5 | 25 31.3 | 25 35.5 | 24 21.5 | 5 .9 | 65 11.1 | 125 21.4 | | 5 | 25 46.3 | 25 50.5 | 24 35.8 | 5 .9 | 65 11.2 | 125 21.6 | |
| 6 | 25 31.5 | 25 35.8 | 24 21.7 | 6 1.0 | 66 11.3 | 126 21.5 | | 6 | 25 46.5 | 25 50.8 | 24 36.0 | 6 1.0 | 66 11.4 | 126 21.7 | |
| 7 | 25 31.8 | 25 36.0 | 24 22.0 | 7 1.2 | 67 11.4 | 127 21.7 | | 7 | 25 46.8 | 25 51.0 | 24 36.3 | 7 1.2 | 67 11.6 | 127 21.9 | |
| 8 | 25 32.0 | 25 36.3 | 24 22.2 | 8 1.4 | 68 11.6 | 128 21.9 | | 8 | 25 47.0 | 25 51.3 | 24 36.5 | 8 1.4 | 68 11.7 | 128 22.1 | |
| 9 | 25 32.3 | 25 36.5 | 24 22.4 | 9 1.5 | 69 11.8 | 129 22.0 | | 9 | 25 47.3 | 25 51.5 | 24 36.8 | 9 1.6 | 69 11.9 | 129 22.3 | |
| 10 | 25 32.5 | 25 36.8 | 24 22.7 | 10 1.7 | 70 12.0 | 130 22.2 | | 10 | 25 47.5 | 25 51.8 | 24 37.0 | 10 1.7 | 70 12.1 | 130 22.4 | |
| 11 | 25 32.8 | 25 37.0 | 24 22.9 | 11 1.9 | 71 12.1 | 131 22.4 | | 11 | 25 47.8 | 25 52.0 | 24 37.2 | 11 1.9 | 71 12.2 | 131 22.6 | |
| 12 | 25 33.0 | 25 37.3 | 24 23.2 | 12 2.1 | 72 12.3 | 132 22.6 | | 12 | 25 48.0 | 25 52.3 | 24 37.5 | 12 2.1 | 72 12.4 | 132 22.8 | |
| 13 | 25 33.3 | 25 37.5 | 24 23.4 | 13 2.2 | 73 12.5 | 133 22.7 | | 13 | 25 48.3 | 25 52.6 | 24 37.7 | 13 2.2 | 73 12.6 | 133 22.9 | |
| 14 | 25 33.5 | 25 37.8 | 24 23.6 | 14 2.4 | 74 12.6 | 134 22.9 | | 14 | 25 48.5 | 25 52.8 | 24 38.0 | 14 2.4 | 74 12.8 | 134 23.1 | |
| 15 | 25 33.8 | 25 38.0 | 24 23.9 | 15 2.6 | 75 12.8 | 135 23.1 | | 15 | 25 48.8 | 25 53.1 | 24 38.2 | 15 2.6 | 75 12.9 | 135 23.3 | |
| 16 | 25 34.0 | 25 38.3 | 24 24.1 | 16 2.7 | 76 13.0 | 136 23.2 | | 16 | 25 49.0 | 25 53.3 | 24 38.4 | 16 2.8 | 76 13.1 | 136 23.5 | |
| 17 | 25 34.3 | 25 38.5 | 24 24.4 | 17 2.9 | 77 13.2 | 137 23.4 | | 17 | 25 49.3 | 25 53.6 | 24 38.7 | 17 2.9 | 77 13.3 | 137 23.6 | |
| 18 | 25 34.5 | 25 38.8 | 24 24.6 | 18 3.1 | 78 13.3 | 138 23.6 | | 18 | 25 49.5 | 25 53.8 | 24 38.9 | 18 3.1 | 78 13.5 | 138 23.8 | |
| 19 | 25 34.8 | 25 39.0 | 24 24.8 | 19 3.2 | 79 13.5 | 139 23.7 | | 19 | 25 49.8 | 25 54.1 | 24 39.2 | 19 3.3 | 79 13.6 | 139 24.0 | |
| 20 | 25 35.0 | 25 39.3 | 24 25.1 | 20 3.4 | 80 13.7 | 140 23.9 | | 20 | 25 50.0 | 25 54.3 | 24 39.4 | 20 3.5 | 80 13.8 | 140 24.2 | |
| 21 | 25 35.3 | 25 39.5 | 24 25.3 | 21 3.6 | 81 13.8 | 141 24.1 | | 21 | 25 50.3 | 25 54.6 | 24 39.6 | 21 3.6 | 81 14.0 | 141 24.3 | |
| 22 | 25 35.5 | 25 39.8 | 24 25.5 | 22 3.8 | 82 14.0 | 142 24.3 | | 22 | 25 50.5 | 25 54.8 | 24 39.9 | 22 3.8 | 82 14.1 | 142 24.5 | |
| 23 | 25 35.8 | 25 40.0 | 24 25.8 | 23 3.9 | 83 14.2 | 143 24.4 | | 23 | 25 50.8 | 25 55.1 | 24 40.1 | 23 4.0 | 83 14.3 | 143 24.7 | |
| 24 | 25 36.0 | 25 40.3 | 24 26.0 | 24 4.1 | 84 14.4 | 144 24.6 | | 24 | 25 51.0 | 25 55.3 | 24 40.3 | 24 4.1 | 84 14.5 | 144 24.8 | |
| 25 | 25 36.3 | 25 40.5 | 24 26.3 | 25 4.3 | 85 14.5 | 145 24.8 | | 25 | 25 51.3 | 25 55.6 | 24 40.6 | 25 4.3 | 85 14.7 | 145 25.0 | |
| 26 | 25 36.5 | 25 40.8 | 24 26.5 | 26 4.4 | 86 14.7 | 146 24.9 | | 26 | 25 51.5 | 25 55.8 | 24 40.8 | 26 4.5 | 86 14.8 | 146 25.2 | |
| 27 | 25 36.8 | 25 41.0 | 24 26.7 | 27 4.6 | 87 14.9 | 147 25.1 | | 27 | 25 51.8 | 25 56.1 | 24 41.1 | 27 4.7 | 87 15.0 | 147 25.4 | |
| 28 | 25 37.0 | 25 41.3 | 24 27.0 | 28 4.8 | 88 15.0 | 148 25.3 | | 28 | 25 52.0 | 25 56.3 | 24 41.3 | 28 4.8 | 88 15.2 | 148 25.5 | |
| 29 | 25 37.3 | 25 41.5 | 24 27.2 | 29 5.0 | 89 15.2 | 149 25.5 | | 29 | 25 52.3 | 25 56.6 | 24 41.5 | 29 5.0 | 89 15.4 | 149 25.7 | |
| 30 | 25 37.5 | 25 41.8 | 24 27.5 | 30 5.1 | 90 15.4 | 150 25.6 | | 30 | 25 52.5 | 25 56.8 | 24 41.8 | 30 5.2 | 90 15.5 | 150 25.9 | |
| 31 | 25 37.8 | 25 42.0 | 24 27.7 | 31 5.3 | 91 15.5 | 151 25.8 | | 31 | 25 52.8 | 25 57.1 | 24 42.0 | 31 5.3 | 91 15.7 | 151 26.0 | |
| 32 | 25 38.0 | 25 42.3 | 24 27.9 | 32 5.5 | 92 15.7 | 152 26.0 | | 32 | 25 53.0 | 25 57.3 | 24 42.3 | 32 5.5 | 92 15.9 | 152 26.2 | |
| 33 | 25 38.3 | 25 42.5 | 24 28.2 | 33 5.6 | 93 15.9 | 153 26.1 | | 33 | 25 53.3 | 25 57.6 | 24 42.5 | 33 5.7 | 93 16.0 | 153 26.4 | |
| 34 | 25 38.5 | 25 42.8 | 24 28.4 | 34 5.8 | 94 16.1 | 154 26.3 | | 34 | 25 53.5 | 25 57.8 | 24 42.7 | 34 5.9 | 94 16.2 | 154 26.6 | |
| 35 | 25 38.8 | 25 43.0 | 24 28.7 | 35 6.0 | 95 16.2 | 155 26.5 | | 35 | 25 53.8 | 25 58.1 | 24 43.0 | 35 6.0 | 95 16.4 | 155 26.7 | |
| 36 | 25 39.0 | 25 43.3 | 24 28.9 | 36 6.2 | 96 16.4 | 156 26.7 | | 36 | 25 54.0 | 25 58.3 | 24 43.2 | 36 6.2 | 96 16.6 | 156 26.9 | |
| 37 | 25 39.3 | 25 43.5 | 24 29.1 | 37 6.3 | 97 16.6 | 157 26.8 | | 37 | 25 54.3 | 25 58.6 | 24 43.4 | 37 6.4 | 97 16.7 | 157 27.1 | |
| 38 | 25 39.5 | 25 43.8 | 24 29.4 | 38 6.5 | 98 16.7 | 158 27.0 | | 38 | 25 54.5 | 25 58.8 | 24 43.7 | 38 6.6 | 98 16.9 | 158 27.3 | |
| 39 | 25 39.8 | 25 44.0 | 24 29.6 | 39 6.7 | 99 16.9 | 159 27.2 | | 39 | 25 54.8 | 25 59.1 | 24 43.9 | 39 6.7 | 99 17.1 | 159 27.4 | |
| 40 | 25 40.0 | 25 44.3 | 24 29.8 | 40 6.8 | 100 17.1 | 160 27.3 | | 40 | 25 55.0 | 25 59.3 | 24 44.2 | 40 6.9 | 100 17.3 | 160 27.6 | |
| 41 | 25 40.3 | 25 44.5 | 24 30.1 | 41 7.0 | 101 17.3 | 161 27.5 | | 41 | 25 55.3 | 25 59.6 | 24 44.4 | 41 7.1 | 101 17.4 | 161 27.8 | |
| 42 | 25 40.5 | 25 44.8 | 24 30.3 | 42 7.2 | 102 17.4 | 162 27.7 | | 42 | 25 55.5 | 25 59.8 | 24 44.6 | 42 7.2 | 102 17.6 | 162 27.9 | |
| 43 | 25 40.8 | 25 45.0 | 24 30.6 | 43 7.3 | 103 17.6 | 163 27.8 | | 43 | 25 55.8 | 26 1. | 24 44.9 | 43 7.4 | 103 17.8 | 163 28.1 | |
| 44 | 25 41.0 | 25 45.3 | 24 30.8 | 44 7.5 | 104 17.8 | 164 28.0 | | 44 | 25 56.0 | 26 .3 | 24 45.1 | 44 7.6 | 104 17.9 | 164 28.3 | |
| 45 | 25 41.3 | 25 45.5 | 24 31.0 | 45 7.7 | 105 17.9 | 165 28.2 | | 45 | 25 56.3 | 26 .6 | 24 45.4 | 45 7.8 | 105 18.1 | 165 28.5 | |
| 46 | 25 41.5 | 25 45.8 | 24 31.3 | 46 7.9 | 106 18.1 | 166 28.4 | | 46 | 25 56.5 | 26 .8 | 24 45.6 | 46 7.9 | 106 18.3 | 166 28.6 | |
| 47 | 25 41.8 | 25 46.0 | 24 31.5 | 47 8.0 | 107 18.3 | 167 28.5 | | 47 | 25 56.8 | 26 1. | 24 45.8 | 47 8.1 | 107 18.5 | 167 28.8 | |
| 48 | 25 42.0 | 25 46.3 | 24 31.8 | 48 8.2 | 108 18.5 | 168 28.7 | | 48 | 25 57.0 | 26 1.3 | 24 46.1 | 48 8.3 | 108 18.6 | 168 29.0 | |
| 49 | 25 42.3 | 25 46.5 | 24 32.0 | 49 8.4 | 109 18.6 | 169 28.9 | | 49 | 25 57.3 | 26 1.6 | 24 46.3 | 49 8.5 | 109 18.8 | 169 29.2 | |
| 50 | 25 42.5 | 25 46.8 | 24 32.2 | 50 8.5 | 110 18.8 | 170 29.0 | | 50 | 25 57.5 | 26 1.8 | 24 46.5 | 50 8.6 | 110 19.0 | 170 29.3 | |
| 51 | 25 42.8 | 25 47.0 | 24 32.5 | 51 8.7 | 111 19.0 | 171 29.2 | | 51 | 25 57.8 | 26 2.1 | 24 46.8 | 51 8.8 | 111 19.1 | 171 29.5 | |
| 52 | 25 43.0 | 25 47.3 | 24 32.7 | 52 8.9 | 112 19.1 | 172 29.4 | | 52 | 25 58.0 | 26 2.3 | 24 47.0 | 52 9.0 | 112 19.3 | 172 29.7 | |
| 53 | 25 43.3 | 25 47.5 | 24 32.9 | 53 9.1 | 113 19.3 | 173 29.6 | | 53 | 25 58.3 | 26 2.6 | 24 47.3 | 53 9.1 | 113 19.5 | 173 29.8 | |
| 54 | 25 43.5 | 25 47.8 | 24 33.2 | 54 9.2 | 114 19.5 | 174 29.7 | | 54 | 25 58.5 | 26 2.8 | 24 47.5 | 54 9.3 | 114 19.7 | 174 30.0 | |
| 55 | 25 43.8 | 25 48.0 | 24 33.4 | 55 9.4 | 115 19.6 | 175 29.9 | | 55 | 25 58.8 | 26 3.1 | 24 47.7 | 55 9.5 | 115 19.8 | 175 30.2 | |
| 56 | 25 44.0 | 25 48.3 | 24 33.7 | 56 9.6 | 116 19.8 | 176 30.1 | | 56 | 25 59.0 | 26 3.3 | 24 48.0 | 56 9.7 | 116 20.0 | 176 30.4 | |
| 57 | 25 44.3 | 25 48.5 | 24 33.9 | 57 9.7 | 117 20.0 | 177 30.2 | | 57 | 25 59.3 | 26 3.6 | 24 48.2 | 57 9.8 | 117 20.2 | 177 30.5 | |
| 58 | 25 44.5 | 25 48.8 | 24 34.1 | 58 9.9 | 118 20.2 | 178 30.4 | | 58 | 25 59.5 | 26 3.8 | 24 48.5 | 58 10.0 | 118 20.4 | 178 30.7 | |
| 59 | 25 44.8 | 25 49.0 | 24 34.4 | 59 10.1 | 119 20.3 | 179 30.6 | | 59 | 25 59.8 | 26 4.1 | 24 48.7 | 59 10.2 | 119 20.5 | 179 30.9 | |
| 60 | 25 45.0 | 25 49.3 | 24 34.6 | 60 10.3 | 120 20.5 | 180 30.8 | | 60 | 26 .0 | 26 4.3 | 24 48.9 | 60 10.4 | 120 20.7 | 180 31.1 | |

1 h 44 min

1 h 45 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. |
| o | ' | o | ' | o | ' | o | o | ' | o | ' | o | ' | o |
| 0 | 26 .0 | 26 4.3 | 24 48.9 | 0 .0 | 60 10.5 | 120 20.9 | 0 | 26 15.0 | 26 19.4 | 25 3.3 | 0 .0 | 60 10.6 | 120 21.1 |
| 1 | 26 .3 | 26 4.6 | 24 49.2 | 1 .2 | 61 10.6 | 121 21.1 | 1 | 26 15.3 | 26 19.6 | 25 3.5 | 1 .2 | 61 10.7 | 121 21.3 |
| 2 | 26 .5 | 26 4.8 | 24 49.4 | 2 .3 | 62 10.8 | 122 21.2 | 2 | 26 15.5 | 26 19.9 | 25 3.7 | 2 .4 | 62 10.9 | 122 21.5 |
| 3 | 26 .8 | 26 5.1 | 24 49.6 | 3 .5 | 63 11.0 | 123 21.4 | 3 | 26 15.8 | 26 20.1 | 25 4.0 | 3 .5 | 63 11.1 | 123 21.6 |
| 4 | 26 1.0 | 26 5.3 | 24 49.9 | 4 .7 | 64 11.1 | 124 21.6 | 4 | 26 16.0 | 26 20.4 | 25 4.2 | 4 .7 | 64 11.3 | 124 21.8 |
| 5 | 26 1.3 | 26 5.6 | 24 50.1 | 5 .9 | 65 11.3 | 125 21.8 | 5 | 26 16.3 | 26 20.6 | 25 4.4 | 5 .9 | 65 11.4 | 125 22.0 |
| 6 | 26 1.5 | 26 5.8 | 24 50.4 | 6 1.0 | 66 11.5 | 126 21.9 | 6 | 26 16.5 | 26 20.9 | 25 4.7 | 6 1.1 | 66 11.6 | 126 22.2 |
| 7 | 26 1.8 | 26 6.1 | 24 50.6 | 7 1.2 | 67 11.7 | 127 22.1 | 7 | 26 16.8 | 26 21.1 | 25 4.9 | 7 1.2 | 67 11.8 | 127 22.3 |
| 8 | 26 2.0 | 26 6.3 | 24 50.8 | 8 1.4 | 68 11.8 | 128 22.3 | 8 | 26 17.0 | 26 21.4 | 25 5.2 | 8 1.4 | 68 12.0 | 128 22.5 |
| 9 | 26 2.3 | 26 6.6 | 24 51.1 | 9 1.6 | 69 12.0 | 129 22.5 | 9 | 26 17.3 | 26 21.6 | 25 5.4 | 9 1.6 | 69 12.1 | 129 22.7 |
| 10 | 26 2.5 | 26 6.8 | 24 51.3 | 10 1.7 | 70 12.2 | 130 22.6 | 10 | 26 17.5 | 26 21.9 | 25 5.6 | 10 1.8 | 70 12.3 | 130 22.9 |
| 11 | 26 2.8 | 26 7.1 | 24 51.6 | 11 1.9 | 71 12.4 | 131 22.8 | 11 | 26 17.8 | 26 22.1 | 25 5.9 | 11 1.9 | 71 12.5 | 131 23.0 |
| 12 | 26 3.0 | 26 7.3 | 24 51.8 | 12 2.1 | 72 12.5 | 132 23.0 | 12 | 26 18.0 | 26 22.4 | 25 6.1 | 12 2.1 | 72 12.7 | 132 23.2 |
| 13 | 26 3.3 | 26 7.6 | 24 52.0 | 13 2.3 | 73 12.7 | 133 23.2 | 13 | 26 18.3 | 26 22.6 | 25 6.4 | 13 2.3 | 73 12.8 | 133 23.4 |
| 14 | 26 3.5 | 26 7.8 | 24 52.3 | 14 2.4 | 74 12.9 | 134 23.3 | 14 | 26 18.5 | 26 22.9 | 25 6.6 | 14 2.5 | 74 13.0 | 134 23.6 |
| 15 | 26 3.8 | 26 8.1 | 24 52.5 | 15 2.6 | 75 13.1 | 135 23.5 | 15 | 26 18.8 | 26 23.1 | 25 6.8 | 15 2.6 | 75 13.2 | 135 23.7 |
| 16 | 26 4.0 | 26 8.3 | 24 52.8 | 16 2.8 | 76 13.2 | 136 23.7 | 16 | 26 19.0 | 26 23.4 | 25 7.1 | 16 2.8 | 76 13.4 | 136 23.9 |
| 17 | 26 4.3 | 26 8.6 | 24 53.0 | 17 3.0 | 77 13.4 | 137 23.9 | 17 | 26 19.3 | 26 23.6 | 25 7.3 | 17 3.0 | 77 13.5 | 137 24.1 |
| 18 | 26 4.5 | 26 8.8 | 24 53.2 | 18 3.1 | 78 13.6 | 138 24.0 | 18 | 26 19.5 | 26 23.9 | 25 7.5 | 18 3.2 | 78 13.7 | 138 24.3 |
| 19 | 26 4.8 | 26 9.1 | 24 53.5 | 19 3.3 | 79 13.8 | 139 24.2 | 19 | 26 19.8 | 26 24.1 | 25 7.8 | 19 3.3 | 79 13.9 | 139 24.4 |
| 20 | 26 5.0 | 26 9.3 | 24 53.7 | 20 3.5 | 80 13.9 | 140 24.4 | 20 | 26 20.0 | 26 24.4 | 25 8.0 | 20 3.5 | 80 14.1 | 140 24.6 |
| 21 | 26 5.3 | 26 9.6 | 24 53.9 | 21 3.7 | 81 14.1 | 141 24.6 | 21 | 26 20.3 | 26 24.6 | 25 8.3 | 21 3.7 | 81 14.2 | 141 24.8 |
| 22 | 26 5.5 | 26 9.8 | 24 54.2 | 22 3.8 | 82 14.3 | 142 24.7 | 22 | 26 20.5 | 26 24.9 | 25 8.5 | 22 3.9 | 82 14.4 | 142 25.0 |
| 23 | 26 5.8 | 26 10.1 | 24 54.4 | 23 4.0 | 83 14.5 | 143 24.9 | 23 | 26 20.8 | 26 25.1 | 25 8.7 | 23 4.0 | 83 14.6 | 143 25.1 |
| 24 | 26 6.0 | 26 10.4 | 24 54.7 | 24 4.2 | 84 14.6 | 144 25.1 | 24 | 26 21.0 | 26 25.4 | 25 9.0 | 24 4.2 | 84 14.8 | 144 25.3 |
| 25 | 26 6.3 | 26 10.6 | 24 54.9 | 25 4.4 | 85 14.8 | 145 25.3 | 25 | 26 21.3 | 26 25.6 | 25 9.2 | 25 4.4 | 85 14.9 | 145 25.5 |
| 26 | 26 6.5 | 26 10.9 | 24 55.1 | 26 4.5 | 86 15.0 | 146 25.4 | 26 | 26 21.5 | 26 25.9 | 25 9.5 | 26 4.6 | 86 15.1 | 146 25.7 |
| 27 | 26 6.8 | 26 11.1 | 24 55.4 | 27 4.7 | 87 15.2 | 147 25.6 | 27 | 26 21.8 | 26 26.1 | 25 9.7 | 27 4.7 | 87 15.3 | 147 25.8 |
| 28 | 26 7.0 | 26 11.4 | 24 55.6 | 28 4.9 | 88 15.3 | 148 25.8 | 28 | 26 22.0 | 26 26.4 | 25 9.9 | 28 4.9 | 88 15.5 | 148 26.0 |
| 29 | 26 7.3 | 26 11.6 | 24 55.9 | 29 5.1 | 89 15.5 | 149 26.0 | 29 | 26 22.3 | 26 26.6 | 25 10.2 | 29 5.1 | 89 15.6 | 149 26.2 |
| 30 | 26 7.5 | 26 11.9 | 24 56.1 | 30 5.2 | 90 15.7 | 150 26.1 | 30 | 26 22.5 | 26 26.9 | 25 10.4 | 30 5.3 | 90 15.8 | 150 26.4 |
| 31 | 26 7.8 | 26 12.1 | 24 56.3 | 31 5.4 | 91 15.8 | 151 26.3 | 31 | 26 22.8 | 26 27.1 | 25 10.6 | 31 5.5 | 91 16.0 | 151 26.6 |
| 32 | 26 8.0 | 26 12.4 | 24 56.6 | 32 5.6 | 92 16.0 | 152 26.5 | 32 | 26 23.0 | 26 27.4 | 25 10.9 | 32 5.6 | 92 16.2 | 152 26.7 |
| 33 | 26 8.3 | 26 12.6 | 24 56.8 | 33 5.7 | 93 16.2 | 153 26.6 | 33 | 26 23.3 | 26 27.6 | 25 11.1 | 33 5.8 | 93 16.4 | 153 26.9 |
| 34 | 26 8.5 | 26 12.9 | 24 57.0 | 34 5.9 | 94 16.4 | 154 26.8 | 34 | 26 23.5 | 26 27.9 | 25 11.4 | 34 6.0 | 94 16.5 | 154 27.1 |
| 35 | 26 8.8 | 26 13.1 | 24 57.3 | 35 6.1 | 95 16.5 | 155 27.0 | 35 | 26 23.8 | 26 28.1 | 25 11.6 | 35 6.2 | 95 16.7 | 155 27.3 |
| 36 | 26 9.0 | 26 13.4 | 24 57.5 | 36 6.3 | 96 16.7 | 156 27.2 | 36 | 26 24.0 | 26 28.4 | 25 11.8 | 36 6.3 | 96 16.9 | 156 27.4 |
| 37 | 26 9.3 | 26 13.6 | 24 57.8 | 37 6.4 | 97 16.9 | 157 27.3 | 37 | 26 24.3 | 26 28.7 | 25 12.1 | 37 6.5 | 97 17.1 | 157 27.6 |
| 38 | 26 9.5 | 26 13.9 | 24 58.0 | 38 6.6 | 98 17.1 | 158 27.5 | 38 | 26 24.5 | 26 28.9 | 25 12.3 | 38 6.7 | 98 17.2 | 158 27.8 |
| 39 | 26 9.8 | 26 14.1 | 24 58.2 | 39 6.8 | 99 17.2 | 159 27.7 | 39 | 26 24.8 | 26 29.2 | 25 12.6 | 39 6.9 | 99 17.4 | 159 28.0 |
| 40 | 26 10.0 | 26 14.4 | 24 58.5 | 40 7.0 | 100 17.4 | 160 27.9 | 40 | 26 25.0 | 26 29.4 | 25 12.8 | 40 7.0 | 100 17.6 | 160 28.1 |
| 41 | 26 10.3 | 26 14.6 | 24 58.7 | 41 7.1 | 101 17.6 | 161 28.0 | 41 | 26 25.3 | 26 29.7 | 25 13.0 | 41 7.2 | 101 17.8 | 161 28.3 |
| 42 | 26 10.5 | 26 14.9 | 24 59.0 | 42 7.3 | 102 17.8 | 162 28.2 | 42 | 26 25.5 | 26 29.9 | 25 13.3 | 42 7.4 | 102 17.9 | 162 28.5 |
| 43 | 26 10.8 | 26 15.1 | 24 59.2 | 43 7.5 | 103 17.9 | 163 28.4 | 43 | 26 25.8 | 26 30.2 | 25 13.5 | 43 7.6 | 103 18.1 | 163 28.7 |
| 44 | 26 11.0 | 26 15.4 | 24 59.4 | 44 7.7 | 104 18.1 | 164 28.6 | 44 | 26 26.0 | 26 30.4 | 25 13.7 | 44 7.7 | 104 18.3 | 164 28.8 |
| 45 | 26 11.3 | 26 15.6 | 24 59.7 | 45 7.8 | 105 18.3 | 165 28.7 | 45 | 26 26.3 | 26 30.7 | 25 14.0 | 45 7.9 | 105 18.5 | 165 29.0 |
| 46 | 26 11.5 | 26 15.9 | 24 59.9 | 46 8.0 | 106 18.5 | 166 28.9 | 46 | 26 26.5 | 26 30.9 | 25 14.2 | 46 8.1 | 106 18.6 | 166 29.2 |
| 47 | 26 11.8 | 26 16.1 | 25 1.1 | 47 8.2 | 107 18.6 | 167 29.1 | 47 | 26 26.8 | 26 31.2 | 25 14.5 | 47 8.3 | 107 18.8 | 167 29.4 |
| 48 | 26 12.0 | 26 16.4 | 25 1.4 | 48 8.4 | 108 18.8 | 168 29.3 | 48 | 26 27.0 | 26 31.4 | 25 14.7 | 48 8.4 | 108 19.0 | 168 29.5 |
| 49 | 26 12.3 | 26 16.6 | 25 1.6 | 49 8.5 | 109 19.0 | 169 29.4 | 49 | 26 27.3 | 26 31.7 | 25 14.9 | 49 8.6 | 109 19.2 | 169 29.7 |
| 50 | 26 12.5 | 26 16.9 | 25 1.9 | 50 8.7 | 110 19.2 | 170 29.6 | 50 | 26 27.5 | 26 31.9 | 25 15.2 | 50 8.8 | 110 19.3 | 170 29.9 |
| 51 | 26 12.8 | 26 17.1 | 25 1.1 | 51 8.9 | 111 19.3 | 171 29.8 | 51 | 26 27.8 | 26 32.2 | 25 15.4 | 51 9.0 | 111 19.5 | 171 30.1 |
| 52 | 26 13.0 | 26 17.4 | 25 1.3 | 52 9.1 | 112 19.5 | 172 30.0 | 52 | 26 28.0 | 26 32.4 | 25 15.7 | 52 9.1 | 112 19.7 | 172 30.2 |
| 53 | 26 13.3 | 26 17.6 | 25 1.6 | 53 9.2 | 113 19.7 | 173 30.1 | 53 | 26 28.3 | 26 32.7 | 25 15.9 | 53 9.3 | 113 19.9 | 173 30.4 |
| 54 | 26 13.5 | 26 17.9 | 25 1.8 | 54 9.4 | 114 19.9 | 174 30.3 | 54 | 26 28.5 | 26 32.9 | 25 16.1 | 54 9.5 | 114 20.0 | 174 30.6 |
| 55 | 26 13.8 | 26 18.1 | 25 2.1 | 55 9.6 | 115 20.0 | 175 30.5 | 55 | 26 28.8 | 26 33.2 | 25 16.4 | 55 9.7 | 115 20.2 | 175 30.8 |
| 56 | 26 14.0 | 26 18.4 | 25 2.3 | 56 9.8 | 116 20.2 | 176 30.7 | 56 | 26 29.0 | 26 33.4 | 25 16.6 | 56 9.8 | 116 20.4 | 176 30.9 |
| 57 | 26 14.3 | 26 18.6 | 25 2.5 | 57 9.9 | 117 20.4 | 177 30.8 | 57 | 26 29.3 | 26 33.7 | 25 16.9 | 57 10.0 | 117 20.6 | 177 31.1 |
| 58 | 26 14.5 | 26 18.9 | 25 2.8 | 58 10.1 | 118 20.6 | 178 31.0 | 58 | 26 29.5 | 26 33.9 | 25 17.1 | 58 10.2 | 118 20.7 | 178 31.3 |
| 59 | 26 14.8 | 26 19.1 | 25 3.0 | 59 10.3 | 119 20.7 | 179 31.2 | 59 | 26 29.8 | 26 34.2 | 25 17.3 | 59 10.4 | 119 20.9 | 179 31.5 |
| 60 | 26 15.0 | 26 19.4 | 25 3.3 | 60 10.5 | 120 20.9 | 180 31.4 | 60 | 26 30.0 | 26 34.4 | 25 17.6 | 60 10.6 | 120 21.1 | 180 31.7 |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 26 30.0 | 26 34.4 | 25 17.6 | 0 .0 | 60 10.7 | 120 21.3 | |
| 1 | 26 30.3 | 26 34.7 | 25 17.8 | 1 .2 | 61 10.8 | 121 21.5 | |
| 2 | 26 30.5 | 26 34.9 | 25 18.0 | 2 .4 | 62 11.0 | 122 21.7 | |
| 3 | 26 30.8 | 26 35.2 | 25 18.3 | 3 .5 | 63 11.2 | 123 21.8 | |
| 4 | 26 31.0 | 26 35.4 | 25 18.5 | 4 .7 | 64 11.4 | 124 22.0 | |
| 5 | 26 31.3 | 26 35.7 | 25 18.8 | 5 .9 | 65 11.5 | 125 22.2 | |
| 6 | 26 31.5 | 26 35.9 | 25 19.0 | 6 1.1 | 66 11.7 | 126 22.4 | |
| 7 | 26 31.8 | 26 36.2 | 25 19.2 | 7 1.2 | 67 11.9 | 127 22.5 | |
| 8 | 26 32.0 | 26 36.4 | 25 19.5 | 8 1.4 | 68 12.1 | 128 22.7 | |
| 9 | 26 32.3 | 26 36.7 | 25 19.7 | 9 1.6 | 69 12.2 | 129 22.9 | |
| 10 | 26 32.5 | 26 36.9 | 25 20.0 | 10 1.8 | 70 12.4 | 130 23.1 | |
| 11 | 26 32.8 | 26 37.2 | 25 20.2 | 11 2.0 | 71 12.6 | 131 23.3 | |
| 12 | 26 33.0 | 26 37.4 | 25 20.4 | 12 2.1 | 72 12.8 | 132 23.4 | |
| 13 | 26 33.3 | 26 37.7 | 25 20.7 | 13 2.3 | 73 13.0 | 133 23.6 | |
| 14 | 26 33.5 | 26 37.9 | 25 20.9 | 14 2.5 | 74 13.1 | 134 23.8 | |
| 15 | 26 33.8 | 26 38.2 | 25 21.1 | 15 2.7 | 75 13.3 | 135 24.0 | |
| 16 | 26 34.0 | 26 38.4 | 25 21.4 | 16 2.8 | 76 13.5 | 136 24.1 | |
| 17 | 26 34.3 | 26 38.7 | 25 21.6 | 17 3.0 | 77 13.7 | 137 24.3 | |
| 18 | 26 34.5 | 26 38.9 | 25 21.9 | 18 3.2 | 78 13.8 | 138 24.5 | |
| 19 | 26 34.8 | 26 39.2 | 25 22.1 | 19 3.4 | 79 14.0 | 139 24.7 | |
| 20 | 26 35.0 | 26 39.4 | 25 22.3 | 20 3.6 | 80 14.2 | 140 24.9 | |
| 21 | 26 35.3 | 26 39.7 | 25 22.6 | 21 3.7 | 81 14.4 | 141 25.0 | |
| 22 | 26 35.5 | 26 39.9 | 25 22.8 | 22 3.9 | 82 14.6 | 142 25.2 | |
| 23 | 26 35.8 | 26 40.2 | 25 23.1 | 23 4.1 | 83 14.7 | 143 25.4 | |
| 24 | 26 36.0 | 26 40.4 | 25 23.3 | 24 4.3 | 84 14.9 | 144 25.6 | |
| 25 | 26 36.3 | 26 40.7 | 25 23.5 | 25 4.4 | 85 15.1 | 145 25.7 | |
| 26 | 26 36.5 | 26 40.9 | 25 23.8 | 26 4.6 | 86 15.3 | 146 25.9 | |
| 27 | 26 36.8 | 26 41.2 | 25 24.0 | 27 4.8 | 87 15.4 | 147 26.1 | |
| 28 | 26 37.0 | 26 41.4 | 25 24.2 | 28 5.0 | 88 15.6 | 148 26.3 | |
| 29 | 26 37.3 | 26 41.7 | 25 24.5 | 29 5.1 | 89 15.8 | 149 26.4 | |
| 30 | 26 37.5 | 26 41.9 | 25 24.7 | 30 5.3 | 90 16.0 | 150 26.6 | |
| 31 | 26 37.8 | 26 42.2 | 25 25.0 | 31 5.5 | 91 16.2 | 151 26.8 | |
| 32 | 26 38.0 | 26 42.4 | 25 25.2 | 32 5.7 | 92 16.3 | 152 27.0 | |
| 33 | 26 38.3 | 26 42.7 | 25 25.4 | 33 5.9 | 93 16.5 | 153 27.2 | |
| 34 | 26 38.5 | 26 42.9 | 25 25.7 | 34 6.0 | 94 16.7 | 154 27.3 | |
| 35 | 26 38.8 | 26 43.2 | 25 25.9 | 35 6.2 | 95 16.9 | 155 27.5 | |
| 36 | 26 39.0 | 26 43.4 | 25 26.2 | 36 6.4 | 96 17.0 | 156 27.7 | |
| 37 | 26 39.3 | 26 43.7 | 25 26.4 | 37 6.6 | 97 17.2 | 157 27.9 | |
| 38 | 26 39.5 | 26 43.9 | 25 26.6 | 38 6.7 | 98 17.4 | 158 28.0 | |
| 39 | 26 39.8 | 26 44.2 | 25 26.9 | 39 6.9 | 99 17.6 | 159 28.2 | |
| 40 | 26 40.0 | 26 44.4 | 25 27.1 | 40 7.1 | 100 17.8 | 160 28.4 | |
| 41 | 26 40.3 | 26 44.7 | 25 27.3 | 41 7.3 | 101 17.9 | 161 28.6 | |
| 42 | 26 40.5 | 26 44.9 | 25 27.6 | 42 7.5 | 102 18.1 | 162 28.8 | |
| 43 | 26 40.8 | 26 45.2 | 25 27.8 | 43 7.6 | 103 18.3 | 163 28.9 | |
| 44 | 26 41.0 | 26 45.4 | 25 28.1 | 44 7.8 | 104 18.5 | 164 29.1 | |
| 45 | 26 41.3 | 26 45.7 | 25 28.3 | 45 8.0 | 105 18.6 | 165 29.3 | |
| 46 | 26 41.5 | 26 45.9 | 25 28.5 | 46 8.2 | 106 18.8 | 166 29.5 | |
| 47 | 26 41.8 | 26 46.2 | 25 28.8 | 47 8.3 | 107 19.0 | 167 29.6 | |
| 48 | 26 42.0 | 26 46.5 | 25 29.0 | 48 8.5 | 108 19.2 | 168 29.8 | |
| 49 | 26 42.3 | 26 46.7 | 25 29.3 | 49 8.7 | 109 19.3 | 169 30.0 | |
| 50 | 26 42.5 | 26 47.0 | 25 29.5 | 50 8.9 | 110 19.5 | 170 30.2 | |
| 51 | 26 42.8 | 26 47.2 | 25 29.7 | 51 9.1 | 111 19.7 | 171 30.4 | |
| 52 | 26 43.0 | 26 47.5 | 25 30.0 | 52 9.2 | 112 19.9 | 172 30.5 | |
| 53 | 26 43.3 | 26 47.7 | 25 30.2 | 53 9.4 | 113 20.1 | 173 30.7 | |
| 54 | 26 43.5 | 26 48.0 | 25 30.5 | 54 9.6 | 114 20.2 | 174 30.9 | |
| 55 | 26 43.8 | 26 48.2 | 25 30.7 | 55 9.8 | 115 20.4 | 175 31.1 | |
| 56 | 26 44.0 | 26 48.5 | 25 30.9 | 56 9.9 | 116 20.6 | 176 31.2 | |
| 57 | 26 44.3 | 26 48.7 | 25 31.2 | 57 10.1 | 117 20.8 | 177 31.4 | |
| 58 | 26 44.5 | 26 49.0 | 25 31.4 | 58 10.3 | 118 20.9 | 178 31.6 | |
| 59 | 26 44.8 | 26 49.2 | 25 31.6 | 59 10.5 | 119 21.1 | 179 31.8 | |
| 60 | 26 45.0 | 26 49.5 | 25 31.9 | 60 10.7 | 120 21.3 | 180 32.0 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | / | o | / | o | / | o | / |
| 0 | 26 45.0 | 26 49.5 | 25 31.9 | 0 .0 | 60 10.8 | 120 21.5 | |
| 1 | 26 45.3 | 26 49.7 | 25 32.1 | 1 .2 | 61 10.9 | 121 21.7 | |
| 2 | 26 45.5 | 26 50.0 | 25 32.4 | 2 .4 | 62 11.1 | 122 21.9 | |
| 3 | 26 45.8 | 26 50.2 | 25 32.6 | 3 .5 | 63 11.3 | 123 22.0 | |
| 4 | 26 46.0 | 26 50.5 | 25 32.8 | 4 .7 | 64 11.5 | 124 22.2 | |
| 5 | 26 46.3 | 26 50.7 | 25 33.1 | 5 .9 | 65 11.6 | 125 22.4 | |
| 6 | 26 46.5 | 26 51.0 | 25 33.3 | 6 1.1 | 66 11.8 | 126 22.6 | |
| 7 | 26 46.8 | 26 51.2 | 25 33.6 | 7 1.3 | 67 12.0 | 127 22.8 | |
| 8 | 26 47.0 | 26 51.5 | 25 33.8 | 8 1.4 | 68 12.2 | 128 22.9 | |
| 9 | 26 47.3 | 26 51.7 | 25 34.0 | 9 1.6 | 69 12.4 | 129 23.1 | |
| 10 | 26 47.5 | 26 52.0 | 25 34.3 | 10 1.8 | 70 12.5 | 130 23.3 | |
| 11 | 26 47.8 | 26 52.2 | 25 34.5 | 11 2.0 | 71 12.7 | 131 23.5 | |
| 12 | 26 48.0 | 26 52.5 | 25 34.7 | 12 2.2 | 72 12.9 | 132 23.7 | |
| 13 | 26 48.3 | 26 52.7 | 25 35.0 | 13 2.3 | 73 13.1 | 133 23.8 | |
| 14 | 26 48.5 | 26 53.0 | 25 35.2 | 14 2.5 | 74 13.3 | 134 24.0 | |
| 15 | 26 48.8 | 26 53.2 | 25 35.5 | 15 2.7 | 75 13.4 | 135 24.2 | |
| 16 | 26 49.0 | 26 53.5 | 25 35.7 | 16 2.9 | 76 13.6 | 136 24.4 | |
| 17 | 26 49.3 | 26 53.7 | 25 35.9 | 17 3.0 | 77 13.8 | 137 24.5 | |
| 18 | 26 49.5 | 26 54.0 | 25 36.2 | 18 3.2 | 78 14.0 | 138 24.7 | |
| 19 | 26 49.8 | 26 54.2 | 25 36.4 | 19 3.4 | 79 14.2 | 139 24.9 | |
| 20 | 26 50.0 | 26 54.5 | 25 36.7 | 20 3.6 | 80 14.3 | 140 25.1 | |
| 21 | 26 50.3 | 26 54.7 | 25 36.9 | 21 3.8 | 81 14.5 | 141 25.3 | |
| 22 | 26 50.5 | 26 55.0 | 25 37.1 | 22 3.9 | 82 14.7 | 142 25.4 | |
| 23 | 26 50.8 | 26 55.2 | 25 37.4 | 23 4.1 | 83 14.9 | 143 25.6 | |
| 24 | 26 51.0 | 26 55.5 | 25 37.6 | 24 4.3 | 84 15.1 | 144 25.8 | |
| 25 | 26 51.3 | 26 55.7 | 25 37.8 | 25 4.5 | 85 15.2 | 145 26.0 | |
| 26 | 26 51.5 | 26 56.0 | 25 38.1 | 26 4.7 | 86 15.4 | 146 26.2 | |
| 27 | 26 51.8 | 26 56.2 | 25 38.3 | 27 4.8 | 87 15.6 | 147 26.3 | |
| 28 | 26 52.0 | 26 56.5 | 25 38.6 | 28 5.0 | 88 15.8 | 148 26.5 | |
| 29 | 26 52.3 | 26 56.7 | 25 38.8 | 29 5.2 | 89 15.9 | 149 26.7 | |
| 30 | 26 52.5 | 26 57.0 | 25 39.0 | 30 5.4 | 90 16.1 | 150 26.9 | |
| 31 | 26 52.8 | 26 57.2 | 25 39.3 | 31 5.6 | 91 16.3 | 151 27.1 | |
| 32 | 26 53.0 | 26 57.5 | 25 39.5 | 32 5.7 | 92 16.5 | 152 27.2 | |
| 33 | 26 53.3 | 26 57.7 | 25 39.8 | 33 5.9 | 93 16.7 | 153 27.4 | |
| 34 | 26 53.5 | 26 58.0 | 25 40.0 | 34 6.1 | 94 16.8 | 154 27.6 | |
| 35 | 26 53.8 | 26 58.2 | 25 40.2 | 35 6.3 | 95 17.0 | 155 27.8 | |
| 36 | 26 54.0 | 26 58.5 | 25 40.5 | 36 6.5 | 96 17.2 | 156 28.0 | |
| 37 | 26 54.3 | 26 58.7 | 25 40.7 | 37 6.6 | 97 17.4 | 157 28.1 | |
| 38 | 26 54.5 | 26 59.0 | 25 41.0 | 38 6.8 | 98 17.6 | 158 28.3 | |
| 39 | 26 54.8 | 26 59.2 | 25 41.2 | 39 7.0 | 99 17.7 | 159 28.5 | |
| 40 | 26 55.0 | 26 59.5 | 25 41.4 | 40 7.2 | 100 17.9 | 160 28.7 | |
| 41 | 26 55.3 | 26 59.7 | 25 41.7 | 41 7.3 | 101 18.1 | 161 28.8 | |
| 42 | 26 55.5 | 26 60.0 | 25 41.9 | 42 7.5 | 102 18.3 | 162 29.0 | |
| 43 | 26 55.8 | 27 2 | 25 42.1 | 43 7.7 | 103 18.5 | 163 29.2 | |
| 44 | 26 56.0 | 27 .5 | 25 42.4 | 44 7.9 | 104 18.6 | 164 29.4 | |
| 45 | 26 56.3 | 27 .7 | 25 42.6 | 45 8.1 | 105 18.8 | 165 29.6 | |
| 46 | 26 56.5 | 27 1.0 | 25 42.9 | 46 8.2 | 106 19.0 | 166 29.7 | |
| 47 | 26 56.8 | 27 1.2 | 25 43.1 | 47 8.4 | 107 19.2 | 167 29.9 | |
| 48 | 26 57.0 | 27 1.5 | 25 43.3 | 48 8.6 | 108 19.4 | 168 30.1 | |
| 49 | 26 57.3 | 27 1.7 | 25 43.6 | 49 8.8 | 109 19.5 | 169 30.3 | |
| 50 | 26 57.5 | 27 2.0 | 25 43.8 | 50 9.0 | 110 19.7 | 170 30.5 | |
| 51 | 26 57.8 | 27 2.2 | 25 44.1 | 51 9.1 | 111 19.9 | 171 30.6 | |
| 52 | 26 58.0 | 27 2.5 | 25 44.3 | 52 9.3 | 112 20.1 | 172 30.8 | |
| 53 | 26 58.3 | 27 2.7 | 25 44.5 | 53 9.5 | 113 20.2 | 173 31.0</ | |

1 h 48 min

1 h 49 min

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 27 .0 | 27 4.5 | 25 46.2 | 0 .0 | 60 10.9 | 120 21.7 | |
| 1 | 27 .3 | 27 4.8 | 25 46.4 | 1 .2 | 61 11.0 | 121 21.9 | |
| 2 | 27 .5 | 27 5.0 | 25 46.7 | 2 .4 | 62 11.2 | 122 22.1 | |
| 3 | 27 .8 | 27 5.3 | 25 46.9 | 3 .5 | 63 11.4 | 123 22.2 | |
| 4 | 27 1.0 | 27 5.5 | 25 47.2 | 4 .7 | 64 11.6 | 124 22.4 | |
| 5 | 27 1.3 | 27 5.8 | 25 47.4 | 5 .9 | 65 11.8 | 125 22.6 | |
| 6 | 27 1.5 | 27 6.0 | 25 47.6 | 6 1.1 | 66 11.9 | 126 22.8 | |
| 7 | 27 1.8 | 27 6.3 | 25 47.9 | 7 1.3 | 67 12.1 | 127 23.0 | |
| 8 | 27 2.0 | 27 6.5 | 25 48.1 | 8 1.4 | 68 12.3 | 128 23.1 | |
| 9 | 27 2.3 | 27 6.8 | 25 48.3 | 9 1.6 | 69 12.5 | 129 23.3 | |
| 10 | 27 2.5 | 27 7.0 | 25 48.6 | 10 1.8 | 70 12.7 | 130 23.5 | |
| 11 | 27 2.8 | 27 7.3 | 25 48.8 | 11 2.0 | 71 12.8 | 131 23.7 | |
| 12 | 27 3.0 | 27 7.5 | 25 49.1 | 12 2.2 | 72 13.0 | 132 23.9 | |
| 13 | 27 3.3 | 27 7.8 | 25 49.3 | 13 2.4 | 73 13.2 | 133 24.1 | |
| 14 | 27 3.5 | 27 8.0 | 25 49.5 | 14 2.5 | 74 13.4 | 134 24.2 | |
| 15 | 27 3.8 | 27 8.3 | 25 49.8 | 15 2.7 | 75 13.6 | 135 24.4 | |
| 16 | 27 4.0 | 27 8.5 | 25 50.0 | 16 2.9 | 76 13.7 | 136 24.6 | |
| 17 | 27 4.3 | 27 8.8 | 25 50.3 | 17 3.1 | 77 13.9 | 137 24.8 | |
| 18 | 27 4.5 | 27 9.0 | 25 50.5 | 18 3.3 | 78 14.1 | 138 25.0 | |
| 19 | 27 4.8 | 27 9.3 | 25 50.7 | 19 3.4 | 79 14.3 | 139 25.1 | |
| 20 | 27 5.0 | 27 9.5 | 25 51.0 | 20 3.6 | 80 14.5 | 140 25.3 | |
| 21 | 27 5.3 | 27 9.8 | 25 51.2 | 21 3.8 | 81 14.6 | 141 25.5 | |
| 22 | 27 5.5 | 27 10.0 | 25 51.4 | 22 4.0 | 82 14.8 | 142 25.7 | |
| 23 | 27 5.8 | 27 10.3 | 25 51.7 | 23 4.2 | 83 15.0 | 143 25.9 | |
| 24 | 27 6.0 | 27 10.5 | 25 51.9 | 24 4.3 | 84 15.2 | 144 26.0 | |
| 25 | 27 6.3 | 27 10.8 | 25 52.2 | 25 4.5 | 85 15.4 | 145 26.2 | |
| 26 | 27 6.5 | 27 11.0 | 25 52.4 | 26 4.7 | 86 15.6 | 146 26.4 | |
| 27 | 27 6.8 | 27 11.3 | 25 52.6 | 27 4.9 | 87 15.7 | 147 26.6 | |
| 28 | 27 7.0 | 27 11.5 | 25 52.9 | 28 5.1 | 88 15.9 | 148 26.8 | |
| 29 | 27 7.3 | 27 11.8 | 25 53.1 | 29 5.2 | 89 16.1 | 149 26.9 | |
| 30 | 27 7.5 | 27 12.0 | 25 53.4 | 30 5.4 | 90 16.3 | 150 27.1 | |
| 31 | 27 7.8 | 27 12.3 | 25 53.6 | 31 5.6 | 91 16.5 | 151 27.3 | |
| 32 | 27 8.0 | 27 12.5 | 25 53.8 | 32 5.8 | 92 16.6 | 152 27.5 | |
| 33 | 27 8.3 | 27 12.8 | 25 54.1 | 33 6.0 | 93 16.8 | 153 27.7 | |
| 34 | 27 8.5 | 27 13.0 | 25 54.3 | 34 6.1 | 94 17.0 | 154 27.8 | |
| 35 | 27 8.8 | 27 13.3 | 25 54.6 | 35 6.3 | 95 17.2 | 155 28.0 | |
| 36 | 27 9.0 | 27 13.5 | 25 54.8 | 36 6.5 | 96 17.4 | 156 28.2 | |
| 37 | 27 9.3 | 27 13.8 | 25 55.0 | 37 6.7 | 97 17.5 | 157 28.4 | |
| 38 | 27 9.5 | 27 14.0 | 25 55.3 | 38 6.9 | 98 17.7 | 158 28.6 | |
| 39 | 27 9.8 | 27 14.3 | 25 55.5 | 39 7.1 | 99 17.9 | 159 28.8 | |
| 40 | 27 10.0 | 27 14.5 | 25 55.7 | 40 7.2 | 100 18.1 | 160 28.9 | |
| 41 | 27 10.3 | 27 14.8 | 25 56.0 | 41 7.4 | 101 18.3 | 161 29.1 | |
| 42 | 27 10.5 | 27 15.0 | 25 56.2 | 42 7.6 | 102 18.4 | 162 29.3 | |
| 43 | 27 10.8 | 27 15.3 | 25 56.5 | 43 7.8 | 103 18.6 | 163 29.5 | |
| 44 | 27 11.0 | 27 15.5 | 25 56.7 | 44 8.0 | 104 18.8 | 164 29.7 | |
| 45 | 27 11.3 | 27 15.8 | 25 56.9 | 45 8.1 | 105 19.0 | 165 29.8 | |
| 46 | 27 11.5 | 27 16.0 | 25 57.2 | 46 8.3 | 106 19.2 | 166 30.0 | |
| 47 | 27 11.8 | 27 16.3 | 25 57.4 | 47 8.5 | 107 19.3 | 167 30.2 | |
| 48 | 27 12.0 | 27 16.5 | 25 57.7 | 48 8.7 | 108 19.5 | 168 30.4 | |
| 49 | 27 12.3 | 27 16.8 | 25 57.9 | 49 8.9 | 109 19.7 | 169 30.6 | |
| 50 | 27 12.5 | 27 17.0 | 25 58.1 | 50 9.0 | 110 19.9 | 170 30.7 | |
| 51 | 27 12.8 | 27 17.3 | 25 58.4 | 51 9.2 | 111 20.1 | 171 30.9 | |
| 52 | 27 13.0 | 27 17.5 | 25 58.6 | 52 9.4 | 112 20.3 | 172 31.1 | |
| 53 | 27 13.3 | 27 17.8 | 25 58.8 | 53 9.6 | 113 20.4 | 173 31.3 | |
| 54 | 27 13.5 | 27 18.0 | 25 59.1 | 54 9.8 | 114 20.6 | 174 31.5 | |
| 55 | 27 13.8 | 27 18.3 | 25 59.3 | 55 9.9 | 115 20.8 | 175 31.6 | |
| 56 | 27 14.0 | 27 18.5 | 25 59.6 | 56 10.1 | 116 21.0 | 176 31.8 | |
| 57 | 27 14.3 | 27 18.8 | 25 59.8 | 57 10.3 | 117 21.2 | 177 32.0 | |
| 58 | 27 14.5 | 27 19.0 | 26 .0 | 58 10.5 | 118 21.3 | 178 32.2 | |
| 59 | 27 14.8 | 27 19.3 | 26 .3 | 59 10.7 | 119 21.5 | 179 32.4 | |
| 60 | 27 15.0 | 27 19.5 | 26 .5 | 60 10.9 | 120 21.7 | 180 32.6 | |

| POPRAVKA ČASOVNOG UGLA | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' |
| 0 | 27 15.0 | 27 19.5 | 26 .5 | 0 .0 | 60 11.0 | 120 21.9 | |
| 1 | 27 15.3 | 27 19.8 | 26 .8 | 1 .2 | 61 11.1 | 121 22.1 | |
| 2 | 27 15.5 | 27 20.0 | 26 1.0 | 2 .4 | 62 11.3 | 122 22.3 | |
| 3 | 27 15.8 | 27 20.3 | 26 1.2 | 3 .5 | 63 11.5 | 123 22.4 | |
| 4 | 27 16.0 | 27 20.5 | 26 1.5 | 4 .7 | 64 11.7 | 124 22.6 | |
| 5 | 27 16.3 | 27 20.8 | 26 1.7 | 5 .9 | 65 11.9 | 125 22.8 | |
| 6 | 27 16.5 | 27 21.0 | 26 1.9 | 6 1.1 | 66 12.0 | 126 23.0 | |
| 7 | 27 16.8 | 27 21.3 | 26 2.2 | 7 1.3 | 67 12.2 | 127 23.2 | |
| 8 | 27 17.0 | 27 21.5 | 26 2.4 | 8 1.5 | 68 12.4 | 128 23.4 | |
| 9 | 27 17.3 | 27 21.8 | 26 2.7 | 9 1.6 | 69 12.6 | 129 23.5 | |
| 10 | 27 17.5 | 27 22.0 | 26 2.9 | 10 1.8 | 70 12.8 | 130 23.7 | |
| 11 | 27 17.8 | 27 22.3 | 26 3.1 | 11 2.0 | 71 13.0 | 131 23.9 | |
| 12 | 27 18.0 | 27 22.6 | 26 3.4 | 12 2.2 | 72 13.1 | 132 24.1 | |
| 13 | 27 18.3 | 27 22.8 | 26 3.6 | 13 2.4 | 73 13.3 | 133 24.3 | |
| 14 | 27 18.5 | 27 23.1 | 26 3.9 | 14 2.6 | 74 13.5 | 134 24.5 | |
| 15 | 27 18.8 | 27 23.3 | 26 4.1 | 15 2.7 | 75 13.7 | 135 24.6 | |
| 16 | 27 19.0 | 27 23.6 | 26 4.3 | 16 2.9 | 76 13.9 | 136 24.8 | |
| 17 | 27 19.3 | 27 23.8 | 26 4.6 | 17 3.1 | 77 14.1 | 137 25.0 | |
| 18 | 27 19.5 | 27 24.1 | 26 4.8 | 18 3.3 | 78 14.2 | 138 25.2 | |
| 19 | 27 19.8 | 27 24.3 | 26 5.1 | 19 3.5 | 79 14.4 | 139 25.4 | |
| 20 | 27 20.0 | 27 24.6 | 26 5.3 | 20 3.7 | 80 14.6 | 140 25.6 | |
| 21 | 27 20.3 | 27 24.8 | 26 5.5 | 21 3.8 | 81 14.8 | 141 25.7 | |
| 22 | 27 20.5 | 27 25.1 | 26 5.8 | 22 4.0 | 82 15.0 | 142 25.9 | |
| 23 | 27 20.8 | 27 25.3 | 26 6.0 | 23 4.2 | 83 15.1 | 143 26.1 | |
| 24 | 27 21.0 | 27 25.6 | 26 6.2 | 24 4.4 | 84 15.3 | 144 26.3 | |
| 25 | 27 21.3 | 27 25.8 | 26 6.5 | 25 4.6 | 85 15.5 | 145 26.5 | |
| 26 | 27 21.5 | 27 26.1 | 26 6.7 | 26 4.7 | 86 15.7 | 146 26.6 | |
| 27 | 27 21.8 | 27 26.3 | 26 7.0 | 27 4.9 | 87 15.9 | 147 26.8 | |
| 28 | 27 22.0 | 27 26.6 | 26 7.2 | 28 5.1 | 88 16.1 | 148 27.0 | |
| 29 | 27 22.3 | 27 26.8 | 26 7.4 | 29 5.3 | 89 16.2 | 149 27.2 | |
| 30 | 27 22.5 | 27 27.1 | 26 7.7 | 30 5.5 | 90 16.4 | 150 27.4 | |
| 31 | 27 22.8 | 27 27.3 | 26 7.9 | 31 5.7 | 91 16.6 | 151 27.6 | |
| 32 | 27 23.0 | 27 27.6 | 26 8.2 | 32 5.8 | 92 16.8 | 152 27.7 | |
| 33 | 27 23.3 | 27 27.8 | 26 8.4 | 33 6.0 | 93 17.0 | 153 27.9 | |
| 34 | 27 23.5 | 27 28.1 | 26 8.6 | 34 6.2 | 94 17.2 | 154 28.1 | |
| 35 | 27 23.8 | 27 28.3 | 26 8.9 | 35 6.4 | 95 17.3 | 155 28.3 | |
| 36 | 27 24.0 | 27 28.6 | 26 9.1 | 36 6.6 | 96 17.5 | 156 28.5 | |
| 37 | 27 24.3 | 27 28.8 | 26 9.3 | 37 6.8 | 97 17.7 | 157 28.7 | |
| 38 | 27 24.5 | 27 29.1 | 26 9.6 | 38 6.9 | 98 17.9 | 158 28.8 | |
| 39 | 27 24.8 | 27 29.3 | 26 9.8 | 39 7.1 | 99 18.1 | 159 29.0 | |
| 40 | 27 25.0 | 27 29.6 | 26 10.1 | 40 7.3 | 100 18.3 | 160 29.2 | |
| 41 | 27 25.3 | 27 29.8 | 26 10.3 | 41 7.5 | 101 18.4 | 161 29.4 | |
| 42 | 27 25.5 | 27 30.1 | 26 10.5 | 42 7.7 | 102 18.6 | 162 29.6 | |
| 43 | 27 25.8 | 27 30.3 | 26 10.8 | 43 7.8 | 103 18.8 | 163 29.7 | |
| 44 | 27 26.0 | 27 30.6 | 26 11.0 | 44 8.0 | 104 19.0 | 164 29.9 | |
| 45 | 27 26.3 | 27 30.8 | 26 11.3 | 45 8.2 | 105 19.2 | 165 30.1 | |
| 46 | 27 26.5 | 27 31.1 | 26 11.5 | 46 8.4 | 106 19.3 | 166 30.3 | |
| 47 | 27 26.8 | 27 31.3 | 26 11.7 | 47 8.6 | 107 19.5 | 167 30.5 | |
| 48 | 27 27.0 | 27 31.6 | 26 12.0 | 48 8.8 | 108 19.7 | 168 30.7 | |
| 49 | 27 27.3 | 27 31.8 | 26 12.2 | 49 8.9 | 109 19.9 | 169 30.8 | |
| 50 | 27 27.5 | 27 32.1 | 26 12.4 | 50 9.1 | 110 20.1 | 170 31.0 | |
| 51 | 27 27.8 | 27 32.3 | 26 12.7 | 51 9.3 | 111 20.3 | 171 31.2 | |
| 52 | 27 28.0 | 27 32.6 | 26 12.9 | 52 9.5 | 112 20.4 | 172 31.4 | |
| 53 | 27 28.3 | 27 32.8 | 26 13.2 | 53 9.7 | 113 20.6 | 173 31.6 | |
| 54 | 27 28.5 | 27 33.1 | 26 13.4 | 54 9.9 | 114 20.8 | 174 31.8 | |
| 55 | 27 | | | | | | |

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 27 30.0 | 27 34.6 | 26 14.8 | 0 .0 | 60 11.1 | 120 22.1 | | 0 | 27 45.0 | 27 49.6 | 26 29.2 | 0 .0 | 60 11.2 | 120 22.3 | |
| 1 | 27 30.3 | 27 34.8 | 26 15.1 | 1 .2 | 61 11.2 | 121 22.3 | | 1 | 27 45.3 | 27 49.9 | 26 29.4 | 1 .2 | 61 11.3 | 121 22.5 | |
| 2 | 27 30.5 | 27 35.1 | 26 15.3 | 2 .4 | 62 11.4 | 122 22.5 | | 2 | 27 45.5 | 27 50.1 | 26 29.6 | 2 .4 | 62 11.5 | 122 22.7 | |
| 3 | 27 30.8 | 27 35.3 | 26 15.5 | 3 .6 | 63 11.6 | 123 22.7 | | 3 | 27 45.8 | 27 50.4 | 26 29.9 | 3 .6 | 63 11.7 | 123 22.9 | |
| 4 | 27 31.0 | 27 35.6 | 26 15.8 | 4 .7 | 64 11.8 | 124 22.8 | | 4 | 27 46.0 | 27 50.6 | 26 30.1 | 4 .7 | 64 11.9 | 124 23.0 | |
| 5 | 27 31.3 | 27 35.8 | 26 16.0 | 5 .9 | 65 12.0 | 125 23.0 | | 5 | 27 46.3 | 27 50.9 | 26 30.3 | 5 .9 | 65 12.1 | 125 23.2 | |
| 6 | 27 31.5 | 27 36.1 | 26 16.3 | 6 1.1 | 66 12.2 | 126 23.2 | | 6 | 27 46.5 | 27 51.1 | 26 30.6 | 6 1.1 | 66 12.3 | 126 23.4 | |
| 7 | 27 31.8 | 27 36.3 | 26 16.5 | 7 1.3 | 67 12.3 | 127 23.4 | | 7 | 27 46.8 | 27 51.4 | 26 30.8 | 7 1.3 | 67 12.5 | 127 23.6 | |
| 8 | 27 32.0 | 27 36.6 | 26 16.7 | 8 1.5 | 68 12.5 | 128 23.6 | | 8 | 27 47.0 | 27 51.6 | 26 31.1 | 8 1.5 | 68 12.6 | 128 23.8 | |
| 9 | 27 32.3 | 27 36.8 | 26 17.0 | 9 1.7 | 69 12.7 | 129 23.8 | | 9 | 27 47.3 | 27 51.9 | 26 31.3 | 9 1.7 | 69 12.8 | 129 24.0 | |
| 10 | 27 32.5 | 27 37.1 | 26 17.2 | 10 1.8 | 70 12.9 | 130 23.9 | | 10 | 27 47.5 | 27 52.1 | 26 31.5 | 10 1.9 | 70 13.0 | 130 24.2 | |
| 11 | 27 32.8 | 27 37.3 | 26 17.5 | 11 2.0 | 71 13.1 | 131 24.1 | | 11 | 27 47.8 | 27 52.4 | 26 31.8 | 11 2.0 | 71 13.2 | 131 24.3 | |
| 12 | 27 33.0 | 27 37.6 | 26 17.7 | 12 2.2 | 72 13.3 | 132 24.3 | | 12 | 27 48.0 | 27 52.6 | 26 32.0 | 12 2.2 | 72 13.4 | 132 24.5 | |
| 13 | 27 33.3 | 27 37.8 | 26 17.9 | 13 2.4 | 73 13.4 | 133 24.5 | | 13 | 27 48.3 | 27 52.9 | 26 32.3 | 13 2.4 | 73 13.6 | 133 24.7 | |
| 14 | 27 33.5 | 27 38.1 | 26 18.2 | 14 2.6 | 74 13.6 | 134 24.7 | | 14 | 27 48.5 | 27 53.1 | 26 32.5 | 14 2.6 | 74 13.8 | 134 24.9 | |
| 15 | 27 33.8 | 27 38.3 | 26 18.4 | 15 2.8 | 75 13.8 | 135 24.9 | | 15 | 27 48.8 | 27 53.4 | 26 32.7 | 15 2.8 | 75 13.9 | 135 25.1 | |
| 16 | 27 34.0 | 27 38.6 | 26 18.7 | 16 2.9 | 76 14.0 | 136 25.0 | | 16 | 27 49.0 | 27 53.6 | 26 33.0 | 16 3.0 | 76 14.1 | 136 25.3 | |
| 17 | 27 34.3 | 27 38.8 | 26 18.9 | 17 3.1 | 77 14.2 | 137 25.2 | | 17 | 27 49.3 | 27 53.9 | 26 33.2 | 17 3.2 | 77 14.3 | 137 25.5 | |
| 18 | 27 34.5 | 27 39.1 | 26 19.1 | 18 3.3 | 78 14.4 | 138 25.4 | | 18 | 27 49.5 | 27 54.1 | 26 33.4 | 18 3.3 | 78 14.5 | 138 25.6 | |
| 19 | 27 34.8 | 27 39.3 | 26 19.4 | 19 3.5 | 79 14.5 | 139 25.6 | | 19 | 27 49.8 | 27 54.4 | 26 33.7 | 19 3.5 | 79 14.7 | 139 25.8 | |
| 20 | 27 35.0 | 27 39.6 | 26 19.6 | 20 3.7 | 80 14.7 | 140 25.8 | | 20 | 27 50.0 | 27 54.6 | 26 33.9 | 20 3.7 | 80 14.9 | 140 26.0 | |
| 21 | 27 35.3 | 27 39.8 | 26 19.8 | 21 3.9 | 81 14.9 | 141 26.0 | | 21 | 27 50.3 | 27 54.9 | 26 34.2 | 21 3.9 | 81 15.1 | 141 26.2 | |
| 22 | 27 35.5 | 27 40.1 | 26 20.1 | 22 4.1 | 82 15.1 | 142 26.2 | | 22 | 27 50.5 | 27 55.1 | 26 34.4 | 22 4.1 | 82 15.2 | 142 26.4 | |
| 23 | 27 35.8 | 27 40.3 | 26 20.3 | 23 4.2 | 83 15.3 | 143 26.3 | | 23 | 27 50.8 | 27 55.4 | 26 34.6 | 23 4.3 | 83 15.4 | 143 26.6 | |
| 24 | 27 36.0 | 27 40.6 | 26 20.6 | 24 4.4 | 84 15.5 | 144 26.5 | | 24 | 27 51.0 | 27 55.6 | 26 34.9 | 24 4.5 | 84 15.6 | 144 26.8 | |
| 25 | 27 36.3 | 27 40.9 | 26 20.8 | 25 4.6 | 85 15.7 | 145 26.7 | | 25 | 27 51.3 | 27 55.9 | 26 35.1 | 25 4.6 | 85 15.8 | 145 26.9 | |
| 26 | 27 36.5 | 27 41.1 | 26 21.0 | 26 4.8 | 86 15.8 | 146 26.9 | | 26 | 27 51.5 | 27 56.1 | 26 35.4 | 26 4.8 | 86 16.0 | 146 27.1 | |
| 27 | 27 36.8 | 27 41.4 | 26 21.3 | 27 5.0 | 87 16.0 | 147 27.1 | | 27 | 27 51.8 | 27 56.4 | 26 35.6 | 27 5.0 | 87 16.2 | 147 27.3 | |
| 28 | 27 37.0 | 27 41.6 | 26 21.5 | 28 5.2 | 88 16.2 | 148 27.3 | | 28 | 27 52.0 | 27 56.6 | 26 35.8 | 28 5.2 | 88 16.4 | 148 27.5 | |
| 29 | 27 37.3 | 27 41.9 | 26 21.8 | 29 5.3 | 89 16.4 | 149 27.4 | | 29 | 27 52.3 | 27 56.9 | 26 36.1 | 29 5.4 | 89 16.5 | 149 27.7 | |
| 30 | 27 37.5 | 27 42.1 | 26 22.0 | 30 5.5 | 90 16.6 | 150 27.6 | | 30 | 27 52.5 | 27 57.1 | 26 36.3 | 30 5.6 | 90 16.7 | 150 27.9 | |
| 31 | 27 37.8 | 27 42.4 | 26 22.2 | 31 5.7 | 91 16.8 | 151 27.8 | | 31 | 27 52.8 | 27 57.4 | 26 36.5 | 31 5.8 | 91 16.9 | 151 28.1 | |
| 32 | 27 38.0 | 27 42.6 | 26 22.5 | 32 5.9 | 92 16.9 | 152 28.0 | | 32 | 27 53.0 | 27 57.6 | 26 36.8 | 32 5.9 | 92 17.1 | 152 28.2 | |
| 33 | 27 38.3 | 27 42.9 | 26 22.7 | 33 6.1 | 93 17.1 | 153 28.2 | | 33 | 27 53.3 | 27 57.9 | 26 37.0 | 33 6.1 | 93 17.3 | 153 28.4 | |
| 34 | 27 38.5 | 27 43.1 | 26 22.9 | 34 6.3 | 94 17.3 | 154 28.4 | | 34 | 27 53.5 | 27 58.1 | 26 37.3 | 34 6.3 | 94 17.5 | 154 28.6 | |
| 35 | 27 38.8 | 27 43.4 | 26 23.2 | 35 6.4 | 95 17.5 | 155 28.5 | | 35 | 27 53.8 | 27 58.4 | 26 37.5 | 35 6.5 | 95 17.7 | 155 28.8 | |
| 36 | 27 39.0 | 27 43.6 | 26 23.4 | 36 6.6 | 96 17.7 | 156 28.7 | | 36 | 27 54.0 | 27 58.7 | 26 37.7 | 36 6.7 | 96 17.8 | 156 29.0 | |
| 37 | 27 39.3 | 27 43.9 | 26 23.7 | 37 6.8 | 97 17.9 | 157 28.9 | | 37 | 27 54.3 | 27 58.9 | 26 38.0 | 37 6.9 | 97 18.0 | 157 29.2 | |
| 38 | 27 39.5 | 27 44.1 | 26 23.9 | 38 7.0 | 98 18.0 | 158 29.1 | | 38 | 27 54.5 | 27 59.2 | 26 38.2 | 38 7.1 | 98 18.2 | 158 29.4 | |
| 39 | 27 39.8 | 27 44.4 | 26 24.1 | 39 7.2 | 99 18.2 | 159 29.3 | | 39 | 27 54.8 | 27 59.4 | 26 38.5 | 39 7.2 | 99 18.4 | 159 29.5 | |
| 40 | 27 40.0 | 27 44.6 | 26 24.4 | 40 7.4 | 100 18.4 | 160 29.5 | | 40 | 27 55.0 | 27 59.7 | 26 38.7 | 40 7.4 | 100 18.6 | 160 29.7 | |
| 41 | 27 40.3 | 27 44.9 | 26 24.6 | 41 7.6 | 101 18.6 | 161 29.7 | | 41 | 27 55.3 | 27 59.9 | 26 38.9 | 41 7.6 | 101 18.8 | 161 29.9 | |
| 42 | 27 40.5 | 27 45.1 | 26 24.9 | 42 7.7 | 102 18.8 | 162 29.8 | | 42 | 27 55.5 | 27 60.2 | 26 39.2 | 42 7.8 | 102 19.0 | 162 30.1 | |
| 43 | 27 40.8 | 27 45.4 | 26 25.1 | 43 7.9 | 103 19.0 | 163 30.0 | | 43 | 27 55.8 | 27 60.4 | 26 39.4 | 43 8.0 | 103 19.1 | 163 30.3 | |
| 44 | 27 41.0 | 27 45.6 | 26 25.3 | 44 8.1 | 104 19.2 | 164 30.2 | | 44 | 27 56.0 | 27 60.7 | 26 39.6 | 44 8.2 | 104 19.3 | 164 30.5 | |
| 45 | 27 41.3 | 27 45.9 | 26 25.6 | 45 8.3 | 105 19.3 | 165 30.4 | | 45 | 27 56.3 | 27 60.9 | 26 39.9 | 45 8.4 | 105 19.5 | 165 30.7 | |
| 46 | 27 41.5 | 27 46.1 | 26 25.8 | 46 8.5 | 106 19.5 | 166 30.6 | | 46 | 27 56.5 | 27 61.2 | 26 40.1 | 46 8.5 | 106 19.7 | 166 30.8 | |
| 47 | 27 41.8 | 27 46.4 | 26 26.0 | 47 8.7 | 107 19.7 | 167 30.8 | | 47 | 27 56.8 | 27 61.4 | 26 40.4 | 47 8.7 | 107 19.9 | 167 31.0 | |
| 48 | 27 42.0 | 27 46.6 | 26 26.3 | 48 8.8 | 108 19.9 | 168 30.9 | | 48 | 27 57.0 | 27 61.7 | 26 40.6 | 48 8.9 | 108 20.1 | 168 31.2 | |
| 49 | 27 42.3 | 27 46.9 | 26 26.5 | 49 9.0 | 109 20.1 | 169 31.1 | | 49 | 27 57.3 | 27 62.0 | 26 40.8 | 49 9.1 | 109 20.3 | 169 31.4 | |
| 50 | 27 42.5 | 27 47.1 | 26 26.8 | 50 9.2 | 110 20.3 | 170 31.3 | | 50 | 27 57.5 | 27 62.2 | 26 41.1 | 50 9.3 | 110 20.4 | 170 31.6 | |
| 51 | 27 42.8 | 27 47.4 | 26 27.0 | 51 9.4 | 111 20.4 | 171 31.5 | | 51 | 27 57.8 | 27 62.4 | 26 41.3 | 51 9.5 | 111 20.6 | 171 31.8 | |
| 52 | 27 43.0 | 27 47.6 | 26 27.2 | 52 9.6 | 112 20.6 | 172 31.7 | | 52 | 27 58.0 | 27 62.7 | 26 41.6 | 52 9.7 | 112 20.8 | 172 32.0 | |
| 53 | 27 43.3 | 27 47.9 | 26 27.5 | 53 9.8 | 113 20.8 | 173 31.9 | | 53 | 27 58.3 | 27 62.9 | 26 41.8 | 53 9.8 | 113 21.0 | 173 32.1 | |
| 54 | 27 43.5 | 27 48.1 | 26 27.7 | 54 9.9 | 114 21.0 | 174 32.0 | | 54 | 27 58.5 | 27 63.2 | 26 42.0 | 54 10.0 | 114 21.2 | 174 32.3 | |
| 55 | 27 43.8 | 27 48.4 | 26 28.0 | 55 10.1 | 115 21.2 | 175 32.2 | | 55 | 27 58.8 | 27 63.4 | 26 42.3 | 55 10.2 | 115 21.4 | 175 32.5 | |
| 56 | 27 44.0 | 27 48.6 | 26 28.2 | 56 10.3 | 116 21.4 | 176 32.4 | | 56 | 27 59.0 | 27 63.7 | 26 42.5 | 56 10.4 | 116 21.6 | 176 32.7 | |
| 57 | 27 44.3 | 27 48.9 | 26 28.4 | 57 10.5 | 117 21.5 | 177 32.6 | | 57 | 27 59.3 | 27 63.9 | 26 42.8 | 57 10.6 | 117 21.7 | 177 32.9 | |
| 58 | 27 44.5 | 27 49.1 | 26 28.7 | 58 10.7 | 118 21.7 | 178 32.8 | | 58 | 27 59.5 | 27 64.2 | 26 43.0 | 58 10.8 | 118 21.9 | 178 33.1 | |
| 59 | 27 44.8 | 27 49.4 | 26 28.9 | 59 10.9 | 119 21.9 | 179 33.0 | | 59 | 27 59.8 | 27 64.4 | 26 43.2 | 59 11.0 | 119 22.1 | 179 33.3 | |
| 60 | 27 45.0 | 27 49.6 | 26 29.2 | 60 11.1 | 120 22.1 | 180 33.2 | | 60 | 28 .0 | 28 4.7 | 26 43.5 | 60 11.2 | 120 22.3 | 180 33.5 | |

1 h 52 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | |
|------------------------|--------------------|----------------------|--------------|---------|----------|----------|---|---|-------|--|
| s | SUNCA I PLANETA | PROLJEĆNE TAČKE T | MJESECA C | Δ | popr. | Δ | popr. | Δ | popr. | |
| 0 | 28 .0 | 28 4.7 | 26 43.5 | 0 .0 | 60 11.3 | 120 22.5 | | | | |
| 1 | 28 .3 | 28 4.9 | 26 43.7 | 1 .2 | 61 11.4 | 121 22.7 | | | | |
| 2 | 28 .5 | 28 5.2 | 26 43.9 | 2 .4 | 62 11.6 | 122 22.9 | | | | |
| 3 | 28 .8 | 28 5.4 | 26 44.2 | 3 .6 | 63 11.8 | 123 23.1 | | | | |
| 4 | 28 1.0 | 28 5.7 | 26 44.4 | 4 .8 | 64 12.0 | 124 23.3 | | | | |
| 5 | 28 1.3 | 28 5.9 | 26 44.7 | 5 .9 | 65 12.2 | 125 23.4 | | | | |
| 6 | 28 1.5 | 28 6.2 | 26 44.9 | 6 1.1 | 66 12.4 | 126 23.6 | | | | |
| 7 | 28 1.8 | 28 6.4 | 26 45.1 | 7 1.3 | 67 12.6 | 127 23.8 | | | | |
| 8 | 28 2.0 | 28 6.7 | 26 45.4 | 8 1.5 | 68 12.8 | 128 24.0 | | | | |
| 9 | 28 2.3 | 28 6.9 | 26 45.6 | 9 1.7 | 69 12.9 | 129 24.2 | | | | |
| 10 | 28 2.5 | 28 7.2 | 26 45.9 | 10 1.9 | 70 13.1 | 130 24.4 | | | | |
| 11 | 28 2.8 | 28 7.4 | 26 46.1 | 11 2.1 | 71 13.3 | 131 24.6 | | | | |
| 12 | 28 3.0 | 28 7.7 | 26 46.3 | 12 2.3 | 72 13.5 | 132 24.8 | | | | |
| 13 | 28 3.3 | 28 7.9 | 26 46.6 | 13 2.4 | 73 13.7 | 133 24.9 | | | | |
| 14 | 28 3.5 | 28 8.2 | 26 46.8 | 14 2.6 | 74 13.9 | 134 25.1 | | | | |
| 15 | 28 3.8 | 28 8.4 | 26 47.0 | 15 2.8 | 75 14.1 | 135 25.3 | | | | |
| 16 | 28 4.0 | 28 8.7 | 26 47.3 | 16 3.0 | 76 14.3 | 136 25.5 | | | | |
| 17 | 28 4.3 | 28 8.9 | 26 47.5 | 17 3.2 | 77 14.4 | 137 25.7 | | | | |
| 18 | 28 4.5 | 28 9.2 | 26 47.8 | 18 3.4 | 78 14.6 | 138 25.9 | | | | |
| 19 | 28 4.8 | 28 9.4 | 26 48.0 | 19 3.6 | 79 14.8 | 139 26.1 | | | | |
| 20 | 28 5.0 | 28 9.7 | 26 48.2 | 20 3.8 | 80 15.0 | 140 26.3 | | | | |
| 21 | 28 5.3 | 28 9.9 | 26 48.5 | 21 3.9 | 81 15.2 | 141 26.4 | | | | |
| 22 | 28 5.5 | 28 10.2 | 26 48.7 | 22 4.1 | 82 15.4 | 142 26.6 | | | | |
| 23 | 28 5.8 | 28 10.4 | 26 49.0 | 23 4.3 | 83 15.6 | 143 26.8 | | | | |
| 24 | 28 6.0 | 28 10.7 | 26 49.2 | 24 4.5 | 84 15.8 | 144 27.0 | | | | |
| 25 | 28 6.3 | 28 10.9 | 26 49.4 | 25 4.7 | 85 15.9 | 145 27.1 | | | | |
| 26 | 28 6.5 | 28 11.2 | 26 49.7 | 26 4.9 | 86 16.1 | 146 27.4 | | | | |
| 27 | 28 6.8 | 28 11.4 | 26 49.9 | 27 5.1 | 87 16.3 | 147 27.6 | | | | |
| 28 | 28 7.0 | 28 11.7 | 26 50.1 | 28 5.3 | 88 16.5 | 148 27.8 | | | | |
| 29 | 28 7.3 | 28 11.9 | 26 50.4 | 29 5.4 | 89 16.7 | 149 27.9 | | | | |
| 30 | 28 7.5 | 28 12.2 | 26 50.6 | 30 5.6 | 90 16.9 | 150 28.1 | | | | |
| 31 | 28 7.8 | 28 12.4 | 26 50.9 | 31 5.8 | 91 17.1 | 151 28.3 | | | | |
| 32 | 28 8.0 | 28 12.7 | 26 51.1 | 32 6.0 | 92 17.3 | 152 28.5 | | | | |
| 33 | 28 8.3 | 28 12.9 | 26 51.3 | 33 6.2 | 93 17.4 | 153 28.7 | | | | |
| 34 | 28 8.5 | 28 13.2 | 26 51.6 | 34 6.4 | 94 17.6 | 154 28.9 | | | | |
| 35 | 28 8.8 | 28 13.4 | 26 51.8 | 35 6.6 | 95 17.8 | 155 29.1 | | | | |
| 36 | 28 9.0 | 28 13.7 | 26 52.1 | 36 6.8 | 96 18.0 | 156 29.3 | | | | |
| 37 | 28 9.3 | 28 13.9 | 26 52.3 | 37 6.9 | 97 18.2 | 157 29.4 | | | | |
| 38 | 28 9.5 | 28 14.2 | 26 52.5 | 38 7.1 | 98 18.4 | 158 29.6 | | | | |
| 39 | 28 9.8 | 28 14.4 | 26 52.8 | 39 7.3 | 99 18.6 | 159 29.8 | | | | |
| 40 | 28 10.0 | 28 14.7 | 26 53.0 | 40 7.5 | 100 18.8 | 160 30.0 | | | | |
| 41 | 28 10.3 | 28 14.9 | 26 53.2 | 41 7.7 | 101 18.9 | 161 30.1 | | | | |
| 42 | 28 10.5 | 28 15.2 | 26 53.5 | 42 7.9 | 102 19.1 | 162 30.4 | | | | |
| 43 | 28 10.8 | 28 15.4 | 26 53.7 | 43 8.1 | 103 19.3 | 163 30.6 | | | | |
| 44 | 28 11.0 | 28 15.7 | 26 54.0 | 44 8.3 | 104 19.5 | 164 30.8 | | | | |
| 45 | 28 11.3 | 28 15.9 | 26 54.2 | 45 8.4 | 105 19.7 | 165 30.9 | | | | |
| 46 | 28 11.5 | 28 16.2 | 26 54.4 | 46 8.6 | 106 19.9 | 166 31.1 | | | | |
| 47 | 28 11.8 | 28 16.4 | 26 54.7 | 47 8.8 | 107 20.1 | 167 31.3 | | | | |
| 48 | 28 12.0 | 28 16.7 | 26 54.9 | 48 9.0 | 108 20.3 | 168 31.5 | | | | |
| 49 | 28 12.3 | 28 17.0 | 26 55.2 | 49 9.2 | 109 20.4 | 169 31.7 | | | | |
| 50 | 28 12.5 | 28 17.2 | 26 55.4 | 50 9.4 | 110 20.6 | 170 31.9 | | | | |
| 51 | 28 12.8 | 28 17.5 | 26 55.6 | 51 9.6 | 111 20.8 | 171 32.1 | | | | |
| 52 | 28 13.0 | 28 17.7 | 26 55.9 | 52 9.8 | 112 21.0 | 172 32.3 | | | | |
| 53 | 28 13.3 | 28 18.0 | 26 56.1 | 53 9.9 | 113 21.2 | 173 32.4 | | | | |
| 54 | 28 13.5 | 28 18.2 | 26 56.4 | 54 10.1 | 114 21.4 | 174 32.6 | | | | |
| 55 | 28 13.8 | 28 18.5 | 26 56.6 | 55 10.3 | 115 21.6 | 175 32.8 | | | | |
| 56 | 28 14.0 | 28 18.7 | 26 56.8 | 56 10.5 | 116 21.8 | 176 33.0 | | | | |
| 57 | 28 14.3 | 28 19.0 | 26 57.1 | 57 10.7 | 117 21.9 | 177 33.1 | | | | |
| 58 | 28 14.5 | 28 19.2 | 26 57.3 | 58 10.9 | 118 22.1 | 178 33.4 | | | | |
| 59 | 28 14.8 | 28 19.5 | 26 57.5 | 59 11.1 | 119 22.3 | 179 33.6 | | | | |
| 60 | 28 15.0 | 28 19.7 | 26 57.8 | 60 11.3 | 120 22.5 | 180 33.8 | | | | |

1 h 53 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 28 30.0 | 28 34.8 | 27 12.1 | 0 .0 | 60 11.5 | 120 22.9 | | 0 | 28 45.0 | 28 49.8 | 27 26.4 | 0 .0 | 60 11.6 | 120 23.1 | |
| 1 | 28 30.3 | 28 35.0 | 27 12.3 | 1 .2 | 61 11.6 | 121 23.1 | | 1 | 28 45.3 | 28 50.0 | 27 26.7 | 1 .2 | 61 11.7 | 121 23.3 | |
| 2 | 28 30.5 | 28 35.3 | 27 12.6 | 2 .4 | 62 11.8 | 122 23.3 | | 2 | 28 45.5 | 28 50.3 | 27 26.9 | 2 .4 | 62 11.9 | 122 23.5 | |
| 3 | 28 30.8 | 28 35.5 | 27 12.8 | 3 .6 | 63 12.0 | 123 23.5 | | 3 | 28 45.8 | 28 50.5 | 27 27.1 | 3 .6 | 63 12.1 | 123 23.7 | |
| 4 | 28 31.0 | 28 35.8 | 27 13.1 | 4 .8 | 64 12.2 | 124 23.7 | | 4 | 28 46.0 | 28 50.8 | 27 27.4 | 4 .8 | 64 12.3 | 124 23.9 | |
| 5 | 28 31.3 | 28 36.0 | 27 13.3 | 5 1.0 | 65 12.4 | 125 23.9 | | 5 | 28 46.3 | 28 51.0 | 27 27.6 | 5 1.0 | 65 12.5 | 125 24.1 | |
| 6 | 28 31.5 | 28 36.3 | 27 13.5 | 6 1.1 | 66 12.6 | 126 24.0 | | 6 | 28 46.5 | 28 51.3 | 27 27.8 | 6 1.2 | 66 12.7 | 126 24.3 | |
| 7 | 28 31.8 | 28 36.5 | 27 13.8 | 7 1.3 | 67 12.8 | 127 24.2 | | 7 | 28 46.8 | 28 51.5 | 27 28.1 | 7 1.3 | 67 12.9 | 127 24.4 | |
| 8 | 28 32.0 | 28 36.8 | 27 14.0 | 8 1.5 | 68 13.0 | 128 24.4 | | 8 | 28 47.0 | 28 51.8 | 27 28.3 | 8 1.5 | 68 13.1 | 128 24.6 | |
| 9 | 28 32.3 | 28 37.0 | 27 14.2 | 9 1.7 | 69 13.2 | 129 24.6 | | 9 | 28 47.3 | 28 52.0 | 27 28.6 | 9 1.7 | 69 13.3 | 129 24.8 | |
| 10 | 28 32.5 | 28 37.3 | 27 14.5 | 10 1.9 | 70 13.4 | 130 24.8 | | 10 | 28 47.5 | 28 52.3 | 27 28.8 | 10 1.9 | 70 13.5 | 130 25.0 | |
| 11 | 28 32.8 | 28 37.5 | 27 14.7 | 11 2.1 | 71 13.5 | 131 25.0 | | 11 | 28 47.8 | 28 52.5 | 27 29.0 | 11 2.1 | 71 13.7 | 131 25.2 | |
| 12 | 28 33.0 | 28 37.8 | 27 15.0 | 12 2.3 | 72 13.7 | 132 25.2 | | 12 | 28 48.0 | 28 52.8 | 27 29.3 | 12 2.3 | 72 13.9 | 132 25.4 | |
| 13 | 28 33.3 | 28 38.0 | 27 15.2 | 13 2.5 | 73 13.9 | 133 25.4 | | 13 | 28 48.3 | 28 53.1 | 27 29.5 | 13 2.5 | 73 14.1 | 133 25.6 | |
| 14 | 28 33.5 | 28 38.3 | 27 15.4 | 14 2.7 | 74 14.1 | 134 25.6 | | 14 | 28 48.5 | 28 53.3 | 27 29.8 | 14 2.7 | 74 14.2 | 134 25.8 | |
| 15 | 28 33.8 | 28 38.5 | 27 15.7 | 15 2.9 | 75 14.3 | 135 25.8 | | 15 | 28 48.8 | 28 53.6 | 27 30.0 | 15 2.9 | 75 14.4 | 135 26.0 | |
| 16 | 28 34.0 | 28 38.8 | 27 15.9 | 16 3.1 | 76 14.5 | 136 26.0 | | 16 | 28 49.0 | 28 53.8 | 27 30.2 | 16 3.1 | 76 14.6 | 136 26.2 | |
| 17 | 28 34.3 | 28 39.0 | 27 16.2 | 17 3.2 | 77 14.7 | 137 26.1 | | 17 | 28 49.3 | 28 54.1 | 27 30.5 | 17 3.3 | 77 14.8 | 137 26.4 | |
| 18 | 28 34.5 | 28 39.3 | 27 16.4 | 18 3.4 | 78 14.9 | 138 26.3 | | 18 | 28 49.5 | 28 54.3 | 27 30.7 | 18 3.5 | 78 15.0 | 138 26.6 | |
| 19 | 28 34.8 | 28 39.5 | 27 16.6 | 19 3.6 | 79 15.1 | 139 26.5 | | 19 | 28 49.8 | 28 54.6 | 27 31.0 | 19 3.7 | 79 15.2 | 139 26.8 | |
| 20 | 28 35.0 | 28 39.8 | 27 16.9 | 20 3.8 | 80 15.3 | 140 26.7 | | 20 | 28 50.0 | 28 54.8 | 27 31.2 | 20 3.9 | 80 15.4 | 140 27.0 | |
| 21 | 28 35.3 | 28 40.0 | 27 17.1 | 21 4.0 | 81 15.5 | 141 26.9 | | 21 | 28 50.3 | 28 55.1 | 27 31.4 | 21 4.0 | 81 15.6 | 141 27.1 | |
| 22 | 28 35.5 | 28 40.3 | 27 17.3 | 22 4.2 | 82 15.6 | 142 27.1 | | 22 | 28 50.5 | 28 55.3 | 27 31.7 | 22 4.2 | 82 15.8 | 142 27.3 | |
| 23 | 28 35.8 | 28 40.5 | 27 17.6 | 23 4.4 | 83 15.8 | 143 27.3 | | 23 | 28 50.8 | 28 55.6 | 27 31.9 | 23 4.4 | 83 16.0 | 143 27.5 | |
| 24 | 28 36.0 | 28 40.8 | 27 17.8 | 24 4.6 | 84 16.0 | 144 27.5 | | 24 | 28 51.0 | 28 55.8 | 27 32.1 | 24 4.6 | 84 16.2 | 144 27.7 | |
| 25 | 28 36.3 | 28 41.0 | 27 18.1 | 25 4.8 | 85 16.2 | 145 27.7 | | 25 | 28 51.3 | 28 56.1 | 27 32.4 | 25 4.8 | 85 16.4 | 145 27.9 | |
| 26 | 28 36.5 | 28 41.3 | 27 18.3 | 26 5.0 | 86 16.4 | 146 27.9 | | 26 | 28 51.5 | 28 56.3 | 27 32.6 | 26 5.0 | 86 16.6 | 146 28.1 | |
| 27 | 28 36.8 | 28 41.5 | 27 18.5 | 27 5.2 | 87 16.6 | 147 28.1 | | 27 | 28 51.8 | 28 56.6 | 27 32.9 | 27 5.2 | 87 16.7 | 147 28.3 | |
| 28 | 28 37.0 | 28 41.8 | 27 18.8 | 28 5.3 | 88 16.8 | 148 28.2 | | 28 | 28 52.0 | 28 56.8 | 27 33.1 | 28 5.4 | 88 16.9 | 148 28.5 | |
| 29 | 28 37.3 | 28 42.0 | 27 19.0 | 29 5.5 | 89 17.0 | 149 28.4 | | 29 | 28 52.3 | 28 57.1 | 27 33.3 | 29 5.6 | 89 17.1 | 149 28.7 | |
| 30 | 28 37.5 | 28 42.3 | 27 19.3 | 30 5.7 | 90 17.2 | 150 28.6 | | 30 | 28 52.5 | 28 57.3 | 27 33.6 | 30 5.8 | 90 17.3 | 150 28.9 | |
| 31 | 28 37.8 | 28 42.5 | 27 19.5 | 31 5.9 | 91 17.4 | 151 28.8 | | 31 | 28 52.8 | 28 57.6 | 27 33.8 | 31 6.0 | 91 17.5 | 151 29.1 | |
| 32 | 28 38.0 | 28 42.8 | 27 19.7 | 32 6.1 | 92 17.6 | 152 29.0 | | 32 | 28 53.0 | 28 57.8 | 27 34.1 | 32 6.2 | 92 17.7 | 152 29.3 | |
| 33 | 28 38.3 | 28 43.0 | 27 20.0 | 33 6.3 | 93 17.7 | 153 29.2 | | 33 | 28 53.3 | 28 58.1 | 27 34.3 | 33 6.4 | 93 17.9 | 153 29.5 | |
| 34 | 28 38.5 | 28 43.3 | 27 20.2 | 34 6.5 | 94 17.9 | 154 29.4 | | 34 | 28 53.5 | 28 58.3 | 27 34.5 | 34 6.5 | 94 18.1 | 154 29.6 | |
| 35 | 28 38.8 | 28 43.5 | 27 20.5 | 35 6.7 | 95 18.1 | 155 29.6 | | 35 | 28 53.8 | 28 58.6 | 27 34.8 | 35 6.7 | 95 18.3 | 155 29.8 | |
| 36 | 28 39.0 | 28 43.8 | 27 20.7 | 36 6.9 | 96 18.3 | 156 29.8 | | 36 | 28 54.0 | 28 58.8 | 27 35.0 | 36 6.9 | 96 18.5 | 156 30.0 | |
| 37 | 28 39.3 | 28 44.0 | 27 20.9 | 37 7.1 | 97 18.5 | 157 30.0 | | 37 | 28 54.3 | 28 59.1 | 27 35.2 | 37 7.1 | 97 18.7 | 157 30.2 | |
| 38 | 28 39.5 | 28 44.3 | 27 21.2 | 38 7.3 | 98 18.7 | 158 30.2 | | 38 | 28 54.5 | 28 59.3 | 27 35.5 | 38 7.3 | 98 18.9 | 158 30.4 | |
| 39 | 28 39.8 | 28 44.5 | 27 21.4 | 39 7.4 | 99 18.9 | 159 30.3 | | 39 | 28 54.8 | 28 59.6 | 27 35.7 | 39 7.5 | 99 19.1 | 159 30.6 | |
| 40 | 28 40.0 | 28 44.8 | 27 21.6 | 40 7.6 | 100 19.1 | 160 30.5 | | 40 | 28 55.0 | 28 59.8 | 27 36.0 | 40 7.7 | 100 19.3 | 160 30.8 | |
| 41 | 28 40.3 | 28 45.0 | 27 21.9 | 41 7.8 | 101 19.3 | 161 30.7 | | 41 | 28 55.3 | 29 .1 | 27 36.2 | 41 7.9 | 101 19.4 | 161 31.0 | |
| 42 | 28 40.5 | 28 45.3 | 27 22.1 | 42 8.0 | 102 19.5 | 162 30.9 | | 42 | 28 55.5 | 29 .3 | 27 36.4 | 42 8.1 | 102 19.6 | 162 31.2 | |
| 43 | 28 40.8 | 28 45.5 | 27 22.4 | 43 8.2 | 103 19.7 | 163 31.1 | | 43 | 28 55.8 | 29 .6 | 27 36.7 | 43 8.3 | 103 19.8 | 163 31.4 | |
| 44 | 28 41.0 | 28 45.8 | 27 22.6 | 44 8.4 | 104 19.8 | 164 31.3 | | 44 | 28 56.0 | 29 .8 | 27 36.9 | 44 8.5 | 104 20.0 | 164 31.6 | |
| 45 | 28 41.3 | 28 46.0 | 27 22.8 | 45 8.6 | 105 20.0 | 165 31.5 | | 45 | 28 56.3 | 29 1.1 | 27 37.2 | 45 8.7 | 105 20.2 | 165 31.8 | |
| 46 | 28 41.5 | 28 46.3 | 27 23.1 | 46 8.8 | 106 20.2 | 166 31.7 | | 46 | 28 56.5 | 29 1.3 | 27 37.4 | 46 8.9 | 106 20.4 | 166 32.0 | |
| 47 | 28 41.8 | 28 46.5 | 27 23.3 | 47 9.0 | 107 20.4 | 167 31.9 | | 47 | 28 56.8 | 29 1.6 | 27 37.6 | 47 9.0 | 107 20.6 | 167 32.1 | |
| 48 | 28 42.0 | 28 46.8 | 27 23.6 | 48 9.2 | 108 20.6 | 168 32.1 | | 48 | 28 57.0 | 29 1.8 | 27 37.9 | 48 9.2 | 108 20.8 | 168 32.3 | |
| 49 | 28 42.3 | 28 47.0 | 27 23.8 | 49 9.4 | 109 20.8 | 169 32.3 | | 49 | 28 57.3 | 29 2.1 | 27 38.1 | 49 9.4 | 109 21.0 | 169 32.5 | |
| 50 | 28 42.5 | 28 47.3 | 27 24.0 | 50 9.5 | 110 21.0 | 170 32.4 | | 50 | 28 57.5 | 29 2.3 | 27 38.3 | 50 9.6 | 110 21.2 | 170 32.7 | |
| 51 | 28 42.8 | 28 47.5 | 27 24.3 | 51 9.7 | 111 21.2 | 171 32.6 | | 51 | 28 57.8 | 29 2.6 | 27 38.6 | 51 9.8 | 111 21.4 | 171 32.9 | |
| 52 | 28 43.0 | 28 47.8 | 27 24.5 | 52 9.9 | 112 21.4 | 172 32.8 | | 52 | 28 58.0 | 29 2.8 | 27 38.8 | 52 10.0 | 112 21.6 | 172 33.1 | |
| 53 | 28 43.3 | 28 48.0 | 27 24.7 | 53 10.1 | 113 21.6 | 173 33.0 | | 53 | 28 58.3 | 29 3.1 | 27 39.1 | 53 10.2 | 113 21.8 | 173 33.3 | |
| 54 | 28 43.5 | 28 48.3 | 27 25.0 | 54 10.3 | 114 21.8 | 174 33.2 | | 54 | 28 58.5 | 29 3.3 | 27 39.3 | 54 10.4 | 114 21.9 | 174 33.5 | |
| 55 | 28 43.8 | 28 48.5 | 27 25.2 | 55 10.5 | 115 21.9 | 175 33.4 | | 55 | 28 58.8 | 29 3.6 | 27 39.5 | 55 10.6 | 115 22.1 | 175 33.7 | |
| 56 | 28 44.0 | 28 48.8 | 27 25.5 | 56 10.7 | 116 22.1 | 176 33.6 | | 56 | 28 59.0 | 29 3.8 | 27 39.8 | 56 10.8 | 116 22.3 | 176 33.9 | |
| 57 | 28 44.3 | 28 49.0 | 27 25.7 | 57 10.9 | 117 22.3 | 177 33.8 | | 57 | 28 59.3 | 29 4.1 | 27 40.0 | 57 11.0 | 117 22.5 | 177 34.1 | |
| 58 | 28 44.5 | 28 49.3 | 27 25.9 | 58 11.1 | 118 22.5 | 178 34.0 | | 58 | 28 59.5 | 29 4.3 | 27 40.3 | 58 11.2 | 118 22.7 | 178 34.3 | |
| 59 | 28 44.8 | 28 49.5 | 27 26.2 | 59 11.3 | 119 22.7 | 179 34.2 | | 59 | 28 59.8 | 29 4.6 | 27 40.5 | 59 11.4 | 119 22.9 | 179 34.5 | |
| 60 | 28 45.0 | 28 49.8 | 27 26.4 | 60 11.5 | 120 22.9 | 180 34.4 | | 60 | 29 .0 | 29 4.8 | 27 40.7 | 60 11.6 | 120 23.1 | 180 34.7 | |

1 h 56 min

| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|---|--------------------|----------------------|--------------|------------|------------|------------|---|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | |
| o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' | o | ' |
| 0 | 29 .0 | 29 4.8 | 27 40.7 | 0 .0 | 60 11.7 | 120 23.3 | | 0 | 29 15.0 | 29 19.9 | 27 55.1 | 0 .0 | 60 11.8 | 120 23.5 | |
| 1 | 29 .3 | 29 5.1 | 27 41.0 | 1 .2 | 61 11.8 | 121 23.5 | | 1 | 29 15.3 | 29 20.1 | 27 55.3 | 1 .2 | 61 11.9 | 121 23.7 | |
| 2 | 29 .5 | 29 5.3 | 27 41.2 | 2 .4 | 62 12.0 | 122 23.7 | | 2 | 29 15.5 | 29 20.4 | 27 55.5 | 2 .4 | 62 12.1 | 122 23.9 | |
| 3 | 29 .8 | 29 5.6 | 27 41.4 | 3 .6 | 63 12.2 | 123 23.9 | | 3 | 29 15.8 | 29 20.6 | 27 55.8 | 3 .6 | 63 12.3 | 123 24.1 | |
| 4 | 29 1.0 | 29 5.8 | 27 41.7 | 4 .8 | 64 12.4 | 124 24.1 | | 4 | 29 16.0 | 29 20.9 | 27 56.0 | 4 .8 | 64 12.5 | 124 24.3 | |
| 5 | 29 1.3 | 29 6.1 | 27 41.9 | 5 1.0 | 65 12.6 | 125 24.3 | | 5 | 29 16.3 | 29 21.1 | 27 56.2 | 5 1.0 | 65 12.7 | 125 24.5 | |
| 6 | 29 1.5 | 29 6.3 | 27 42.2 | 6 1.2 | 66 12.8 | 126 24.5 | | 6 | 29 16.5 | 29 21.4 | 27 56.5 | 6 1.2 | 66 12.9 | 126 24.7 | |
| 7 | 29 1.8 | 29 6.6 | 27 42.4 | 7 1.4 | 67 13.0 | 127 24.7 | | 7 | 29 16.8 | 29 21.6 | 27 56.7 | 7 1.4 | 67 13.1 | 127 24.9 | |
| 8 | 29 2.0 | 29 6.8 | 27 42.6 | 8 1.6 | 68 13.2 | 128 24.9 | | 8 | 29 17.0 | 29 21.9 | 27 57.0 | 8 1.6 | 68 13.3 | 128 25.1 | |
| 9 | 29 2.3 | 29 7.1 | 27 42.9 | 9 1.7 | 69 13.4 | 129 25.0 | | 9 | 29 17.3 | 29 22.1 | 27 57.2 | 9 1.8 | 69 13.5 | 129 25.3 | |
| 10 | 29 2.5 | 29 7.3 | 27 43.1 | 10 1.9 | 70 13.6 | 130 25.2 | | 10 | 29 17.5 | 29 22.4 | 27 57.4 | 10 2.0 | 70 13.7 | 130 25.5 | |
| 11 | 29 2.8 | 29 7.6 | 27 43.4 | 11 2.1 | 71 13.8 | 131 25.4 | | 11 | 29 17.8 | 29 22.6 | 27 57.7 | 11 2.2 | 71 13.9 | 131 25.7 | |
| 12 | 29 3.0 | 29 7.8 | 27 43.6 | 12 2.3 | 72 14.0 | 132 25.6 | | 12 | 29 18.0 | 29 22.9 | 27 57.9 | 12 2.4 | 72 14.1 | 132 25.9 | |
| 13 | 29 3.3 | 29 8.1 | 27 43.8 | 13 2.5 | 73 14.2 | 133 25.8 | | 13 | 29 18.3 | 29 23.1 | 27 58.2 | 13 2.5 | 73 14.3 | 133 26.0 | |
| 14 | 29 3.5 | 29 8.3 | 27 44.1 | 14 2.7 | 74 14.4 | 134 26.0 | | 14 | 29 18.5 | 29 23.4 | 27 58.4 | 14 2.7 | 74 14.5 | 134 26.2 | |
| 15 | 29 3.8 | 29 8.6 | 27 44.3 | 15 2.9 | 75 14.6 | 135 26.2 | | 15 | 29 18.8 | 29 23.6 | 27 58.6 | 15 2.9 | 75 14.7 | 135 26.4 | |
| 16 | 29 4.0 | 29 8.8 | 27 44.6 | 16 3.1 | 76 14.8 | 136 26.4 | | 16 | 29 19.0 | 29 23.9 | 27 58.9 | 16 3.1 | 76 14.9 | 136 26.6 | |
| 17 | 29 4.3 | 29 9.1 | 27 44.8 | 17 3.3 | 77 15.0 | 137 26.6 | | 17 | 29 19.3 | 29 24.1 | 27 59.1 | 17 3.3 | 77 15.1 | 137 26.8 | |
| 18 | 29 4.5 | 29 9.3 | 27 45.0 | 18 3.5 | 78 15.1 | 138 26.8 | | 18 | 29 19.5 | 29 24.4 | 27 59.3 | 18 3.5 | 78 15.3 | 138 27.0 | |
| 19 | 29 4.8 | 29 9.6 | 27 45.3 | 19 3.7 | 79 15.3 | 139 27.0 | | 19 | 29 19.8 | 29 24.6 | 27 59.6 | 19 3.7 | 79 15.5 | 139 27.2 | |
| 20 | 29 5.0 | 29 9.8 | 27 45.5 | 20 3.9 | 80 15.5 | 140 27.2 | | 20 | 29 20.0 | 29 24.9 | 27 59.8 | 20 3.9 | 80 15.7 | 140 27.4 | |
| 21 | 29 5.3 | 29 10.1 | 27 45.7 | 21 4.1 | 81 15.7 | 141 27.4 | | 21 | 29 20.3 | 29 25.1 | 28 .1 | 21 4.1 | 81 15.9 | 141 27.6 | |
| 22 | 29 5.5 | 29 10.3 | 27 46.0 | 22 4.3 | 82 15.9 | 142 27.6 | | 22 | 29 20.5 | 29 25.4 | 28 .3 | 22 4.3 | 82 16.1 | 142 27.8 | |
| 23 | 29 5.8 | 29 10.6 | 27 46.2 | 23 4.5 | 83 16.1 | 143 27.8 | | 23 | 29 20.8 | 29 25.6 | 28 .5 | 23 4.5 | 83 16.3 | 143 28.0 | |
| 24 | 29 6.0 | 29 10.9 | 27 46.5 | 24 4.7 | 84 16.3 | 144 28.0 | | 24 | 29 21.0 | 29 25.9 | 28 .8 | 24 4.7 | 84 16.5 | 144 28.2 | |
| 25 | 29 6.3 | 29 11.1 | 27 46.7 | 25 4.9 | 85 16.5 | 145 28.2 | | 25 | 29 21.3 | 29 26.1 | 28 1.0 | 25 4.9 | 85 16.6 | 145 28.4 | |
| 26 | 29 6.5 | 29 11.4 | 27 46.9 | 26 5.0 | 86 16.7 | 146 28.3 | | 26 | 29 21.5 | 29 26.4 | 28 1.3 | 26 5.1 | 86 16.8 | 146 28.6 | |
| 27 | 29 6.8 | 29 11.6 | 27 47.2 | 27 5.2 | 87 16.9 | 147 28.5 | | 27 | 29 21.8 | 29 26.6 | 28 1.5 | 27 5.3 | 87 17.0 | 147 28.8 | |
| 28 | 29 7.0 | 29 11.9 | 27 47.4 | 28 5.4 | 88 17.1 | 148 28.7 | | 28 | 29 22.0 | 29 26.9 | 28 1.7 | 28 5.5 | 88 17.2 | 148 29.0 | |
| 29 | 29 7.3 | 29 12.1 | 27 47.7 | 29 5.6 | 89 17.3 | 149 28.9 | | 29 | 29 22.3 | 29 27.1 | 28 2.0 | 29 5.7 | 89 17.4 | 149 29.2 | |
| 30 | 29 7.5 | 29 12.4 | 27 47.9 | 30 5.8 | 90 17.5 | 150 29.1 | | 30 | 29 22.5 | 29 27.4 | 28 2.2 | 30 5.9 | 90 17.6 | 150 29.4 | |
| 31 | 29 7.8 | 29 12.6 | 27 48.1 | 31 6.0 | 91 17.7 | 151 29.3 | | 31 | 29 22.8 | 29 27.6 | 28 2.4 | 31 6.1 | 91 17.8 | 151 29.6 | |
| 32 | 29 8.0 | 29 12.9 | 27 48.4 | 32 6.2 | 92 17.9 | 152 29.5 | | 32 | 29 23.0 | 29 27.9 | 28 2.7 | 32 6.3 | 92 18.0 | 152 29.8 | |
| 33 | 29 8.3 | 29 13.1 | 27 48.6 | 33 6.4 | 93 18.1 | 153 29.7 | | 33 | 29 23.3 | 29 28.1 | 28 2.9 | 33 6.5 | 93 18.2 | 153 30.0 | |
| 34 | 29 8.5 | 29 13.4 | 27 48.8 | 34 6.6 | 94 18.3 | 154 29.9 | | 34 | 29 23.5 | 29 28.4 | 28 3.2 | 34 6.7 | 94 18.4 | 154 30.2 | |
| 35 | 29 8.8 | 29 13.6 | 27 49.1 | 35 6.8 | 95 18.4 | 155 30.1 | | 35 | 29 23.8 | 29 28.6 | 28 3.4 | 35 6.9 | 95 18.6 | 155 30.4 | |
| 36 | 29 9.0 | 29 13.9 | 27 49.3 | 36 7.0 | 96 18.6 | 156 30.3 | | 36 | 29 24.0 | 29 28.9 | 28 3.6 | 36 7.1 | 96 18.8 | 156 30.6 | |
| 37 | 29 9.3 | 29 14.1 | 27 49.6 | 37 7.2 | 97 18.8 | 157 30.5 | | 37 | 29 24.3 | 29 29.2 | 28 3.9 | 37 7.2 | 97 19.0 | 157 30.7 | |
| 38 | 29 9.4 | 29 14.4 | 27 49.8 | 38 7.4 | 98 19.0 | 158 30.7 | | 38 | 29 24.5 | 29 29.4 | 28 4.1 | 38 7.4 | 98 19.2 | 158 30.9 | |
| 39 | 29 9.6 | 29 14.6 | 27 50.0 | 39 7.6 | 99 19.2 | 159 30.9 | | 39 | 29 24.8 | 29 29.7 | 28 4.4 | 39 7.6 | 99 19.4 | 159 31.1 | |
| 40 | 29 10.0 | 29 14.9 | 27 50.3 | 40 7.8 | 100 19.4 | 160 31.1 | | 40 | 29 25.0 | 29 29.9 | 28 4.6 | 40 7.8 | 100 19.6 | 160 31.3 | |
| 41 | 29 10.3 | 29 15.1 | 27 50.5 | 41 8.0 | 101 19.6 | 161 31.3 | | 41 | 29 25.3 | 29 30.2 | 28 4.8 | 41 8.0 | 101 19.8 | 161 31.5 | |
| 42 | 29 10.5 | 29 15.4 | 27 50.8 | 42 8.2 | 102 19.8 | 162 31.5 | | 42 | 29 25.5 | 29 30.4 | 28 5.1 | 42 8.2 | 102 20.0 | 162 31.7 | |
| 43 | 29 10.8 | 29 15.6 | 27 51.0 | 43 8.3 | 103 20.0 | 163 31.6 | | 43 | 29 25.8 | 29 30.7 | 28 5.3 | 43 8.4 | 103 20.2 | 163 31.9 | |
| 44 | 29 11.0 | 29 15.9 | 27 51.2 | 44 8.5 | 104 20.2 | 164 31.8 | | 44 | 29 26.0 | 29 30.9 | 28 5.5 | 44 8.6 | 104 20.4 | 164 32.1 | |
| 45 | 29 11.3 | 29 16.1 | 27 51.5 | 45 8.7 | 105 20.4 | 165 32.0 | | 45 | 29 26.3 | 29 31.2 | 28 5.8 | 45 8.8 | 105 20.6 | 165 32.3 | |
| 46 | 29 11.5 | 29 16.4 | 27 51.7 | 46 8.9 | 106 20.6 | 166 32.2 | | 46 | 29 26.5 | 29 31.4 | 28 6.0 | 46 9.0 | 106 20.8 | 166 32.5 | |
| 47 | 29 11.8 | 29 16.6 | 27 51.9 | 47 9.1 | 107 20.8 | 167 32.4 | | 47 | 29 26.8 | 29 31.7 | 28 6.3 | 47 9.2 | 107 21.0 | 167 32.7 | |
| 48 | 29 12.0 | 29 16.9 | 27 52.2 | 48 9.3 | 108 21.0 | 168 32.6 | | 48 | 29 27.0 | 29 31.9 | 28 6.5 | 48 9.4 | 108 21.2 | 168 32.9 | |
| 49 | 29 12.3 | 29 17.1 | 27 52.4 | 49 9.5 | 109 21.2 | 169 32.8 | | 49 | 29 27.3 | 29 32.2 | 28 6.7 | 49 9.6 | 109 21.3 | 169 33.1 | |
| 50 | 29 12.5 | 29 17.4 | 27 52.7 | 50 9.7 | 110 21.4 | 170 33.0 | | 50 | 29 27.5 | 29 32.4 | 28 7.0 | 50 9.8 | 110 21.5 | 170 33.3 | |
| 51 | 29 12.8 | 29 17.6 | 27 52.9 | 51 9.9 | 111 21.6 | 171 33.2 | | 51 | 29 27.8 | 29 32.7 | 28 7.2 | 51 10.0 | 111 21.7 | 171 33.5 | |
| 52 | 29 13.0 | 29 17.9 | 27 53.1 | 52 10.1 | 112 21.7 | 172 33.4 | | 52 | 29 28.0 | 29 32.9 | 28 7.5 | 52 10.2 | 112 21.9 | 172 33.7 | |
| 53 | 29 13.3 | 29 18.1 | 27 53.4 | 53 10.3 | 113 21.9 | 173 33.6 | | 53 | 29 28.3 | 29 33.2 | 28 7.7 | 53 10.4 | 113 22.1 | 173 33.9 | |
| 54 | 29 13.5 | 29 18.4 | 27 53.6 | 54 10.5 | 114 22.1 | 174 33.8 | | 54 | 29 28.5 | 29 33.4 | 28 7.9 | 54 10.6 | 114 22.3 | 174 34.1 | |
| 55 | 29 13.8 | 29 18.6 | 27 53.9 | 55 10.7 | 115 22.3 | 175 34.0 | | 55 | 29 28.8 | 29 33.7 | 28 8.2 | 55 10.8 | 115 22.5 | 175 34.3 | |
| 56 | 29 14.0 | 29 18.9 | 27 54.1 | 56 10.9 | 116 22.5 | 176 34.2 | | 56 | 29 29.0 | 29 33.9 | 28 8.4 | 56 11.0 | 116 22.7 | 176 34.5 | |
| 57 | 29 14.3 | 29 19.1 | 27 54.3 | 57 11.1 | 117 22.7 | 177 34.4 | | 57 | 29 29.3 | 29 34.2 | 28 8.7 | 57 11.2 | 117 22.9 | 177 34.7 | |
| 58 | 29 14.5 | 29 19.4 | 27 54.6 | 58 11.3 | 118 22.9 | 178 34.6 | | 58 | 29 29.5 | 29 34.4 | 28 8.9 | 58 11.4 | 118 23.1 | 178 34.9 | |
| 59 | 29 14.8 | 29 19.6 | 27 54.8 | 59 11.5 | 119 23.1 | 179 34.8 | | 59 | 29 29.8 | 29 34.7 | 28 9.1 | 59 11.6 | 119 23.3 | 179 35.1 | |
| 60 | 29 15.0 | 29 19.9 | 27 55.1 | 60 11.7 | 120 23.3 | 180 35.0 | | 60 | 29 30.0 | 29 34.9 | 28 9.4 | 60 11.8 | 120 23.5 | 180 35.3 | |

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| POPRAVKA ČASOVNOG UGLA | | | | | | | | POPRAVKA DR | | | | | | | |
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| POPRAVKA ČASOVNOG UGLA | | | | | | | POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Mjeseca i planeta | | | | | | |
|------------------------|--------------------|----------------------|--------------|------------|------------|------------|---|--------------------|----------------------|--------------|------------|------------|------------|
| S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. | S | SUNCA I PLANETA | PROLJEĆNE TAČKE ° | MJESECA ⟨ | Δ popr. | Δ popr. | Δ popr. |
| o | / | o | / | o | / | o | o | / | o | / | o | / | o |
| 0 | 29 30.0 | 29 34.9 | 28 9.4 | 0 .0 | 60 11.9 | 120 23.7 | 0 | 29 45.0 | 29 50.0 | 28 23.7 | 0 .0 | 60 12.0 | 120 23.9 |
| 1 | 29 30.3 | 29 35.2 | 28 9.6 | 1 .2 | 61 12.0 | 121 23.9 | 1 | 29 45.3 | 29 50.2 | 28 23.9 | 1 .2 | 61 12.1 | 121 24.1 |
| 2 | 29 30.5 | 29 35.4 | 28 9.8 | 2 .4 | 62 12.2 | 122 24.1 | 2 | 29 45.5 | 29 50.5 | 28 24.2 | 2 .4 | 62 12.3 | 122 24.3 |
| 3 | 29 30.8 | 29 35.7 | 28 10.1 | 3 .6 | 63 12.4 | 123 24.3 | 3 | 29 45.8 | 29 50.7 | 28 24.4 | 3 .6 | 63 12.5 | 123 24.5 |
| 4 | 29 31.0 | 29 35.9 | 28 10.3 | 4 .8 | 64 12.6 | 124 24.5 | 4 | 29 46.0 | 29 51.0 | 28 24.6 | 4 .8 | 64 12.7 | 124 24.7 |
| 5 | 29 31.3 | 29 36.2 | 28 10.6 | 5 1.0 | 65 12.8 | 125 24.7 | 5 | 29 46.3 | 29 51.2 | 28 24.9 | 5 1.0 | 65 12.9 | 125 24.9 |
| 6 | 29 31.5 | 29 36.4 | 28 10.8 | 6 1.2 | 66 13.0 | 126 24.9 | 6 | 29 46.5 | 29 51.5 | 28 25.1 | 6 1.2 | 66 13.1 | 126 25.1 |
| 7 | 29 31.8 | 29 36.7 | 28 11.0 | 7 1.4 | 67 13.2 | 127 25.1 | 7 | 29 46.8 | 29 51.7 | 28 25.4 | 7 1.4 | 67 13.3 | 127 25.3 |
| 8 | 29 32.0 | 29 36.9 | 28 11.3 | 8 1.6 | 68 13.4 | 128 25.3 | 8 | 29 47.0 | 29 52.0 | 28 25.6 | 8 1.6 | 68 13.5 | 128 25.5 |
| 9 | 29 32.3 | 29 37.2 | 28 11.5 | 9 1.8 | 69 13.6 | 129 25.5 | 9 | 29 47.3 | 29 52.2 | 28 25.8 | 9 1.8 | 69 13.7 | 129 25.7 |
| 10 | 29 32.5 | 29 37.4 | 28 11.8 | 10 2.0 | 70 13.8 | 130 25.7 | 10 | 29 47.5 | 29 52.5 | 28 26.1 | 10 2.0 | 70 13.9 | 130 25.9 |
| 11 | 29 32.8 | 29 37.7 | 28 12.0 | 11 2.2 | 71 14.0 | 131 25.9 | 11 | 29 47.8 | 29 52.7 | 28 26.3 | 11 2.2 | 71 14.1 | 131 26.1 |
| 12 | 29 33.0 | 29 37.9 | 28 12.2 | 12 2.4 | 72 14.2 | 132 26.1 | 12 | 29 48.0 | 29 53.0 | 28 26.5 | 12 2.4 | 72 14.3 | 132 26.3 |
| 13 | 29 33.3 | 29 38.2 | 28 12.5 | 13 2.6 | 73 14.4 | 133 26.3 | 13 | 29 48.3 | 29 53.2 | 28 26.8 | 13 2.6 | 73 14.5 | 133 26.5 |
| 14 | 29 33.5 | 29 38.4 | 28 12.7 | 14 2.8 | 74 14.6 | 134 26.5 | 14 | 29 48.5 | 29 53.5 | 28 27.0 | 14 2.8 | 74 14.7 | 134 26.7 |
| 15 | 29 33.8 | 29 38.7 | 28 12.9 | 15 3.0 | 75 14.8 | 135 26.7 | 15 | 29 48.8 | 29 53.7 | 28 27.3 | 15 3.0 | 75 14.9 | 135 26.9 |
| 16 | 29 34.0 | 29 38.9 | 28 13.2 | 16 3.2 | 76 15.0 | 136 26.9 | 16 | 29 49.0 | 29 54.0 | 28 27.5 | 16 3.2 | 76 15.1 | 136 27.1 |
| 17 | 29 34.3 | 29 39.2 | 28 13.4 | 17 3.4 | 77 15.2 | 137 27.1 | 17 | 29 49.3 | 29 54.2 | 28 27.7 | 17 3.4 | 77 15.3 | 137 27.3 |
| 18 | 29 34.5 | 29 39.4 | 28 13.7 | 18 3.6 | 78 15.4 | 138 27.3 | 18 | 29 49.5 | 29 54.5 | 28 28.0 | 18 3.6 | 78 15.5 | 138 27.5 |
| 19 | 29 34.8 | 29 39.7 | 28 13.9 | 19 3.8 | 79 15.6 | 139 27.5 | 19 | 29 49.8 | 29 54.7 | 28 28.2 | 19 3.8 | 79 15.7 | 139 27.7 |
| 20 | 29 35.0 | 29 39.9 | 28 14.1 | 20 4.0 | 80 15.8 | 140 27.7 | 20 | 29 50.0 | 29 55.0 | 28 28.5 | 20 4.0 | 80 15.9 | 140 27.9 |
| 21 | 29 35.3 | 29 40.2 | 28 14.4 | 21 4.1 | 81 16.0 | 141 27.8 | 21 | 29 50.3 | 29 55.2 | 28 28.7 | 21 4.2 | 81 16.1 | 141 28.1 |
| 22 | 29 35.5 | 29 40.4 | 28 14.6 | 22 4.3 | 82 16.2 | 142 28.0 | 22 | 29 50.5 | 29 55.5 | 28 28.9 | 22 4.4 | 82 16.3 | 142 28.3 |
| 23 | 29 35.8 | 29 40.7 | 28 14.9 | 23 4.5 | 83 16.4 | 143 28.2 | 23 | 29 50.8 | 29 55.7 | 28 29.2 | 23 4.6 | 83 16.5 | 143 28.5 |
| 24 | 29 36.0 | 29 40.9 | 28 15.1 | 24 4.7 | 84 16.6 | 144 28.4 | 24 | 29 51.0 | 29 56.0 | 28 29.4 | 24 4.8 | 84 16.7 | 144 28.7 |
| 25 | 29 36.3 | 29 41.2 | 28 15.3 | 25 4.9 | 85 16.8 | 145 28.6 | 25 | 29 51.3 | 29 56.2 | 28 29.6 | 25 5.0 | 85 16.9 | 145 28.9 |
| 26 | 29 36.5 | 29 41.4 | 28 15.6 | 26 5.1 | 86 17.0 | 146 28.8 | 26 | 29 51.5 | 29 56.5 | 28 29.9 | 26 5.2 | 86 17.1 | 146 29.1 |
| 27 | 29 36.8 | 29 41.7 | 28 15.8 | 27 5.3 | 87 17.2 | 147 29.0 | 27 | 29 51.8 | 29 56.7 | 28 30.1 | 27 5.4 | 87 17.3 | 147 29.3 |
| 28 | 29 37.0 | 29 41.9 | 28 16.0 | 28 5.5 | 88 17.4 | 148 29.2 | 28 | 29 52.0 | 29 57.0 | 28 30.4 | 28 5.6 | 88 17.5 | 148 29.5 |
| 29 | 29 37.3 | 29 42.2 | 28 16.3 | 29 5.7 | 89 17.6 | 149 29.4 | 29 | 29 52.3 | 29 57.2 | 28 30.6 | 29 5.8 | 89 17.7 | 149 29.7 |
| 30 | 29 37.5 | 29 42.4 | 28 16.5 | 30 5.9 | 90 17.8 | 150 29.6 | 30 | 29 52.5 | 29 57.5 | 28 30.8 | 30 6.0 | 90 17.9 | 150 29.9 |
| 31 | 29 37.8 | 29 42.7 | 28 16.8 | 31 6.1 | 91 18.0 | 151 29.8 | 31 | 29 52.8 | 29 57.7 | 28 31.1 | 31 6.2 | 91 18.1 | 151 30.1 |
| 32 | 29 38.0 | 29 42.9 | 28 17.0 | 32 6.3 | 92 18.2 | 152 30.0 | 32 | 29 53.0 | 29 58.0 | 28 31.3 | 32 6.4 | 92 18.3 | 152 30.3 |
| 33 | 29 38.3 | 29 43.2 | 28 17.2 | 33 6.5 | 93 18.4 | 153 30.2 | 33 | 29 53.3 | 29 58.2 | 28 31.6 | 33 6.6 | 93 18.5 | 153 30.5 |
| 34 | 29 38.5 | 29 43.4 | 28 17.5 | 34 6.7 | 94 18.6 | 154 30.4 | 34 | 29 53.5 | 29 58.5 | 28 31.8 | 34 6.8 | 94 18.7 | 154 30.7 |
| 35 | 29 38.8 | 29 43.7 | 28 17.7 | 35 6.9 | 95 18.8 | 155 30.6 | 35 | 29 53.8 | 29 58.7 | 28 32.0 | 35 7.0 | 95 18.9 | 155 30.9 |
| 36 | 29 39.0 | 29 43.9 | 28 18.0 | 36 7.1 | 96 19.0 | 156 30.8 | 36 | 29 54.0 | 29 59.0 | 28 32.3 | 36 7.2 | 96 19.1 | 156 31.1 |
| 37 | 29 39.3 | 29 44.2 | 28 18.2 | 37 7.3 | 97 19.2 | 157 31.0 | 37 | 29 54.3 | 29 59.2 | 28 32.5 | 37 7.4 | 97 19.3 | 157 31.3 |
| 38 | 29 39.5 | 29 44.4 | 28 18.4 | 38 7.5 | 98 19.4 | 158 31.2 | 38 | 29 54.5 | 29 59.5 | 28 32.8 | 38 7.6 | 98 19.5 | 158 31.5 |
| 39 | 29 39.8 | 29 44.7 | 28 18.7 | 39 7.7 | 99 19.6 | 159 31.4 | 39 | 29 54.8 | 29 59.7 | 28 33.0 | 39 7.8 | 99 19.7 | 159 31.7 |
| 40 | 29 40.0 | 29 44.9 | 28 18.9 | 40 7.9 | 100 19.8 | 160 31.6 | 40 | 29 55.0 | 29 60.0 | 28 33.2 | 40 8.0 | 100 19.9 | 160 31.9 |
| 41 | 29 40.3 | 29 45.2 | 28 19.1 | 41 8.1 | 101 19.9 | 161 31.8 | 41 | 29 55.3 | 29 60.2 | 28 33.5 | 41 8.2 | 101 20.1 | 161 32.1 |
| 42 | 29 40.5 | 29 45.4 | 28 19.4 | 42 8.3 | 102 20.1 | 162 32.0 | 42 | 29 55.5 | 29 60.5 | 28 33.7 | 42 8.4 | 102 20.3 | 162 32.3 |
| 43 | 29 40.8 | 29 45.7 | 28 19.6 | 43 8.5 | 103 20.3 | 163 32.2 | 43 | 29 55.8 | 29 60.7 | 28 33.9 | 43 8.6 | 103 20.5 | 163 32.5 |
| 44 | 29 41.0 | 29 45.9 | 28 19.9 | 44 8.7 | 104 20.5 | 164 32.4 | 44 | 29 56.0 | 29 61.0 | 28 34.2 | 44 8.8 | 104 20.7 | 164 32.7 |
| 45 | 29 41.3 | 29 46.2 | 28 20.1 | 45 8.9 | 105 20.7 | 165 32.6 | 45 | 29 56.3 | 29 61.2 | 28 34.4 | 45 9.0 | 105 20.9 | 165 32.9 |
| 46 | 29 41.5 | 29 46.4 | 28 20.3 | 46 9.1 | 106 20.9 | 166 32.8 | 46 | 29 56.5 | 29 61.5 | 28 34.7 | 46 9.2 | 106 21.1 | 166 33.1 |
| 47 | 29 41.8 | 29 46.7 | 28 20.6 | 47 9.3 | 107 21.1 | 167 33.0 | 47 | 29 56.8 | 29 61.7 | 28 34.9 | 47 9.4 | 107 21.3 | 167 33.3 |
| 48 | 29 42.0 | 29 47.0 | 28 20.8 | 48 9.5 | 108 21.3 | 168 33.2 | 48 | 29 57.0 | 29 62.0 | 28 35.1 | 48 9.6 | 108 21.5 | 168 33.5 |
| 49 | 29 42.3 | 29 47.2 | 28 21.1 | 49 9.7 | 109 21.5 | 169 33.4 | 49 | 29 57.3 | 29 62.2 | 28 35.4 | 49 9.8 | 109 21.7 | 169 33.7 |
| 50 | 29 42.5 | 29 47.5 | 28 21.3 | 50 9.9 | 110 21.7 | 170 33.6 | 50 | 29 57.5 | 29 62.5 | 28 35.6 | 50 10.0 | 110 21.9 | 170 33.9 |
| 51 | 29 42.8 | 29 47.7 | 28 21.5 | 51 10.1 | 111 21.9 | 171 33.8 | 51 | 29 57.8 | 29 62.7 | 28 35.9 | 51 10.2 | 111 22.1 | 171 34.1 |
| 52 | 29 43.0 | 29 48.0 | 28 21.8 | 52 10.3 | 112 22.1 | 172 34.0 | 52 | 29 58.0 | 29 63.0 | 28 36.1 | 52 10.4 | 112 22.3 | 172 34.3 |
| 53 | 29 43.3 | 29 48.2 | 28 22.0 | 53 10.5 | 113 22.3 | 173 34.2 | 53 | 29 58.3 | 29 63.2 | 28 36.3 | 53 10.6 | 113 22.5 | 173 34.5 |
| 54 | 29 43.5 | 29 48.5 | 28 22.3 | 54 10.7 | 114 22.5 | 174 34.4 | 54 | 29 58.5 | 29 63.5 | 28 36.6 | 54 10.8 | 114 22.7 | 174 34.7 |
| 55 | 29 43.8 | 29 48.7 | 28 22.5 | 55 10.9 | 115 22.7 | 175 34.6 | 55 | 29 58.8 | 29 63.7 | 28 36.8 | 55 11.0 | 115 22.9 | 175 34.9 |
| 56 | 29 44.0 | 29 49.0 | 28 22.7 | 56 11.1 | 116 22.9 | 176 34.8 | 56 | 29 59.0 | 29 64.0 | 28 37.0 | 56 11.2 | 116 23.1 | 176 35.1 |
| 57 | 29 44.3 | 29 49.2 | 28 23.0 | 57 11.3 | 117 23.1 | 177 35.0 | 57 | 29 59.3 | 29 64.2 | 28 37.3 | 57 11.4 | 117 23.3 | 177 35.3 |
| 58 | 29 44.5 | 29 49.5 | 28 23.2 | 58 11.5 | 118 23.3 | 178 35.2 | 58 | 29 59.5 | 29 64.5 | 28 37.5 | 58 11.6 | 118 23.5 | 178 35.5 |
| 59 | 29 44.8 | 29 49.7 | 28 23.4 | 59 11.7 | 119 23.5 | 179 35.4 | 59 | 29 59.8 | 29 64.7 | 28 37.8 | 59 11.8 | 119 23.7 | 179 35.7 |
| 60 | 29 45.0 | 29 50.0 | 28 23.7 | 60 11.9 | 120 23.7 | 180 35.6 | 60 | 30 .0 | 30 5.0 | 28 38.0 | 60 12.0 | 120 23.9 | 180 35.9 |

| POPRAVKA ČASOVNOG UGLA | | |
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TABLICA ZA PRETVARANJE

| UGAOVNIH U VREMENSKE VREDNOSTI | | | | | | | | | | | | VREMENSKIH U UGAONE | | | | | | | | | | |
|--------------------------------|---|-----|-----|---|-----|-----|----|-----|-----|----|-----|---------------------|-----|----|-----|----|----|----|-----|----|------|------|
| o | h | min | o | h | min | o | h | min | o | h | min | r | min | s | " | s | h | o | min | o | ' | s |
| | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 0 | 0 | 60 | 4 | 0 | 120 | 8 | 0 | 180 | 12 | 0 | 240 | 16 | 0 | 300 | 20 | 0 | 0 | 0 | 0 | .00 | |
| 1 | 0 | 4 | 61 | 4 | 4 | 121 | 8 | 4 | 181 | 12 | 4 | 241 | 16 | 4 | 301 | 20 | 4 | 1 | 0 | 4 | .07 | |
| 2 | 0 | 8 | 62 | 4 | 8 | 122 | 8 | 8 | 182 | 12 | 8 | 242 | 16 | 8 | 302 | 20 | 8 | 2 | 0 | 8 | .13 | |
| 3 | 0 | 12 | 63 | 4 | 12 | 123 | 8 | 12 | 183 | 12 | 12 | 243 | 16 | 12 | 303 | 20 | 12 | 3 | 0 | 12 | .20 | |
| 4 | 0 | 16 | 64 | 4 | 16 | 124 | 8 | 16 | 184 | 12 | 16 | 244 | 16 | 16 | 304 | 20 | 16 | 4 | 0 | 16 | .27 | |
| 5 | 0 | 20 | 65 | 4 | 20 | 125 | 8 | 20 | 185 | 12 | 20 | 245 | 16 | 20 | 305 | 20 | 20 | 5 | 0 | 20 | .33 | |
| 6 | 0 | 24 | 66 | 4 | 24 | 126 | 8 | 24 | 186 | 12 | 24 | 246 | 16 | 24 | 306 | 20 | 24 | 6 | 0 | 24 | .40 | |
| 7 | 0 | 28 | 67 | 4 | 28 | 127 | 8 | 28 | 187 | 12 | 28 | 247 | 16 | 28 | 307 | 20 | 28 | 7 | 0 | 28 | .47 | |
| 8 | 0 | 32 | 68 | 4 | 32 | 128 | 8 | 32 | 188 | 12 | 32 | 248 | 16 | 32 | 308 | 20 | 32 | 8 | 0 | 32 | .53 | |
| 9 | 0 | 36 | 69 | 4 | 36 | 129 | 8 | 36 | 189 | 12 | 36 | 249 | 16 | 36 | 309 | 20 | 36 | 9 | 0 | 36 | .60 | |
| 10 | 0 | 40 | 70 | 4 | 40 | 130 | 8 | 40 | 190 | 12 | 40 | 250 | 16 | 40 | 310 | 20 | 40 | 10 | 0 | 40 | .67 | |
| 11 | 0 | 44 | 71 | 4 | 44 | 131 | 8 | 44 | 191 | 12 | 44 | 251 | 16 | 44 | 311 | 20 | 44 | 11 | 0 | 44 | .73 | |
| 12 | 0 | 48 | 72 | 4 | 48 | 132 | 8 | 48 | 192 | 12 | 48 | 252 | 16 | 48 | 312 | 20 | 48 | 12 | 0 | 48 | .80 | |
| 13 | 0 | 52 | 73 | 4 | 52 | 133 | 8 | 52 | 193 | 12 | 52 | 253 | 16 | 52 | 313 | 20 | 52 | 13 | 0 | 52 | .87 | |
| 14 | 0 | 56 | 74 | 4 | 56 | 134 | 8 | 56 | 194 | 12 | 56 | 254 | 16 | 56 | 314 | 20 | 56 | 14 | 0 | 56 | .93 | |
| 15 | 1 | 0 | 75 | 5 | 0 | 135 | 9 | 0 | 195 | 13 | 0 | 255 | 17 | 0 | 315 | 21 | 0 | 15 | 1 | 0 | 1.00 | |
| 16 | 1 | 4 | 76 | 5 | 4 | 136 | 9 | 4 | 196 | 13 | 4 | 256 | 17 | 4 | 316 | 21 | 4 | 16 | 1 | 4 | 1.07 | |
| 17 | 1 | 8 | 77 | 5 | 8 | 137 | 9 | 8 | 197 | 13 | 8 | 257 | 17 | 8 | 317 | 21 | 8 | 17 | 1 | 8 | 1.13 | |
| 18 | 1 | 12 | 78 | 5 | 12 | 138 | 9 | 12 | 198 | 13 | 12 | 258 | 17 | 12 | 318 | 21 | 12 | 18 | 1 | 12 | 1.20 | |
| 19 | 1 | 16 | 79 | 5 | 16 | 139 | 9 | 16 | 199 | 13 | 16 | 259 | 17 | 16 | 319 | 21 | 16 | 19 | 1 | 16 | 1.27 | |
| 20 | 1 | 20 | 80 | 5 | 20 | 140 | 9 | 20 | 200 | 13 | 20 | 260 | 17 | 20 | 320 | 21 | 20 | 20 | 1 | 20 | 1.33 | |
| 21 | 1 | 24 | 81 | 5 | 24 | 141 | 9 | 24 | 201 | 13 | 24 | 261 | 17 | 24 | 321 | 21 | 24 | 21 | 1 | 24 | 1.40 | |
| 22 | 1 | 28 | 82 | 5 | 28 | 142 | 9 | 28 | 202 | 13 | 28 | 262 | 17 | 28 | 322 | 21 | 28 | 22 | 1 | 28 | 1.47 | |
| 23 | 1 | 32 | 83 | 5 | 32 | 143 | 9 | 32 | 203 | 13 | 32 | 263 | 17 | 32 | 323 | 21 | 32 | 23 | 1 | 32 | 1.53 | |
| 24 | 1 | 36 | 84 | 5 | 36 | 144 | 9 | 36 | 204 | 13 | 36 | 264 | 17 | 36 | 324 | 21 | 36 | 24 | 1 | 36 | 1.60 | |
| 25 | 1 | 40 | 85 | 5 | 40 | 145 | 9 | 40 | 205 | 13 | 40 | 265 | 17 | 40 | 325 | 21 | 40 | 25 | 1 | 40 | 1.67 | |
| 26 | 1 | 44 | 86 | 5 | 44 | 146 | 9 | 44 | 206 | 13 | 44 | 266 | 17 | 44 | 326 | 21 | 44 | 26 | 1 | 44 | 1.73 | |
| 27 | 1 | 48 | 87 | 5 | 48 | 147 | 9 | 48 | 207 | 13 | 48 | 267 | 17 | 48 | 327 | 21 | 48 | 27 | 1 | 48 | 1.80 | |
| 28 | 1 | 52 | 88 | 5 | 52 | 148 | 9 | 52 | 208 | 13 | 52 | 268 | 17 | 52 | 328 | 21 | 52 | 28 | 1 | 52 | 1.87 | |
| 29 | 1 | 56 | 89 | 5 | 56 | 149 | 9 | 56 | 209 | 13 | 56 | 269 | 17 | 56 | 329 | 21 | 56 | 29 | 1 | 56 | 1.93 | |
| 30 | 2 | 0 | 90 | 6 | 0 | 150 | 10 | 0 | 210 | 14 | 0 | 270 | 18 | 0 | 330 | 22 | 0 | 30 | 2 | 0 | 2.00 | |
| 31 | 2 | 4 | 91 | 6 | 4 | 151 | 10 | 4 | 211 | 14 | 4 | 271 | 18 | 4 | 331 | 22 | 4 | 31 | 2 | 4 | 2.07 | |
| 32 | 2 | 8 | 92 | 6 | 8 | 152 | 10 | 8 | 212 | 14 | 8 | 272 | 18 | 8 | 332 | 22 | 8 | 32 | 2 | 8 | 2.13 | |
| 33 | 2 | 12 | 93 | 6 | 12 | 153 | 10 | 12 | 213 | 14 | 12 | 273 | 18 | 12 | 333 | 22 | 12 | 33 | 2 | 12 | 2.20 | |
| 34 | 2 | 16 | 94 | 6 | 16 | 154 | 10 | 16 | 214 | 14 | 16 | 274 | 18 | 16 | 334 | 22 | 16 | 34 | 2 | 16 | 2.27 | |
| 35 | 2 | 20 | 95 | 6 | 20 | 155 | 10 | 20 | 215 | 14 | 20 | 275 | 18 | 20 | 335 | 22 | 20 | 35 | 2 | 20 | 2.33 | |
| 36 | 2 | 24 | 96 | 6 | 24 | 156 | 10 | 24 | 216 | 14 | 24 | 276 | 18 | 24 | 336 | 22 | 24 | 36 | 2 | 24 | 2.40 | |
| 37 | 2 | 28 | 97 | 6 | 28 | 157 | 10 | 28 | 217 | 14 | 28 | 277 | 18 | 28 | 337 | 22 | 28 | 37 | 2 | 28 | 2.47 | |
| 38 | 2 | 32 | 98 | 6 | 32 | 158 | 10 | 32 | 218 | 14 | 32 | 278 | 18 | 32 | 338 | 22 | 32 | 38 | 2 | 32 | 2.53 | |
| 39 | 2 | 36 | 99 | 6 | 36 | 159 | 10 | 36 | 219 | 14 | 36 | 279 | 18 | 36 | 339 | 22 | 36 | 39 | 2 | 36 | 2.60 | |
| 40 | 2 | 40 | 100 | 6 | 40 | 160 | 10 | 40 | 220 | 14 | 40 | 280 | 18 | 40 | 340 | 24 | 40 | 40 | 2 | 40 | 2.67 | |
| 41 | 2 | 44 | 101 | 6 | 44 | 161 | 10 | 44 | 221 | 14 | 44 | 281 | 18 | 44 | 341 | 24 | 44 | 41 | 2 | 44 | 2.73 | |
| 42 | 2 | 48 | 102 | 6 | 48 | 162 | 10 | 48 | 222 | 14 | 48 | 282 | 18 | 48 | 342 | 24 | 48 | 42 | 2 | 48 | 2.80 | |
| 43 | 2 | 52 | 103 | 6 | 52 | 163 | 10 | 52 | 223 | 14 | 52 | 283 | 18 | 52 | 343 | 24 | 52 | 43 | 2 | 52 | 2.87 | |
| 44 | 2 | 56 | 104 | 6 | 56 | 164 | 10 | 56 | 224 | 14 | 56 | 284 | 18 | 56 | 344 | 24 | 56 | 44 | 2 | 56 | 2.93 | |
| 45 | 3 | 0 | 105 | 7 | 0 | 165 | 11 | 0 | 225 | 15 | 0 | 285 | 19 | 0 | 345 | 23 | 0 | 45 | 3 | 0 | 3.00 | |
| 46 | 3 | 4 | 106 | 7 | 4 | 166 | 11 | 4 | 226 | 15 | 4 | 286 | 19 | 4 | 346 | 23 | 4 | 46 | 3 | 4 | 3.07 | |
| 47 | 3 | 8 | 107 | 7 | 8 | 167 | 11 | 8 | 227 | 15 | 8 | 287 | 19 | 8 | 347 | 23 | 8 | 47 | 3 | 8 | 3.13 | |
| 48 | 3 | 12 | 108 | 7 | 12 | 168 | 11 | 12 | 228 | 15 | 12 | 288 | 19 | 12 | 348 | 23 | 12 | 48 | 3 | 12 | 3.20 | |
| 49 | 3 | 16 | 109 | 7 | 16 | 169 | 11 | 16 | 229 | 15 | 16 | 289 | 19 | 16 | 349 | 23 | 16 | 49 | 3 | 16 | 3.27 | |
| 50 | 3 | 20 | 110 | 7 | 20 | 170 | 11 | 20 | 230 | 15 | 20 | 290 | 19 | 20 | 350 | 23 | 20 | 50 | 3 | 20 | 3.33 | |
| 51 | 3 | 24 | 111 | 7 | 24 | 171 | 11 | 24 | 231 | 15 | 24 | 291 | 19 | 24 | 351 | 23 | 24 | 51 | 3 | 24 | 3.40 | |
| 52 | 3 | 28 | 112 | 7 | 28 | 172 | 11 | 28 | 232 | 15 | 28 | 292 | 19 | 28 | 352 | 23 | 28 | 52 | 3 | 28 | 3.47 | |
| 53 | 3 | 32 | 113 | 7 | 32 | 173 | 11 | 32 | 233 | 15 | 32 | 293 | 19 | 32 | 353 | 23 | 32 | 53 | 3 | 32 | 3.53 | |
| 54 | 3 | 36 | 114 | 7 | 36 | 174 | 11 | 36 | 234 | 15 | 36 | 294 | 19 | 36 | 354 | 23 | 36 | 54 | 3 | 36 | 3.60 | |
| 55 | 3 | 40 | 115 | 7 | 40 | 175 | 11 | 40 | 235 | 15 | 40 | 295 | 19 | 40 | 355 | 23 | 40 | 55 | 3 | 40 | 3.67 | |
| 56 | 3 | 44 | 116 | 7 | 44 | 176 | 11 | 44 | 236 | 15 | 44 | 296 | 19 | 44 | 356 | 23 | 44 | 56 | 3 | 44 | 3.73 | |
| 57 | 3 | 48 | 117 | 7 | 48 | 177 | 11 | 48 | 237 | 15 | 48 | 297 | 19 | 48 | 357 | 23 | 48 | 57 | 3 | 48 | 3.80 | |
| 58 | 3 | 52 | 118 | 7 | 52 | 178 | 11 | 52 | 238 | 15 | 52 | 298 | 19 | 52 | 358 | 23 | 52 | 58 | 3 | 52 | 3.87 | |
| 59 | 3 | 56 | 119 | 7 | 56 | 179 | 11 | 56 | 239 | 15 | 56 | 299 | 19 | 56 | 359 | 23 | 56 | 59 | 3 | 56 | 3.93 | |
| 60 | 4 | 0 | 120 | 8 | 0 | 180 | 12 | 0 | 240 | 16 | 0 | 300 | 20 | 0 | 360 | 24 | 0 | 60 | 4 | 0 | 4.00 | |
| | | | | | | | | | | | | | | | | | | | | | .10 | 1.50 |

* * ★ * *

Uputstvo

ZA

UPOTREBU NAUTIČKOG GODIŠNJA

UPUTSTVO

za upotrebu Nautičkog godišnjaka

Nautički godišnjak se sastoji od dva osnovna dijela:

1. **Promjenljivog** (efemeride Sunca, Mjeseca, Venere, Marsa, Jupitera, Saturna ...) i
2. **Stalnog** dijela.

Efemeride se mijenjaju svake godine, dok su u stalnom dijelu prilozi koji se ne mijenjaju.

Efemeride sadrže:

- a) Mjesečeve mijene, perigej, apogej, vidljivost planeta, početke godišnjih doba, pomračenje Sunca i Mjeseca, te kalendar za 2012. godinu;
- b) časovni ugao i deklinaciju Sunca, Mjeseca, Venere, Marsa, Jupitera i Saturna, časovni ugao Proljećne tačke za svaki parni čas univerzalnog vremena sa jednočasovnim srednjim i stvarnim razlikama;
- c) vrijeme izlaza i zalaza Sunca i Mjeseca sa jednočasovnim promjenama za Mjesec, i trajanje građanskog i astronomskog sumraka za svaki datum za geografske širine od 60°N do 60°S ;
- d) vremensko izjednačenje za 00^{h} i 12^{h} univerzalnog vremena sa jednočasovnom promjenom, vrijeme gornjeg prolaza Sunca kroz meridijan u Griniču i prividni poluprečnik Sunca (r);
- e) vrijeme gornjeg prolaza Mjeseca kroz meridijan u Griniču sa jednočasovnom promjenom, horizontsku paralaksu Mjeseca i njegov prividni poluprečnik sa 00^{h} u Griniču. Dalje slijede starost Mjeseca u danima i glavne faze (mijene) za određene dane;
- f) vrijeme gornjeg prolaza planeta kroz meridijan Griniča, horizontsku paralaksu, surektascenciju i prividnu veličinu za 00^{h} univerzalnog vremena;
- g) surektascencije, deklinacije i vremena gornjih prolaza zvjezda kroz meridijan Griniča za svaki prvi dan u mjesecu;
- h) podatke za Sjevernjaču koje čine Tablice popravki I., II i III za određivanje geografske širine pomoću Sjevernjače i tablice azimuta Sjevernjače;
- i) ovo uputstvo.

Sadržaj **stalnog** dijela je:

- a) interpolacione tablice za izračunavanje trenutaka izlaza-zalaza Sunca i Mjeseca za $\varphi = 0^{\circ}$ do 30° i za $\varphi = 30^{\circ}$ do 60° ;
- b) interpolacione tablice za određivanje λ_V kao popravke srednjeg vremena pri izračunavanju trenutaka izlaza, zalaza i prolaza Mjeseca kroz meridijan;
- c) interpolacione tablice za popravku časovnog ugla Sunca i planeta, proljećne tačke i Mjeseca i za popravku drugog reda za časovni ugao navedenih nebeskih tijela. Tablice omogućuju i popravku deklinacije tih nebeskih tijela, određivanje časovnog ugla i deklinacije za bilo koji trenutak;
- d) pomoćne tablice za pretvaranje vremenskih u lučne vrednosti i obratno;
- e) zvanična i zonska vremena i karta zonskih i zvaničnih vremena;
- f) karte zvjezdanih nebala.

Primeri za rad sa Godišnjakom grupisani su, radi lakšeg pronalaženja, prema sličnosti. Za vrijeme svakog izračunavanja mora se voditi računa o predznaku koji je jednak važan kao i sama brojka, jer su sva izračunavanja algebarska, gde predznak određuje da li će se vršiti sabiranje ili oduzimanje.

PREGLED PRIMJERA ZA KORIŠĆENJE NAUTIČKOG GODIŠNJAKA

| | |
|---|----------|
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| 1.2. Određivanje časovnog ugla i deklinacije Mjeseca | 3, 4 |
| 1.3. Određivanje časovnog ugla i deklinacije planeta | 5, 6 |
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| 2.2. Određivanje izlaza i zalaza Mjeseca | 11, 12 |

| | |
|---|---------|
| 3. Određivanje gornjeg prolaza nebeskih tijela kroz meridijan | Primer: |
| 3.1. Određivanje gornjeg prolaza Sunca kroz meridijan | 13, 14 |
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| 3.3. Određivanje gornjeg prolaza planeta kroz meridijan | 17 |
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| 4. Sjevernača | |
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| 5. Pretvaranje raznih vrsta vremena | |
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| 5.2. Pretvaranje zvjezdanih vremena u zonsko i mjesno srednje vrijeme | 23 |
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1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE NEBESKIH TIJELA

Efemeride daju časovni ugao i deklinaciju Sunca, Mjeseca i planeta za svaki parni čas datuma, a pomoćne interpolacione tablice omogućavaju određivanje časovnog ugla i deklinacije za bilo koji trenutak.

Popravka časovnog ugla određuje se pomoću interpolacionih tablica u koloni „Popravka časovnog ugla“, a popravka drugog reda za časovni ugao na istoj strani u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Mjeseca i planeta“.

Prva popravka časovnog ugla određena je pod pretpostavkom da jednočasovne promjene časovnih uglova za Sunce iznose 15° , za proljećnu tačku $15^\circ 02'.5$ i za Mjesec $14^\circ 19'$. Popravka drugog reda časovnog ugla Sunca, Mjeseca i planeta jeste popravka tih srednjih promjena, jer stvarne časovne promjene časovnih uglova razlikuju se za veće ili manje vrijednosti od usvojenih srednjih promjena. Veličina Δ za račun popravke drugog reda nalazi se na dnu efemerida Sunca i planeta, za Mjesec desno od vrijednosti časovnog ugla, a za popravku drugog reda proljećne tačke ne uzima se u obzir jer su odstupanja od srednje vrijednosti $15^\circ 02'.5$ praktično zanemarljiva.

Određivanje deklinacije nekog nebeskog tijela za određeni trenutak vršimo na taj način da u efemeridama tog dana za parni čas pronađemo osnovnu vrijednost deklinacije. Popravku za određeni trenutak pronalazimo u interpolacionim tablicama u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Mjeseca i planeta“, a pomoću vrijednosti Δ .

1.1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE SUNCA

► PRIMJER 1. Odrediti mjesni časovni ugao i deklinaciju Sunca za 14. april 2012. godine u UT = $7^h 31^m 46^s$ na $\lambda = 96^\circ 14'.6E$.

a) časovni ugao

| | |
|---|---------------------------------------|
| Sa strane za 14. april S za 6^h | 269°56'.2 |
| Iz interpolacionih tablica za $1^h 31^m 46^s$ popravka časovnog ugla Sunca | 22°56'.5 |
| Iz interpolacionih tablica za $1^h 31^m$ popravka drugog reda za $S(\Delta = +2)$ | 0'.3 |
| <hr/> | |
| S | 292°53'.0 |
| +λ | + 96°14'.6 |
| <hr/> | |
| s | 389° 7'.6 → s _W = 29° 7'.6 |

b) deklinacija

| | |
|---|----------|
| Sa strane za 14. april δ za 6^h | +9°33'.9 |
| Iz interpol. tablica za $1^h 31^m$ popravka za $\delta(\Delta = +9)$.. | + 1'.4 |
| <hr/> | |
| δ | +9°35'.3 |

► PRIMJER 2. Odrediti mjesni časovni ugao i deklinaciju Sunca za 18. septembar 2012. godine u UT = $13^h 05^m 14^s$ na $\lambda = 28^\circ 53'.6W$.

a) časovni ugao

| | |
|---|---------------------------------------|
| Sa strane za 18. septembar S za 12^h | 1°29'.8 |
| Iz interpolacionih tablica za $1^h 5^m 14^s$ popravka časovnog ugla Sunca | 16°18'.5 |
| Popravka drugog reda za $S(\Delta = +2)$ | 0'.2 |
| <hr/> | |
| S | 17°48'.5 |
| +λ | - 28°53'.6 |
| <hr/> | |
| s _W | 348°54'.9 → s _E = 11° 5'.1 |

b) deklinacija

| | |
|---|----------|
| Sa strane za 18. septembar δ za 12^h | +1°36'.0 |
| Iz interpol. tablica za $1^h 5^m$ popravka za $\delta(\Delta = -10)$.. | - 1'.1 |
| δ | +1°34'.9 |

1.2. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE MJESECA

► PRIMJER 3. Odrediti mjesni časovni ugao i deklinaciju Mjeseca za 15. mart 2012. godine u UT = $8^{\circ}15'25''$ na $\lambda = 15^{\circ}32'.0W$.

a) časovni ugao

| | |
|---|------------|
| Sa strane za 15. mart S za 8^{h} | 24°47'.6 |
| Iz interpolacionih tablica za $0^{\text{h}}15^{\text{m}}25^{\text{s}}$ popravka časovnog ugla Mjeseca | 3°40'.7 |
| Iz interpol. tablica za $0^{\text{h}}15^{\text{m}}$ popravka za S($\Delta = + 67$) | 1'.7 |
| S | 28°30'.0 |
| +λ | - 15°32'.0 |

b) deklinacija

| | |
|---|--------------------|
| Sa strane za 15. mart δ za 8^{h} | $-21^{\circ}39'.4$ |
| Iz interpol. tablica za $0^{\text{h}}15^{\text{m}}$ popravka za $\delta(\Delta = 26)$ | $+ 0'.7$ |
| δ | $-21^{\circ}38'.7$ |

$$s_W \dots \quad 12^\circ 58'.6 \rightarrow s_E = 347^\circ 8'.4$$

► PRIM JER 4. Odrediti mjesni časovni ugao i deklinaciju Mjeseca za 20. jun 2012. godine u UT = $10^{\text{h}}31^{\text{m}}18^{\text{s}}$ na $\lambda = 34^{\circ}23'8''$.

a) časovni ugao

| | |
|---|---------------------|
| Sa strane za 20. jun S za 10° | $320^{\circ} 6'.6$ |
| Iz interpolacionih tablica za $0^{\circ}31'18''$ popravka časovnog ugla Mjeseca | $7^{\circ}28'.1$ |
| Iz interpol. tablica za $0^{\circ}31'$ popravka za $S(\Delta = 110)$ | $5'.8$ |
| | |
| S | $320^{\circ}40'.5$ |
| ± 1 | $+ 34^{\circ}23'.8$ |

b) deklinacija

| | |
|---|--------------------|
| Sa strane za 20. jun δ za 10° | $+20^{\circ}17'.6$ |
| Iz interpol. tablica za $0^{\circ}31'$ popravka za $\delta(\Delta = -43)$ | $-2'.3$ |
| <hr/> | |
| δ | $+20^{\circ}15'.3$ |

$$s_W \dots \quad 355^\circ 4'.3 \rightarrow s_E = -4^\circ 55'.7$$

1.3. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE PLANETA

► PRIMJER 5. Odrediti mjesni časovni ugao i deklinaciju Venere za 7. decembar 2012. godine u $UT = 21^{\text{h}}15^{\text{m}}7^{\text{s}}$ na $\lambda = 58^{\circ}34' .2\text{E}$.

a) časovni ugao

| | |
|---|---------------------|
| Sa strane za 7. decembar S za 20° | $149^{\circ}26'.1$ |
| Iz interpolacionih tablica za $1^{\circ}15''$ popravka časovnog ugla planete | $18^{\circ}46'.8$ |
| Iz interpolacionih tablica za $1^{\circ}15''$ popravka drugog reda za S ($\Delta = -6$) | $-0^{\circ}.8$ |
| | |
| S | $168^{\circ}12'.1$ |
| $+ \lambda$ | $+ 58^{\circ}34'.2$ |

b) deklinacija

Sa strane za 7. decembar δ za 20^h $-16^\circ 9' 2''$
 Iz interpol. tablica za $1^h 15^m$ popravka za δ ($\Delta = -9$) $-1' 1''$

δ $-26^\circ 59' 3''$

► PRIMJER 6. Odrediti mjesni časovni ugao i deklinaciju Jupitera za 23. oktobar 2012. godine u UT = $8^{\text{h}}55^{\text{m}}28^{\text{s}}$ na $\lambda = 145^{\circ}20'1\text{W}$.

a) časovni ugao

| | |
|---|-------------|
| Sa strane za 23. oktobar S za 8° | 77° 28'.7 |
| Iz interpolacionih tablica za $0^{\circ}55^{\text{m}}28^{\text{s}}$ popravka časovnog ugla planete | 13° 52'.0 |
| Iz interpolacionih tablica za $0^{\circ}55^{\text{m}}$ popravka drugog reda za S ($\Delta = +26$) | 2° 4' |
| S | 91° 22'.1 |
| + λ | -145° 20'.1 |

b) deklinacija

Sa strane za 23. oktobar δ za 8^{h} + $21^{\circ}51'1.$
Iz interpol. tablica za $0^{\text{h}}55^{\text{m}}$ popravka za $\delta(\Delta = 0)$ $0^{\circ}0$

s - $53^{\circ}58'0$ → s_E = $306^{\circ}2'0$

1.4. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE ZVIJEZDE

Za određivanje časovnog ugla zvijezde prvo se određuje časovni ugao Proljećne tačke S_{T} , odnosno vrijednost zvjezdanog vremena izražena u stepenima. Njoj dodajemo surektascenciju ($360^{\circ} - \alpha$) te zvijezde prema jednačini $S_* = S_{\text{T}} - \alpha_*$, odnosno $S_* = S_{\text{T}} + (360^{\circ} - \alpha_*)$. Rektascencija odnosno surektascencija zvezda se tokom mjeseca neznatno mijenjaju, pa su stoga date njihove vrijednosti samo za prvi dan mjeseca. U slučaju veće promjene surektascencije tokom mjeseca, njenja interpolacija vrši se napamet. Isto tako, deklinacije zvijezda date su za prvi dan mjeseca. U slučaju potrebe interpolacije, ista se vrši napamet.

► PRIMJER 7. Odrediti mjesni časovni ugao i deklinaciju zvijezde Regulus (α Leo) za 16. mart 2012. godine u UT = $18^h 11^m 26^s$ na $\lambda = 62^\circ 13' .2W$.

| a) časovni ugao Proleće (↑) tačke | |
|--|-------------------|
| Sa strane za 16. mart S_T za 18^h | $84^\circ 43'.1$ |
| Iz interpolacionih tablica za $0^\circ 11' .26''$ popravka časovnog ugla ↑ tačke | $2^\circ 52'.0$ |
| <hr/> | |
| S_T | $87^\circ 35'.1$ |
| <hr/> | |
| Deklinacija (iz tablice deklinacija nautičkih zvjezd pod r.b. 24 za 1. mart): δ | $+11^\circ 54'.2$ |

| b) časovni ugao zvijezde | |
|--|--------------------|
| S_T | $87^\circ 35'.1$ |
| Iz tablice surektascenzija nautičkih zvjezd pod r.b. 24 za 1. mart | $207^\circ 44'.3$ |
| <hr/> | |
| S_x | $295^\circ 19'.4$ |
| $+ \lambda$ | $- 62^\circ 13'.2$ |
| <hr/> | |
| S_E | $233^\circ 6'.2$ |
| S_E | $126^\circ 53'.8$ |

► PRIMJER 8. Odrediti mjesni časovni ugao i deklinaciju zvijezde Deneb (α Cyg) za 10. avgust 2012. godine u UT = $21^h 42^m 8^s$ na $\lambda = 93^\circ 14' .2E$.

| a) časovni ugao Proleće (↑) tačke | |
|--|--------------------|
| Sa strane za 10. avgust S_T za 20^h | $259^\circ 41'.5$ |
| Iz interpolacionih tablica za $1^\circ 42' .08''$ popravka časovnog ugla ↑ tačke | $25^\circ 36'.3$ |
| <hr/> | |
| S_T | $285^\circ 17'.8$ |
| <hr/> | |
| Deklinacija (iz tablice deklinacija nautičkih zvjezd pod r.b. 50 za 1. avgust): δ | $+ 45^\circ 19'.9$ |

| b) časovni ugao zvijezde | |
|--|--------------------|
| S_T | $285^\circ 17'.8$ |
| Iz tablice surektascenzija nautičkih zvjezd pod r.b. 50 za 1. avgust | $49^\circ 31'.4$ |
| <hr/> | |
| S_x | $334^\circ 48'.2$ |
| $+ \lambda$ | $+ 93^\circ 14'.2$ |
| <hr/> | |
| S_E | $428^\circ 2'.4$ |
| S_E | $68^\circ 2'.4$ |

2. ODREĐIVANJE IZLAZA I ZALAZA NEBESKIH TIJELA

2.1. ODREĐIVANJE IZLAZA I ZALAZA SUNCA, POČETKA I ZAVRŠETKA GRAĐANSKOG I ASTRONOMSKOG SUMRAKA

Trenuci izlaza i zalaza Sunca (gornjeg ruba), te trajanja sumraka, dati su u efemeridama za sjeverne i južne širine od 0° do 60° . Početak građanskog ili astronomskog svitanja određuje se oduzimanjem trajanja sumraka od trenutka izlaza Sunca. Završetak građanskog ili astronomskog sumraka određuje se dodavanjem trajanja sumraka na trenutak zalaza Sunca. Dati su trenuci izlaza i zalaza Sunca, te trajanja sumraka, za svaki dan. Potrebno je izvršiti interpolaciju samo za određenu geografsku širinu pomoću dve interpolacione tablice. Prva tablica je za geografske širine od 0° do $30^\circ N$ i S, a druga za širine od 30° do $60^\circ N$ i S. Interpolacija trajanja sumraka vrši se po potrebi samo za celobrojne vrijednosti minuta.

► PRIMJER 9. Odrediti trenutak izlaza i zalaza Sunca, početak građanskog svitanja i završetak građanskog sumraka za 5. jul 2012. godine na $\varphi = 48^\circ 28' .2S$, $\lambda = 72^\circ 43' .6E$, $\varphi = 48^\circ .5S$, $\lambda = 4^\circ 50' .9$ ($x = +5^\circ$).

| a) izlaz | |
|--|------------------|
| $UT = t_s$ izlaza za $\varphi = 45^\circ S$ | $7^\circ 38' .0$ |
| Popravka za $3^\circ .5$ iz interpolacionih tablica ($\Delta = +20''$) | $+ 14'' .0$ |
| <hr/> | |
| t_s izlaza za $\varphi = 48^\circ .5S$ | $7^\circ 52' .0$ |
| $+ (x - \lambda)$ | $+ 9'' .1$ |
| <hr/> | |
| t_x | $8^\circ 1' .1$ |
| – trajanje građanskog sumraka | $- 37' .0$ |
| <hr/> | |
| početak građanskog svitanja | $7^\circ 24' .1$ |

| b) zalaz | |
|--|-------------------|
| $UT = t_s$ zalaza za $\varphi = 45^\circ S$ | $16^\circ 31' .0$ |
| Popravka za $3^\circ .5$ iz interpolacionih tablica ($\Delta = -19''$) | $- 13'' .3$ |
| <hr/> | |
| t_s zalaza za $\varphi = 48^\circ .5S$ | $16^\circ 17' .7$ |
| $+ (x - \lambda)$ | $+ 9'' .1$ |
| <hr/> | |
| t_x | $16^\circ 26' .8$ |
| + trajanje građanskog sumraka | $+ 37' .0$ |
| <hr/> | |
| završetak građanskog sumraka | $17^\circ 3' .8$ |

► PRIMJER 10. Odrediti trenutak izlaza i zalaza Sunca, početak astronomskog svitanja i završetak astronomskog sumraka za 21. septembar 2012. godine na $\varphi = 22^\circ 14' .0N$, $\lambda = 56^\circ 41' .2W$, $\varphi = 22^\circ .2N$, $\lambda = 3^\circ 46' .7$ ($x = -4^\circ$).

| a) izlaz | |
|---|------------------|
| $UT = t_s$ izlaza za $\varphi = 20^\circ N$ | $5^\circ 49' .0$ |
| Popravka za $2^\circ .2$ iz interpolacionih tablica ($\Delta = -1''$) | $- 0'' .2$ |
| <hr/> | |

| b) zalaz | |
|--|-------------------|
| $UT = t_s$ zalaza za $\varphi = 20^\circ N$ | $17^\circ 57' .0$ |
| Popravka za $2^\circ .2$ iz interpolacionih tablica ($\Delta = 0''$) | $+ 0'' .0$ |

| | |
|---|-------------------------------------|
| t_s izlaza za $\varphi = 22^\circ.2N$ | 5 ⁴ 48 ^m .8 |
| $+(x - \lambda)$ | - 13 ^m .3 |
| | |
| t_x | 5 ¹ 35 ^m .5 |
| - trajanje astronomskog sumraka | - 1 ^h 14 ^m .5 |
| | |
| početak astronomskog svitanja | 4 ^h 21 ^m .0 |

| | |
|---|-------------------------------------|
| t _s zalaza t _p = 22°.2N | 17 ^h 57 ^m .0 |
| + (x - λ) | - 13 ^m .3 |
| | |
| t _x | 17 ^h 43 ^m .7 |
| + trajanje astronomskog sumraka | + 1 ^m 14 ^s .5 |
| | |
| završetak astronomskog sumraka | 18 ^h 58 ^m .2 |

2.2. ODREĐIVANJE IZLAZA I ZALAZA MJESECA

trenuci izlaza i zalaza Mjeseca (gornjeg ruba) za svaki dan, za sjeverne i južne geografske širine od 0° do 60° , te njihove promjene za jedan čas $\Delta/24$ date su u efemeridama. Pomoću promjene $\Delta/24$ određuje se popravka λ prilikom određivanja izlaza i zalaza Mjeseca. U slučaju određivanja izlaza i zalaza Mjeseca na istočnim geografskim dužinama u cilju postizanja tačnosti uzima se vrijednost $\Delta/24$ za prethodni dan. Veličina $\Delta/24$ je uvek pozitivna zbog kašnjenja Mjeseca. Popravka λ se uvek algebarski oduzima od trenutka izlaza ili zalaza Mjeseca u Griniču. Mora da se vodi računa o znacima uz $\lambda/24$. Popravka λ data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Mjeseca kroz meridian. Prvo se vrši interpolacija za geografsku širinu pomoću interpolacione tablice za određivanje trenutaka Sunčevih i Mesečevih izlaza i zalaza, a zatim se određuje popravka za geografsku dužinu.

Moguće je da za određeni dan i širinu u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► PRIMJER 11. Odrediti trenutak izlaza i zalaza Mjeseca za 19. jun 2012. godine na $\varphi = 17^{\circ}36'0\text{N}$, $\lambda = 72^{\circ}15'0\text{E}$, $\varphi = 17^{\circ}.6\text{N}$, $\lambda = 4^{\circ}49'0\text{E}$ ($x = +5^{\text{h}}$).

a) izkaz

| | |
|---|--------------|
| UT = t_s izlaza za $\varphi = 10^\circ N$ | $5^h 27^m 0$ |
| Popravka za $7^\circ 6$ iz interpolacionih tabl. ($\Delta = -18^m$) | $- 13^m 7$ |
| UT izlaza za $\varphi = 17^\circ 6N$ | $5^h 13^m 3$ |
| $\lambda = 72^\circ 3E$ | |
| $\Delta/24 = \nu = 2^m 1$ $-\lambda\nu$ | $- 10^m 1$ |
| t_s | $5^h 2^m 8$ |
| $+(x - \lambda)$ | $+ 11^m 0$ |
| t_x | $5^h 13^m 8$ |

b) zakaz

| | |
|---|---|
| $UT = t_s$ zalaza za $\varphi = 10^\circ N$ | 18 ^h 24 ^m .0 |
| Poprvak za $7^\circ .6$ iz interpolacionih tabl. ($\Delta = +17^m$) | + 12 ^m .9 |
| | |
| UT zalaza za $\varphi = 17^\circ .6N$ | 18 ^h 36 ^m .9 |
| $\lambda = 72^\circ .3E$ | |
| $\Delta / 24 = v = 2^m.0$ | - λv - 9 ^m .6 |
| | |
| t_s | 18 ^h 27 ^m .3 |
| $+(x - \lambda)$ | + 11 ^m .0 |
| | |
| t_x | 18 ^h 38 ^m .3 |

► PRIMJER 12. Odrediti trenutke izlaza i zalaza Mjeseca za 23. oktobar 2012. godine na $\varphi = 33^{\circ}25'0.0S$, $\lambda = 38^{\circ}53'0.0W$, $\varphi = 33^{\circ}4.4S$, $\lambda = 2^{\circ}35'5.5W$ ($x = -3^{\circ}$).

a) izlaz

| | |
|--|-------------------------------------|
| UT = t_s izlaza za $\varphi = 30^\circ S$ | +12 ^h 41 ^m .0 |
| Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = -5^m$) | - 3 ^m .4 |
| | |
| UT izlaza za $\varphi = 33^\circ.4 S$ | +12 ^h 37 ^m .6 |
| $\lambda = 38^\circ.9 W$ | |
| $\Delta/24 = v = 2^m.4$ - λv | - 6 ^m .2 |
| | |
| t_s | +12 ^h 31 ^m .4 |
| $+(x - \lambda)$ | - 24 ^m .5 |
| | |
| t_x | +12 ^h 6 ^m .9 |

b) zalaz

| | |
|--|------------------------------------|
| $UT = t_s$ zalaza za $\varphi = 30^\circ S$ | 25 ^h 11 ^m .0 |
| Poprvka za $30^\circ.4$ iz interpolacionih tabl. ($\Delta = +4^m$) | + 4 ^m .1 |
| | |
| UT zalaza za $\varphi = 33^\circ.4S$ | 25 ^h 15 ^m .1 |
| $\lambda = 38^\circ.9W$ | |
| $\Delta / 24 = v = 1^m.6$ | - λv - 4 ^m .2 |
| | |
| t_s | 25 ^h 10 ^m .9 |
| $+(x - \lambda)$ | - 24 ^m .5 |
| | |
| t_x | 24 ^h 46 ^m .4 |

2.3. ODREĐIVANJE IZLAZA I ZALAZA PLANETA I ZVJEZDA

Trenutak izlaza i zalaza planeta i zvjezda se ne određuje jer se njihov izlaz i zalaz ne vide. Ali u slučaju potrebe može se odrediti dužina poludnevnog luka na osnovu deklinacije određene zvijezde i geografske širine posmatrača ili se ista veličina odredi pomoću Nautičkih tablica na osnovu zadatih vrijednosti. Tako određena dužina poludnevnog luka oduzima se od trenutka gornjeg prolaza određene zvijezde kroz meridijan i dobija se trenutak izlaza, a ako se veličina poludnevnog luka doda na trenutak prolaza dobija se trenutak zalaza.

3. ODREĐIVANJE GORNJEG PROLAZA NEBESKIH TIJELA KROZ MERIDIJAN

3.1. ODREĐIVANJE GORNJEG PROLAZA SUNCA KROZ MERIDIJAN

Za određivanje gornjeg prolaza Sunca kroz meridijan koristi se činjenica da Sunce u trenutku gornjeg prolaza kroz meridijan određenog mjeseta ima časovni ugao 0° . Zapadna geografska dužina određenog mjeseta, gdje je časovni ugao Sunca 0° , odgovara u tom momentu časovnom ugлу Sunca u Griniču, odnosno $\lambda_W = S_\odot$. Za istočne geografske širine koristi se jednačina $(360^\circ - \lambda_E) = S_\odot$. Dakle, moramo odrediti trenutak UT za koji je časovni ugao Sunca S_\odot jednak λ_W ili $(360^\circ - \lambda_E)$. Tako određenom trenutku dodaje se zonski indeks sa predznakom i dobija se zonsko vrijeme gornjeg prolaza Sunca kroz meridijan.

Gornji prolaz Sunca kroz meridijan određuje se i pomoći vremenskog izjednačenja, tj. iz $T_p - e = UT$. U efemerida su date vrednosti vremenskog izjednačenja $e = T_p - UT$ za 00^h i 12^h sa odgovarajućom jednočasovnom promjenom. Preko e određuje se univerzalno vrijeme gornjeg prolaza Sunca kroz meridijan. Za istočne geografske širine koristi se $\Delta/24$ za prethodni dan radi postizanja veće tačnosti.

Treći (približni) način određivanja trenutka gornjeg prolaza Sunca kroz meridijan, uz najveću moguću grešku do $\pm 0^\circ.2$, je ako trenutku gornjeg prolaza Sunca kroz meridijan u Griniču T_m dodamo $x - \lambda$ (primjer 14b).

► PRIMJER 13. Odrediti trenutak gornjeg prolaza Sunca kroz meridijan za 8. mart 2012. godine na $\lambda = 103^\circ 28' 8W$, $\lambda = 6^\circ 53' 55''$ ($x = -7^h$).

a) pomoći časovnog ugla

| | |
|-----------------------|-------------------|
| $\lambda_W = S_\odot$ | $103^\circ 28' 8$ |
| u UT $18^h S_\odot$ | $87^\circ 20' 6$ |

Iz interpolacione tablice za Sunce u $1^\circ 04' 32''$... $16^\circ 8' 2$

UT $19^\circ 04' 32''$
 $+x$ $-7^\circ 00' 00''$

t_x $12^\circ 04' 32''$

b) pomoći vremenskog izjednačenja

| | | | |
|------------|----------------------|-------------|-------------------|
| t_p | $12^\circ 00' 00''$ | e_{12^h} | $-10^\circ 41' 3$ |
| $-\lambda$ | $+ 6^\circ 53' 55''$ | $\Delta/24$ | $+ 0^\circ 6$ |

Tp $18^\circ 53' 55''$

$-e$ $+ 10^\circ 41' 3$
 UT $19^\circ 04' 32''$
 $+x$ $- 7^\circ 00' 00''$

t_x $12^\circ 04' 32''$

► PRIMJER 14. Odrediti trenutak gornjeg prolaza Sunca kroz meridijan za 22. januar 2012. godine na $\lambda = 145^\circ 52' 1E$, $\lambda = 9^\circ 43' 28''$ ($x = +10^h$).

a) pomoći časovnog ugla

| | |
|-------------------------------------|-------------------|
| $(360^\circ - \lambda_E) = S_\odot$ | $214^\circ 07' 9$ |
| u UT $2^h S_\odot$ | $207^\circ 9' 9$ |

Iz interpolacione tablice za Sunce u $0^\circ 27' 52''$... $6^\circ 58'$

UT $2^\circ 27' 52''$
 $+x$ $+10^\circ 00' 00''$

t_x $12^\circ 27' 52''$

b) skraćeni postupak

| | | | |
|-------------|-------------------|------------------|------------------|
| $T_m = t_m$ | $12^\circ 11' 5$ | $T_m = t_m$ | $12^\circ 11' 5$ |
| $-\lambda$ | $- 9^\circ 43' 5$ | $+(x - \lambda)$ | $0^\circ 16' 5$ |

UT $2^\circ 28' 0$

$+x$ $+10^\circ 00' 0$

t_x $12^\circ 28' 0$

t_x $12^\circ 28' 0$

t_x $12^\circ 28' 0$

3.2. ODREĐIVANJE GORNJEG PROLAZA MJESECA KROZ MERIDIJAN

Način određivanja gornjeg prolaza Mjeseca kroz meridijan je isti kao određivanje izlaza i zalaza Mjeseca. Iz efemerida se dobija univerzalno vrijeme gornjeg prolaza Mjeseca kroz meridijan u Griniču uz odgovarajuću časovnu promjenu $\Delta/24$. Ako se određuje popravka λ_v za zapadne geografske širine, veličina $\Delta/24$ uzima se za dan prolaza Mjeseca kroz meridijan, a za istočne geografske širine uzima se $\Delta/24$ za prethodni dan. Popravka λ_v data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Mjeseca kroz meridijan.

Moguće je da za određeni dan u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► PRIMJER 15. Odrediti trenutak gornjeg prolaza Mjeseca kroz meridijan za 18. januar 2012. godine na $\lambda = 48^\circ 6' 0W$.

| | | | | | |
|--------------|-----------------|-----------------|--------------|------------|-------------------|
| T_m | $7^\circ 32' 0$ | $\Delta/24 = v$ | $2^\circ 5$ | x | $- 3^\circ 00' 0$ |
| $-\lambda_v$ | $+ 8^\circ 0$ | λ | $48^\circ 1$ | $-\lambda$ | $+ 3^\circ 12' 4$ |

| | | | | | |
|------------------|-----------------|-------------|---------------|------------------|-------------------|
| t_m | $7^\circ 11' 2$ | λ_v | $- 8^\circ 0$ | $+(x - \lambda)$ | $+ 0^\circ 12' 4$ |
| $+(x - \lambda)$ | $12^\circ 4$ | | | | |

t_x $7^\circ 23' 6$

► PRIMJER 16. Odrediti trenutak gornjeg prolaza Mjeseca kroz meridijan u Griniču za 23. jun 2012. godine na $\lambda = 126^{\circ}40'.2E$.

$$\begin{array}{rcl}
 T_m & \dots & 15^h 10^m.0 \\
 -\lambda v & \dots & - 16^m.9 \\
 \hline
 t_m & \dots & 14^h 53^m.1 \\
 +(x - \lambda) & \dots & - 0^h 26^m.7 \\
 \hline
 t_x & \dots & 14^h 26^m.4
 \end{array}
 \quad
 \begin{array}{rcl}
 \Delta/24 = v & \dots & 2^m.0 \\
 \lambda & \dots & 126^{\circ}.7 \\
 \hline
 \lambda v & \dots & 16^m.9 \\
 \hline
 +(x - \lambda) & \dots & - 0^h 26^m.7
 \end{array}
 \quad
 \begin{array}{rcl}
 x & \dots & + 8^h 00^m.0 \\
 -\lambda & \dots & - 8^h 26^m.7 \\
 \hline
 \end{array}$$

3.3. ODREĐIVANJE GORNJEG PROLAZA PLANETA KROZ MERIDIJAN

Metodologija određivanja trenutaka gornjih prolaza planeta kroz meridijan ista je kao za Mjesec, uz razliku da veličina $\Delta/24$ može biti pozitivna, kada planeta kasni kao Mjesec, ili negativna, kada planeta rani kao zvijezde. Obično je veličina $\Delta/24$ negativna.

Ako planeta rani u odnosu na prethodni dan na istočnim geografskim dužinama, vrijeme je veće od griničkog, a na zapadnim manje, t.j. suprotno nego kod Mjeseca. Ako planeta kasni postupak je isti kao u slučaju određivanja gornjeg prolaza Mjeseca kroz meridijan. Shodno tome, određuje se znak λv . Obično je planetarni dan kraći od srednjeg sunčevog, pa se može desiti da planeta u jednom danu dva puta prolazi kroz meridijan mesta, odmah posle pola noći i nešto pre pola noći.

Pošto je razlika između trenutaka dva uzastopna prolaza kroz meridijan mala, iznos λv se ne određuje (primjer 17b); univerzalno vrijeme prolaza kroz meridijan je isto kao mjesno srednje vrijeme kojem se samo dodaje $(x - \lambda)$ i na taj način se određuje zonsko vrijeme prolaza planeta kroz meridijan mesta.

► PRIMJER 17. Odrediti trenutak gornjeg prolaza Jupitera kroz meridijan za 14. jun 2012. godine na $\lambda = 46^{\circ}17'.3W$, $\lambda = 3^h 5^m.2$ ($x = -3^h$).

$$\begin{array}{ll}
 \text{a) tačan postupak} & \text{b) približni postupak—u praksi dovoljno tačan} \\
 \begin{array}{rcl}
 T_m & \dots & 10^h 22^m.0 \\
 -\lambda v & \dots & 0^m.4 \\
 \hline
 t_m & \dots & 10^h 22^m.4 \\
 +(x - \lambda) & \dots & + 5^m.2 \\
 \hline
 t_x & \dots & 10^h 27^m.6
 \end{array} & \begin{array}{rcl}
 \lambda & \dots & 3^h.1W \\
 v = \Delta/24 & \dots & -3^m/24 \\
 \lambda v = 3.1 \times \frac{-3}{24} & \dots & -0^m.4 \\
 \hline
 T_m & \dots & 10^h 22^m.0 \\
 +(x - \lambda) & \dots & 5^m.2 \\
 \hline
 t_x & \dots & 10^h 27^m.2
 \end{array}
 \end{array}$$

3.4. ODREĐIVANJE GORNJEG PROLAZA ZVJEZDA KROZ MERIDIJAN

Trenutak gornjeg prolaza zvijezde kroz meridijan Griniča dat je u efemeridama za svaki prvi dan u mjesecu. U slučaju određivanja trenutka prolaza kroz meridijan za bilo koji drugi dan u mjesecu, od vrednosti iz efemerida oduzima se popravka koja se nalazi na donjem dijelu stranice za izabrani dan.

Trenutak gornjeg prolaza kroz meridijan T_m izraženo preko UT može da se uzme kao mjesno srednje vrijeme prolaza kroz meridijan posmatrača t_m , što je približno, jer zvijezda dnevno rani oko 4 minuta, a što na većim geografskim dužinama stvara greške od 1 do 2 minute. Dakle, potrebno je odrediti λv , ali se to ne radi jer za svakodnevni rad tačnost je dovoljna, ako se griničko vrijeme prolaza kroz meridijan uzima kao mjesno srednje vrijeme i, uz dodavanje $(x - \lambda)$, pretvara u zonsko.

► PRIMJER 18. Odrediti vrijeme gornjeg prolaza zvijezde Arcturus (α Boo) kroz meridijan 23. maja 2012. godine na $\lambda = 28^{\circ}14'.2E$, $\lambda = 1^h 52^m.9$, ($x = +2^h$).

Iz tablice gornjih prolaza zvijezda kroz meridijan za
1. maj 2012. godine (r.b. zvezde 35) $T_m = t_m \dots 21^h 37^m.0$
Popravka za 23 dana iz iste tablice $\dots - 1^h 28^m.3$

$$\begin{array}{rcl}
 t_m & \dots & 20^h 8^m.7 \\
 +(x - \lambda) & \dots & 7^m.1 \\
 \hline
 t_x & \dots & 20^h 15^m.8
 \end{array}$$

4. SJEVERNJAČA

4.1. ODREĐIVANJE GEOGRAFSKE ŠIRINE POMOĆU VISINE SJEVERNJAČE I ODREĐIVANJE AZIMUTA SJEVERNJAČE

Izmjerena visina Sjevernjače ispravlja se radi instrumentskih grešaka k_i i k_e , depresije i refrakcije. Rezultat ispravki je V_p , kojem se dodaju popravke I, II i III iz tablica Godišnjaka. Ulagane veličine tablice azimuta Sjevernjače su mjesni časovni ugao Projećne tačke i geografska širina posmatrača.

► PRIMJER 19. Odrediti geografsku širinu posmatrača pomoću visine zvijezde Sjevernjače; odrediti njen azimut za 18. septembar 2012. godine u UT = $22^h36^m00^s$ na $\varphi = 42^\circ23'N$ i $\lambda = 38^\circ47'W$ zbirne pozicije, ako je prava visina Sjevernjače $V_p = 41^\circ54'.2$.

a) određivanje mjesnog časovnog ugla s_T

| | |
|---|------------------|
| S_T za UT 22^h | $328^\circ12'.8$ |
| Iz interpolacionih tablica popravka S_T za 36^m | $9^\circ1'.5$ |
| <hr/> | |
| S_T | $337^\circ13'.3$ |
| $+ \lambda$ | $-38^\circ47'.0$ |
| <hr/> | |
| s_T | $298^\circ26'.3$ |

b) određivanje visine

| | |
|-----------------|-----------------|
| V_p | $41^\circ54'.2$ |
| I | $-12'.4$ |
| II | $+0'.2$ |
| III | $+0'.1$ |
| <hr/> | |
| φ | $41^\circ42'.1$ |
| ω | $1^\circ.0$ |

5. PRETVARANJE RAZNIH VRSTA VREMENA

5.1. PRETVARANJE ZONSKOG, MJESNOG SREDNJEG VREMENA I VREMENA PO ČASOVNIKU U UNIVERZALNO VRIJEME I OBRATNO

Podaci efemerida odnose se na grinički meridijan, pa je ulazna veličina univerzalno vreme UT.

U slučaju da časovnik posmatrača pokazuje zonsko vrijeme, vrijeme posmatrana je zonsko vrijeme t_x . Isto tako, može to vrijeme biti vrijeme po časovniku t_c ili mjesno zonsko vrijeme t_s , a što nije često.

► PRIMJER 20. Odrediti UT ako su poznati zonsko vrijeme t_x , vrijeme po časovniku t_c i srednje mjesno vrijeme t_s na $\lambda = 13^\circ51'.0E$, $\lambda = 0^\circ55^m24^s$ ($x = +1^h$).

a) prelaz sa t_x na UT

| | |
|-------------|----------------|
| t_x | $7^h39^m19^s$ |
| $-x$ | $-1^h00^m00^s$ |
| <hr/> | |
| UT | $6^h39^m19^s$ |

b) prelaz sa t_c na UT

| | |
|-------------|---------------|
| t_c | $7^h31^m55^s$ |
| $+U$ | -53^m48^s |
| <hr/> | |
| t_h | $6^h38^m07^s$ |
| $+S$ | $+1^m12^s$ |
| <hr/> | |
| UT | $6^h39^m19^s$ |

c) prelaz sa t_s na UT

| | |
|------------------|---------------|
| t_s | $7^h34^m43^s$ |
| $-\lambda$ | -55^m24^s |
| <hr/> | |
| UT | $6^h39^m19^s$ |

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

► PRIMJER 21. Odrediti zonsko vrijeme t_x , vrijeme po časovniku t_c i srednje mjesno vrijeme t_s za UT na $\lambda = 57^\circ24'.0E$, $\lambda = 3^\circ49^m36^s$ ($x = -4^h$).

a) prelaz sa UT na t_x

| | |
|-------------|----------------|
| UT | $9^h46^m12^s$ |
| $+x$ | $-4^h00^m00^s$ |
| <hr/> | |
| t_x | $5^h46^m12^s$ |

b) prelaz sa UT na t_c

| | |
|-------------|-----------------|
| UT | $9^h46^m12.0^s$ |
| $-S$ | $+2^m06'.5$ |
| <hr/> | |
| t_c | $5^h54^m51.0^s$ |

c) prelaz sa UT na t_s

| | |
|------------------|--------------------|
| UT | $9^h46^m12^s$ |
| $+\lambda$ | $-3^\circ49^m36^s$ |
| <hr/> | |
| t_s | $5^h56^m36^s$ |

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

► PRIMJER 22. Odrediti zonsko vrijeme t_x za mjesno srednje vrijeme $t_s = 13^h 15^m 36^s$ na $\lambda = 107^\circ 28' 0W$, $\lambda = 7^\circ 9^m 52^s$ ($x = -7$).

a) duži postupak

$$\begin{array}{rcl} t_s & \dots & 13^h 15^m 36^s \\ -\lambda & \dots & 7^h 09^m 52^s \\ \hline UT & \dots & 20^h 25^m 28^s \\ +x & \dots & -7^h 00^m 00^s \\ \hline t_x & \dots & 13^h 25^m 28^s \end{array}$$

b) kraći postupak

$$\begin{array}{rcl} t_s & \dots & 13^h 15^m 36^s \\ +(x - \lambda) & \dots & + 9^m 52^s \\ \hline x & \dots & -7^h 00^m 00^s \\ -\lambda & \dots & 7^h 09^m 52^s \\ \hline (x - \lambda) & \dots & 9^m 52^s \\ \hline t_x & \dots & 13^h 25^m 28^s \end{array}$$

5.2. PRETVARANJE ZVJEZDANOG VREMENA U ZONSKO I MJESNO SREDNJE VRIJEME

Određeno zvjezdano vrijeme pretvorimo u mjesni časovni ugao Proljećne tačke. Grinički časovni ugao Proljećne tačke dobija se oduzimanjem geografske dužine od mjesnog časovnog ugla Proljećne tačke. Iz efemerida pomoću griničkog časovnog ugla Proljećne tačke određujemo univerzalno vrijeme. Dodavanjem zonskog indeksa dobija se zonsko vrijeme, ili dodavanjem geografske dužine izražene u vremenu dobija se mjesno srednje vrijeme. Moguće je da dobijemo t_x ili t_s za prethodni dan ili naredni dan od datuma za koji tražimo t_x ili t_s . U tom slučaju postupak određivanja vremena se ponavlja, ali od zapadne geografske dužine se oduzima S_γ za naredni dan, a za istočne geografske dužine za prethodni dan.

► PRIMJER 23. Odrediti zonsko vrijeme t_x odnosno mjesno srednje vrijeme t_s za 19. januar 2012. godine ako je zvjezdano vrijeme $t_z = 6^h 36^m 3^s$ na $\lambda = 112^\circ 10' 5E$, $\lambda = 7^\circ 28' 42''$ ($x = +7$).

$$\begin{array}{ll} \text{a)} t_s & \text{b)} t_x \\ \begin{array}{l} t_z = 6^h 36^m 03^s = S_\gamma \dots \\ -\lambda \dots \end{array} & \begin{array}{l} UT \dots 15^h 9^m 44^s \\ +\lambda \dots 7^\circ 28' 42'' \end{array} \\ \hline \begin{array}{l} S_\gamma \dots 14^h 00^m 00^s \\ 20. \text{ januar u UT} \dots -S_\gamma \dots \end{array} & \begin{array}{l} UT \dots 15^h 9^m 44^s \\ +x \dots + 7^h 00^m 00^s \end{array} \\ \hline \begin{array}{l} 346^\circ 50' 3 \\ -329^\circ 21' 5 \end{array} & \begin{array}{l} 22^\circ 38' 26'' \\ t_s \dots 22^\circ 9^m 44^s \\ t_x \dots 22^\circ 9^m 44^s \end{array} \\ \hline \begin{array}{l} \text{Iz interpol. tablice za} \\ \text{Proljećnu tačku u } \dots 1^h 9^m 44^s \\ UT \dots 15^h 9^m 44^s \end{array} & \leftarrow 17^\circ 28' 8 \end{array}$$

6. IDENTIFIKACIJA ZVJEZDA POMOĆU ZVJEZDANIH KARATA

Zvjezdane karte u prilogu služe za opštu orientaciju na zvjezdanom nebu i prepoznavanje zvjezda na dva moguća načina.

1. Meridijan posmatrača moguće je odrediti na zvjezdanoj karti pomoću surektascenzijske zvijezde na tom meridijanu. Ako je posmatrač na zapadnoj geografskoj dužini i zvijezda je tačno u meridijanu, vrijednost λ_W jednaka je griničkom časovnom uglu te zvijezde ($\lambda_W = S_*$). Za posmatrača na istoj geografskoj dužini odnos je $(360^\circ - \lambda_E) = S_*$. Pošto je grinički časovni ugao zvijezde S_* jednak griničkom časovnom uglu Proljećne tačke umanjenom za rektascenziju zvijezde ($S_* = S_\gamma - \alpha_*$), onda je $(\alpha_* = S_\gamma - S_*)$. Surektascenzija je jednak časovnom uglu zvijezde umanjenom za časovni ugao Proljećne tačke ($360^\circ - \alpha_* = S_* - S_\gamma$). Grinički časovni ugao zvijezde odgovara zapadnoj geografskoj dužini ($S_* = \lambda_W$), pa je $(360^\circ - \alpha_*) = \lambda_W - S_\gamma$, dok je za istočne geografske dužine $(360^\circ - \alpha_*) = (360^\circ - \lambda_E) - S_\gamma$.

► PRIMJER 24. Odrediti za 5. jul 2012. godine u $UT = 00^h 06^m 3$ na zvjezdanoj karti meridijan posmatrača i prepoznati zvijezdu u zenithu ako je posmatrač na $\varphi = 45^\circ 11' N$, $\lambda = 25^\circ 45' E$.

a) određivanje S_γ

$$\begin{array}{rcl} 5. \text{ jul za } 00^h S_\gamma & \dots & 283^\circ 23'.2 \\ \text{Popravka časovnog ugla Proljećne tačke za } 06^\circ 18' \dots + 1^\circ 34'.8 \\ \hline S_\gamma & \dots & 284^\circ 58'.0 \end{array}$$

b) određivanje surektascenzijske zvijezde pomoću izraza

$$\begin{array}{rcl} (360^\circ - \alpha_*) & = & (360^\circ - \lambda_E) - S_\gamma \\ & & 360^\circ 00'.0 \\ -\lambda & \dots & - 25^\circ 45'.6 \\ \hline (360^\circ - \lambda) & \dots & 334^\circ 14'.4 \\ -S_\gamma & \dots & 284^\circ 58'.0 \\ \hline (360^\circ - \alpha_*) & \dots & 49^\circ 16'.4 \\ & & \cong 49^\circ .3 \end{array}$$

Prepoznavanje zvijezde u posmatračevom zenitu je jednostavno, jer se tačka u zenitu nalazi na njegovom meridijanu, a deklinacija zvijezde jednaka je geografskoj širini posmatrača. Stoga je surektascenzija zvezde oko $49^{\circ}3$, a njena deklinacija oko $45^{\circ}11'.0\text{N}$. Iz pregleda zvjezdna Godišnjaka ili zvjezdane karte vidljivo je da je to zvijezda Deneb ($\alpha\text{ Cyg}$) sa stvarnom surektascenzijom $49^{\circ}31'.4$ i deklinacijom $45^{\circ}19'.7$. Ostale zvijezde koje nisu u zenitu raspoznaju se upoređenjem slike zvjezdanih nebala sa zvjezdanim kartom.

► PRIMJER 25. Odrediti za 22. januar 2012. godine u $t_x = 4^{\text{h}} 8^{\text{m}} .6$ ($x = +2$) na zvjezdanoj karti meridijan posmatrača i prepoznati zvijezdu bližu zenita. Posmatrač se nalazi na $\varphi = 54^{\circ}50'N$, $\lambda = 47^{\circ}20'.1E$.

| a) određivanje UT | b) određivanje S_{Υ} | c) određivanje slike zvezde pomoću izraza $(360^\circ - \alpha_*) = (360^\circ - \lambda_E) - S_{\Upsilon}$ |
|----------------------------------|---|---|
| t_x 4 ⁰⁸ 06,6 | 22. januar u 02 ^h S_{Υ} 150 ^{050'2} . | (360 ^o - λ) 312 ^{39'9} . |
| -x -2 ⁰⁰ 00,0 | Popravka časovnog ugla Proljeće tačke za 08 ^m .6 ... 2 ^{009'4} . | - S_{Υ} 152 ^{59'6} . |
| UT 2 ⁰⁸ 06,6 | S_{Υ} 152 ^{59'6} . | (360 ^o - α_*) 159 ^{40'3} . |

Iz zvjezdane karte ili pregleda zvijezda vidljivo je da je zvijezda blizu zenita Mizar (ζ Ursae Majoris) čija je deklinacija $54^{\circ}51'.3$ N, a surektascenzija $158^{\circ}53'.5$.

2. Zvezdana karta u Merkatorovoj projekciji na gornjem i donjem rubu ima upisane mjesecu i dane i time je posmatraču omogućeno da odmah vidi koji je dio zvjezdanih neba vidljiv određenog datuma u pola noći. Ako želimo tačno odrediti meridijan posmatrača, moramo odrediti mjesni časovni ugao Proljećne tačke (zvjezdano mjesno vrijeme) i izračunat vrednost oduzetih od 360° . Na gornjem rubu karte pronalazimo odgovarajuću surektascenciju i time dobijamo mesto meridijana posmatrača. Zvezde desno od meridijana su prema zapadu, a lijevo prema istoku od posmatrača, koji je okrenut prema jugu.

► PRIMJER 26. Odrediti meridijan posmatrača i prepoznati zvijezdu blizu zenita 14. aprila 2012. godine u $t_x = 23^{\circ}17'.9$ ($x = +2$) na $\varphi = 52^{\circ}36'N$, $\lambda = 37^{\circ}55'.6E$.

| a) određivanje UT | b) određivanje s_T |
|---|---|
| t _x 23 ^h 17 ^m .9 | 14. april za 20 ^h S _T 143°23'.1 |
| x - 2°00'0.0 | Popravka časovnog ugla Projekcne tačke za 1 ^h 17 ^m 53 ^s 19°31'.5 |
| UT 21 ^h 17 ^m .9 | |
| | -S_T 162°54'.6 |
| | +λ + 37°55'.6 |
| | |
| | s_T 200°50'.2 |
| | α 200°50'.2 |
| | (360° - s _T) 159° 9'.8 |
| | (360° - α) 159° 9'.8 |

Meridijan posmatrača nalazi se na skali surektascenije na $159^{\circ}2'$. Pošto je vrijednost posmatračeve geografske širine slična vrijednosti deklinacije zvijezde, zvijezda blizu zenita može biti Mizar (ζ UMa), čija je stvarna deklinacija $54^{\circ}51'6''$ i surektascenzija $158^{\circ}53'1''$.

3. Prepoznavanje zvijezde u blizini zenita moguće je i pomoću mjesnog vremena posmatrača. Zvjezdano nebo zvjezdane karte prikazano je u pola noći, odnosno kada je $t_s = 00^h$ posmatrača. Znači da je određivanje zenita posmatrača lako, na karti se kao apscisa koristi određeni datum, a ordinata je geografska širina (ϕ) mjesta posmatrača.

Ako se položaj zenita posmatrača određuje u drugom trenutku, prvo se određuje zenit u ponoć i zatim se određuje vremenska razlika između $t_s = 0^h$ i mjesnog vremena posmatrača, uzima šestarom na časovnoj podeli donjem rubu zvjezdane karte i nanosi se od pozicije zenita u pola noći, ulijeve ako je traženo vrijeme posle pola noći ili udesno ako je vrijeme pre pola noći. Doholjena tačka je pozicija zenita posmatrača.

Na taj način, određeni zenit posmatrača može poslužiti za približnu orientaciju mjerenjem zenitne udaljenosti zvijezde po levoj ili desnoj stepenskoj podjeli deklinacije. Isto tako, može se odrediti približan azimut slično određivanju na pomorskoj karti. U tom slučaju, navigacijski trougao mora se okrenuti jer su E i W strane zvjezdane karte suprotno okrenute u odnosu na navigacijsku kartu. Takođe je bitno da su na ovaj način određeni podaci u blizini horizonta posmatrača netažni

► PRIMJER 27. Prepoznajte zvezdu čiji je azimut $A_w = 168^\circ$ i zenitna udaljenost $z = 29^\circ$ dana 11. marta 2012. godine na poziciji $\varphi = 41^\circ 20' N$ i $\lambda = 17^\circ 56' E$, u $t_v = 22^\circ 15' M$ ($x = +1$).

| | |
|--|---|
| a) određivanje t_s | b) razlika u odnosu na ponoć |
| $t_x \dots$ | $t_{s_1} \dots$ |
| $-(x - \lambda) \dots$ | $-t_{s_2} \dots$ |
| $t_e \dots$ | $\Delta t_e \text{ (pre ponoći)} \dots$ |
| $22^{\text{h}}15^{\text{m}}$ | $0^{\text{h}}00^{\text{m}}$ |
| $+ 12^{\text{m}}$ | $22^{\text{h}}27^{\text{m}}$ |
| $22^{\text{h}}27^{\text{m}}$ | $1^{\text{h}}33^{\text{m}}$ |

Postupajući na gore opisani način, nalazi se pozicija zenita u ponoć, sa koordinatama: $\phi = \delta = 41^{\circ}30'N$ i $(360^{\circ} - \alpha) = 215^{\circ}$ (11. mart). Od ove pozicije, približno u smjeru 168° i na udaljenosti 29° , pronađimo zvijezdu Regulus (α Leonis).

* * ★ * *

Zvanična

/

ZONSKA VREMENA

ZVANIČNA I ZONSKA VREMENA

ZONSKO VRIJEME

Podela Zemlje na vremenske zone izvršena je tako da svaka vremenska zona obuhvata područje od 15° geografske dužine. Početna vremenska zona sa zonskim indeksom 0 ($x = 0^{\text{h}}$) proteže se od griničkog meridijana na istok i na zapad do $\lambda = 7^{\circ}5\text{ E}$ i $\lambda = 7^{\circ}5\text{ W}$, a ostale zone nadovezuju se na ove prema istoku, i to sa zonskim indeksima $+1^{\text{h}}$ do $+12^{\text{h}}$, a prema zapadu one sa zonskim indeksima od -1^{h} do -12^{h} . Zone sa indeksima $+12^{\text{h}}$ i -12^{h} predstavljaju, u stvari, jednu te istu zonu sa indeksom $\pm 12^{\text{h}}$ koja se proteže između $\lambda = 172^{\circ}5\text{ E}$ i $\lambda = 172^{\circ}5\text{ W}$, sa središnjim meridijanom 180° od Griniča.

Za prijelaz sa zonskog na griničko vrijeme koristi se obrazac, gdje x označava zonski indeks:

$$\text{UT} = t_x - x$$

(O pretvaranju vremena vidi primjer u poglavljiju 5 Uputstva za upotrebu Nautičkog godišnjaka).

DATUMSKA GRANICA

Linija na čijem se prelazu vrši promjena datuma zove se *datumska granica*. Ona se ne proteže tačno po meridijanu 180° , već zaobilazi nastanjeno kopno i ostrva, pa ide linijom koja se dobije spojnicom sledećih tačaka:

| φ | λ | φ | λ |
|-----------|--------------------------------|-----------|-----------|
| 90°.0 N | 180° | 48°.0 N | 180° |
| 75°.0 N | 180° | 05°.0 S | 180° |
| 68°.0 N | 168°58'22" W (ostrva Diomede) | 15°.0 S | 172°.5 W |
| 65°.5 N | 168°58'22" W (Beringov moreuz) | 45°.0 S | 172°.5 W |
| 53°.0 N | 170° E | 51°.0 S | 180° |
| | | 90°.0 S | 180° |

Prilikom prijelaza datumske granice, ploveći prema zapadu datum se *povećava* za jedan dan. Kada se ona prelazi ploveći prema istoku, *smanjuje* se za jedan dan.

ZVANIČNO VRIJEME I LJETNO VRIJEME

Zvanično vrijeme, tj. ono vrijeme koje se unutar granica pojedinih država ili unutar njihovih određenih teritorija koristi u službenom i svakodnevnom životu, najčešće je jednako odgovarajućem zonskom vremenu ili tzv. zimskom vremenu (vidi „Pregled zvaničnih vremena“). Veće zemlje imaju više zvaničnih vremena od kojih svako važi za određene teritorije.

Neke zemlje uvode i *ljetno vrijeme* zbog racionalnog iskorišćenja dnevnog svjetla. Ono se obično razlikuje od zonskog (zimskog) vremena za 1^{h} , a načelno važi na sjevernoj hemisferi za razdoblje od aprila do oktobra, a na južnoj hemisferi od oktobra do marta. Ipak, neke zemlje ne utvrđuju ni jednake ni fiksne datume prelaska, već ih uvode od slučaja do slučaja na nekoliko dana pre prelaska.

Za prijelaz sa *zvaničnog* na *griničko vrijeme* koristi se obrazac

$$\text{UT} = t_{zv} - zv,$$

gdje zv označava indeks zvaničnog vremena.

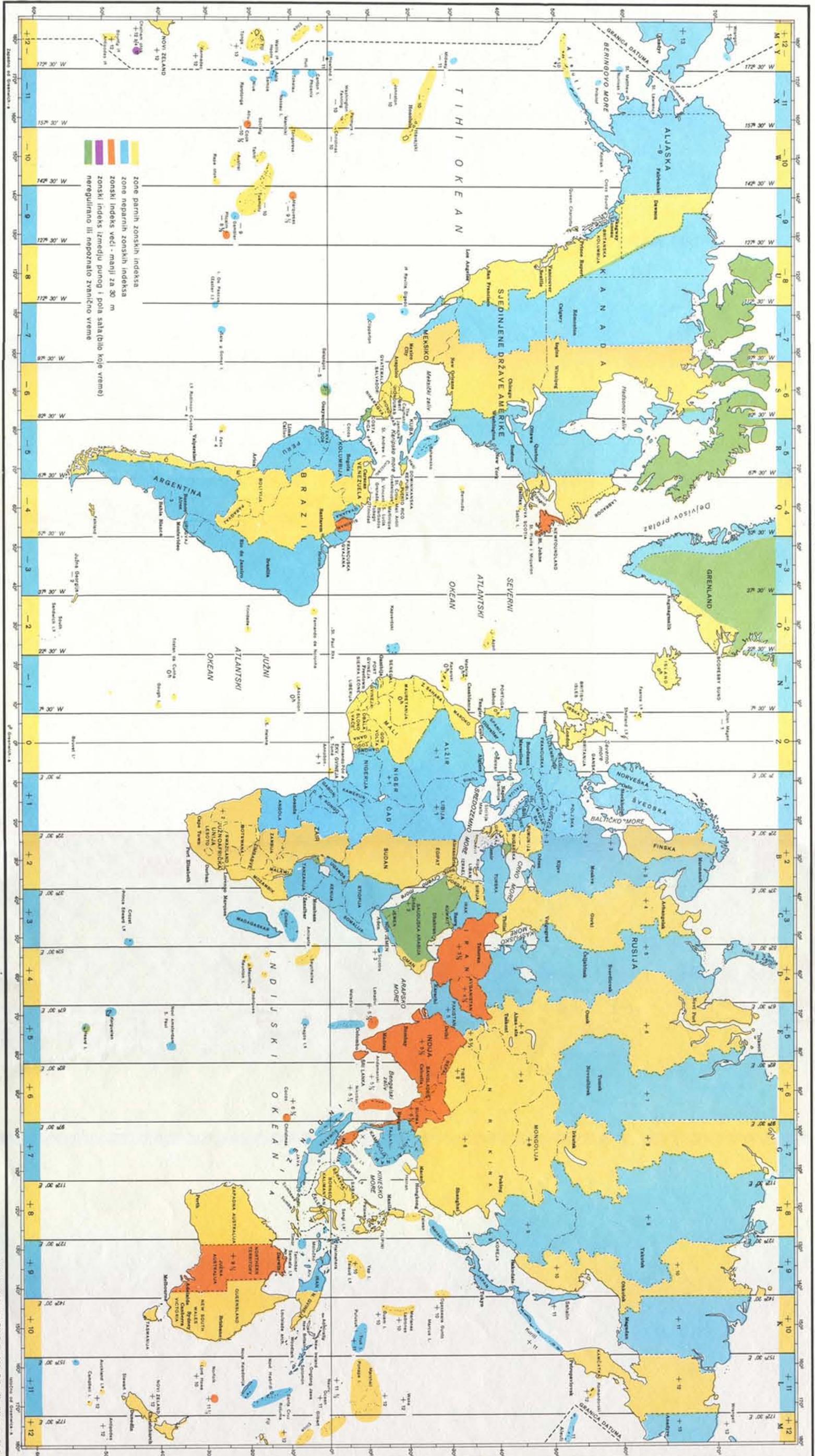
HRONOLOŠKI CIKLUSI IERE

| | | | | | |
|-------------------------------------|--------|-------------------------|---------------------------|--------|----------|
| Epakta | 6 | Julijanski period | 6725 | | |
| Zlatni broj (Mjesecев ciklus) | XVIII | Sunčev ciklus | 5 | | |
| ERA | GODINA | Počinje | ERA | GODINA | Počinje |
| Vizantijska | 7521 | 14. Sep. | Japanska | 2672 | 1. Jan. |
| Jevrejska | 5773 | 16. Sep. | Grčka (Seleukidova) | 2324 | 14. Sep. |
| Kineska (réen chén) | (4649) | 3. Jan. | Indijska (Saka) | 1934 | 21. Mart |
| Rimska | 2765 | 14. Jan. | Dioklecijanova | 1729 | 11. Sep. |
| Nabonasarova | 2761 | 20. Apr. | Islamska (Hegira) | 1434 | 14. Nov. |

PREGLED ZVANIČNIH VREMENA

| ISTOČNO OD GREENWICH-a | | | ZAPADNO OD GREENWICH-a | | |
|------------------------|-------|---------------------|------------------------|------------------------|-------|
| | [+] | | | [-] | |
| Albanija | 1 00 | Kina | 8 00 | Argentina | 3 00 |
| Alžir | 1 00 | Kipar | 2 00 | Azorska ostrva | 1 00 |
| Angola | 1 00 | Koreja | 9 00 | Bahamska ostrva | 5 00 |
| Australija: | | Krit | 2 00 | Barbados | 4 00 |
| Capital Territory | 10 00 | Kuvajt | 3 00 | Belize | 6 00 |
| New South Wales | 10 00 | Laos | 7 00 | Bermuda | 4 00 |
| Northern Territory | 9 30 | Liban | 2 00 | Bolivijska | 4 00 |
| Queensland | 10 00 | Libija | 1 00 | Brazil: | |
| South Australia | 9 30 | Madagaskar | 3 00 | Istočni deo | 3 00 |
| Tasmania | 10 00 | Makao | 8 00 | Srednji deo | 4 00 |
| Victoria | 10 00 | Maldivska ostrva | 5 00 | Zapadni deo | 5 00 |
| Western Australia | 8 00 | Malezija | 8 00 | Čile | 4 00 |
| Bahrein | 3 00 | Malta | 1 00 | Dominikanska Republika | 4 00 |
| Balearska ostrva | 1 00 | Mandžurija | 9 00 | Ekvador | 5 00 |
| Bali | 7 00 | Marijanska ostrva | 10 00 | Foklandska ostrva | 4 00 |
| Bangladeš | 6 00 | Mauricijus | 4 00 | Galapagos | 6 00 |
| Belgija | 1 00 | Monako | 1 00 | Gambija | 0 00 |
| Benin (Dahomej) | 1 00 | Mozambik | 2 00 | Gana | 0 00 |
| Brunej | 8 00 | Namibija | 2 00 | Grenada | 4 00 |
| Bugarska | 2 00 | Nemačka | 1 00 | Gvajana (Francuska) | 3 00 |
| Burma | 6 30 | Nigerija | 1 00 | Gvajana (Republika) | 3 00 |
| Burundi | 2 00 | Norveška | 1 00 | Gvatemala | 6 00 |
| Ceuta | 1 00 | Nova Kaledonija | 11 00 | Haiti | 5 00 |
| Čad | 1 00 | Novi Zeland | 12 00 | Honduras | 6 00 |
| Danska | 1 00 | Oman | 4 00 | Jamajka | 5 00 |
| Džibuti | 3 00 | Pakistan | 5 00 | Kajmanska ostrva | 5 00 |
| Egipt | 2 00 | Papua, Nova Gvineja | 10 00 | Kanada: | |
| Etiopija | 3 00 | Poljska | 1 00 | British Columbia | 8 00 |
| Fidži | 12 00 | Reunion | 4 00 | Labrador | 4 00 |
| Filipini | 8 00 | Rumunija | 2 00 | New Newfoundland | 3 30 |
| Finska | 2 00 | Rusija (10 zona): | | New Scotia | 4 00 |
| Francuska | 1 00 | Novi Port | 5 00 | Yucon | 8 00 |
| Gabon | 1 00 | Sahalin | 11 00 | Kanarska ostrva | 0 00 |
| Gibraltar | 1 00 | Sankt Petersburg | 3 00 | Kapverdska ostrva | 1 00 |
| Grčka | 2 00 | Vladivostok | 10 00 | Kolumbija | 5 00 |
| Holandija | 1 00 | Volgograd | 4 00 | Kostarika | 6 00 |
| Hong Kong | 8 00 | Sao Tome i Principe | 0 00 | Kuba | 5 00 |
| Indija | 5 30 | Sardinija | 1 00 | Martinik | 4 00 |
| Indonezija: | | Saudiski Arabija | 3 00 | Meksiko | 6 00 |
| Bali, Jawa, Sumatra | 7 00 | Sejšelska ostrva | 4 00 | Midvej | 11 00 |
| Borneo, Flores, Timor | 8 00 | Sicilija | 1 00 | Nikaragva | 6 00 |
| Iran, Molučka ostrva | 9 00 | Singapur | 8 00 | Panamski kanal | 5 00 |
| Irak | 3 00 | Sirija | 2 00 | Peru | 5 00 |
| Iran | 3 30 | Sokotra | 3 00 | Portoriko | 4 00 |
| Irska | 0 00 | Somalija | 3 00 | SAD (6 zona): | |
| Island | 0 00 | Sudan | 2 00 | Aljaska | 9 00 |
| Italija | 1 00 | Španija | 1 00 | Atlantska obala | 5 00 |
| Izrael | 2 00 | Šri Lanka (Cejon) | 5 30 | Florida | 5 00 |
| Japan | 9 00 | Švedska | 1 00 | Havaji | 10 00 |
| Jemen | 3 00 | Tajland | 7 00 | Meksički zaliv | 6 00 |
| Jordan | 2 00 | Tajvan | 8 00 | Pacificka obala | 8 00 |
| Jugoslavija | 1 00 | Tanzanija | 3 00 | Salvador | 6 00 |
| Južnoafrička Republika | 2 00 | Tunis | 1 00 | Samoa | 11 00 |
| Kamčatka | 12 00 | Turska | 3 00 | Surinam | 3 00 |
| Kamerun | 1 00 | Uganda | 3 00 | Tobago | 4 00 |
| Kampučija | 7 00 | Ujedinjeni Emirati | 4 00 | Trinidad | 4 00 |
| Katar | 3 00 | Velika Britanija | 0 00 | Urugvaj | 3 00 |
| Kenija | 3 00 | Vijetnam | 7 00 | Venezuela | 4 00 |

KARTA ZONSKIH I ZVANIČNIH VREMENA

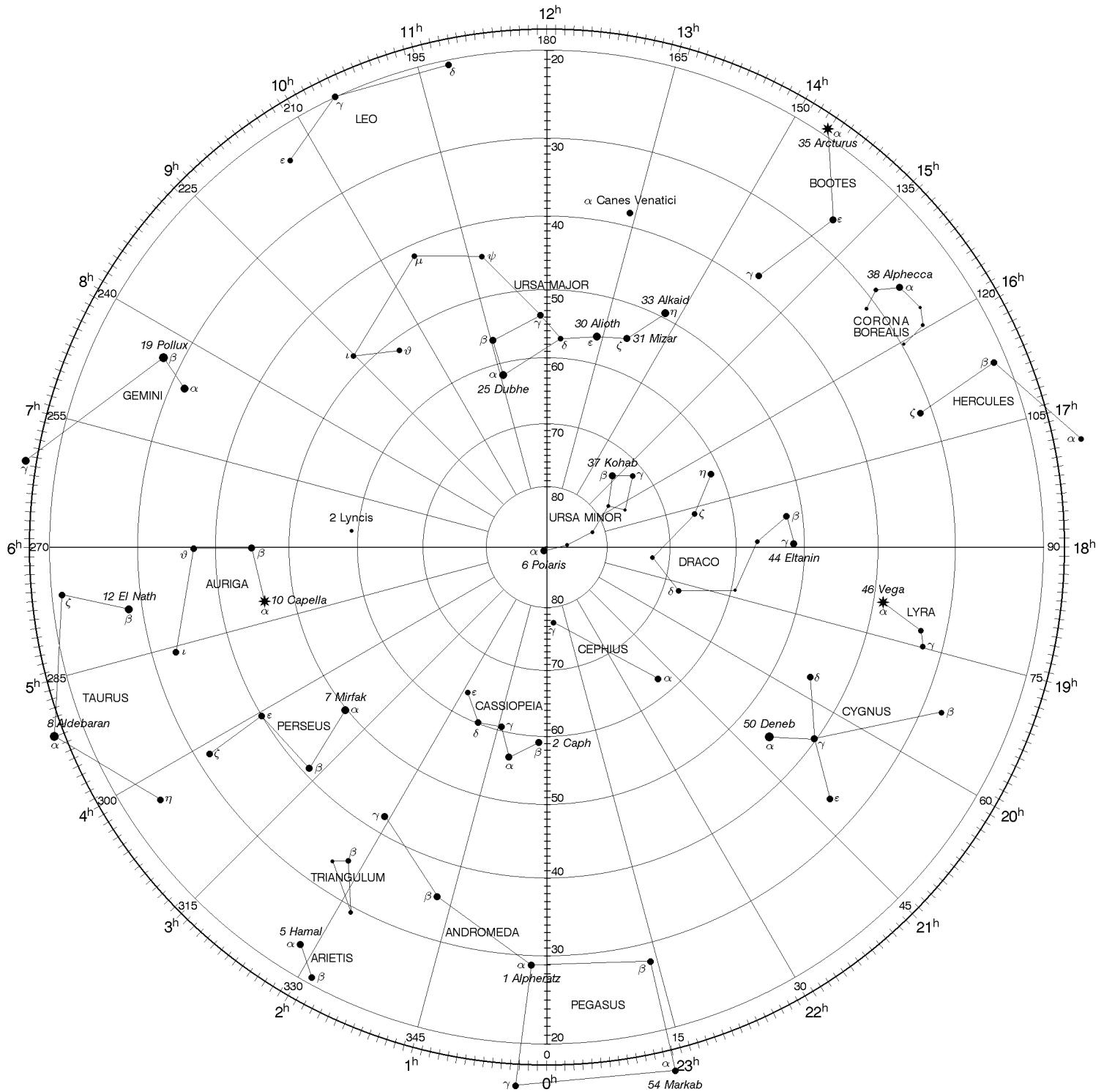


* * ★ * *

Karte

ZVJEZDANOГ NEBA

KARTA SAZVEŽĐA SEVERNOG NEBA



VELIČINE ZVEZDA

★ $0.0 \geq m$
● $2.5 < m \leq 3.0$

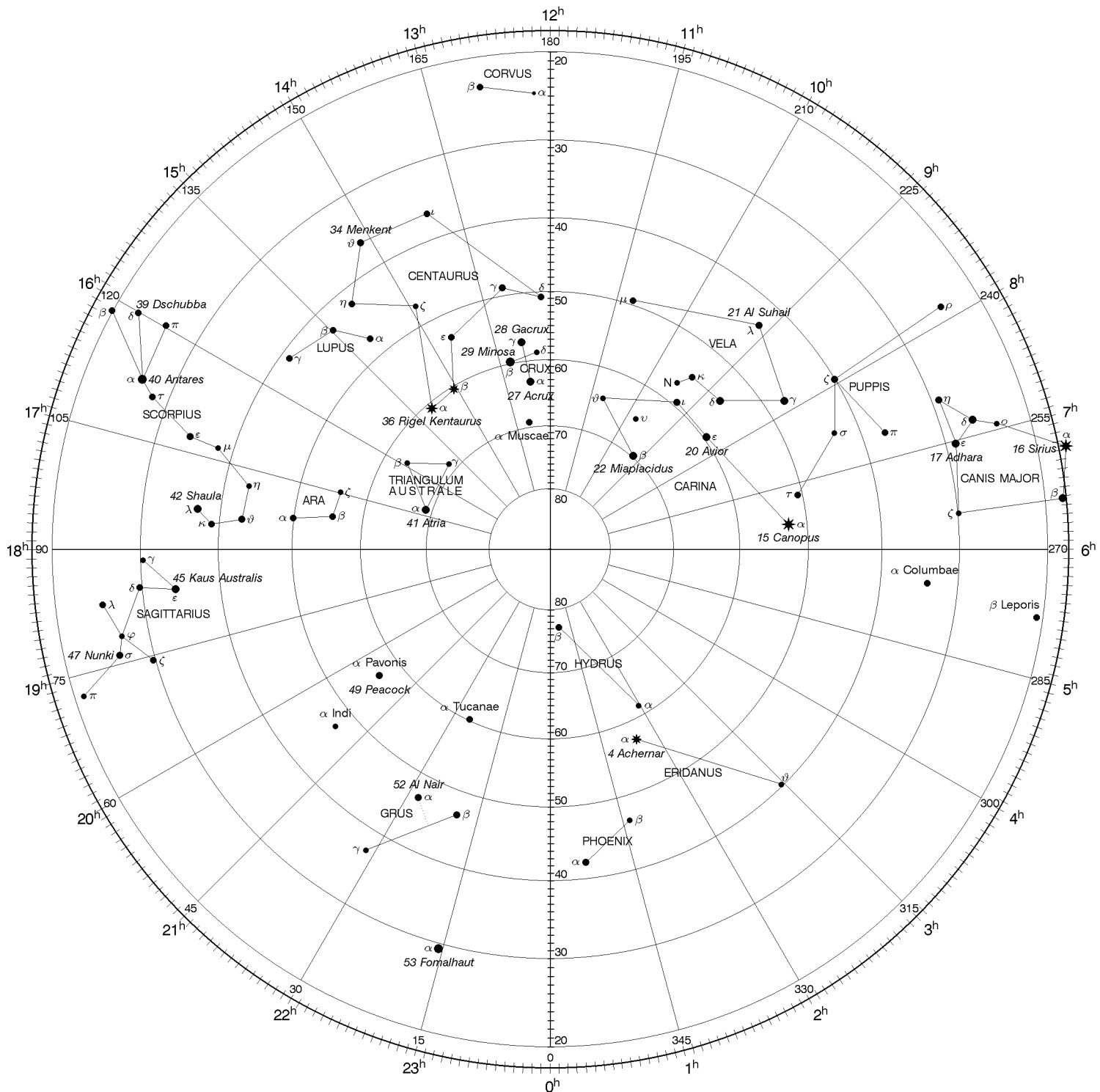
★ $0.0 < m \leq 0.5$
● $3.0 < m \leq 3.5$

★ $0.5 < m \leq 1.0$
● $3.5 < m \leq 4.0$

● $1.0 < m \leq 1.5$
● $4.0 < m \leq 4.5$

● $1.5 < m \leq 2.0$
● $4.5 < m \leq 5.0$
● $2.0 < m \leq 2.5$

KARTA SAZVEŽĐA JUŽNOG NEBA



VELIČINE ZVEZDA

- ★ $0.0 \geq m$
 - ★ $0.0 < m \leq 0.5$
 - ★ $0.5 < m \leq 1.0$
 - $1.0 < m \leq 1.5$
 - $1.5 < m \leq 2.0$
 - $2.0 < m \leq 2.5$
 - $2.5 < m \leq 3.0$
 - $3.0 < m \leq 3.5$
 - $3.5 < m \leq 4.0$
 - $4.0 < m \leq 4.5$
 - $4.5 < m \leq 5.0$

ZVEZDANO NEBO U POLA NOĆI

