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# NAUTIČKI GODIŠNJAK

— ZA —  
**2009**  
— GODINU —

UPRAVA ZA POMORSKU SIGURNOST CRNE GORE  
BAR – CRNA GORA

# UKUPNA POPRAVKA VISINE

PRVA POPRAVKA VISINE ZA SUNCE, ZVEZDE I PLANETE		
Opažena visina	☉	★ i planeta
	refrakcija paralaksa radijus = 16'	refrakcija
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
8.5	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 PROMENE 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
	+0.3	+0.2	+0.1	-0.1	-0.2	-0.2	-0.2	-0.2	0.0	+0.1	+0.2	+0.3

☉ Za gornji rub Sunca korekcija = tablična vrednost manje dvostruki radijus (2r)

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PRVO IZDANJE

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IZDAVAČ:

**UPRAVA ZA POMORSKU SIGURNOST BAR**  
**MATEMATIČKI FAKULTET BEOGRAD**

GLAVNI I ODGOVORNI UREDNIK:

Prof. Dr **STEVO ŠEGAN**

RECENZENT:

Kap.d.plov. **KRSTO RAKOČEVIĆ**

LEKTURA I KOREKTURA:

PROF. DR **STEVO ŠEGAN**

UREĐIVAČKI ODBOR:

Kap.d.plov. **KRSTO RAKOČEVIĆ**

PROF. DR **STEVO ŠEGAN**

SLOG:

PROF. DR **STEVO ŠEGAN**

ŠTAMPA: STUDIO PLUS, Beograd

---

POVEZ: STUDIO PLUS, Beograd

---

TIRAŽ:

**150 PRIMERAKA**

ADRESA IZDAVAČA:

**UPRAVA ZA POMORSKU SIGURNOST CRNE GORE**  
**MARŠALA TITA 7, 85000 BAR**



PRVO IZDANJE

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var = promenljivi deo Nautičkog godišnjaka  
const = stalni deo Nautičkog godišnjaka

# PREDGOVOR

Uprava za pomorsku sigurnost Crne Gore iz Bara izdaje svoj treći broj NAUTIČKOG GODIŠNJAKA, koji je pet-naesti u jednom drugom nizu i šezdesetišesti u ukupnom nizu izdanja ove publikacije na našim prostorima.

Za šezdesetišest brojeva Nautičkog godišnjaka, do sada, možemo zahvaliti jednoj maloj armiji ljudi, entuzijasta i naučnika, koji su dali svoj nesebični 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 prevedeni na naš jezik i kada su ručno ukucavane brojne vrednosti efemerida, tablica popravki i svih ostalih delova Godišnjaka, do današnje 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 dva, izvršio je prof. dr Stevo Šegan, profesor na Katedri za astronomiju Matematičkog fakulteta u Beogradu.

Svi podaci potrebni za navigaciju izračunati su polazeći od heliocentričnih pravougljih koordinata nebeskih tela za standardnu epohu J2000.0, a izračunavanja su usklađena sa preporukama i rešenjima Međunarodne astronomske unije (IAU 1976–1983 i XXIV GA 2000). Takvim postupkom osigurana je maksimalna tačnost u današnje vreme.

Podaci u Nautičkom godišnjaku izračunati su i prerađeni isključivo za potrebe astronomske navigacije.

Godišnjak se sastoji iz dva dela—*efemeridskog* (*var*) i *stalnog* (*const*). Efemeridski deo sadrži efemeride Sunca, Meseca, četiri velike planete (Venere, Marsa, Jupitera i Saturna) i pedeset četiri najsjajnije (nautičke) zvezde za celu godinu i tablice za određivanje geografske širine pomoću visine i azimuta Severnjače. Stalni deo Godišnjaka sadrži interpolacione i pomoćne tablice.

Svi vremenski podaci u Nautičkom godišnjaku odnose se na Grinički meridijan. Prema tome, argument u svim efemeridama je univerzalno vreme, koje se računa od ponoći (00<sup>h</sup>.00).

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

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

Sve primedbe, koje smo dobili nakon izlazenja prethodnih brojeva, ukoliko se pokazalo da su tačne, uvažili smo.

Molimo da nam i u buduće dostavite, eventualne i opravdane primedbe i ispravke, koje ćemo, sa punim uvažavanjem, razmotriti.

KATEDRA ZA ASTRONOMIJU  
UNIVERZITETA U BEOGRADU

PROF. DR STEVO ŠEGAN

DIREKTOR  
UPRAVE ZA POMORSKU SIGURNOST CRNE GORE

KAPETAN DUKE PLOVIDBE  
KRSTO RAKOČEVIĆ

# ASTRONOMSKI ZNACI, SKRAĆENICE I KONSTANTE

## NAŠI I ENGLJSKI NAZIVI ZA ZNAKOVE Domestic and English Names for Symbols

☉ ... Sunce	The Sun
☾ ... Mesec	The Moon
★ ... Zvezda	A Star
♀ ... Venera	Venus
♂ ... Mars	Mars
♃ ... Jupiter	Jupiter
♄ ... Saturn	Saturn
♈ ... Prolećna tačka	First Point of Aries
● ... Mlad Mesec	New Moon
◐ ... Prva četvrt	First Quarter
◑ ... Pun Mesec	Full Moon
◓ ... Poslednja četvrt	Last Quarter
° ... Stepen	Degree
' ... Minut (luka)	Minute of Arc
" ... Sekunda (luka)	Second of Arc

## ZODIJAČKI ZNACI I SAZVEŽĐA

♈ ... Ovan	Aries
♉ ... Bik	Taurus
♊ ... Blizanci	Gemini
♋ ... Rak	Cancer
♌ ... Lav	Leo
♍ ... Devojka	Virgo
♎ ... Vaga	Libra
♏ ... Škorpija	Scorpius
♐ ... Strelac	Sagittarius
♑ ... Jarac	Capricornus
♒ ... Vodolija	Aquarius
♓ ... Ribe	Pisces
♈ ... Prolećna tačka	
♏ ... Jesenja tačka	

## OPŠTI ASTRONOMSKI ZNACI

☉ ... Sunce	♅ ... Uran
☾ ... Mesec	♆ ... Neptun
☿ ... Merkur	♇ ... Pluton
♀ ... Venera	☄ ... Kometa
♁ ... Zemlja	● ... Mlad Mesec
♂ ... Mars	◐ ... Prva četvrt
♃ ... Jupiter	◑ ... Pun Mesec
♄ ... Saturn	◓ ... Poslednja četvrt

## SKRAĆENICE

d ... dan	} vremena
h ... čas	
min ... minut	
s ... sekunda	
° ... stepen	} ugla
' ... minut	
" ... sekunda	
+	{ severne geografske širine i deklinacije; istočne geografske dužine
-	{ južne geografske širine i deklinacije; zapadne geografske dužine

## OSNOVNE ASTRONOMSKE KONSTANTE IAU(1976) XXIV(2000)

### DEFINICIONE KONSTANTE

Gausova gravitaciona konstanta . . . . .  $k = 0.017\ 202\ 098\ 95$   
Brzina svetlosti . . . . .  $c = 299\ 792\ 458\ m/s$

### OSNOVNE KONSTANTE

Svetlosno vreme . . . . .  $\tau_A = 499.004\ 786\ s$   
Ekvatorski poluprečnik Zemlje . . . . .  $a_e = 6\ 378\ 137\ m$   
Dinamički faktor oblika Zemlje . . . . .  $J_2 = 0.001\ 082\ 64$   
Geocentrična gravitaciona konstanta . . . . .  $GE = 3.986\ 004 \times 10^{14}\ m^3/s^2$   
Konstanta gravitacije . . . . .  $G = 6.673 \times 10^{-11}\ m^3/kg\ s^2$   
Masa Meseca u jedinicama mase Zemlje  $\mu = 0.012\ 300\ 04$   
Opšta precesija u longitudi,  
za Julijansko stoleće . . . . .  $\rho = 5029''.7970$   
Nagib ekliptike . . . . .  $\epsilon = 23^\circ 26' 21''.448$

### IZVEDENE KONSTANTE

Konstanta nutacije . . . . .  $N = 9''.2052$   
Jedinica rastojanja (astronomska jed.)  $c\tau_A = A = 1.495\ 978\ 71 \times 10^{11}\ m$   
Paralaksa Sunca . . . . .  $\arcsin(a_e/A) = \pi_\odot = 8''.794\ 143$   
Konstanta aberacije . . . . .  $\alpha = 20''.495\ 51$   
Faktor Zemljine spljoštenosti . . . . .  $f = 0.003\ 352\ 82 = 1/298.256$   
Heliocentrična gravitaciona konstanta  $GS = 1.327\ 124\ 42 \times 10^{20}\ m^3/s^2$   
Masa Sunca u jedinicama mase Zemlje  $GS/GE = S/E = 332\ 946.0$   
Masa Sunca . . . . .  $GS/G = S = 1.9884 \times 10^{30}\ kg$   
Relativne mase planeta:  
Merkur . . . . . 6023 600  
Venera . . . . . 408 523.7  
Zemlja + Mesec . . . . . 328 900.6  
Mars . . . . . 3098 708  
Jupiter . . . . . 1 047.349  
Saturn . . . . . 3 497.9  
Uran . . . . . 22 903  
Neptun . . . . . 19 412  
Pluton . . . . . 135 200 000



# NAŠE I ENGLLESKE SKRAĆENICE I KLJUČNE REČI

## Domestic and English Abbreviations and Key Words

<p><b>UT</b> Univerzalno (svetsko) vreme</p> <p><b>T<sub>p</sub></b> Griničko pravo vreme</p> <p><b>T<sub>z</sub></b> Griničko zvezdano vreme</p> <p><b>T<sub>m</sub></b> Srednje vreme gornjeg prolaza kroz meridijan u Griniču</p> <p><b>T<sub>m</sub></b> Srednje vreme donjeg prolaza kroz meridijan u Griniču</p> <p><b>t<sub>s</sub></b> Mesno srednje vreme</p> <p><b>t<sub>p</sub></b> Mesno pravo vreme</p> <p><b>t<sub>z</sub></b> Mesno zvezdano vreme</p> <p><b>t<sub>x</sub></b> Zonsko vreme</p> <p><b>t<sub>zv</sub></b> Zvanično vreme</p> <p><b>e</b> Jednačina vremena</p> <p><b>S</b> Grinički časovni ugao</p> <p><b>s</b> Mesni časovni ugao</p> <p><b>δ</b> Deklinacija</p> <p><b>α</b> Rektascenzija</p> <p><b>(360° - α)</b> Surektascenzija</p> <p><b>γ</b> Prolećna tačka</p> <p><b>π</b> Horizontska paralaksa</p> <p><b>φ</b> Geografska širina</p> <p><b>λ</b> Geografska dužina</p> <p><b>r</b> Poluprečnik</p> <p><b>Pl.</b> Planete</p> <p><b>Br.</b> Broj</p> <p><b>Vel.</b> Veličina</p> <p><b>d</b> Dan</p> <p><b>h</b> Čas</p> <p><b>min</b> Minut</p> <p><b>s</b> Sekunda</p>	<p><b>UT</b> Universal Time</p> <p><b>GAT</b> Greenwich Apparent Time</p> <p><b>GST</b> Greenwich Sidereal Time</p> <p><b>T<sub>U</sub></b> Greenwich Mean Time of the Upper Transit on the Meridian of Greenwich</p> <p><b>T<sub>L</sub></b> Greenwich Mean Time of the Lower Transit on the Meridian of Greenwich</p> <p><b>LMT</b> Local Mean Time</p> <p><b>LAT</b> Local Apparent Time</p> <p><b>LST</b> Local Sidereal Time</p> <p><b>ZT</b> Zone Time</p> <p><b>LCT</b> Local Civil Time</p> <p><b>Eq.T.</b> Equation of Time (App.-Mean)</p> <p><b>GHA</b> Greenwich Hour Angle</p> <p><b>LHA</b> Local Hour Angle, Meridian Angle</p> <p><b>Dec.</b> Declination</p> <p><b>RA</b> Right Ascension</p> <p><b>SHA</b> Sidereal Hour Angle</p> <p><b>γ</b> First Point of Aries</p> <p><b>H.P.</b> Horizontal Parallax</p> <p><b>Lat.</b> Latitude</p> <p><b>Long.</b> Longitude</p> <p><b>SD</b> Semidiameter</p> <p><b>Pl.</b> Planets</p> <p><b>No.</b> Number</p> <p><b>Mag.</b> Magnitude</p> <p><b>d</b> Day</p> <p><b>h</b> Hour</p> <p><b>min</b> Minute of Time</p> <p><b>s</b> Second of Time</p>
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Pregled zvezda .....	Review of Selected Stars
Prividni položaji zvezda .....	Apparent Places of Selected Stars
Popravka časovnog ugla .....	Increment to GHA
Druga popravka za časovni ugao i deklinaciju .....	Correction to GHA and Declination
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Popravka .....	Correction
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Interpolacione tablice .....	Interpolation Tables
Izlaz, zalaz .....	Rise, Set
Trajanje sumraka .....	Twilight Duration
Građanski .....	Civil
Astronomski .....	Astronomic
Mesečeve mene .....	Moon Phases
Starost Meseca .....	Moon Age
Perigej .....	Perigee
Apogej .....	Apogee

# PODACI O MESECU I POČETKU GODIŠNJIH DOBA

MESEČEVE MENE																						
mesec	MLAD MESEC				PRVA ČETVRT				PUN MESEC				POSLEDNJA ČETVRT				mesec					
	●		●		●		●		○		○		●		●							
	dan	h	min	dan	h	min	dan	h	min	dan	h	min	dan	h	min	dan		h	min			
Januar				26	7	55	4	11	56				11	3	27				18	2	46	Januar
Februar				25	1	35	2	23	13				9	14	49				16	21	37	Februar
Mart				26	16	6	4	7	46				11	2	38				18	17	47	Mart
April				25	3	23	2	14	34				9	14	56				17	13	36	April
Maj				24	12	11	1	20	44	31	3	22	9	4	1				17	7	26	Maj
Jun				22	19	35				29	11	28	7	18	12				15	22	15	Jun
Jul				22	2	35				28	22	0	7	9	21				15	9	53	Jul
Avgust				20	10	2				27	11	42	6	0	55				13	18	55	Avgust
Septembar				18	18	44				26	4	50	4	16	3				12	2	16	Septembar
Oktobar				18	5	33				26	0	42	4	6	10				11	8	56	Oktobar
Novembar				16	19	14				24	21	39	2	19	14				9	15	56	Novembar
Decembar				16	12	2				24	17	36	2	7	30	31	19	13	9	0	13	Decembar




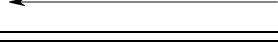



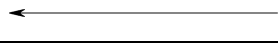









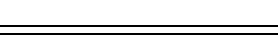








PERIGEJ I APOGEJ MESECA													
mesec	PERIGEJ					APOGEJ				mesec			
	dan	h	min	dan		h	min	dan	h		min		
Januar	10	10	53.0				23	0	12.0	Januar			
Februar	7	20	9.0				19	17	1.0	Februar			
Mart	7	15	8.0				19	13	17.0	Mart			
April	2	2	32.0	28	6	28.0	16	9	17.0	April			
Maj				26	3	45.0	14	2	58.0	Maj			
Jun				23	10	40.0	10	16	5.0	Jun			
Jul				21	20	17.0	7	21	40.0	Jul			
Avgust				19	4	54.0	4	0	43.0	31	11	5.0	Avgust
Septembar				16	7	57.0				28	3	34.0	Septembar
Oktobar				13	12	29.0				25	23	19.0	Oktobar
Novembar				7	7	31.0				22	20	8.0	Novembar
Decembar				4	14	13.0				20	14	55.0	Decembar

VIDLJIVOST PLANETA												
Osenčeni deo dijagrama pokazuje kada je planeta nevidljiva												
Planeta	Jan.	Feb.	Mart	Apr.	Maj	Jun	Jul	Avg.	Sep.	Okt.	Nov.	Dec.
♀ Venera			19. III	1. IV							3. XII	
♂ Mars	17. I											
♃ Jupiter	10. I	8. II										
♄ Saturn								31. VIII		7. X		

POČECI GODIŠNJIH DOBA			
PROLEĆE	LETO	JESEN	ZIMA
20. mart u 11 <sup>h</sup> 44 <sup>m</sup> 0	21. jun u 5 <sup>h</sup> 45 <sup>m</sup> 0	22. septembar u 21 <sup>h</sup> 18 <sup>m</sup> 0	21. decembar u 17 <sup>h</sup> 47 <sup>m</sup> 0

# POMRAČENJA SUNCA I MESECA u 2009. godini

DESIĆE SE UKUPNO ŠEST POMRAČENJA:  
JEDNO PRSTENASTO I JEDNO POTPUNO POMRAČENJE SUNCA  
POMRAČENJA MESECA: JEDNO DELIMIČNO I TRI POLUSENKOM

1.	26. JANUAR	 <b>PRSTENASTO POMRAČENJE SUNCA</b>	univerzalno (svetsko) vreme dan h min
•		POČETAK POMRAČENJA	26 6 9.0
••••		SREDINA POMRAČENJA	26 7 58.7
•		KRAJ POMRAČENJA	26 9 48.5
		VIDLJIVOST: JUŽNA AFRIKA, ANTARKTIK, INDIJSKI OKEAN, AUSTRALIJA, AUSTRAL-AZIJA	
4.	9. FEBRUAR	 <b>POMRAČENJE MESECA POLUSENKOM</b>	univerzalno (svetsko) vreme dan h min
•		ULAZAK MESECA U POLUSENKU	9 12 36.8
••••		SREDINA POMRAČENJA	9 14 38.3
•		IZLAZAK MESECA IZ POLUSENKE	9 16 39.6
4.	7. JULI	 <b>POMRAČENJE MESECA POLUSENKOM</b>	univerzalno (svetsko) vreme dan h min
•		ULAZAK MESECA U POLUSENKU	7 8 32.8
••••		SREDINA POMRAČENJA	7 9 38.6
•		IZLAZAK MESECA IZ POLUSENKE	7 10 44.5
3.	22. JULI	 <b>POTPUNO POMRAČENJE SUNCA</b>	univerzalno (svetsko) vreme dan h min
•		POČETAK POMRAČENJA	22 23 58.3
•••		POČETAK POTPUNOG POMRAČENJA	23 0 54.5
••••		SREDINA POMRAČENJA	23 2 35.4
•••		KRAJ POTPUNOG POMRAČENJA	23 4 16.2
•		KRAJ POMRAČENJA	23 5 12.4
		VIDLJIVOST: ISTOČNI MEDITERAN, AZIJA, PACIFIK	
4.	6. AVGUST	 <b>POMRAČENJE MESECA POLUSENKOM</b>	univerzalno (svetsko) vreme dan h min
•		ULAZAK MESECA U POLUSENKU	6 23 1.1
••••		SREDINA POMRAČENJA	7 0 39.2
•		IZLAZAK MESECA IZ POLUSENKE	7 2 17.4
4.	31. DECEMBAR	 <b>DELIMIČNO POMRAČENJE MESECA</b>	univerzalno (svetsko) vreme dan h min
•		ULAZAK MESECA U POLUSENKU	31 17 15.3
••••		SREDINA POMRAČENJA	31 19 22.7
•		IZLAZAK MESECA IZ POLUSENKE	31 21 30.1

# KALENDAR

## za prostu 2009. godinu

JANUAR				FEBRUAR				MART				APRIL				MAJ				JUN			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
245				245				245				245				245				245			
ČE	1	1	4832.5	NE5	1	32	4863.5	NE9	1	60	4891.5	SR	1	91	4922.5	PE	1	121	4952.5	PO	1	152	4983.5
PE	2	2	4833.5	PO	2	33	4864.5	PO	2	61	4892.5	ČE	2	92	4923.5	SU	2	122	4953.5	UT	2	153	4984.5
SU	3	3	4834.5	UT	3	34	4865.5	UT	3	62	4893.5	PE	3	93	4924.5	NE18	3	123	4954.5	SR	3	154	4985.5
NE1	4	4	4835.5	SR	4	35	4866.5	SR	4	63	4894.5	SU	4	94	4925.5	PO	4	124	4955.5	ČE	4	155	4986.5
PO	5	5	4836.5	ČE	5	36	4867.5	ČE	5	64	4895.5	NE14	5	95	4926.5	UT	5	125	4956.5	PE	5	156	4987.5
UT	6	6	4837.5	PE	6	37	4868.5	PE	6	65	4896.5	PO	6	96	4927.5	SR	6	126	4957.5	SU	6	157	4988.5
SR	7	7	4838.5	SU	7	38	4869.5	SU	7	66	4897.5	UT	7	97	4928.5	ČE	7	127	4958.5	NE23	7	158	4989.5
ČE	8	8	4839.5	NE6	8	39	4870.5	NE10	8	67	4898.5	SR	8	98	4929.5	PE	8	128	4959.5	PO	8	159	4990.5
PE	9	9	4840.5	PO	9	40	4871.5	PO	9	68	4899.5	ČE	9	99	4930.5	SU	9	129	4960.5	UT	9	160	4991.5
SU	10	10	4841.5	UT	10	41	4872.5	UT	10	69	4900.5	PE	10	100	4931.5	NE19	10	130	4961.5	SR	10	161	4992.5
NE2	11	11	4842.5	SR	11	42	4873.5	SR	11	70	4901.5	SU	11	101	4932.5	PO	11	131	4962.5	ČE	11	162	4993.5
PO	12	12	4843.5	ČE	12	43	4874.5	ČE	12	71	4902.5	NE15	12	102	4933.5	UT	12	132	4963.5	PE	12	163	4994.5
UT	13	13	4844.5	PE	13	44	4875.5	PE	13	72	4903.5	PO	13	103	4934.5	SR	13	133	4964.5	SU	13	164	4995.5
SR	14	14	4845.5	SU	14	45	4876.5	SU	14	73	4904.5	UT	14	104	4935.5	ČE	14	134	4965.5	NE24	14	165	4996.5
ČE	15	15	4846.5	NE7	15	46	4877.5	NE11	15	74	4905.5	SR	15	105	4936.5	PE	15	135	4966.5	PO	15	166	4997.5
PE	16	16	4847.5	PO	16	47	4878.5	PO	16	75	4906.5	ČE	16	106	4937.5	SU	16	136	4967.5	UT	16	167	4998.5
SU	17	17	4848.5	UT	17	48	4879.5	UT	17	76	4907.5	PE	17	107	4938.5	NE20	17	137	4968.5	SR	17	168	4999.5
NE3	18	18	4849.5	SR	18	49	4880.5	SR	18	77	4908.5	SU	18	108	4939.5	PO	18	138	4969.5	ČE	18	169	5000.5
PO	19	19	4850.5	ČE	19	50	4881.5	ČE	19	78	4909.5	NE16	19	109	4940.5	UT	19	139	4970.5	PE	19	170	5001.5
UT	20	20	4851.5	PE	20	51	4882.5	PE	20	79	4910.5	PO	20	110	4941.5	SR	20	140	4971.5	SU	20	171	5002.5
SR	21	21	4852.5	SU	21	52	4883.5	SU	21	80	4911.5	UT	21	111	4942.5	ČE	21	141	4972.5	NE25	21	172	5003.5
ČE	22	22	4853.5	NE8	22	53	4884.5	NE12	22	81	4912.5	SR	22	112	4943.5	PE	22	142	4973.5	PO	22	173	5004.5
PE	23	23	4854.5	PO	23	54	4885.5	PO	23	82	4913.5	ČE	23	113	4944.5	SU	23	143	4974.5	UT	23	174	5005.5
SU	24	24	4855.5	UT	24	55	4886.5	UT	24	83	4914.5	PE	24	114	4945.5	NE21	24	144	4975.5	SR	24	175	5006.5
NE4	25	25	4856.5	SR	25	56	4887.5	SR	25	84	4915.5	SU	25	115	4946.5	PO	25	145	4976.5	ČE	25	176	5007.5
PO	26	26	4857.5	ČE	26	57	4888.5	ČE	26	85	4916.5	NE17	26	116	4947.5	UT	26	146	4977.5	PE	26	177	5008.5
UT	27	27	4858.5	PE	27	58	4889.5	PE	27	86	4917.5	PO	27	117	4948.5	SR	27	147	4978.5	SU	27	178	5009.5
SR	28	28	4859.5	SU	28	59	4890.5	SU	28	87	4918.5	UT	28	118	4949.5	ČE	28	148	4979.5	NE26	28	179	5010.5
ČE	29	29	4860.5					NE13	29	88	4919.5	SR	29	119	4950.5	PE	29	149	4980.5	PO	29	180	5011.5
PE	30	30	4861.5					PO	30	89	4920.5	ČE	30	120	4951.5	SU	30	150	4981.5	UT	30	181	5012.5
SU	31	31	4862.5					UT	31	90	4921.5					NE22	31	151	4982.5				

JUL				AVGUST				SEPTEMBAR				OKTOBAR				NOVEMBAR				DECEMBAR			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
245				245				245				245				245				245			
SR	1	182	5013.5	SU	1	213	5044.5	UT	1	244	5075.5	ČE	1	274	5105.5	NE44	1	305	5136.5	UT	1	335	5166.5
ČE	2	183	5014.5	NE31	2	214	5045.5	SR	2	245	5076.5	PE	2	275	5106.5	PO	2	306	5137.5	PO	2	336	5167.5
PE	3	184	5015.5	PO	3	215	5046.5	ČE	3	246	5077.5	SU	3	276	5107.5	UT	3	307	5138.5	ČE	3	337	5168.5
SU	4	185	5016.5	UT	4	216	5047.5	PE	4	247	5078.5	NE40	4	277	5108.5	SR	4	308	5139.5	PE	4	338	5169.5
NE27	5	186	5017.5	SR	5	217	5048.5	SU	5	248	5079.5	PO	5	278	5109.5	ČE	5	309	5140.5	SU	5	339	5170.5
PO	6	187	5018.5	ČE	6	218	5049.5	NE36	6	249	5080.5	UT	6	279	5110.5	PE	6	310	5141.5	NE49	6	340	5171.5
UT	7	188	5019.5	PE	7	219	5050.5	PO	7	250	5081.5	SR	7	280	5111.5	SU	7	311	5142.5	PO	7	341	5172.5
SR	8	189	5020.5	SU	8	220	5051.5	UT	8	251	5082.5	ČE	8	281	5112.5	NE45	8	312	5143.5	UT	8	342	5173.5
ČE	9	190	5021.5	NE32	9	221	5052.5	SR	9	252	5083.5	PE	9	282	5113.5	PO	9	313	5144.5	SR	9	343	5174.5
PE	10	191	5022.5	PO	10	222	5053.5	ČE	10	253	5084.5	SU	10	283	5114.5	UT	10	314	5145.5	ČE	10	344	5175.5
SU	11	192	5023.5	UT	11	223	5054.5	PE	11	254	5085.5	NE41	11	284	5115.5	SR	11	315	5146.5	PE	11	345	5176.5
NE28	12	193	5024.5	SR	12	224	5055.5	SU	12	255	5086.5	PO	12	285	5116.5	ČE	12	316	5147.5	SU	12	346	5177.5
PO	13	194	5025.5	ČE	13	225	5056.5	NE37	13	256	5087.5	UT	13	286	5117.5	PE	13	317	5148.5	NE50	13	347	5178.5
UT	14	195	5026.5	PE	14	226	5057.5	PO	14	257	5088.5	SR	14	287	5118.5	SU	14	318	5149.5	PO	14	348	5179.5
SR	15	196	5027.5	SU	15	227	5058.5	UT	15	258	5089.5	ČE	15	288	5119.5	NE46	15	319	5150.5	UT	15	349	5180.5
ČE	16	197	5028.5	NE33	16	228	5059.5	SR	16	259	5090.5	PE	16	289	5120.5	PO	16	320	5151.5	SR	16	350	5181.5
PE	17	198	5029.5	PO	17	229	5060.5	ČE	17	260	5091.5	SU	17	290	5121.5	UT	17	321	5152.5	ČE	17	351	5182.5
SU	18	199	5030.5	UT	18	230	5061.5	PE	18	261	5092.5	NE42	18	291	5122.5	SR	18	322	5153.5	PE	18	352	5183.5
NE24	19	200	5031.5	SR	19	231	5062.5	SU	19	262	5093.5	PO	19	292	5123.5	ČE	19	323	5154.5	SU	19	353	5184.5
PO	20	201	5032.5	ČE	20	232	5063.5	NE38	20	263	5094.5	UT	20	293	5124.5	PE	20	324	5155.5	NE51	20	354	5185.5
UT	21	202	5033.5	PE	21	233	5064.5	PO	21	264	5095.5	SR	21	294	5125.5	SU	21	325	5156.5	PO	21	355	5186.5
SR	22	203	5034.5	SU	22	234	5065.5	UT	22	265	5096.5	ČE	22	295	5126.5	NE47	22	326	5157.5	UT	22	356	5187.5
ČE	23	204	5035.5	NE34	23	235	5066.5	SR	23	266	5097.5	PE	23	296	5127.5	PO	23	327	5158.5	SR	23	357	5188.5
PE	24	205	5036.5	PO	24	236	5067.5	ČE	24	267	5098.5	SU	24	297	5128.5	UT	24	328	5159.5	ČE	24	358	5189.5
SU	25	206	5037.5	UT	25	237	5068.5	PE	25	268	5099.5	NE43	25	298	5129.5	SR	25	329	5160.5	PE	25	359	5190.5
NE30</																							



# ***Efemeride***

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

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	8.1	-23	.5	100	46.3	130	48.3	-13	49.1	186	45.7	-24	6.1
2	209	7.5	-23	.1	130	51.3	160	48.1	-13	46.9	216	46.5	-24	6.1
4	239	6.9	-22	59.7	160	56.2	190	47.8	-13	44.8	246	47.3	-24	6.0
6	269	6.3	-22	59.3	191	1.1	220	47.6	-13	42.6	276	48.1	-24	6.0
8	299	5.7	-22	58.8	221	6.0	250	47.3	-13	40.4	306	48.9	-24	6.0
10	329	5.1	-22	58.4	251	11.0	280	47.1	-13	38.2	336	49.8	-24	5.9
12	359	4.6	-22	58.0	281	15.9	310	46.9	-13	36.0	6	50.6	-24	5.9
14	29	4.0	-22	57.6	311	20.8	340	46.6	-13	33.8	36	51.4	-24	5.8
16	59	3.4	-22	57.1	341	25.8	10	46.4	-13	31.6	66	52.2	-24	5.8
18	89	2.8	-22	56.7	11	30.7	40	46.2	-13	29.4	96	53.0	-24	5.7
20	119	2.2	-22	56.3	41	35.6	70	46.0	-13	27.2	126	53.8	-24	5.7
22	149	1.6	-22	55.8	71	40.5	100	45.8	-13	25.0	156	54.6	-24	5.6
Δ		-3		2				-1		11			4	0

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	9 3	15 4	0 57	2 45	10 32	.1	19 57	3.5		
55	8 25	15 42	0 45	2 17	10 14	.4	20 12	3.2		
50	7 59	16 8	0 38	1 59	10 1	.6	20 23	3.0		
45	7 38	16 28	0 34	1 46	9 51	.8	20 32	2.8		
40	7 22	16 45	0 30	1 37	9 42	1.0	20 39	2.6		
35	7 8	16 59	0 28	1 30	9 34	1.1	20 46	2.4		
30	6 56	17 11	0 26	1 25	9 28	1.2	20 51	2.3		
20	6 35	17 32	0 24	1 18	9 16	1.4	21 1	2.1		
10	6 17	17 50	0 23	1 15	9 6	1.6	21 9	1.9		
0	5 59	18 7	0 22	1 15	8 56	1.8	21 17	1.8		
10	5 42	18 24	0 23	1 17	8 47	1.9	21 24	1.6		
20	5 24	18 43	0 24	1 24	8 36	2.1	21 32	1.4		
30	5 2	19 5	0 27	1 36	8 24	2.3	21 42	1.2		
35	4 49	19 17	0 30	1 46	8 17	2.4	21 47	1.1		
40	4 34	19 32	0 33	2 2	8 10	2.6	21 53	.9		
45	4 17	19 50	0 37	2 30	8 0	2.8	21 59	.8		
50	3 54	20 12	0 44	:::	7 49	3.0	22 8	.6		
55	3 25	20 41	0 57	:::	7 35	3.2	22 18	.4		
60	2 42	21 24	1 37	:::	7 17	3.6	22 30	.1		

UT	MESEC				JUPITER				SATURN				
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	139	57.6	153	-14	50.5	132	158	53.1	-20	49.3	286	32.8	5
2	169	4.9	153	-14	26.8	133	188	56.9	-20	49.1	316	37.7	5
4	198	12.3	154	-14	2.9	134	219	.6	-20	48.9	346	42.7	5
6	227	19.8	154	-13	38.7	134	249	4.3	-20	48.6	16	47.6	5
8	256	27.5	154	-13	14.2	135	279	8.0	-20	48.4	46	52.5	5
10	285	35.3	155	-12	49.6	136	309	11.8	-20	48.2	76	57.4	5
12	314	43.2	155	-12	24.7	137	339	15.5	-20	48.0	107	2.3	5
14	343	51.3	155	-11	59.5	138	9	19.2	-20	47.7	137	7.2	5
16	12	59.5	155	-11	34.2	138	39	22.9	-20	47.5	167	12.2	5
18	42	7.7	155	-11	8.6	139	69	26.7	-20	47.3	197	17.1	5
20	71	16.1	155	-10	42.8	140	99	30.4	-20	47.0	227	22.0	5
22	100	24.6	155	-10	16.8	140	129	34.1	-20	46.8	257	26.9	5
Δ							19			1	25		0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r	
h	min	s	'	h min	min	'	'		
00	- 2	58.8	-1.2	16.3	T <sub>m</sub>	15 6	1.8	54.7	14.9
12	- 3	13.2	T <sub>m</sub> ☉	12 h	3.2 min	Starost	3.5 d	Faza ●	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	31	-4.2	♄	13 23	.0	59	-1.8
♂	11 33	.1	87	1.3	♂	4 53	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	1.0	-22	55.4	101	45.5	130	45.5	-13	22.8	186	55.4	-24	5.6
2	209	.4	-22	54.9	131	50.4	160	45.3	-13	20.6	216	56.2	-24	5.5
4	238	59.9	-22	54.5	161	55.3	190	45.1	-13	18.4	246	57.0	-24	5.4
6	268	59.3	-22	54.0	192	.3	220	44.9	-13	16.2	276	57.8	-24	5.4
8	298	58.7	-22	53.6	222	5.2	250	44.7	-13	14.0	306	58.6	-24	5.3
10	328	58.1	-22	53.1	252	10.1	280	44.5	-13	11.7	336	59.4	-24	5.2
12	358	57.5	-22	52.6	282	15.0	310	44.3	-13	9.5	7	.2	-24	5.2
14	28	57.0	-22	52.2	312	20.0	340	44.2	-13	7.3	37	1.0	-24	5.1
16	58	56.4	-22	51.7	342	24.9	10	44.0	-13	5.1	67	1.8	-24	5.0
18	88	55.8	-22	51.2	12	29.8	40	43.8	-13	2.9	97	2.6	-24	5.0
20	118	55.2	-22	50.7	42	34.8	70	43.6	-13	.7	127	3.5	-24	4.9
22	148	54.6	-22	50.3	72	39.7	100	43.5	-12	58.4	157	4.3	-24	4.8
Δ		-3		2				-1		11			4	0

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	9 2	15 5	0 57	2 44	10 33	.1	21 22	3.6		
55	8 25	15 43	0 45	2 17	10 24	.4	21 29	3.2		
50	7 59	16 9	0 38	1 59	10 16	.6	21 34	3.0		
45	7 38	16 29	0 34	1 46	10 10	.8	21 38	2.8		
40	7 22	16 46	0 30	1 37	10 5	.9	21 42	2.6		
35	7 8	16 59	0 28	1 30	10 1	1.1	21 44	2.5		
30	6 56	17 12	0 26	1 25	9 57	1.2	21 47	2.3		
20	6 35	17 32	0 24	1 18	9 50	1.4	21 51	2.1		
10	6 17	17 50	0 23	1 15	9 44	1.6	21 55	1.9		
0	5 60	18 7	0 22	1 15	9 39	1.8	21 59	1.8		
10	5 43	18 25	0 23	1 17	9 33	1.9	22 2	1.6		
20	5 24	18 43	0 24	1 24	9 27	2.1	22 6	1.4		
30	5 3	19 5	0 27	1 36	9 20	2.3	22 10	1.2		
35	4 50	19 17	0 30	1 46	9 16	2.5	22 13	1.1		
40	4 35	19 32	0 33	2 2	9 12	2.6	22 15	.9		
45	4 17	19 50	0 37	2 30	9 6	2.8	22 18	.8		
50	3 55	20 12	0 44	:::	9 0	3.0	22 22	.6		
55	3 26	20 41	0 57	:::	8 52	3.2	22 26	.3		
60	2 43	21 23	1 35	:::	8 42	3.5	22 32	.1		

UT	MESEC				JUPITER				SATURN				
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	129	33.1	155	- 9	50.7	141	159	37.8	-20	46.6	287	31.8	5
2	158	41.7	155	- 9	24.3	141	189	41.6	-20	46.3	317	36.8	5
4	187	50.4	154	- 8	57.7	142	219	45.3	-20	46.1	347	41.7	5
6	216	59.2	154	- 8	31.0	142	249	49.0	-20	45.9	17	46.6	5
8	246	8.0	154	- 8	4.1	143	279	52.7	-20	45.6	47	51.5	5
10	275	16.9	154	- 7	37.1	143	309	56.4	-20	45.4	77	56.4	5
12	304	25.8	153	- 7	9.8	144	340	.2	-20	45.2	108	1.4	5
14	333	34.7	153	- 6	42.5	144	10	3.9	-20	45.0	138	6.3	5
16	2	43.7	152	- 6	14.9	144	40	7.6	-20	44.7	168	11.2	5
18	31	52.7	152	- 5	47.3	145	70	11.3	-20	44.5	198	16.2	5
20	61	1.6	151	- 5	19.5	145	100	15.1	-20	44.3	228	21.1	5
22	90	10.6	151	- 4	51.5	145	130	18.8	-20	44.0	258	26.0	5
Δ							19			1	25		0

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	178	54.1	-22 49.8	102	44.6	130	43.3	-12 56.2	187	5.1	-24 4.7	
2	208	53.5	-22 49.3	132	49.5	160	43.1	-12 54.0	217	5.9	-24 4.6	
4	238	52.9	-22 48.8	162	54.5	190	43.0	-12 51.7	247	6.7	-24 4.6	
6	268	52.3	-22 48.3	192	59.4	220	42.8	-12 49.5	277	7.5	-24 4.5	
8	298	51.8	-22 47.8	223	4.3	250	42.6	-12 47.3	307	8.3	-24 4.4	
10	328	51.2	-22 47.3	253	9.2	280	42.5	-12 45.1	337	9.1	-24 4.3	
12	358	50.6	-22 46.8	283	14.2	310	42.3	-12 42.8	7	9.9	-24 4.2	
14	28	50.0	-22 46.3	313	19.1	340	42.2	-12 40.6	37	10.7	-24 4.1	
16	58	49.5	-22 45.8	343	24.0	10	42.1	-12 38.3	67	11.5	-24 4.0	
18	88	48.9	-22 45.3	13	29.0	40	41.9	-12 36.1	97	12.3	-24 3.9	
20	118	48.3	-22 44.8	43	33.9	70	41.8	-12 33.9	127	13.1	-24 3.8	
22	148	47.8	-22 44.2	73	38.8	100	41.7	-12 31.6	157	13.9	-24 3.7	
Δ		-3	3				-1	11		4		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 7	0 56	2 44	10 35	.1	22 48	3.7
55	8 25	15 44	0 45	2 16	10 32	.4	22 47	3.3
50	7 58	16 10	0 38	1 59	10 30	.6	22 46	3.1
45	7 38	16 30	0 34	1 46	10 29	.8	22 45	2.9
40	7 22	16 46	0 30	1 37	10 28	.9	22 44	2.7
35	7 8	17 0	0 28	1 30	10 26	1.1	22 44	2.6
30	6 56	17 12	0 26	1 25	10 25	1.2	22 43	2.4
20	6 36	17 33	0 24	1 18	10 24	1.4	22 43	2.2
10	6 17	17 51	0 23	1 15	10 22	1.6	22 42	2.0
0	6 0	18 8	0 22	1 15	10 21	1.8	22 41	1.8
10	5 43	18 25	0 23	1 17	10 19	2.0	22 40	1.6
20	5 25	18 43	0 24	1 24	10 18	2.2	22 40	1.4
30	5 3	19 5	0 27	1 36	10 16	2.4	22 39	1.2
35	4 51	19 18	0 29	1 46	10 15	2.5	22 38	1.1
40	4 36	19 32	0 33	2 1	10 14	2.7	22 37	1.0
45	4 18	19 50	0 37	2 29	10 13	2.8	22 37	.8
50	3 56	20 11	0 44	:::	10 11	3.0	22 36	.6
55	3 27	20 40	0 56	:::	10 9	3.3	22 35	.4
60	2 45	21 23	1 34	:::	10 7	3.6	22 33	.1
S								

UT	MESEC				JUPITER		SATURN					
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>				
h	°	'	''	°	°	'	°	'				
0	119	19.6	150	-4 23.5	145	160	22.5	-20 43.8	288	30.9	5 9.2	
2	148	28.5	149	-3 55.3	145	190	26.2	-20 43.6	318	35.9	5 9.2	
4	177	37.4	148	-3 27.1	145	220	29.9	-20 43.3	348	40.8	5 9.2	
6	206	46.3	148	-2 58.7	146	250	33.7	-20 43.1	18	45.7	5 9.2	
8	235	55.1	147	-2 30.2	146	280	37.4	-20 42.9	48	50.7	5 9.3	
10	265	3.9	146	-2 1.7	146	310	41.1	-20 42.6	78	55.6	5 9.3	
12	294	12.6	145	-1 33.0	146	340	44.8	-20 42.4	109	.5	5 9.3	
14	323	21.2	144	-1 4.3	145	10	48.5	-20 42.2	139	5.5	5 9.3	
16	352	29.8	143	-0 35.5	145	40	52.3	-20 41.9	169	10.4	5 9.4	
18	21	38.2	141	-0 6.6	145	70	56.0	-20 41.7	199	15.3	5 9.4	
20	50	46.6	140	0 22.3	145	100	59.7	-20 41.4	229	20.3	5 9.4	
22	79	54.8	139	0 51.2	145	131	3.4	-20 41.2	259	25.2	5 9.5	
Δ							19	1		25		0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-3 55.7	-1.2	16.3	T <sub>m</sub>	16 31	1.8	55.7 15.2		
12	-4 9.6	T <sub>m</sub> ☉	12 h 4.2 min	Starost 5.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	29	-4.2	♄	13 17	.0	59	-1.8
♂	11 31	.1	85	1.3	♂	4 45	.0	187	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	178	47.2	-22 43.7	103	43.7	130	41.5	-12 29.4	187	14.7	-24 3.6	
2	208	46.6	-22 43.2	133	48.7	160	41.4	-12 27.1	217	15.5	-24 3.5	
4	238	46.1	-22 42.7	163	53.6	190	41.3	-12 24.9	247	16.3	-24 3.4	
6	268	45.5	-22 42.1	193	58.5	220	41.2	-12 22.6	277	17.1	-24 3.3	
8	298	44.9	-22 41.6	224	3.5	250	41.1	-12 20.4	307	17.9	-24 3.2	
10	328	44.4	-22 41.1	254	8.4	280	41.0	-12 18.1	337	18.7	-24 3.1	
12	358	43.8	-22 40.5	284	13.3	310	40.9	-12 15.9	7	19.5	-24 3.0	
14	28	43.2	-22 40.0	314	18.2	340	40.8	-12 13.6	37	20.3	-24 2.9	
16	58	42.7	-22 39.4	344	23.2	10	40.7	-12 11.3	67	21.1	-24 2.8	
18	88	42.1	-22 38.9	14	28.1	40	40.6	-12 9.1	97	21.9	-24 2.7	
20	118	41.5	-22 38.3	44	33.0	70	40.5	-12 6.8	127	22.7	-24 2.5	
22	148	41.0	-22 37.8	74	38.0	100	40.4	-12 4.6	157	23.5	-24 2.4	
Δ		-3	3				-1	11		4		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	15 8	0 56	2 43	10 36	.1	..	.0
55	8 24	15 45	0 45	2 16	10 41	.4	..	.0
50	7 58	16 11	0 38	1 59	10 44	.6	23 60	3.2
45	7 38	16 31	0 34	1 46	10 47	.8	23 54	3.0
40	7 22	16 47	0 30	1 37	10 50	1.0	23 49	2.8
35	7 8	17 1	0 28	1 30	10 52	1.1	23 45	2.7
30	6 56	17 13	0 26	1 25	10 54	1.3	23 41	2.5
20	6 36	17 33	0 24	1 18	10 58	1.5	23 35	2.3
10	6 18	17 51	0 23	1 15	11 1	1.7	23 30	2.1
0	6 1	18 8	0 22	1 15	11 4	1.9	23 25	1.9
10	5 44	18 25	0 23	1 17	11 7	2.1	23 20	1.7
20	5 25	18 44	0 24	1 23	11 10	2.3	23 14	1.6
30	5 4	19 5	0 27	1 36	11 13	2.5	23 8	1.3
35	4 51	19 18	0 29	1 46	11 15	2.6	23 4	1.2
40	4 37	19 32	0 32	2 1	11 18	2.8	23 0	1.1
45	4 19	19 50	0 37	2 28	11 21	2.9	22 56	.9
50	3 58	20 11	0 44	:::	11 24	3.2	22 50	.7
55	3 29	20 40	0 56	:::	11 28	3.4	22 43	.4
60	2 46	21 22	1 32	:::	11 34	3.8	22 34	.1
S								

UT	MESEC				JUPITER		SATURN					
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>				
h	°	'	''	°	°	'	°	'				
0	109	2.9	138	1 20.2	144	161	7.1	-20 41.0	289	30.1	5 9.5	
2	138	10.9	136	1 49.3	144	191	10.8	-20 40.7	319	35.1	5 9.5	
4	167	18.7	135	2 18.3	144	221	14.6	-20 40.5	349	40.0	5 9.5	
6	196	26.4	133	2 47.4	143	251	18.3	-20 40.3	19	45.0	5 9.6	
8	225	33.9	132	3 16.5	143	281	22.0	-20 40.0	49	49.9	5 9.6	
10	254	41.2	130	3 45.7	142	311	25.7	-20 39.8	79	54.8	5 9.6	
12	283	48.3	129	4 14.8	142	341	29.4	-20 39.6	109	59.8	5 9.7	
14	312	55.3	127	4 43.9	141	11	33.2	-20 39.3	140	4.7	5 9.7	
16	342	2.0	125	5 12.9	140	41	36.9	-20 39.1	170	9.7	5 9.7	
18	11	8.5	123	5 42.0	140	71	40.6	-20 38.9	200	14.6	5 9.8	
20	40	14.8	122	6 11.0	139	101	44.3	-20 38.6	230	19.6	5 9.8	
22	69	20.9	120	6 40.0	138	131	48.0	-20 38.4	260	24.5	5 9.8	
Δ							19	1		25		0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-4 23.6	-1.1	16.3	T <sub>m</sub>	17 14	1.9	56.3 15.3		
12	-4 37.3	T <sub>m</sub> ☉	12 h 4.6 min	Starost 6.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	28	-4.2	♄	13 14	.0	58	-1.8
♂	11 31	.1	84	1.3	♂	4 41	.0	187	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	178	40.4	-22 37.2	104	42.9		130	40.3	-12 2.3	187	24.3	-24 2.3
2	208	39.9	-22 36.7	134	47.8		160	40.2	-12 .0	217	25.1	-24 2.2
4	238	39.3	-22 36.1	164	52.7		190	40.2	-11 57.8	247	25.9	-24 2.0
6	268	38.7	-22 35.5	194	57.7		220	40.1	-11 55.5	277	26.7	-24 1.9
8	298	38.2	-22 35.0	225	2.6		250	40.0	-11 53.2	307	27.5	-24 1.8
10	328	37.6	-22 34.4	255	7.5		280	40.0	-11 51.0	337	28.3	-24 1.7
12	358	37.1	-22 33.8	285	12.5		310	39.9	-11 48.7	7	29.1	-24 1.5
14	28	36.5	-22 33.2	315	17.4		340	39.9	-11 46.4	37	29.9	-24 1.4
16	58	36.0	-22 32.6	345	22.3		10	39.8	-11 44.1	67	30.7	-24 1.3
18	88	35.4	-22 32.1	15	27.2		40	39.8	-11 41.9	97	31.4	-24 1.1
20	118	34.9	-22 31.5	45	32.2		70	39.7	-11 39.6	127	32.2	-24 1.0
22	148	34.3	-22 30.9	75	37.1		100	39.7	-11 37.3	157	33.0	-24 .8
Δ		-3	3					0	11		4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 0	15 10	0 56	2 43	10 38	.1	0 17	3.9
55	8 24	15 47	0 45	2 16	10 50	.5	0 7	3.5
50	7 58	16 12	0 38	1 58	10 60	.8	...	.0
45	7 38	16 32	0 33	1 46	11 8	1.0	...	.0
40	7 22	16 48	0 30	1 37	11 14	1.1	...	.0
35	7 9	17 2	0 28	1 30	11 20	1.3	...	.0
30	6 57	17 14	0 26	1 25	11 25	1.4	...	.0
20	6 36	17 34	0 24	1 18	11 33	1.6	...	.0
10	6 18	17 52	0 23	1 15	11 41	1.8	...	.0
0	6 1	18 9	0 22	1 15	11 48	2.0	...	.0
10	5 44	18 26	0 23	1 17	11 56	2.2	...	.0
20	5 26	18 44	0 24	1 23	12 4	2.4	23 51	1.7
30	5 5	19 5	0 27	1 35	12 13	2.6	23 40	1.5
35	4 52	19 18	0 29	1 45	12 18	2.8	23 33	1.4
40	4 38	19 32	0 32	2 1	12 24	2.9	23 26	1.2
45	4 20	19 49	0 37	2 27	12 31	3.1	23 17	1.1
50	3 59	20 11	0 44	:::	12 40	3.3	23 6	.8
55	3 30	20 39	0 56	:::	12 50	3.6	22 53	.6
60	2 48	21 21	1 30	:::	13 4	4.0	22 36	.2
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	°	'			
0	98	26.7	118	7 8.9	137	161	51.7	-20 38.1	290	29.5	5 9.9
2	127	32.2	116	7 37.8	136	191	55.5	-20 37.9	320	34.4	5 9.9
4	156	37.5	114	8 6.6	135	221	59.2	-20 37.7	350	39.4	5 9.9
6	185	42.4	112	8 35.3	134	252	2.9	-20 37.4	20	44.3	5 10.0
8	214	47.1	109	9 4.0	133	282	6.6	-20 37.2	50	49.2	5 10.0
10	243	51.5	107	9 32.5	132	312	10.3	-20 37.0	80	54.2	5 10.0
12	272	55.6	105	10 1.0	130	342	14.0	-20 36.7	110	59.2	5 10.1
14	301	59.3	103	10 29.3	129	12	17.8	-20 36.5	141	4.1	5 10.1
16	331	2.7	100	10 57.5	128	42	21.5	-20 36.2	171	9.1	5 10.1
18	0	5.8	98	11 25.5	126	72	25.2	-20 36.0	201	14.0	5 10.2
20	29	8.4	96	11 53.4	124	102	28.9	-20 35.8	231	19.0	5 10.2
22	58	10.8	93	12 21.2	123	132	32.6	-20 35.5	261	23.9	5 10.2
Δ							19	1		25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 4 51.1	-1.1	16.3	T <sub>m</sub>	17 60	2.0	57.1		
12	- 5 4.6	T <sub>m</sub> ☉	12 h 5.1 min	Starost	7.5 d	Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 17	.2	27	-4.2	♄	13 11	.0	58	-1.8
♂	11 30	.1	84	1.3	♅	4 37	.0	187	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	178	33.8	-22 30.3	105	42.0		130	39.6	-11 35.0	187	33.8	-24 .7
2	208	33.2	-22 29.7	135	47.0		160	39.6	-11 32.7	217	34.6	-24 .5
4	238	32.7	-22 29.1	165	51.9		190	39.6	-11 30.5	247	35.4	-24 .4
6	268	32.1	-22 28.5	195	56.8		220	39.5	-11 28.2	277	36.2	-24 .2
8	298	31.6	-22 27.9	226	1.7		250	39.5	-11 25.9	307	37.0	-24 .1
10	328	31.0	-22 27.3	256	6.7		280	39.5	-11 23.6	337	37.8	-23 59.9
12	358	30.5	-22 26.6	286	11.6		310	39.5	-11 21.3	7	38.6	-23 59.8
14	28	29.9	-22 26.0	316	16.5		340	39.5	-11 19.0	37	39.4	-23 59.6
16	58	29.4	-22 25.4	346	21.5		10	39.5	-11 16.7	67	40.2	-23 59.5
18	88	28.9	-22 24.8	16	26.4		40	39.4	-11 14.4	97	41.0	-23 59.3
20	118	28.3	-22 24.2	46	31.3		70	39.4	-11 12.1	127	41.8	-23 59.1
22	148	27.8	-22 23.5	76	36.2		100	39.5	-11 9.8	157	42.6	-23 59.0
Δ		-3	3					0	11		4	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 60	15 12	0 56	2 42	10 41	.2	1 50	4.2
55	8 23	15 48	0 45	2 16	11 2	.7	1 31	3.7
50	7 58	16 13	0 38	1 58	11 18	1.0	1 17	3.4
45	7 38	16 33	0 33	1 46	11 31	1.2	1 6	3.2
40	7 22	16 49	0 30	1 37	11 42	1.4	0 57	3.0
35	7 9	17 3	0 28	1 30	11 51	1.5	0 49	2.8
30	6 57	17 14	0 26	1 25	11 59	1.6	0 43	2.7
20	6 36	17 35	0 24	1 18	12 13	1.9	0 31	2.5
10	6 19	17 53	0 23	1 15	12 25	2.0	0 21	2.3
0	6 2	18 9	0 22	1 15	12 37	2.2	0 11	2.1
10	5 45	18 26	0 23	1 17	12 48	2.4	0 1	1.9
20	5 27	18 44	0 24	1 23	13 1	2.6	...	.0
30	5 5	19 5	0 27	1 35	13 16	2.8	...	.0
35	4 53	19 18	0 29	1 45	13 24	2.9	...	.0
40	4 39	19 32	0 32	2 0	13 34	3.1	23 55	1.5
45	4 21	19 49	0 37	2 27	13 45	3.3	23 42	1.4
50	3 60	20 11	0 43	:::	13 59	3.5	23 27	1.1
55	3 32	20 39	0 55	:::	14 17	3.8	23 7	.8
60	2 50	21 20	1 29	:::	14 41	4.3	22 40	.3
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	°	'			
0	87	12.7	91	12 48.8	121	162	36.3	-20 35.3	291	28.9	5 10.3
2	116	14.3	88	13 16.2	119	192	40.0	-20 35.0	321	33.8	5 10.3
4	145	15.4	86	13 43.4	118	222	43.8	-20 34.8	351	38.8	5 10.3
6	174	16.2	83	14 10.4	116	252	47.5	-20 34.6	21	43.7	5 10.4
8	203	16.5	81	14 37.1	114	282	51.2	-20 34.3	51	48.7	5 10.4
10	232	16.4	78	15 3.7	112	312	54.9	-20 34.1	81	53.7	5 10.5
12	261	15.9	75	15 30.0	109	342	58.6	-20 33.8	111	58.6	5 10.5
14	290	14.9	73	15 56.1	107	13	2.3	-20 33.6	142	3.6	5 10.5
16	319	13.4	70	16 21.8	105	43	6.1	-20 33.4	172	8.5	5 10.6
18	348	11.5	67	16 47.3	103						



UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	27.2	-22	22.9	106	41.2	130	39.5	-11	7.5	187	43.4	-23	58.8
2	208	26.7	-22	22.3	136	46.1	160	39.5	-11	5.2	217	44.2	-23	58.6
4	238	26.2	-22	21.6	166	51.0	190	39.5	-11	2.9	247	45.0	-23	58.5
6	268	25.6	-22	21.0	196	55.9	220	39.5	-11	.6	277	45.8	-23	58.3
8	298	25.1	-22	20.3	227	.9	250	39.5	-10	58.3	307	46.6	-23	58.1
10	328	24.6	-22	19.7	257	5.8	280	39.5	-10	56.0	337	47.4	-23	58.0
12	358	24.0	-22	19.0	287	10.7	310	39.6	-10	53.7	7	48.1	-23	57.8
14	28	23.5	-22	18.4	317	15.7	340	39.6	-10	51.4	37	48.9	-23	57.6
16	58	22.9	-22	17.7	347	20.6	10	39.6	-10	49.1	67	49.7	-23	57.4
18	88	22.4	-22	17.1	17	25.5	40	39.7	-10	46.8	97	50.5	-23	57.2
20	118	21.9	-22	16.4	47	30.4	70	39.7	-10	44.5	127	51.3	-23	57.1
22	148	21.4	-22	15.7	77	35.4	100	39.8	-10	42.2	157	52.1	-23	56.9
Δ		-3		3				0		12			4	1

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 59	15 14	0 55	2 42	10 47	.5	3 30	4.4		
55	8 23	15 49	0 44	2 15	11 19	1.0	3 0	3.9		
50	7 58	16 15	0 38	1 58	11 42	1.3	2 39	3.5		
45	7 38	16 34	0 33	1 46	11 60	1.6	2 22	3.3		
40	7 22	16 50	0 30	1 37	12 14	1.7	2 9	3.1		
35	7 9	17 3	0 28	1 30	12 27	1.9	1 57	3.0		
30	6 57	17 15	0 26	1 25	12 38	2.0	1 47	2.9		
20	6 37	17 35	0 24	1 18	12 57	2.1	1 30	2.7		
10	6 19	17 53	0 23	1 15	13 14	2.3	1 15	2.5		
0	6 2	18 10	0 22	1 15	13 30	2.4	1 1	2.3		
10	5 45	18 26	0 23	1 17	13 46	2.6	0 48	2.2		
20	5 27	18 45	0 24	1 23	14 3	2.7	0 33	2.0		
30	5 6	19 5	0 27	1 35	14 23	2.9	0 16	1.8		
35	4 54	19 18	0 29	1 45	14 34	3.0	0 7	1.7		
40	4 40	19 32	0 32	1 60	14 48	3.2	...	.0		
45	4 22	19 49	0 37	2 26	15 3	3.3	...	.0		
50	4 1	20 10	0 43	:::	15 23	3.5	23 54	1.6		
55	3 33	20 38	0 55	:::	15 49	3.9	23 26	1.3		
60	2 52	21 19	1 27	:::	16 26	4.5	22 48	.7		

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	75	2.9	59	18	2.0	95	163	20.9	-20	32.4	292	28.4	5	10.7
2	103	59.0	57	18	26.2	92	193	24.6	-20	32.2	322	33.3	5	10.8
4	132	54.7	54	18	50.1	89	223	28.3	-20	31.9	352	38.3	5	10.8
6	161	49.8	52	19	13.6	86	253	32.0	-20	31.7	22	43.3	5	10.8
8	190	44.4	49	19	36.8	83	283	35.8	-20	31.4	52	48.2	5	10.9
10	219	38.6	46	19	59.5	80	313	39.5	-20	31.2	82	53.2	5	10.9
12	248	32.1	44	20	21.8	77	343	43.2	-20	30.9	112	58.2	5	11.0
14	277	25.2	42	20	43.7	74	13	46.9	-20	30.7	143	3.1	5	11.0
16	306	17.7	39	21	5.1	71	43	50.6	-20	30.5	173	8.1	5	11.1
18	335	9.7	37	21	26.1	68	73	54.3	-20	30.2	203	13.1	5	11.1
20	4	1.2	34	21	46.6	64	103	58.0	-20	30.0	233	18.1	5	11.1
22	32	52.2	32	22	6.6	61	134	1.8	-20	29.7	263	23.0	5	11.2
Δ								19		1			25	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	- 5 44.7	-1.1	16.3	T <sub>m</sub>	19 43	2.5	58.8
12	- 5 57.8	T <sub>m</sub> ☉	12 h 6.0 min	Starost	9.5 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 17	.2	25	-4.2	♄	13 5	.0	58	-1.8
♂	11 29	.1	82	1.3	♅	4 29	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	20.8	-22	15.1	107	40.3	130	39.8	-10	39.9	187	52.9	-23	56.7
2	208	20.3	-22	14.4	137	45.2	160	39.9	-10	37.5	217	53.7	-23	56.5
4	238	19.8	-22	13.7	167	50.2	190	39.9	-10	35.2	247	54.5	-23	56.3
6	268	19.2	-22	13.0	197	55.1	220	40.0	-10	32.9	277	55.3	-23	56.1
8	298	18.7	-22	12.4	228	.0	250	40.1	-10	30.6	307	56.1	-23	55.9
10	328	18.2	-22	11.7	258	4.9	280	40.1	-10	28.3	337	56.9	-23	55.7
12	358	17.7	-22	11.0	288	9.9	310	40.2	-10	26.0	7	57.7	-23	55.5
14	28	17.2	-22	10.3	318	14.8	340	40.3	-10	23.6	37	58.5	-23	55.3
16	58	16.6	-22	9.6	348	19.7	10	40.4	-10	21.3	67	59.2	-23	55.1
18	88	16.1	-22	8.9	18	24.7	40	40.4	-10	19.0	98	.0	-23	54.9
20	118	15.6	-22	8.2	48	29.6	70	40.5	-10	16.7	128	.8	-23	54.7
22	148	15.1	-22	7.5	78	34.5	100	40.6	-10	14.3	158	1.6	-23	54.5
Δ		-3		3				0		12			4	1

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 58	15 15	0 55	2 41	10 59	1.1	5 16	4.3		
55	8 22	15 51	0 44	2 15	11 43	1.7	4 33	3.7		
50	7 57	16 16	0 38	1 58	12 14	1.9	4 4	3.5		
45	7 38	16 35	0 33	1 46	12 37	2.1	3 41	3.3		
40	7 22	16 51	0 30	1 37	12 56	2.2	3 24	3.1		
35	7 9	17 4	0 28	1 30	13 12	2.3	3 9	3.0		
30	6 57	17 16	0 26	1 25	13 25	2.4	2 56	2.9		
20	6 37	17 36	0 24	1 18	13 49	2.5	2 34	2.8		
10	6 19	17 54	0 23	1 15	14 9	2.6	2 15	2.7		
0	6 3	18 10	0 22	1 14	14 28	2.7	1 57	2.6		
10	5 46	18 27	0 23	1 17	14 48	2.7	1 39	2.4		
20	5 28	18 45	0 24	1 23	15 9	2.8	1 21	2.3		
30	5 7	19 6	0 27	1 35	15 33	2.9	0 59	2.1		
35	4 55	19 18	0 29	1 45	15 47	3.0	0 47	2.1		
40	4 40	19 32	0 32	1 59	16 3	3.1	0 32	1.9		
45	4 23	19 49	0 36	2 25	16 23	3.2	0 15	1.8		
50	4 2	20 10	0 43	:::	16 48	3.3	...	.0		
55	3 34	20 38	0 55	:::	17 22	3.5	23 57	2.1		
60	2 54	21 18	1 26	:::	18 14	4.1	23 4	1.6		

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	61	42.6	30	22	26.1	57	164	5.5	-20	29.5	293	28.0	5	11.2
2	90	32.4	28	22	45.1	53	194	9.2	-20	29.2	323	33.0	5	11.3
4	119	21.8	26	23	3.5	50	224	12.9	-20	29.0	353	37.9	5	11.3
6	148	10.6	24	23	21.3	46	254	16.6	-20	28.8	23	42.9	5	11.4
8	176	58.9	22	23	38.6	42	284	20.3	-20	28.5	53	47.9	5	11.4
10	205	46.7	21	23	55.3	38	314	24.0	-20	28.3	83	52.9	5	11.4
12	234	34.0	19	24	11.4	34	344	27.7	-20	28.0	113	57.8	5	11.5
14	263	20.8	18	24	26.9	30	14	31.4	-20	27.8	144	2.8	5	11.5
16	292	7.1	16	24	41.7	26	44	35.2	-20	27.5	174	7.8	5	11.6
18	320	53.0	15	24	55.9	22	74	38.9	-20	27.3	204	12.8	5	11.6
20	349	38.3	14	25	9.4	18	104	42.6</						

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	14.6	-22	6.8	108	39.4	130	40.7	-10	12.0	188	2.4	-23	54.3
2	208	14.0	-22	6.1	138	44.4	160	40.8	-10	9.7	218	3.2	-23	54.1
4	238	13.5	-22	5.4	168	49.3	190	40.9	-10	7.4	248	4.0	-23	53.9
6	268	13.0	-22	4.7	198	54.2	220	41.0	-10	5.0	278	4.8	-23	53.6
8	298	12.5	-22	3.9	228	59.2	250	41.1	-10	2.7	308	5.6	-23	53.4
10	328	12.0	-22	3.2	259	4.1	280	41.2	-10	.4	338	6.4	-23	53.2
12	358	11.5	-22	2.5	289	9.0	310	41.4	-9	58.0	8	7.2	-23	53.0
14	28	11.0	-22	1.8	319	13.9	340	41.5	-9	55.7	38	8.0	-23	52.8
16	58	10.4	-22	1.0	349	18.9	10	41.6	-9	53.4	68	8.8	-23	52.5
18	88	9.9	-22	.3	19	23.8	40	41.7	-9	51.0	98	9.5	-23	52.3
20	118	9.4	-21	59.6	49	28.7	70	41.9	-9	48.7	128	10.3	-23	52.1
22	148	8.9	-21	58.8	79	33.7	100	42.0	-9	46.3	158	11.1	-23	51.8
Δ		-3		4				1		12			4	1

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>		δ <sub>♃</sub>	S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	47	7.7	12	25	34.3	10	164	50.0	-20	26.6	294	27.7	5	11.8
2	75	51.7	11	25	45.7	6	194	53.7	-20	26.3	324	32.7	5	11.8
4	104	35.3	11	25	56.3	1	224	57.4	-20	26.1	354	37.7	5	11.9
6	133	18.5	10	26	6.3	-3	255	1.1	-20	25.8	24	42.7	5	11.9
8	162	1.4	10	26	15.4	-7	285	4.8	-20	25.6	54	47.6	5	12.0
10	190	43.8	10	26	23.9	-11	315	8.6	-20	25.3	84	52.6	5	12.0
12	219	26.0	10	26	31.5	-16	345	12.3	-20	25.1	114	57.6	5	12.1
14	248	7.8	10	26	38.3	-20	15	16.0	-20	24.8	145	2.6	5	12.1
16	276	49.3	10	26	44.4	-24	45	19.7	-20	24.6	175	7.6	5	12.1
18	305	30.6	10	26	49.6	-29	75	23.4	-20	24.3	205	12.6	5	12.2
20	334	11.6	11	26	54.0	-33	105	27.1	-20	24.1	235	17.5	5	12.2
22	2	52.3	11	26	57.6	-37	135	30.8	-20	23.8	265	22.5	5	12.3
Δ								19		1			25	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 57	15 17	0 55	2 41	11 25	2.4	7 0	3.4
55	8 22	15 52	0 44	2 15	12 23	2.6	6 3	3.2
50	7 57	16 17	0 38	1 58	12 60	2.7	5 27	3.1
45	7 38	16 36	0 33	1 45	13 27	2.7	4 60	3.0
40	7 22	16 52	0 30	1 37	13 49	2.7	4 39	3.0
35	7 9	17 5	0 28	1 30	14 6	2.7	4 21	2.9
30	6 57	17 17	0 26	1 25	14 22	2.7	4 6	2.9
20	6 37	17 37	0 24	1 18	14 48	2.8	3 41	2.8
10	6 20	17 54	0 23	1 15	15 11	2.8	3 19	2.8
0	6 3	18 11	0 22	1 14	15 32	2.8	2 58	2.7
10	5 47	18 27	0 23	1 17	15 54	2.8	2 38	2.7
20	5 29	18 45	0 24	1 23	16 17	2.8	2 16	2.6
30	5 8	19 6	0 27	1 35	16 43	2.8	1 51	2.6
35	4 56	19 18	0 29	1 44	16 59	2.8	1 36	2.5
40	4 41	19 32	0 32	1 59	17 17	2.8	1 19	2.4
45	4 25	19 49	0 36	2 24	17 40	2.8	0 58	2.4
50	4 4	20 9	0 43	:::	18 8	2.8	0 32	2.3
55	3 36	20 37	0 54	:::	18 47	2.7	...	.0
60	2 56	21 16	1 24	:::	19 52	2.6	23 42	3.3

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	- 6 36.5	-1.0	16.3	T <sub>m</sub>	21 48	2.8	60.4
12	- 6 49.1	T <sub>m</sub> ☉	12 h 6.8 min	Starost 11.5 d Faza ☉			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♃	15 17	.2	23	-4.3	♄	12 59	.0	57	-1.8
♂	11 28	.1	80	1.3	♅	4 21	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	8.4	-21	58.1	109	38.6	130	42.1	-9	44.0	188	11.9	-23	51.6
2	208	7.9	-21	57.4	139	43.5	160	42.3	-9	41.7	218	12.7	-23	51.4
4	238	7.4	-21	56.6	169	48.4	190	42.4	-9	39.3	248	13.5	-23	51.1
6	268	6.9	-21	55.9	199	53.4	220	42.6	-9	37.0	278	14.3	-23	50.9
8	298	6.4	-21	55.1	229	58.3	250	42.7	-9	34.6	308	15.1	-23	50.7
10	328	5.9	-21	54.4	260	3.2	280	42.9	-9	32.3	338	15.9	-23	50.4
12	358	5.4	-21	53.6	290	8.1	310	43.1	-9	29.9	8	16.7	-23	50.2
14	28	4.9	-21	52.8	320	13.1	340	43.2	-9	27.6	38	17.5	-23	49.9
16	58	4.4	-21	52.1	350	18.0	10	43.4	-9	25.3	68	18.2	-23	49.7
18	88	3.9	-21	51.3	20	22.9	40	43.6	-9	22.9	98	19.0	-23	49.4
20	118	3.4	-21	50.5	50	27.9	70	43.7	-9	20.6	128	19.8	-23	49.2
22	148	2.9	-21	49.8	80	32.8	100	43.9	-9	18.2	158	20.6	-23	48.9
Δ		-2		4				1		12			4	1

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>		δ <sub>♃</sub>	S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	31	32.9	12	27	.4	-41	165	34.5	-20	23.6	295	27.5	5	12.3
2	60	13.3	13	27	2.4	-45	195	38.2	-20	23.3	325	32.5	5	12.4
4	88	53.6	14	27	3.4	-49	225	42.0	-20	23.1	355	37.5	5	12.4
6	117	33.7	15	27	3.7	-53	255	45.7	-20	22.9	25	42.5	5	12.5
8	146	13.7	16	27	3.1	-57	285	49.4	-20	22.6	55	47.5	5	12.6
10	174	53.7	18	27	1.6	-61	315	53.1	-20	22.4	85	52.5	5	12.6
12	203	33.6	19	26	59.3	-65	345	56.8	-20	22.1	115	57.5	5	12.7
14	232	13.6	21	26	56.2	-69	16	.5	-20	21.9	146	2.5	5	12.7
16	260	53.5	22	26	52.2	-73	46	4.2	-20	21.6	176	7.5	5	12.8
18	289	33.5	24	26	47.3	-77	76	7.9	-20	21.4	206	12.4	5	12.8
20	318	13.5	26	26	41.6	-80	106	11.6	-20	21.1	236	17.4	5	12.9
22	346	53.7	28	26	35.0	-84	136	15.3	-20	20.9	266	22.4	5	12.9
Δ								19		1			25	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 56	15 19	0 55	2 40	12 23	4.0	8 21	1.8
55	8 21	15 54	0 44	2 14	13 25	3.5	7 19	2.2
50	7 56	16 18	0 38	1 57	14 4	3.4	6 40	2.4
45	7 37	16 37	0 33	1 45	14 32	3.2	6 12	2.5
40	7 22	16 53	0 30	1 36	14 54	3.1	5 50	2.6
35	7 9	17 6	0 28	1 30	15 12	3.1	5 31	2.6
30	6 57	17 18	0 26	1 25	15 28	3.0	5 15	2.6
20	6 37	17 37	0 24	1 18	15 55	2.9	4 49	2.7
10	6 20	17 55	0 23	1 15	16 18	2.8	4 25	2.7
0	6 4	18 11	0 22	1 14	16 39	2.8	4 4	2.8
10	5 47	18 27	0 23	1 17	17 0	2.7	3 42	2.8
20	5 29	18 45	0 24	1 23	17 23	2.6	3 19	2.9
30	5 9	19 6	0 27	1 34	17 50	2.5	2 52	2.9
35	4 57	19 18	0 29	1 44	18 6			

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	2.4	-21	49.0	110	37.7	130	44.1	-9	15.9	188	21.4	-23	48.7
2	208	1.9	-21	48.2	140	42.6	160	44.3	-9	13.5	218	22.2	-23	48.4
4	238	1.4	-21	47.4	170	47.6	190	44.5	-9	11.1	248	23.0	-23	48.2
6	268	.9	-21	46.6	200	52.5	220	44.7	-9	8.8	278	23.8	-23	47.9
8	298	.4	-21	45.8	230	57.4	250	44.9	-9	6.4	308	24.6	-23	47.7
10	328	.0	-21	45.1	261	2.4	280	45.1	-9	4.1	338	25.4	-23	47.4
12	357	59.5	-21	44.3	291	7.3	310	45.3	-9	1.7	8	26.2	-23	47.1
14	27	59.0	-21	43.5	321	12.2	340	45.5	-8	59.4	38	26.9	-23	46.9
16	57	58.5	-21	42.7	351	17.1	10	45.7	-8	57.0	68	27.7	-23	46.6
18	87	58.0	-21	41.9	21	22.1	40	45.9	-8	54.7	98	28.5	-23	46.3
20	117	57.5	-21	41.1	51	27.0	70	46.2	-8	52.3	128	29.3	-23	46.0
22	147	57.0	-21	40.2	81	31.9	100	46.4	-8	49.9	158	30.1	-23	45.8
Δ		-2		4				1		12		4		1

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 54	15 21	0 54	2 40	13 58	4.7	9 5	.8		
55	8 20	15 55	0 44	2 14	14 50	4.1	8 12	1.4		
50	7 56	16 20	0 37	1 57	15 24	3.7	7 38	1.7		
45	7 37	16 39	0 33	1 45	15 49	3.5	7 12	1.9		
40	7 22	16 54	0 30	1 36	16 9	3.3	6 51	2.1		
35	7 8	17 7	0 28	1 30	16 26	3.2	6 34	2.2		
30	6 57	17 18	0 26	1 25	16 40	3.1	6 19	2.3		
20	6 37	17 38	0 24	1 18	17 5	2.9	5 53	2.4		
10	6 20	17 55	0 23	1 15	17 26	2.7	5 31	2.6		
0	6 4	18 11	0 22	1 14	17 45	2.6	5 11	2.7		
10	5 48	18 28	0 23	1 17	18 5	2.5	4 50	2.8		
20	5 30	18 45	0 24	1 23	18 25	2.3	4 28	2.9		
30	5 9	19 6	0 27	1 34	18 49	2.1	4 2	3.1		
35	4 57	19 18	0 29	1 44	19 3	2.0	3 46	3.2		
40	4 44	19 31	0 32	1 58	19 20	1.8	3 28	3.3		
45	4 27	19 48	0 36	2 22	19 39	1.7	3 7	3.4		
50	4 6	20 8	0 42	3 36	20 3	1.4	2 39	3.6		
55	3 39	20 35	0 54	:::	20 35	1.1	2 1	3.9		
60	3 0	21 14	1 21	:::	21 21	.5	1 1	4.6		

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	15	34.0	30	26	27.6	-87	166	19.0	-20	20.6	296	27.4	5	13.0
2	44	14.4	32	26	19.4	-91	196	22.8	-20	20.4	326	32.4	5	13.0
4	72	55.0	34	26	10.3	-94	226	26.5	-20	20.1	356	37.4	5	13.1
6	101	35.8	36	26	.5	-98	256	30.2	-20	19.9	26	42.4	5	13.1
8	130	16.8	39	25	49.8	-101	286	33.9	-20	19.6	56	47.4	5	13.2
10	158	58.1	41	25	38.3	-104	316	37.6	-20	19.4	86	52.4	5	13.2
12	187	39.6	43	25	26.0	-107	346	41.3	-20	19.1	116	57.4	5	13.3
14	216	21.4	46	25	12.9	-110	16	45.0	-20	18.9	147	2.4	5	13.4
16	245	3.6	48	24	59.1	-113	46	48.7	-20	18.6	177	7.4	5	13.4
18	273	46.1	50	24	44.5	-115	76	52.4	-20	18.4	207	12.4	5	13.5
20	302	28.9	53	24	29.1	-118	106	56.1	-20	18.1	237	17.4	5	13.5
22	331	12.1	55	24	13.0	-121	136	59.8	-20	17.9	267	22.4	5	13.6
Δ								19		1		25		0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-7	26.2	-1.0	16.3	T <sub>m</sub>	1.0	61.3
12	-7	38.2	T <sub>m</sub> ☉	12 h 7.6 min	Starost	13.5 d	Faza ☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	21	-4.3	♄	12 53	.0	57	-1.8
♂	11 26	.1	79	1.3	♂	4 13	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	177	56.6	-21	39.4	111	36.9	130	46.6	-8	47.6	188	30.9	-23	45.5
2	207	56.1	-21	38.6	141	41.8	160	46.8	-8	45.2	218	31.7	-23	45.2
4	237	55.6	-21	37.8	171	46.7	190	47.1	-8	42.8	248	32.5	-23	44.9
6	267	55.1	-21	37.0	201	51.6	220	47.3	-8	40.5	278	33.3	-23	44.7
8	297	54.7	-21	36.2	231	56.6	250	47.6	-8	38.1	308	34.1	-23	44.4
10	327	54.2	-21	35.3	262	1.5	280	47.8	-8	35.7	338	34.9	-23	44.1
12	357	53.7	-21	34.5	292	6.4	310	48.1	-8	33.4	8	35.6	-23	43.8
14	27	53.2	-21	33.7	322	11.4	340	48.3	-8	31.0	38	36.4	-23	43.5
16	57	52.8	-21	32.8	352	16.3	10	48.6	-8	28.6	68	37.2	-23	43.2
18	87	52.3	-21	32.0	22	21.2	40	48.8	-8	26.3	98	38.0	-23	42.9
20	117	51.8	-21	31.2	52	26.1	70	49.1	-8	23.9	128	38.8	-23	42.6
22	147	51.3	-21	30.3	82	31.1	100	49.4	-8	21.5	158	39.6	-23	42.3
Δ		-2		4				1		12		4		1

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 53	15 23	0 54	2 39	15 51	4.7	9 25	.4		
55	8 19	15 57	0 44	2 14	16 28	4.1	8 46	.9		
50	7 55	16 21	0 37	1 57	16 54	3.8	8 19	1.2		
45	7 37	16 40	0 33	1 45	17 13	3.5	7 58	1.5		
40	7 21	16 55	0 30	1 36	17 29	3.3	7 41	1.7		
35	7 8	17 8	0 28	1 29	17 43	3.1	7 27	1.8		
30	6 57	17 19	0 26	1 24	17 54	3.0	7 14	1.9		
20	6 38	17 39	0 24	1 18	18 14	2.8	6 52	2.1		
10	6 20	17 56	0 23	1 15	18 31	2.6	6 33	2.3		
0	6 4	18 12	0 22	1 14	18 48	2.4	6 15	2.5		
10	5 48	18 28	0 23	1 17	19 3	2.2	5 57	2.7		
20	5 31	18 45	0 24	1 22	19 20	2.0	5 38	2.9		
30	5 10	19 6	0 27	1 34	19 40	1.8	5 16	3.1		
35	4 58	19 17	0 29	1 43	19 51	1.6	5 2	3.2		
40	4 45	19 31	0 32	1 58	20 4	1.5	4 47	3.4		
45	4 28	19 47	0 36	2 21	20 19	1.3	4 29	3.5		
50	4 8	20 8	0 42	3 29	20 38	1.0	4 6	3.8		
55	3 41	20 34	0 53	:::	21 1	.7	3 35	4.2		
60	3 2	21 12	1 20	:::	21 33	.2	2 50	4.8		

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	359	55.7	58	23	56.2	-123	167	3.5	-20	17.6	297	27.5	5	13.6
2	28	39.6	60	23	38.7	-125	197	7.3	-20	17.4	327	32.5	5	13.7
4	57	24.0	63	23	20.6	-128	227	11.0	-20	17.1	357	37.5	5	13.8
6	86	8.9	65	23	1.7	-130	257	14.7	-20	16.9	27	42.5	5	13.8
8	114	54.1	68	22	42.2	-132	287	18.4	-20	16.6	57	47.5	5	13.9
10	143	39.8	70	22	22.0	-134	317	22.1	-20	16.3	87	52.5	5	13.9
12	172	26.0	72	22	1.3	-136	347	25.8	-20	16.1	117	57.5	5	14.0
14	201	12.6	75	21	39.9	-138	17	29.5	-20	15.8	148	2.5	5	14.0
16	229	59.7	77	21	17.9	-140	47	33.2	-20	15.6	178	7.5	5	14.1
18	258	47.3	80	20	55.4	-141	77	36.9	-20	15.3	208	12.5	5	14.2
20	287	35.4	82	20	32.3	-143	107	40.6</						

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	177	50.9	-21 29.5	112	36.0		130	49.7	- 8 19.2	188	40.4	-23 42.1
2	207	50.4	-21 28.6	142	40.9		160	49.9	- 8 16.8	218	41.2	-23 41.8
4	237	49.9	-21 27.8	172	45.9		190	50.2	- 8 14.4	248	42.0	-23 41.5
6	267	49.5	-21 26.9	202	50.8		220	50.5	- 8 12.0	278	42.8	-23 41.1
8	297	49.0	-21 26.1	232	55.7		250	50.8	- 8 9.7	308	43.5	-23 40.8
10	327	48.5	-21 25.2	263	6		280	51.1	- 8 7.3	338	44.3	-23 40.5
12	357	48.1	-21 24.3	293	5.6		310	51.4	- 8 4.9	8	45.1	-23 40.2
14	27	47.6	-21 23.5	323	10.5		340	51.7	- 8 2.5	38	45.9	-23 39.9
16	57	47.2	-21 22.6	353	15.4		10	52.0	- 8 2	68	46.7	-23 39.6
18	87	46.7	-21 21.7	23	20.4		40	52.3	- 7 57.8	98	47.5	-23 39.3
20	117	46.2	-21 20.8	53	25.3		70	52.6	- 7 55.4	128	48.3	-23 39.0
22	147	45.8	-21 20.0	83	30.2		100	52.9	- 7 53.0	158	49.1	-23 38.7
Δ		-2	4					1	12		4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 52	15 25	0 54	2 39	17 43	4.4	9 34	.2
55	8 19	15 59	0 44	2 13	18 6	3.9	9 8	.6
50	7 55	16 22	0 37	1 57	18 24	3.6	8 49	.9
45	7 36	16 41	0 33	1 45	18 37	3.4	8 34	1.2
40	7 21	16 56	0 30	1 36	18 49	3.2	8 21	1.3
35	7 8	17 9	0 28	1 29	18 58	3.0	8 10	1.5
30	6 57	17 20	0 26	1 24	19 7	2.8	8 0	1.6
20	6 38	17 39	0 24	1 18	19 21	2.6	7 44	1.9
10	6 21	17 56	0 23	1 14	19 33	2.4	7 29	2.1
0	6 5	18 12	0 22	1 14	19 45	2.2	7 15	2.3
10	5 49	18 28	0 23	1 16	19 56	2.0	7 1	2.5
20	5 31	18 45	0 24	1 22	20 9	1.8	6 46	2.7
30	5 11	19 5	0 27	1 34	20 22	1.5	6 29	2.9
35	4 59	19 17	0 29	1 43	20 30	1.4	6 19	3.1
40	4 46	19 31	0 32	1 57	20 39	1.2	6 7	3.2
45	4 29	19 47	0 36	2 21	20 50	1.0	5 54	3.4
50	4 9	20 7	0 42	3 23	21 3	.8	5 37	3.7
55	3 43	20 33	0 53	:::	21 18	.5	5 15	4.0
60	3 5	21 11	1 18	:::	21 39	.1	4 45	4.5
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	''	°	'	''	''			
0	345	13.0	87	19 44.6	-146	167	48.0	-20 14.6	298	27.6	5 14.3
2	14	2.5	89	19 20.0	-147	197	51.7	-20 14.3	328	32.6	5 14.4
4	42	52.5	91	18 54.9	-148	227	55.5	-20 14.1	358	37.6	5 14.5
6	71	43.1	93	18 29.3	-149	257	59.2	-20 13.8	28	42.6	5 14.5
8	100	34.1	95	18 3.3	-150	288	2.9	-20 13.6	58	47.6	5 14.6
10	129	25.6	97	17 36.9	-151	318	6.6	-20 13.3	88	52.6	5 14.6
12	158	17.6	99	17 10.1	-152	348	10.3	-20 13.1	118	57.7	5 14.7
14	187	10.1	101	16 42.9	-153	18	14.0	-20 12.8	149	2.7	5 14.8
16	216	3.1	103	16 15.4	-154	48	17.7	-20 12.5	179	7.7	5 14.8
18	244	56.5	105	15 47.4	-154	78	21.4	-20 12.3	209	12.7	5 14.9
20	273	50.4	107	15 19.2	-155	108	25.1	-20 12.0	239	17.7	5 15.0
22	302	44.8	109	14 50.7	-156	138	28.8	-20 11.8	269	22.8	5 15.0
Δ						19	1		25	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 8 13.6	-.9	16.3	T <sub>m</sub>	1 2	2.3	60.9 16.6		
12	- 8 25.0	T <sub>m</sub> ☉	12 h 8.4 min	Starost	15.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	19	-4.3	♄	12 47	.0	56	-1.8
♂	11 25	.1	77	1.3	♂	4 5	.0	187	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	177	45.3	-21 19.1	113	35.1		130	53.3	- 7 50.7	188	49.9	-23 38.3
2	207	44.9	-21 18.2	143	40.1		160	53.6	- 7 48.3	218	50.7	-23 38.0
4	237	44.4	-21 17.3	173	45.0		190	53.9	- 7 45.9	248	51.5	-23 37.7
6	267	44.0	-21 16.4	203	49.9		220	54.2	- 7 43.5	278	52.2	-23 37.4
8	297	43.5	-21 15.5	233	54.8		250	54.6	- 7 41.1	308	53.0	-23 37.0
10	327	43.1	-21 14.6	263	59.8		280	54.9	- 7 38.8	338	53.8	-23 36.7
12	357	42.6	-21 13.7	294	4.7		310	55.3	- 7 36.4	8	54.6	-23 36.4
14	27	42.2	-21 12.8	324	9.6		340	55.6	- 7 34.0	38	55.4	-23 36.1
16	57	41.7	-21 11.9	354	14.6		10	56.0	- 7 31.6	68	56.2	-23 35.7
18	87	41.3	-21 11.0	24	19.5		40	56.3	- 7 29.2	98	57.0	-23 35.4
20	117	40.8	-21 10.1	54	24.4		70	56.7	- 7 26.8	128	57.8	-23 35.0
22	147	40.4	-21 9.2	84	29.3		100	57.0	- 7 24.4	158	58.6	-23 34.7
Δ		-2	4					2	12		4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 50	15 28	0 53	2 38	19 28	4.1	9 39	.1
55	8 18	16 0	0 43	2 13	19 41	3.7	9 23	.5
50	7 54	16 24	0 37	1 56	19 50	3.4	9 11	.7
45	7 36	16 42	0 33	1 45	19 58	3.2	9 1	1.0
40	7 21	16 57	0 30	1 36	20 4	3.0	8 53	1.1
35	7 8	17 10	0 28	1 29	20 10	2.8	8 46	1.3
30	6 57	17 21	0 26	1 24	20 15	2.7	8 40	1.4
20	6 38	17 40	0 24	1 18	20 23	2.4	8 29	1.7
10	6 21	17 57	0 23	1 14	20 30	2.2	8 19	1.9
0	6 5	18 12	0 22	1 14	20 37	2.0	8 10	2.1
10	5 49	18 28	0 23	1 16	20 44	1.8	8 1	2.3
20	5 32	18 45	0 24	1 22	20 51	1.6	7 51	2.5
30	5 12	19 5	0 27	1 34	20 59	1.4	7 40	2.8
35	5 0	19 17	0 29	1 43	21 4	1.2	7 33	2.9
40	4 47	19 30	0 32	1 57	21 9	1.1	7 25	3.1
45	4 31	19 46	0 36	2 20	21 15	.9	7 16	3.3
50	4 11	20 6	0 42	3 18	21 22	.7	7 6	3.5
55	3 44	20 32	0 52	:::	21 31	.4	6 52	3.8
60	3 7	21 9	1 17	:::	21 42	.1	6 34	4.2
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	''	°	'	''	''			
0	331	39.7	111	14 21.8	-156	168	32.5	-20 11.5	299	27.8	5 15.1
2	0	35.0	112	13 52.7	-156	198	36.2	-20 11.3	329	32.8	5 15.2
4	29	30.8	114	13 23.3	-157	228	39.9	-20 11.0	359	37.8	5 15.2
6	58	27.0	116	12 53.7	-157	258	43.6	-20 10.8	29	42.8	5 15.3
8	87	23.6	117	12 23.8	-157	288	47.3	-20 10.5	59	47.9	5 15.3
10	116	20.7	119	11 53.7	-157	318	51.1	-20 10.3	89	52.9	5 15.4
12	145	18.2	120	11 23.5	-157	348	54.8	-20 10.0	119	57.9	5 15.5
14	174	16.0	121	10 53.0	-157	18	58.5	-20 9.7	150	2.9	5 15.5
16	203	14.3	123	10 22.4	-157	49	2.2	-20 9.5	180	8.0	5 15.6
18	232	13.0	124	9 51.7	-157	79	5.9	-20 9.2	210	13.0	5 15.7
20	261	12.0	125	9 20.8	-157	109	9.6	-20 9.0	240	18.0	5 15.7
22	290	11.5	126	8 49.8	-157	139	13.3	-20 8.7	270	23.1	5 15.8
Δ						19	1		25	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 8 36.3	-.9	16.3	T <sub>m</sub>	1 58	2.1	60.3 16.4		
12	- 8 47.4	T <sub>m</sub> ☉	12 h 8.8 min	Starost	16.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.2	18	-4.3	♄	12 44	.0	56	-1.8
♂	11 24	.1	76	1.3	♂	4 1	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	177	39.9	-21	8.3	114	34.3	130	57.4	-7	22.1	188	59.4	-23	34.4	
2	207	39.5	-21	7.4	144	39.2	160	57.8	-7	19.7	219	.2	-23	34.0	
4	237	39.1	-21	6.5	174	44.1	190	58.1	-7	17.3	249	.9	-23	33.7	
6	267	38.6	-21	5.5	204	49.1	220	58.5	-7	14.9	279	1.7	-23	33.3	
8	297	38.2	-21	4.6	234	54.0	250	58.9	-7	12.5	309	2.5	-23	33.0	
10	327	37.8	-21	3.7	264	58.9	280	59.3	-7	10.1	339	3.3	-23	32.6	
12	357	37.3	-21	2.7	295	3.8	310	59.7	-7	7.7	9	4.1	-23	32.3	
14	27	36.9	-21	1.8	325	8.8	341	.1	-7	5.3	39	4.9	-23	31.9	
16	57	36.5	-21	.9	355	13.7	11	.5	-7	2.9	69	5.7	-23	31.6	
18	87	36.0	-20	59.9	25	18.6	41	.9	-7	.6	99	6.5	-23	31.2	
20	117	35.6	-20	59.0	55	23.6	71	1.3	-6	58.2	129	7.3	-23	30.9	
22	147	35.2	-20	58.0	85	28.5	101	1.7	-6	55.8	159	8.1	-23	30.5	
Δ		-2		5				2		12			4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 49	15 30	0 53	2 38	21 6	3.9	9 42	.1		
55	8 17	16 2	0 43	2 13	21 9	3.5	9 35	.4		
50	7 53	16 25	0 37	1 56	21 12	3.3	9 29	.7		
45	7 35	16 43	0 33	1 44	21 14	3.0	9 25	.9		
40	7 20	16 58	0 30	1 36	21 16	2.8	9 21	1.0		
35	7 8	17 11	0 28	1 29	21 18	2.7	9 17	1.2		
30	6 57	17 22	0 26	1 24	21 19	2.6	9 14	1.3		
20	6 38	17 41	0 24	1 18	21 21	2.3	9 9	1.6		
10	6 21	17 57	0 22	1 14	21 24	2.1	9 5	1.8		
0	6 5	18 13	0 22	1 14	21 26	1.9	9 0	2.0		
10	5 50	18 29	0 23	1 16	21 28	1.7	8 56	2.2		
20	5 33	18 46	0 24	1 22	21 30	1.5	8 51	2.4		
30	5 13	19 5	0 27	1 33	21 32	1.3	8 46	2.6		
35	5 1	19 17	0 29	1 43	21 33	1.2	8 43	2.8		
40	4 48	19 30	0 32	1 56	21 35	1.0	8 39	2.9		
45	4 32	19 46	0 36	2 19	21 37	.8	8 35	3.1		
50	4 12	20 6	0 42	3 14	21 39	.6	8 30	3.3		
55	3 46	20 31	0 52	:::	21 41	.4	8 24	3.6		
60	3 9	21 8	1 15	:::	21 44	.1	8 15	4.0		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	319	11.2	127	8	18.6	-157	169	17.0	-20	8.5	300	28.1	5	15.9		
2	348	11.4	129	7	47.4	-156	199	20.7	-20	8.2	330	33.1	5	15.9		
4	17	11.8	130	7	16.2	-156	229	24.4	-20	7.9	0	38.1	5	16.0		
6	46	12.6	130	6	44.8	-156	259	28.1	-20	7.7	30	43.2	5	16.1		
8	75	13.8	131	6	13.4	-155	289	31.8	-20	7.4	60	48.2	5	16.1		
10	104	15.2	132	5	42.0	-155	319	35.5	-20	7.2	90	53.2	5	16.2		
12	133	16.9	133	5	10.5	-154	349	39.2	-20	6.9	120	58.3	5	16.3		
14	162	18.9	134	4	39.0	-153	19	42.9	-20	6.7	151	3.3	5	16.4		
16	191	21.2	134	4	7.6	-153	49	46.6	-20	6.4	181	8.3	5	16.4		
18	220	23.7	135	3	36.1	-152	79	50.3	-20	6.1	211	13.4	5	16.5		
20	249	26.5	136	3	4.6	-151	109	54.1	-20	5.9	241	18.4	5	16.6		
22	278	29.6	136	2	33.2	-151	139	57.8	-20	5.6	271	23.5	5	16.6		
Δ								19		1			25		0	

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min	s	'	h min	min	'	'	
00	- 8 58.5	-.9	16.3	T <sub>m</sub>	2 49	2.0	59.5	16.2
12	- 9 9.3	T <sub>m</sub> ☉	12 h 9.2 min	Starost	17.5 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 16	.2	17	-4.3	♄	12 41	.0	56	-1.8
♂	11 24	.1	75	1.3	♅	3 57	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	177	34.7	-20	57.1	115	33.4	131	2.1	-6	53.4	189	8.9	-23	30.1	
2	207	34.3	-20	56.1	145	38.3	161	2.5	-6	51.0	219	9.7	-23	29.8	
4	237	33.9	-20	55.2	175	43.3	191	2.9	-6	48.6	249	10.4	-23	29.4	
6	267	33.5	-20	54.2	205	48.2	221	3.4	-6	46.2	279	11.2	-23	29.0	
8	297	33.0	-20	53.3	235	53.1	251	3.8	-6	43.8	309	12.0	-23	28.7	
10	327	32.6	-20	52.3	265	58.1	281	4.2	-6	41.4	339	12.8	-23	28.3	
12	357	32.2	-20	51.3	296	3.0	311	4.7	-6	39.0	9	13.6	-23	27.9	
14	27	31.8	-20	50.4	326	7.9	341	5.1	-6	36.6	39	14.4	-23	27.5	
16	57	31.3	-20	49.4	356	12.8	11	5.5	-6	34.2	69	15.2	-23	27.2	
18	87	30.9	-20	48.4	26	17.8	41	6.0	-6	31.8	99	16.0	-23	26.8	
20	117	30.5	-20	47.5	56	22.7	71	6.4	-6	29.4	129	16.8	-23	26.4	
22	147	30.1	-20	46.5	86	27.6	101	6.9	-6	27.0	159	17.6	-23	26.0	
Δ		-2		5				2		12			4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 47	15 32	0 53	2 37	22 39	3.8	9 44	.1		
55	8 16	16 4	0 43	2 12	22 34	3.4	9 44	.4		
50	7 53	16 27	0 37	1 56	22 30	3.1	9 45	.6		
45	7 35	16 45	0 33	1 44	22 27	2.9	9 45	.8		
40	7 20	16 59	0 30	1 36	22 24	2.8	9 46	1.0		
35	7 8	17 12	0 28	1 29	22 22	2.6	9 46	1.1		
30	6 57	17 23	0 26	1 24	22 20	2.5	9 46	1.3		
20	6 38	17 41	0 24	1 17	22 17	2.2	9 47	1.5		
10	6 21	17 58	0 22	1 14	22 14	2.1	9 47	1.7		
0	6 6	18 13	0 22	1 14	22 12	1.9	9 48	1.9		
10	5 50	18 29	0 23	1 16	22 9	1.7	9 48	2.1		
20	5 33	18 46	0 24	1 22	22 6	1.5	9 48	2.3		
30	5 14	19 5	0 27	1 33	22 3	1.3	9 49	2.5		
35	5 2	19 16	0 29	1 42	22 1	1.1	9 49	2.6		
40	4 49	19 30	0 32	1 56	21 59	1.0	9 49	2.8		
45	4 33	19 45	0 36	2 18	21 57	.8	9 50	3.0		
50	4 14	20 5	0 41	3 10	21 54	.6	9 50	3.2		
55	3 48	20 30	0 51	:::	21 50	.4	9 50	3.5		
60	3 12	21 6	1 14	:::	21 46	.1	9 51	3.8		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	307	32.8	137	2	1.8	-150	170	1.5	-20	5.4	301	28.5	5	16.7		
2	336	36.3	137	1	30.5	-149	200	5.2	-20	5.1	331	33.5	5	16.8		
4	5	40.0	138	0	59.3	-148	230	8.9	-20	4.8	1	38.6	5	16.8		
6	34	43.9	138	0	28.1	-147	260	12.6	-20	4.6	31	43.6	5	16.9		
8	63	48.0	138	-0	3.0	-146	290	16.3	-20	4.3	61	48.6	5	17.0		
10	92	52.3	138	-0	34.0	-145	320	20.0	-20	4.1	91	53.7	5	17.1		
12	121	56.8	139	-1	4.9	-144	350	23.7	-20	3.8	121	58.7	5	17.1		
14	151	1.4	139	-1	35.7	-143	20	27.4	-20	3.5	152	3.8	5	17.2		
16	180	6.1	139	-2	6.4	-142	50	31.1	-20	3.3	182	8.8	5	17.3		
18	209	11.0	139	-2	36.9	-141										

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	29.7	-20	45.5	116	32.6	131	7.4	-6	24.6	189	18.4	-23	25.6
2	207	29.3	-20	44.5	146	37.5	161	7.8	-6	22.2	219	19.2	-23	25.2
4	237	28.9	-20	43.5	176	42.4	191	8.3	-6	19.8	249	20.0	-23	24.9
6	267	28.4	-20	42.5	206	47.3	221	8.8	-6	17.4	279	20.8	-23	24.5
8	297	28.0	-20	41.5	236	52.3	251	9.2	-6	15.0	309	21.5	-23	24.1
10	327	27.6	-20	40.5	266	57.2	281	9.7	-6	12.6	339	22.3	-23	23.7
12	357	27.2	-20	39.5	297	2.1	311	10.2	-6	10.2	9	23.1	-23	23.3
14	27	26.8	-20	38.5	327	7.0	341	10.7	-6	7.8	39	23.9	-23	22.9
16	57	26.4	-20	37.5	357	12.0	11	11.2	-6	5.4	69	24.7	-23	22.5
18	87	26.0	-20	36.5	27	16.9	41	11.7	-6	3.0	99	25.5	-23	22.1
20	117	25.6	-20	35.5	57	21.8	71	12.2	-6	.6	129	26.3	-23	21.7
22	147	25.2	-20	34.5	87	26.8	101	12.7	-5	58.2	159	27.1	-23	21.3
Δ		-2		5				2		12		4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 46	15 34	0 52	2 36	.. .	.0	9 45	.1		
55	8 15	16 6	0 43	2 12	23 56	3.4	9 53	.4		
50	7 52	16 28	0 37	1 56	23 46	3.1	9 60	.7		
45	7 34	16 46	0 33	1 44	23 37	2.9	10 5	.9		
40	7 20	17 0	0 30	1 35	23 31	2.7	10 10	1.0		
35	7 7	17 13	0 27	1 29	23 25	2.6	10 13	1.2		
30	6 57	17 23	0 26	1 24	23 20	2.4	10 17	1.3		
20	6 38	17 42	0 24	1 17	23 11	2.2	10 23	1.5		
10	6 22	17 58	0 22	1 14	23 3	2.0	10 28	1.7		
0	6 6	18 14	0 22	1 14	22 56	1.9	10 33	1.9		
10	5 51	18 29	0 23	1 16	22 49	1.7	10 38	2.0		
20	5 34	18 46	0 24	1 22	22 42	1.5	10 43	2.2		
30	5 15	19 5	0 27	1 33	22 33	1.3	10 49	2.5		
35	5 3	19 16	0 29	1 42	22 28	1.2	10 53	2.6		
40	4 50	19 29	0 31	1 55	22 23	1.1	10 56	2.7		
45	4 34	19 45	0 35	2 17	22 17	.9	11 1	2.9		
50	4 15	20 4	0 41	3 6	22 9	.7	11 7	3.1		
55	3 50	20 29	0 51	:::	21 60	.4	11 13	3.4		
60	3 14	21 4	1 13	:::	21 48	.1	11 22	3.7		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	296	26.4	139	-4	7.7	-137	170	45.9	-20	2.2	302	29.0	5	17.6		
2	325	31.8	139	-4	37.7	-136	200	49.6	-20	2.0	332	34.0	5	17.6		
4	354	37.2	139	-5	7.4	-135	230	53.3	-20	1.7	2	39.1	5	17.7		
6	23	42.7	139	-5	37.0	-133	260	57.0	-20	1.5	32	44.1	5	17.8		
8	52	48.3	138	-6	6.5	-132	291	.7	-20	1.2	62	49.2	5	17.9		
10	81	53.9	138	-6	35.7	-131	321	4.5	-20	.9	92	54.2	5	17.9		
12	110	59.6	138	-7	4.7	-129	351	8.2	-20	.7	122	59.3	5	18.0		
14	140	5.4	138	-7	33.5	-128	21	11.9	-20	.4	153	4.3	5	18.1		
16	169	11.1	137	-8	2.1	-126	51	15.6	-20	.2	183	9.4	5	18.2		
18	198	16.9	137	-8	30.5	-125	81	19.3	-19	59.9	213	14.4	5	18.3		
20	227	22.8	137	-8	58.7	-123	111	23.0	-19	59.6	243	19.5	5	18.3		
22	256	28.6	136	-9	26.6	-122	141	26.7	-19	59.4	273	24.5	5	18.4		
Δ								19		1		25		0		

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min	s	'	h min	min	'	'	
00	-9 40.9	-.8	16.3	T <sub>m</sub>	4 22	1.9	57.5	15.7
12	-9 51.0	T <sub>m☉</sub>	12 h 9.9 min	Starost	19.5 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 16	.2	15	-4.3	♄	12 35	.0	55	-1.8
♂	11 22	.1	74	1.3	♂	3 49	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	24.8	-20	33.5	117	31.7	131	13.2	-5	55.8	189	27.9	-23	20.9
2	207	24.4	-20	32.5	147	36.6	161	13.7	-5	53.4	219	28.7	-23	20.5
4	237	24.0	-20	31.5	177	41.5	191	14.2	-5	51.0	249	29.5	-23	20.1
6	267	23.6	-20	30.4	207	46.5	221	14.7	-5	48.6	279	30.3	-23	19.6
8	297	23.2	-20	29.4	237	51.4	251	15.2	-5	46.2	309	31.1	-23	19.2
10	327	22.8	-20	28.4	267	56.3	281	15.8	-5	43.8	339	31.9	-23	18.8
12	357	22.4	-20	27.4	298	1.3	311	16.3	-5	41.4	9	32.7	-23	18.4
14	27	22.0	-20	26.3	328	6.2	341	16.8	-5	39.0	39	33.5	-23	18.0
16	57	21.6	-20	25.3	358	11.1	11	17.4	-5	36.6	69	34.3	-23	17.6
18	87	21.3	-20	24.2	28	16.0	41	17.9	-5	34.2	99	35.1	-23	17.1
20	117	20.9	-20	23.2	58	21.0	71	18.4	-5	31.8	129	35.8	-23	16.7
22	147	20.5	-20	22.2	88	25.9	101	19.0	-5	29.4	159	36.6	-23	16.3
Δ		-2		5				3		12		4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 44	15 37	0 52	2 36	0 10	3.7	9 47	.1		
55	8 13	16 7	0 43	2 12	.. .	.0	10 3	.5		
50	7 51	16 30	0 37	1 55	.. .	.0	10 16	.7		
45	7 33	16 47	0 33	1 44	.. .	.0	10 26	.9		
40	7 19	17 2	0 30	1 35	.. .	.0	10 34	1.1		
35	7 7	17 14	0 27	1 29	.. .	.0	10 41	1.2		
30	6 56	17 24	0 26	1 24	.. .	.0	10 48	1.4		
20	6 38	17 43	0 24	1 17	.. .	.0	10 59	1.6		
10	6 22	17 59	0 22	1 14	23 52	2.1	11 8	1.7		
0	6 7	18 14	0 22	1 14	23 41	1.9	11 18	1.9		
10	5 51	18 29	0 23	1 16	23 30	1.8	11 27	2.0		
20	5 35	18 46	0 24	1 22	23 18	1.6	11 37	2.2		
30	5 15	19 5	0 27	1 33	23 5	1.4	11 48	2.4		
35	5 4	19 16	0 29	1 41	22 57	1.3	11 55	2.5		
40	4 51	19 29	0 31	1 55	22 48	1.2	12 2	2.7		
45	4 36	19 44	0 35	2 16	22 38	1.0	12 11	2.9		
50	4 17	20 3	0 41	3 3	22 26	.8	12 21	3.1		
55	3 52	20 28	0 51	:::	22 10	.6	12 35	3.3		
60	3 17	21 2	1 12	:::	21 50	.2	12 52	3.7		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	285	34.4	136	-9	54.3	-120	171	30.4	-19	59.1	303	29.6	5	18.5		
2	314	40.2	135	-10	21.7	-119	201	34.1	-19	58.8	333	34.6	5	18.6		
4	343	46.0	135	-10	48.9	-117	231	37.8	-19	58.6	3	39.7	5	18.6		
6	12	51.8	134	-11	15.9	-115	261	41.5	-19	58.3	33	44.8	5	18.7		
8	41	57.5	134	-11	42.6	-114	291	45.2	-19	58.1	63	49.8	5	18.8		
10	71	3.2	133	-12	9.0	-112	321	48.9	-19	57.8	93	54.9	5	18.9		
12	100	8.9	132	-12	35.1	-110	351	52.6	-19	57.5	123	59.9	5	19.0		
14	129	14.5	132	-13	.9	-108	21	56.3	-19	57.3	154	5.0	5	19.0		
16	158	20.0	131	-13	26.5	-107	52	.0	-19	57.0	184	10.0	5	19.1		
18	187	25.5	130	-13	51.7	-105	82	3.7	-19	56.7	214	15.1	5	19.2		
20	216	30.9	130	-14	16.7	-103	112	7.4	-19	56.5	244	20.2	5	19.3		
22	245	36.2	129	-14	41.4	-101	142	11.1	-19	56.2	274	25.2	5	19.4		
Δ								19		1		25		0		

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-10 1.1	-.8	16.3	T <sub>m</sub>	5 7</		

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	177	20.1	-20	21.1	118	30.8	131	19.6	-5	27.0	189	37.4	-23	15.9
2	207	19.7	-20	20.1	148	35.8	161	20.1	-5	24.6	219	38.2	-23	15.4
4	237	19.3	-20	19.0	178	40.7	191	20.7	-5	22.2	249	39.0	-23	15.0
6	267	18.9	-20	18.0	208	45.6	221	21.2	-5	19.8	279	39.8	-23	14.6
8	297	18.6	-20	16.9	238	50.5	251	21.8	-5	17.4	309	40.6	-23	14.1
10	327	18.2	-20	15.8	268	55.5	281	22.4	-5	15.0	339	41.4	-23	13.7
12	357	17.8	-20	14.8	299	4	311	23.0	-5	12.6	9	42.2	-23	13.2
14	27	17.4	-20	13.7	329	5.3	341	23.5	-5	10.2	39	43.0	-23	12.8
16	57	17.1	-20	12.6	359	10.3	11	24.1	-5	7.7	69	43.8	-23	12.4
18	87	16.7	-20	11.6	29	15.2	41	24.7	-5	5.3	99	44.6	-23	11.9
20	117	16.3	-20	10.5	59	20.1	71	25.3	-5	2.9	129	45.4	-23	11.5
22	147	15.9	-20	9.4	89	25.0	101	25.9	-5	.5	159	46.2	-23	11.0
Δ		-2		5				3		12		4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 43	15 39	0 52	2 35	1 40	3.7	9 50	.2		
55	8 12	16 9	0 42	2 11	1 17	3.3	10 15	.6		
50	7 50	16 31	0 37	1 55	1 0	3.0	10 34	.9		
45	7 33	16 49	0 33	1 44	0 47	2.8	10 48	1.1		
40	7 19	17 3	0 30	1 35	0 36	2.7	11 1	1.2		
35	7 7	17 15	0 27	1 29	0 27	2.5	11 11	1.4		
30	6 56	17 25	0 26	1 24	0 18	2.4	11 20	1.5		
20	6 38	17 43	0 23	1 17	0 4	2.2	11 36	1.6		
10	6 22	17 59	0 22	1 14	...	.0	11 50	1.8		
0	6 7	18 14	0 22	1 13	...	.0	12 3	1.9		
10	5 52	18 29	0 23	1 16	...	.0	12 16	2.1		
20	5 35	18 46	0 24	1 21	23 56	1.7	12 30	2.2		
30	5 16	19 4	0 27	1 32	23 38	1.5	12 46	2.4		
35	5 5	19 15	0 29	1 41	23 28	1.4	12 56	2.5		
40	4 52	19 28	0 31	1 54	23 16	1.3	13 7	2.6		
45	4 37	19 43	0 35	2 15	23 2	1.2	13 19	2.8		
50	4 18	20 2	0 41	2 60	22 45	1.0	13 35	3.0		
55	3 54	20 26	0 50	:::	22 24	.7	13 55	3.3		
60	3 19	21 0	1 10	:::	21 54	.3	14 22	3.7		
S										

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	274	41.4	128	-15	5.7	-99	172	14.8	-19	55.9	304	30.3	5	19.4		
2	303	46.5	127	-15	29.8	-97	202	18.5	-19	55.7	334	35.4	5	19.5		
4	332	51.6	127	-15	53.5	-95	232	22.2	-19	55.4	4	40.4	5	19.6		
6	1	56.5	126	-16	16.9	-93	262	26.0	-19	55.1	34	45.5	5	19.7		
8	31	1.3	125	-16	39.9	-91	292	29.7	-19	54.9	64	50.5	5	19.8		
10	60	6.0	124	-17	2.7	-89	322	33.4	-19	54.6	94	55.6	5	19.8		
12	89	10.6	123	-17	25.0	-87	352	37.1	-19	54.4	125	.7	5	19.9		
14	118	15.0	123	-17	47.1	-85	22	40.8	-19	54.1	155	5.7	5	20.0		
16	147	19.4	122	-18	8.8	-83	52	44.5	-19	53.8	185	10.8	5	20.1		
18	176	23.6	121	-18	30.1	-81	82	48.2	-19	53.6	215	15.9	5	20.2		
20	205	27.6	120	-18	51.0	-79	112	51.9	-19	53.3	245	20.9	5	20.2		
22	234	31.5	119	-19	11.6	-77	142	55.6	-19	53.0	275	26.0	5	20.3		
Δ								19		1		25		0		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	-10	20.6	- .8	16.3	T <sub>m</sub>	5 52	1.9	55.8	15.2
12	-10	30.0	T <sub>m</sub> ☉	12 h 10.5 min	Starost	21.5 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♃	15 15	.2	14	-4.3	♄	12 29	.0	55	-1.8
♄	11 21	.1	72	1.3	♅	3 41	.0	187	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	177	15.6	-20	8.3	119	30.0	131	26.5	-4	58.1	189	47.0	-23	10.6
2	207	15.2	-20	7.3	149	34.9	161	27.1	-4	55.7	219	47.8	-23	10.1
4	237	14.8	-20	6.2	179	39.8	191	27.7	-4	53.3	249	48.6	-23	9.7
6	267	14.5	-20	5.1	209	44.8	221	28.3	-4	50.9	279	49.4	-23	9.2
8	297	14.1	-20	4.0	239	49.7	251	29.0	-4	48.5	309	50.2	-23	8.8
10	327	13.7	-20	2.9	269	54.6	281	29.6	-4	46.1	339	51.0	-23	8.3
12	357	13.4	-20	1.8	299	59.5	311	30.2	-4	43.7	9	51.8	-23	7.8
14	27	13.0	-20	.7	330	4.5	341	30.8	-4	41.3	39	52.6	-23	7.4
16	57	12.6	-19	59.6	0	9.4	11	31.5	-4	38.9	69	53.4	-23	6.9
18	87	12.3	-19	58.5	30	14.3	41	32.1	-4	36.5	99	54.2	-23	6.4
20	117	11.9	-19	57.4	60	19.3	71	32.7	-4	34.1	129	55.0	-23	6.0
22	147	11.6	-19	56.3	90	24.2	101	33.4	-4	31.6	159	55.8	-23	5.5
Δ		-2		5				3		12		4		2

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	8 41	15 41	0 51	2 34	3 10	3.7	9 55	.4		
55	8 11	16 11	0 42	2 11	2 37	3.2	10 30	.9		
50	7 49	16 33	0 36	1 55	2 13	2.9	10 55	1.1		
45	7 32	16 50	0 32	1 43	1 55	2.8	11 14	1.3		
40	7 18	17 4	0 29	1 35	1 40	2.6	11 30	1.4		
35	7 6	17 16	0 27	1 28	1 27	2.5	11 44	1.5		
30	6 56	17 26	0 26	1 24	1 16	2.4	11 55	1.6		
20	6 38	17 44	0 23	1 17	0 58	2.2	12 15	1.8		
10	6 22	17 60	0 22	1 14	0 42	2.1	12 33	1.9		
0	6 7	18 14	0 22	1 13	0 27	2.0	12 49	2.0		
10	5 52	18 29	0 23	1 16	0 12	1.8	13 6	2.1		
20	5 36	18 45	0 24	1 21	...	.0	13 24	2.2		
30	5 17	19 4	0 26	1 32	...	.0	13 44	2.4		
35	5 6	19 15	0 28	1 41	...	.0	13 56	2.5		
40	4 53	19 28	0 31	1 53	23 48	1.6	14 10	2.6		
45	4 38	19 43	0 35	2 14	23 31	1.4	14 26	2.7		
50	4 20	20 1	0 41	2 57	23 9	1.3	14 47	2.9		
55	3 56	20 25	0 50	:::	22 41	1.0	15 14	3.1		
60	3 22	20 58	1 9	:::	22 1	.6	15 52	3.6		
S										

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	263	35.3	119	-19	31.9	-75	172	59.3	-19	52.8	305	31.1	5	20.4		
2	292	38.9	118	-19	51.7	-72	203	3.0	-19	52.5	335	36.2	5	20.5		
4	321	42.4	117	-20	11.2	-70	233	6.7	-19	52.2	5	41.2	5	20.6		
6	350	45.7	116	-20	30.2	-68	263	10.4	-19	52.0	35	46.3	5	20.7		
8	19	48.9	115	-20	48.9	-66	293	14.1	-19	51.7	65	51.4	5	20.8		
10	48	51.9	115	-21	7.2	-63	323	17.8	-19	51.4	95	56.4	5	20.8		
12	77	54.8	114	-21	25.0	-61	353	21.5	-19	51.2	126	1.5	5	20.9		
14	106	57.5	113	-21	42.5	-59	23	25.2	-19	50.9	156	6.6	5	21.0		
16	136	.0	112	-21	59.6	-56	53	28.9	-19	50.6						

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	177	11.2	-19 55.2	120	29.1	131	34.0	- 4	29.2	189	56.6	-23 5.0
2	207	10.9	-19 54.1	150	34.0	161	34.7	- 4	26.8	219	57.4	-23 4.6
4	237	10.5	-19 53.0	180	39.0	191	35.4	- 4	24.4	249	58.2	-23 4.1
6	267	10.2	-19 51.8	210	43.9	221	36.0	- 4	22.0	279	59.0	-23 3.6
8	297	9.8	-19 50.7	240	48.8	251	36.7	- 4	19.6	309	59.8	-23 3.1
10	327	9.5	-19 49.6	270	53.7	281	37.4	- 4	17.2	340	.6	-23 2.7
12	357	9.1	-19 48.5	300	58.7	311	38.0	- 4	14.8	10	1.4	-23 2.2
14	27	8.8	-19 47.3	331	3.6	341	38.7	- 4	12.4	40	2.2	-23 1.7
16	57	8.4	-19 46.2	1	8.5	11	39.4	- 4	10.0	70	3.0	-23 1.2
18	87	8.1	-19 45.1	31	13.5	41	40.1	- 4	7.6	100	3.8	-23 .7
20	117	7.7	-19 43.9	61	18.4	71	40.8	- 4	5.2	130	4.6	-23 .2
22	147	7.4	-19 42.8	91	23.3	101	41.5	- 4	2.8	160	5.4	-22 59.7
Δ		-2	6				3	12			4	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 39	15 44	0 51	2 34	4 39	3.5	10 5	.8
55	8 10	16 13	0 42	2 11	3 54	3.0	10 51	1.2
50	7 48	16 34	0 36	1 55	3 24	2.8	11 22	1.5
45	7 31	16 51	0 32	1 43	3 1	2.6	11 46	1.6
40	7 18	17 5	0 29	1 35	2 42	2.5	12 5	1.7
35	7 6	17 17	0 27	1 28	2 27	2.4	12 21	1.8
30	6 56	17 27	0 26	1 23	2 14	2.3	12 35	1.8
20	6 38	17 45	0 23	1 17	1 52	2.2	12 58	1.9
10	6 22	18 0	0 22	1 14	1 32	2.1	13 19	2.0
0	6 7	18 15	0 22	1 13	1 14	2.0	13 38	2.1
10	5 53	18 29	0 22	1 15	0 56	1.9	13 57	2.1
20	5 37	18 45	0 24	1 21	0 37	1.8	14 17	2.2
30	5 18	19 4	0 26	1 32	0 15	1.7	14 41	2.3
35	5 7	19 15	0 28	1 40	0 3	1.6	14 55	2.4
40	4 55	19 27	0 31	1 53	...	.0	15 12	2.4
45	4 40	19 42	0 35	2 13	...	.0	15 31	2.5
50	4 21	19 60	0 40	2 54	23 40	1.7	15 56	2.6
55	3 58	20 23	0 49	:::	23 6	1.5	16 29	2.8
60	3 24	20 56	1 8	:::	22 15	1.1	17 19	3.2
S								

UT	MESEC				JUPITER		SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	"/	°	'	"/	°	'	"/	
0	252	8.5	110	-23	3.6	-47	173	43.7	-19 49.6	
2	281	10.2	109	-23	18.5	-44	203	47.5	-19 49.3	
4	310	11.8	108	-23	33.0	-42	233	51.2	-19 49.0	
6	339	13.2	108	-23	47.0	-40	263	54.9	-19 48.7	
8	8	14.4	107	-24	.6	-37	293	58.6	-19 48.5	
10	37	15.5	107	-24	13.7	-35	324	2.3	-19 48.2	
12	66	16.5	106	-24	26.4	-32	354	6.0	-19 47.9	
14	95	17.2	106	-24	38.6	-30	24	9.7	-19 47.7	
16	124	17.9	105	-24	50.4	-27	54	13.4	-19 47.4	
18	153	18.4	105	-25	1.6	-24	84	17.1	-19 47.1	
20	182	18.7	105	-25	12.4	-22	114	20.8	-19 46.9	
22	211	18.9	104	-25	22.8	-19	144	24.5	-19 46.6	
Δ							19	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	'	
00	-10 57.6	-.7	16.3	T <sub>m</sub>	7 26	2.0	54.6	14.9	
12	-11 6.3	T <sub>m</sub> ☉	12 h 11.1 min	Starost 23.5 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 14	.2	12	-4.4	♄	12 24	.0	54	-1.8
♂	11 20	.1	70	1.3	♅	3 33	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	177	7.1	-19 41.7	121	28.2	131	42.2	- 4	.4	190	6.2	-22 59.2
2	207	6.7	-19 40.5	151	33.2	161	42.9	- 3	58.0	220	7.0	-22 58.7
4	237	6.4	-19 39.4	181	38.1	191	43.6	- 3	55.6	250	7.8	-22 58.2
6	267	6.0	-19 38.2	211	43.0	221	44.3	- 3	53.1	280	8.6	-22 57.8
8	297	5.7	-19 37.1	241	48.0	251	45.0	- 3	50.7	310	9.4	-22 57.3
10	327	5.4	-19 35.9	271	52.9	281	45.7	- 3	48.3	340	10.2	-22 56.7
12	357	5.0	-19 34.8	301	57.8	311	46.5	- 3	45.9	10	11.0	-22 56.2
14	27	4.7	-19 33.6	332	2.7	341	47.2	- 3	43.5	40	11.8	-22 55.7
16	57	4.4	-19 32.4	2	7.7	11	47.9	- 3	41.1	70	12.6	-22 55.2
18	87	4.1	-19 31.3	32	12.6	41	48.7	- 3	38.7	100	13.4	-22 54.7
20	117	3.7	-19 30.1	62	17.5	71	49.4	- 3	36.3	130	14.3	-22 54.2
22	147	3.4	-19 28.9	92	22.5	101	50.1	- 3	33.9	160	15.1	-22 53.7
Δ		-2	6				4	12			4	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 37	15 46	0 51	2 33	6 3	2.9	10 23	1.5
55	8 8	16 15	0 42	2 10	5 6	2.6	11 21	1.8
50	7 47	16 36	0 36	1 54	4 30	2.5	11 57	1.9
45	7 31	16 53	0 32	1 43	4 3	2.4	12 24	1.9
40	7 17	17 6	0 29	1 35	3 43	2.3	12 45	2.0
35	7 5	17 18	0 27	1 28	3 25	2.3	13 3	2.0
30	6 55	17 28	0 26	1 23	3 10	2.3	13 18	2.0
20	6 38	17 45	0 23	1 17	2 45	2.2	13 44	2.1
10	6 22	18 1	0 22	1 14	2 23	2.1	14 7	2.1
0	6 8	18 15	0 22	1 13	2 3	2.1	14 27	2.1
10	5 53	18 30	0 22	1 15	1 43	2.0	14 48	2.1
20	5 37	18 45	0 24	1 21	1 22	2.0	15 11	2.2
30	5 19	19 3	0 26	1 32	0 57	1.9	15 37	2.2
35	5 8	19 14	0 28	1 40	0 42	1.9	15 52	2.2
40	4 56	19 26	0 31	1 52	0 25	1.8	16 10	2.2
45	4 41	19 41	0 35	2 12	0 5	1.8	16 31	2.2
50	4 23	19 59	0 40	2 51	...	.0	16 59	2.3
55	3 60	20 22	0 49	:::	23 42	2.1	17 36	2.3
60	3 27	20 54	1 7	:::	22 41	2.0	18 37	2.4
S								

UT	MESEC				JUPITER		SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	"/	°	'	"/	°	'	"/	
0	240	19.0	104	-25	32.6	-17	174	28.2	-19 46.3	
2	269	18.9	104	-25	42.0	-14	204	31.9	-19 46.1	
4	298	18.7	104	-25	50.9	-12	234	35.6	-19 45.8	
6	327	18.4	104	-25	59.3	-9	264	39.3	-19 45.5	
8	356	18.0	103	-26	7.2	-6	294	43.0	-19 45.2	
10	25	17.5	103	-26	14.6	-4	324	46.7	-19 45.0	
12	54	16.9	103	-26	21.5	-1	354	50.4	-19 44.7	
14	83	16.1	103	-26	27.9	1	24	54.1	-19 44.4	
16	112	15.3	103	-26	33.8	4	54	57.8	-19 44.2	
18	141	14.4	103	-26	39.2	6	85	1.5	-19 43.9	
20	170	13.4	103	-26	44.0	9	115	5.3	-19 43.6	
22	199	12.4	104	-26	48.4	12	145	9.0	-19 43.4	
Δ							19	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	'	
00	-11 14.9	-.7	16.3	T <sub>m</sub>	8 15	2.1	54.2	14.8	
12	-11 23.3	T <sub>m</sub> ☉	12 h 11.4 min	Starost 24.5 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 13	.2	11	-4.4	♄	12 21	.0	54	-1.8
♂	11 19	.1	70	1.3	♅	3 29	.0	187	.8



UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	177	3.1	-19 27.8	122	27.4	131	50.9	- 3 31.5	190	15.9	-22 53.2	
2	207	2.8	-19 26.6	152	32.3	161	51.7	- 3 29.1	220	16.7	-22 52.7	
4	237	2.4	-19 25.4	182	37.2	191	52.4	- 3 26.7	250	17.5	-22 52.2	
6	267	2.1	-19 24.2	212	42.2	221	53.2	- 3 24.3	280	18.3	-22 51.6	
8	297	1.8	-19 23.1	242	47.1	251	53.9	- 3 21.9	310	19.1	-22 51.1	
10	327	1.5	-19 21.9	272	52.0	281	54.7	- 3 19.5	340	19.9	-22 50.6	
12	357	1.2	-19 20.7	302	57.0	311	55.5	- 3 17.1	10	20.7	-22 50.1	
14	27	.9	-19 19.5	333	1.9	341	56.3	- 3 14.7	40	21.5	-22 49.5	
16	57	.5	-19 18.3	3	6.8	11	57.1	- 3 12.3	70	22.3	-22 49.0	
18	87	.2	-19 17.1	33	11.7	41	57.8	- 3 9.9	100	23.1	-22 48.5	
20	116	59.9	-19 15.9	63	16.7	71	58.6	- 3 7.5	130	23.9	-22 48.0	
22	146	59.6	-19 14.7	93	21.6	101	59.4	- 3 5.1	160	24.7	-22 47.4	
Δ		-2	6			4	12		4	3		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 35	15 49	0 50	2 33	7 12	1.9	10 59	2.5
55	8 7	16 17	0 42	2 10	6 8	2.0	12 3	2.4
50	7 46	16 38	0 36	1 54	5 29	2.0	12 42	2.3
45	7 30	16 54	0 32	1 43	5 1	2.1	13 11	2.3
40	7 16	17 7	0 29	1 34	4 38	2.1	13 33	2.2
35	7 5	17 19	0 27	1 28	4 20	2.1	13 51	2.2
30	6 55	17 29	0 26	1 23	4 4	2.1	14 7	2.2
20	6 38	17 46	0 23	1 17	3 38	2.1	14 34	2.2
10	6 22	18 1	0 22	1 14	3 15	2.1	14 57	2.1
0	6 8	18 15	0 22	1 13	2 54	2.1	15 18	2.1
10	5 54	18 30	0 22	1 15	2 32	2.1	15 40	2.1
20	5 38	18 45	0 24	1 21	2 9	2.1	16 2	2.0
30	5 20	19 3	0 26	1 31	1 43	2.1	16 29	2.0
35	5 9	19 14	0 28	1 40	1 27	2.1	16 45	2.0
40	4 57	19 26	0 31	1 52	1 9	2.1	17 3	1.9
45	4 43	19 40	0 35	2 11	0 48	2.1	17 25	1.9
50	4 25	19 58	0 40	2 49	0 20	2.1	17 53	1.8
55	4 2	20 20	0 49	:::	...	2.1	18 31	1.7
60	3 29	20 52	1 6	:::	23 29	2.9	19 34	1.4
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	"/	°	'	"/	
0	228	11.3	104	-26 52.3	14	175	12.7	-19 43.1	308	34.0	5 23.6
2	257	10.1	104	-26 55.6	17	205	16.4	-19 42.8	338	39.1	5 23.7
4	286	8.9	104	-26 58.5	19	235	20.1	-19 42.5	8	44.2	5 23.8
6	315	7.6	105	-27 .8	22	265	23.8	-19 42.3	38	49.3	5 23.9
8	344	6.3	105	-27 2.6	24	295	27.5	-19 42.0	68	54.4	5 24.0
10	13	5.0	105	-27 3.9	27	325	31.2	-19 41.7	98	59.5	5 24.1
12	42	3.7	106	-27 4.6	30	355	34.9	-19 41.5	129	64.6	5 24.2
14	71	2.3	106	-27 4.9	32	25	38.6	-19 41.2	159	9.7	5 24.3
16	100	1.0	107	-27 4.6	35	55	42.3	-19 40.9	189	14.8	5 24.4
18	128	59.6	107	-27 3.8	37	85	46.0	-19 40.6	219	19.9	5 24.4
20	157	58.3	108	-27 2.5	40	115	49.7	-19 40.4	249	25.0	5 24.5
22	186	57.0	109	-27 .7	42	145	53.4	-19 40.1	279	30.1	5 24.6
Δ						19	1		25	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-11 31.6	-.7	16.3	T <sub>m</sub>	9 6	2.1	54.0 14.7		
12	-11 39.5	T <sub>m☉</sub>	12 h 11.7 min	Starost	25.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	15 13	.2	10	-4.4	♃	12 18	.0	54	-1.8
♂	11 19	.1	69	1.3	♄	3 25	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	59.3	-19 13.5	123	26.5	132	.2	- 3 2.7	190	25.5	-22 46.9	
2	206	59.0	-19 12.3	153	31.5	162	1.0	- 3 .3	220	26.4	-22 46.3	
4	236	58.7	-19 11.1	183	36.4	192	1.9	- 2 57.9	250	27.2	-22 45.8	
6	266	58.4	-19 9.9	213	41.3	222	2.7	- 2 55.5	280	28.0	-22 45.3	
8	296	58.1	-19 8.7	243	46.2	252	3.5	- 2 53.1	310	28.8	-22 44.7	
10	326	57.8	-19 7.5	273	51.2	282	4.3	- 2 50.7	340	29.6	-22 44.2	
12	356	57.5	-19 6.3	303	56.1	312	5.1	- 2 48.3	10	30.4	-22 43.6	
14	26	57.2	-19 5.0	334	1.0	342	6.0	- 2 45.9	40	31.2	-22 43.1	
16	56	56.9	-19 3.8	4	5.9	12	6.8	- 2 43.5	70	32.0	-22 42.5	
18	86	56.6	-19 2.6	34	10.9	42	7.6	- 2 41.1	100	32.8	-22 42.0	
20	116	56.3	-19 1.4	64	15.8	72	8.5	- 2 38.7	130	33.6	-22 41.4	
22	146	56.0	-19 .1	94	20.7	102	9.3	- 2 36.3	160	34.5	-22 40.9	
Δ		-1	6			4	12		4	3		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 51	0 50	2 32	7 57	1.0	11 59	3.3
55	8 5	16 19	0 42	2 9	6 56	1.4	13 0	2.9
50	7 45	16 39	0 36	1 54	6 18	1.6	13 38	2.7
45	7 29	16 55	0 32	1 43	5 50	1.7	14 5	2.5
40	7 16	17 8	0 29	1 34	5 28	1.8	14 26	2.4
35	7 5	17 20	0 27	1 28	5 10	1.9	14 44	2.4
30	6 55	17 29	0 25	1 23	4 55	1.9	14 60	2.3
20	6 38	17 46	0 23	1 17	4 28	2.0	15 26	2.2
10	6 23	18 1	0 22	1 13	4 6	2.0	15 48	2.1
0	6 8	18 16	0 22	1 13	3 44	2.1	16 9	2.1
10	5 54	18 30	0 22	1 15	3 23	2.1	16 29	2.0
20	5 39	18 45	0 24	1 21	3 0	2.2	16 52	1.9
30	5 21	19 3	0 26	1 31	2 34	2.3	17 17	1.8
35	5 10	19 13	0 28	1 39	2 18	2.3	17 32	1.7
40	4 58	19 25	0 31	1 51	2 0	2.4	17 50	1.7
45	4 44	19 39	0 34	2 10	1 38	2.4	18 11	1.6
50	4 26	19 57	0 40	2 46	1 10	2.5	18 37	1.4
55	4 4	20 19	0 48	:::	0 32	2.6	19 13	1.2
60	3 32	20 50	1 5	:::	...	.0	20 8	.7
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	"/	°	'	"/	
0	215	55.7	109	-26 58.4	44	175	57.1	-19 39.8	309	35.2	5 24.7
2	244	54.5	110	-26 55.5	47	206	.8	-19 39.5	339	40.3	5 24.8
4	273	53.3	111	-26 52.2	49	236	4.5	-19 39.3	9	45.4	5 24.9
6	302	52.2	111	-26 48.3	52	266	8.2	-19 39.0	39	50.5	5 25.0
8	331	51.1	112	-26 43.9	54	296	11.9	-19 38.7	69	55.6	5 25.1
10	0	50.1	113	-26 39.0	56	326	15.6	-19 38.5	100	.7	5 25.2
12	29	49.2	114	-26 33.6	59	356	19.4	-19 38.2	130	5.8	5 25.3
14	58	48.3	114	-26 27.7	61	26	23.1	-19 37.9	160	10.9	5 25.4
16	87	47.6	115	-26 21.2	63	56	26.8	-19 37.6	190	16.0	5 25.5
18	116	46.9	116	-26 14.3	66	86	30.5	-19 37.4	220	21.1	5 25.6
20	145	46.4	117	-26 6.9	68	116	34.2	-19 37.1	250	26.2	5 25.7
22	174	46.0	118	-25 59.0	70	146	37.9	-19 36.8	280	31.3	5 25.8
Δ						19	1		26	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-11 47.5	-.6	16.3	T <sub>m</sub>	9 57	2.0	54.0 14.7		
12	-11 55.0	T <sub>m☉</sub>	12 h 11.9 min	Starost	26.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	15 12	.2	9	-4.4	♃	12 15	.0	53	-1.8
♂	11 18	.1	68	1.3	♄	3 21	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	55.7	-18 58.9	124	25.7		132	10.2	-2 33.9	190	35.3	-22 40.3
2	206	55.4	-18 57.7	154	30.6		162	11.1	-2 31.5	220	36.1	-22 39.8
4	236	55.1	-18 56.4	184	35.5		192	11.9	-2 29.1	250	36.9	-22 39.2
6	266	54.9	-18 55.2	214	40.4		222	12.8	-2 26.7	280	37.7	-22 38.6
8	296	54.6	-18 54.0	244	45.4		252	13.7	-2 24.3	310	38.5	-22 38.1
10	326	54.3	-18 52.7	274	50.3		282	14.5	-2 21.9	340	39.3	-22 37.5
12	356	54.0	-18 51.5	304	55.2		312	15.4	-2 19.5	10	40.2	-22 37.0
14	26	53.7	-18 50.2	335	.2		342	16.3	-2 17.1	40	41.0	-22 36.4
16	56	53.4	-18 49.0	5	5.1		12	17.2	-2 14.7	70	41.8	-22 35.8
18	86	53.2	-18 47.7	35	10.0		42	18.1	-2 12.3	100	42.6	-22 35.2
20	116	52.9	-18 46.5	65	14.9		72	19.0	-2 10.0	130	43.4	-22 34.7
22	146	52.6	-18 45.2	95	19.9		102	19.9	-2 7.6	160	44.2	-22 34.1
Δ		-1	6					4	12		4	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 31	15 54	0 50	2 31	8 21	.5	13 19	3.7
55	8 4	16 21	0 41	2 9	7 30	1.0	14 9	3.1
50	7 44	16 41	0 36	1 54	6 57	1.2	14 41	2.9
45	7 28	16 57	0 32	1 42	6 32	1.4	15 6	2.7
40	7 15	17 10	0 29	1 34	6 12	1.5	15 25	2.6
35	7 4	17 21	0 27	1 28	5 55	1.6	15 41	2.5
30	6 54	17 30	0 25	1 23	5 40	1.7	15 55	2.4
20	6 37	17 47	0 23	1 16	5 16	1.8	16 19	2.2
10	6 23	18 2	0 22	1 13	4 54	1.9	16 39	2.1
0	6 9	18 16	0 22	1 13	4 35	2.0	16 58	2.0
10	5 54	18 30	0 22	1 15	4 15	2.1	17 17	1.9
20	5 39	18 45	0 24	1 20	3 53	2.2	17 37	1.8
30	5 22	19 2	0 26	1 31	3 28	2.4	18 0	1.6
35	5 11	19 13	0 28	1 39	3 14	2.4	18 14	1.5
40	4 59	19 24	0 31	1 51	2 57	2.5	18 30	1.4
45	4 45	19 38	0 34	2 9	2 36	2.6	18 48	1.3
50	4 28	19 55	0 39	2 44	2 10	2.8	19 11	1.1
55	4 6	20 17	0 48	:::	1 35	3.0	19 41	.8
60	3 35	20 48	1 4	:::	0 41	3.5	20 25	.4
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	'	"/	°	'	"/		
0	203	45.7	119 -25	50.6	72	176	41.6	-19 36.5	310	36.4	5 25.9
2	232	45.5	120 -25	41.7	74	206	45.3	-19 36.3	340	41.5	5 26.0
4	261	45.5	121 -25	32.3	76	236	49.0	-19 36.0	10	46.7	5 26.1
6	290	45.6	122 -25	22.4	79	266	52.7	-19 35.7	40	51.8	5 26.2
8	319	45.8	123 -25	12.1	81	296	56.4	-19 35.4	70	56.9	5 26.3
10	348	46.2	124 -25	1.3	83	327	.1	-19 35.2	101	2.0	5 26.4
12	17	46.8	125 -24	50.0	85	357	3.8	-19 34.9	131	7.1	5 26.5
14	46	47.5	126 -24	38.2	87	27	7.5	-19 34.6	161	12.2	5 26.6
16	75	48.4	127 -24	26.0	89	57	11.3	-19 34.3	191	17.3	5 26.7
18	104	49.4	128 -24	13.4	91	87	15.0	-19 34.1	221	22.4	5 26.8
20	133	50.7	128 -24	.3	92	117	18.7	-19 33.8	251	27.6	5 26.9
22	162	52.1	129 -23	46.7	94	147	22.4	-19 33.5	281	32.7	5 27.0
Δ						19	1		26	1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-12	2.6	-.6	16.3	T <sub>m</sub>	10 46	2.0	54.0	14.7
12	-12	9.8	T <sub>m☉</sub>	12 h 12.2 min	Starost	27.5 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 12	.2	9	-4.4	♄	12 12	.0	53	-1.8
♂	11 17	.1	67	1.3	♅	3 17	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	52.3	-18 44.0	125	24.8		132	20.8	-2 5.2	190	45.0	-22 33.5
2	206	52.1	-18 42.7	155	29.7		162	21.7	-2 2.8	220	45.9	-22 32.9
4	236	51.8	-18 41.4	185	34.7		192	22.6	-2 .4	250	46.7	-22 32.4
6	266	51.5	-18 40.2	215	39.6		222	23.5	-1 58.0	280	47.5	-22 31.8
8	296	51.3	-18 38.9	245	44.5		252	24.5	-1 55.6	310	48.3	-22 31.2
10	326	51.0	-18 37.6	275	49.4		282	25.4	-1 53.2	340	49.1	-22 30.6
12	356	50.7	-18 36.4	305	54.4		312	26.3	-1 50.8	10	49.9	-22 30.0
14	26	50.5	-18 35.1	335	59.3		342	27.3	-1 48.5	40	50.8	-22 29.4
16	56	50.2	-18 33.8	6	4.2		12	28.2	-1 46.1	70	51.6	-22 28.8
18	86	49.9	-18 32.5	36	9.2		42	29.2	-1 43.7	100	52.4	-22 28.2
20	116	49.7	-18 31.2	66	14.1		72	30.1	-1 41.3	130	53.2	-22 27.6
22	146	49.4	-18 30.0	96	19.0		102	31.1	-1 38.9	160	54.0	-22 27.1
Δ		-1	6				5	12		4	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 29	15 56	0 49	2 31	8 33	.3	14 46	3.7
55	8 2	16 23	0 41	2 9	7 54	.7	15 24	3.2
50	7 43	16 43	0 36	1 53	7 27	1.0	15 50	3.0
45	7 27	16 58	0 32	1 42	7 5	1.2	16 11	2.8
40	7 14	17 11	0 29	1 34	6 48	1.3	16 27	2.6
35	7 3	17 22	0 27	1 28	6 34	1.4	16 40	2.5
30	6 54	17 31	0 25	1 23	6 21	1.5	16 52	2.4
20	6 37	17 48	0 23	1 16	5 60	1.7	17 12	2.2
10	6 23	18 2	0 22	1 13	5 41	1.8	17 30	2.0
0	6 9	18 16	0 22	1 13	5 23	1.9	17 46	1.9
10	5 55	18 30	0 22	1 15	5 6	2.1	18 2	1.8
20	5 40	18 45	0 24	1 20	4 47	2.2	18 19	1.6
30	5 23	19 2	0 26	1 30	4 25	2.4	18 39	1.4
35	5 12	19 12	0 28	1 39	4 12	2.5	18 50	1.3
40	5 1	19 24	0 31	1 50	3 57	2.6	19 3	1.2
45	4 47	19 37	0 34	2 8	3 39	2.7	19 19	1.1
50	4 30	19 54	0 39	2 42	3 17	2.9	19 37	.9
55	4 8	20 16	0 47	:::	2 48	3.2	20 1	.6
60	3 38	20 46	1 3	:::	2 5	3.7	20 34	.2
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	'	"/	°	'	"/		
0	191	53.6	130 -23	32.7	96	177	26.1	-19 33.2	311	37.8	5 27.1
2	220	55.4	131 -23	18.2	98	207	29.8	-19 33.0	341	42.9	5 27.2
4	249	57.4	132 -23	3.4	100	237	33.5	-19 32.7	11	48.0	5 27.3
6	278	59.5	133 -22	48.1	101	267	37.2	-19 32.4	41	53.1	5 27.4
8	308	1.8	134 -22	32.3	103	297	40.9	-19 32.1	71	58.3	5 27.5
10	337	4.3	135 -22	16.2	105	327	44.6	-19 31.8	102	3.4	5 27.6
12	6	7.1	136 -21	59.7	107	357	48.3	-19 31.6	132	8.5	5 27.7
14	35	10.0	137 -21	42.7	108	27	52.0	-19 31.3	162	13.6	5 27.8
16	64	13.1	138 -21	25.4	110	57	55.7				

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	49.2	-18 28.7	126	23.9		132	32.0	- 1 36.5	190	54.9	-22 26.5
2	206	48.9	-18 27.4	156	28.9		162	33.0	- 1 34.1	220	55.7	-22 25.9
4	236	48.6	-18 26.1	186	33.8		192	34.0	- 1 31.8	250	56.5	-22 25.3
6	266	48.4	-18 24.8	216	38.7		222	34.9	- 1 29.4	280	57.3	-22 24.6
8	296	48.1	-18 23.5	246	43.7		252	35.9	- 1 27.0	310	58.1	-22 24.0
10	326	47.9	-18 22.2	276	48.6		282	36.9	- 1 24.6	340	59.0	-22 23.4
12	356	47.6	-18 20.9	306	53.5		312	37.9	- 1 22.2	10	59.8	-22 22.8
14	26	47.4	-18 19.6	336	58.4		342	38.9	- 1 19.9	41	.6	-22 22.2
16	56	47.1	-18 18.3	7	3.4		12	39.9	- 1 17.5	71	1.4	-22 21.6
18	86	46.9	-18 17.0	37	8.3		42	40.9	- 1 15.1	101	2.3	-22 21.0
20	116	46.7	-18 15.7	67	13.2		72	41.9	- 1 12.7	131	3.1	-22 20.4
22	146	46.4	-18 14.4	97	18.2		102	42.9	- 1 10.3	161	3.9	-22 19.8
Δ		-1	7				5	12		4		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 27	15 59	0 49	2 30	8 40	.1	16 15	3.6
55	8 1	16 25	0 41	2 8	8 11	.5	16 42	3.3
50	7 42	16 44	0 36	1 53	7 50	.8	17 2	3.0
45	7 26	16 59	0 32	1 42	7 33	1.0	17 17	2.8
40	7 14	17 12	0 29	1 34	7 20	1.1	17 30	2.6
35	7 3	17 23	0 27	1 28	7 8	1.3	17 40	2.5
30	6 53	17 32	0 25	1 23	6 58	1.4	17 49	2.4
20	6 37	17 48	0 23	1 16	6 40	1.6	18 5	2.2
10	6 23	18 3	0 22	1 13	6 25	1.7	18 19	2.0
0	6 9	18 16	0 22	1 13	6 10	1.9	18 32	1.8
10	5 55	18 30	0 22	1 15	5 55	2.0	18 45	1.7
20	5 41	18 44	0 24	1 20	5 40	2.2	18 58	1.5
30	5 23	19 1	0 26	1 30	5 22	2.4	19 13	1.3
35	5 13	19 11	0 28	1 38	5 11	2.5	19 22	1.2
40	5 2	19 23	0 30	1 50	4 59	2.6	19 32	1.1
45	4 48	19 36	0 34	2 7	4 45	2.8	19 44	.9
50	4 31	19 53	0 39	2 39	4 28	3.0	19 58	.7
55	4 10	20 14	0 47	:::	4 5	3.3	20 16	.5
60	3 40	20 43	1 2	:::	3 34	3.7	20 39	.1

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	°	°	'	''	°	'	''	
0	180	27.5	141	-20 12.2	116	178	10.6	-19 29.9	312	39.2	5 28.4
2	209	31.6	142	-19 52.9	117	208	14.3	-19 29.6	342	44.3	5 28.5
4	238	35.9	143	-19 33.3	118	238	18.0	-19 29.4	12	49.5	5 28.6
6	267	40.4	144	-19 13.4	120	268	21.7	-19 29.1	42	54.6	5 28.7
8	296	45.0	145	-18 53.1	121	298	25.4	-19 28.8	72	59.7	5 28.8
10	325	49.9	145	-18 32.4	122	328	29.1	-19 28.5	103	4.8	5 28.9
12	354	54.9	146	-18 11.5	124	358	32.8	-19 28.2	133	10.0	5 29.0
14	24	.2	147	-17 50.1	125	28	36.5	-19 28.0	163	15.1	5 29.1
16	53	5.6	147	-17 28.5	126	58	40.2	-19 27.7	193	20.2	5 29.2
18	82	11.2	148	-17 6.6	127	88	43.9	-19 27.4	223	25.4	5 29.3
20	111	17.0	149	-16 44.3	128	118	47.6	-19 27.1	253	30.5	5 29.4
22	140	22.9	149	-16 21.8	129	148	51.4	-19 26.8	283	35.6	5 29.5
Δ						19		1	26		1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	-12 30.5	-.5	16.3	T <sub>m</sub>	12 21	1.8	54.4	14.8
12	-12 36.8	T <sub>m☉</sub>	12 h 12.6 min	Starost	29.5 d	Faza	●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°		♄	h min	'	°	
♃	15 10	.2	7	-4.4	♄	12 6	.0	53	-1.8
♄	11 16	.1	65	1.3	♃	3 9	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	46.2	-18 13.0	127	23.1		132	43.9	- 1 8.0	191	4.7	-22 19.1
2	206	45.9	-18 11.7	157	28.0		162	45.0	- 1 5.6	221	5.5	-22 18.5
4	236	45.7	-18 10.4	187	32.9		192	46.0	- 1 3.2	251	6.4	-22 17.9
6	266	45.5	-18 9.1	217	37.9		222	47.0	- 1 .8	281	7.2	-22 17.3
8	296	45.2	-18 7.8	247	42.8		252	48.0	- 0 58.5	311	8.0	-22 16.7
10	326	45.0	-18 6.4	277	47.7		282	49.1	- 0 56.1	341	8.8	-22 16.0
12	356	44.8	-18 5.1	307	52.6		312	50.1	- 0 53.7	11	9.7	-22 15.4
14	26	44.5	-18 3.8	337	57.6		342	51.2	- 0 51.4	41	10.5	-22 14.8
16	56	44.3	-18 2.4	8	2.5		12	52.2	- 0 49.0	71	11.3	-22 14.1
18	86	44.1	-18 1.1	38	7.4		42	53.3	- 0 46.6	101	12.2	-22 13.5
20	116	43.8	-17 59.8	68	12.4		72	54.4	- 0 44.3	131	13.0	-22 12.9
22	146	43.6	-17 58.4	98	17.3		102	55.4	- 0 41.9	161	13.8	-22 12.2
Δ		-1	7				5	12		4		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 25	16 1	0 49	2 29	8 43	.1	17 43	3.6
55	7 59	16 27	0 41	2 8	8 23	.4	18 0	3.2
50	7 40	16 46	0 35	1 53	8 8	.7	18 13	3.0
45	7 25	17 1	0 32	1 42	7 56	.8	18 24	2.8
40	7 13	17 13	0 29	1 34	7 46	1.0	18 32	2.6
35	7 2	17 24	0 27	1 27	7 38	1.1	18 40	2.5
30	6 53	17 33	0 25	1 23	7 30	1.3	18 46	2.3
20	6 37	17 49	0 23	1 16	7 17	1.5	18 57	2.1
10	6 23	18 3	0 22	1 13	7 6	1.6	19 7	1.9
0	6 9	18 16	0 22	1 12	6 55	1.8	19 16	1.8
10	5 56	18 30	0 22	1 15	6 44	2.0	19 25	1.6
20	5 41	18 44	0 24	1 20	6 32	2.1	19 34	1.4
30	5 24	19 1	0 26	1 30	6 19	2.2	19 45	1.2
35	5 14	19 11	0 28	1 38	6 11	2.5	19 51	1.1
40	5 3	19 22	0 30	1 49	6 2	2.6	19 58	1.0
45	4 50	19 35	0 34	2 6	5 52	2.8	20 6	.8
50	4 33	19 52	0 39	2 37	5 39	3.0	20 15	.6
55	4 12	20 12	0 47	:::	5 23	3.2	20 27	.4
60	3 43	20 41	1 1	:::	5 2	3.6	20 42	.1

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	°	°	'	''	°	'	''	
0	169	29.1	150	-15 58.9	130	178	55.1	-19 26.6	313	40.7	5 29.6
2	198	35.4	150	-15 35.8	131	208	58.8	-19 26.3	343	45.9	5 29.7
4	227	41.8	151	-15 12.4	132	239	2.5	-19 26.0	13	51.0	5 29.9
6	256	48.4	151	-14 48.7	133	269	6.2	-19 25.7	43	56.1	5 30.0
8	285	55.2	151	-14 24.7	134	299	9.9	-19 25.4	74	1.3	5 30.1
10	315	2.1	152	-14 .5	135	329	13.6	-19 25.2	104	6.4	5 30.2
12	344	9.2	152	-13 36.1	136	359	17.3	-19 24.9	134	11.5	5 30.3
14	13	16.4	152	-13 11.3	137	29	21.0	-19 24.6	164	16.7	5 30.4
16	42	23.7	153	-12 46.4	137	59	24.7	-19 24.3	194	21.8	5 30.5
18	71	31.2	153	-12 21.2	138	89	28.4	-19 24.1	224	26.9	5 30.6
20	100	38.8	153	-11 55.8	139	119	32.2	-19 23.8	254	32.1	5 30.7
22	129	46.5	153	-11 30.1	139	149	35.9	-19 23.5	284	37.2	5 30.8
Δ						19		1	26		1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	-12 43.2	-.5	16.3	T <sub>m</sub>	13 5	1.8	54.7	14.9
12	-12 49.2	T <sub>m☉</sub>	12 h 12.8 min	Starost	.7 d	Faza	●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°		♄	h min	'	°	
♃	15 9	.2	6	-4.4	♄	12 3	.0	53	-1.8
♄	11 15	.1	65	1.3	♃	3 5	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	43.4	-17 57.1	128	22.2		132	56.5	- 0 39.5	191	14.6	-22 11.6
2	206	43.2	-17 55.7	158	27.1		162	57.6	- 0 37.2	221	15.5	-22 10.9
4	236	43.0	-17 54.4	188	32.1		192	58.7	- 0 34.8	251	16.3	-22 10.3
6	266	42.7	-17 53.0	218	37.0		222	59.8	- 0 32.4	281	17.1	-22 9.7
8	296	42.5	-17 51.7	248	41.9		253	9	- 0 30.1	311	18.0	-22 9.0
10	326	42.3	-17 50.3	278	46.9		283	2.0	- 0 27.7	341	18.8	-22 8.4
12	356	42.1	-17 49.0	308	51.8		313	3.1	- 0 25.3	11	19.6	-22 7.7
14	26	41.9	-17 47.6	338	56.7		343	4.2	- 0 23.0	41	20.5	-22 7.1
16	56	41.7	-17 46.3	9	1.6		13	5.3	- 0 20.6	71	21.3	-22 6.4
18	86	41.4	-17 44.9	39	6.6		43	6.4	- 0 18.3	101	22.1	-22 5.8
20	116	41.2	-17 43.5	69	11.5		73	7.5	- 0 15.9	131	22.9	-22 5.1
22	146	41.0	-17 42.2	99	16.4		103	8.7	- 0 13.6	161	23.8	-22 4.4
Δ		-1	7				6	12		4		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 23	16 4	0 49	2 29	8 45	.1	19 9	3.6
55	7 58	16 29	0 41	2 7	8 33	.4	19 18	3.2
50	7 39	16 48	0 35	1 53	8 24	.6	19 25	3.0
45	7 24	17 2	0 32	1 42	8 17	.8	19 30	2.8
40	7 12	17 14	0 29	1 33	8 11	.9	19 35	2.6
35	7 2	17 25	0 27	1 27	8 5	1.1	19 39	2.5
30	6 52	17 34	0 25	1 22	8 0	1.2	19 42	2.3
20	6 37	17 50	0 23	1 16	7 52	1.4	19 48	2.1
10	6 23	18 3	0 22	1 13	7 45	1.6	19 54	1.9
0	6 9	18 17	0 22	1 12	7 38	1.8	19 58	1.8
10	5 56	18 30	0 22	1 14	7 31	1.9	20 3	1.6
20	5 42	18 44	0 23	1 20	7 24	2.1	20 8	1.4
30	5 25	19 0	0 26	1 30	7 15	2.3	20 14	1.2
35	5 15	19 10	0 28	1 37	7 10	2.5	20 17	1.1
40	5 4	19 21	0 30	1 49	7 5	2.6	20 21	.9
45	4 51	19 34	0 34	2 5	6 58	2.8	20 25	.8
50	4 35	19 50	0 39	2 35	6 51	3.0	20 30	.6
55	4 14	20 11	0 46	:::	6 41	3.2	20 36	.3
60	3 46	20 39	1 0	:::	6 28	3.6	20 44	.1

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	°	'			
0	158	54.3	153 -11	4.3	140	179	39.6	-19 23.2	314	42.3	5 30.9
2	188	2.3	154 -10	38.2	141	209	43.3	-19 22.9	344	47.5	5 31.1
4	217	10.3	154 -10	11.9	141	239	47.0	-19 22.6	14	52.6	5 31.2
6	246	18.4	154 -9	45.5	142	269	50.7	-19 22.4	44	57.8	5 31.3
8	275	26.6	154 -9	18.8	142	299	54.4	-19 22.1	75	2.9	5 31.4
10	304	34.9	153 -8	52.0	143	329	58.1	-19 21.8	105	8.0	5 31.5
12	333	43.3	153 -8	25.0	143	0	1.8	-19 21.5	135	13.2	5 31.6
14	2	51.7	153 -7	57.9	143	30	5.5	-19 21.2	165	18.3	5 31.7
16	32	.2	153 -7	30.6	144	60	9.3	-19 21.0	195	23.5	5 31.8
18	61	8.8	153 -7	3.1	144	90	13.0	-19 20.7	225	28.6	5 32.0
20	90	17.4	152 -6	35.5	144	120	16.7	-19 20.4	255	33.8	5 32.1
22	119	26.0	152 -6	7.7	145	150	20.4	-19 20.1	285	38.9	5 32.2
Δ						19		1	26		1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	-12 55.1	-.5	16.3	T <sub>m</sub>	13 48	1.8	55.1	15.0
12	-13 .7	T <sub>m☉</sub>	12 h 13.0 min	Starost	1.7 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°	°	♄	h min	'	°	°
♃	15 9	.2	5	-4.4	♄	11 60	.0	52	-1.8
♂	11 15	.1	64	1.3	♂	3 1	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	40.8	-17 40.8	129	21.4		133	9.8	- 0 11.2	191	24.6	-22 3.8
2	206	40.6	-17 39.4	159	26.3		163	10.9	- 0 8.8	221	25.4	-22 3.1
4	236	40.4	-17 38.1	189	31.2		193	12.1	- 0 6.5	251	26.3	-22 2.5
6	266	40.2	-17 36.7	219	36.1		223	13.2	- 0 4.1	281	27.1	-22 1.8
8	296	40.0	-17 35.3	249	41.1		253	14.4	- 0 1.8	311	28.0	-22 1.1
10	326	39.8	-17 33.9	279	46.0		283	15.5	0 .6	341	28.8	-22 .5
12	356	39.6	-17 32.5	309	50.9		313	16.7	0 2.9	11	29.6	-21 59.8
14	26	39.4	-17 31.2	339	55.9		343	17.9	0 5.3	41	30.5	-21 59.1
16	56	39.2	-17 29.8	10	.8		13	19.1	0 7.6	71	31.3	-21 58.4
18	86	39.0	-17 28.4	40	5.7		43	20.2	0 10.0	101	32.1	-21 57.8
20	116	38.8	-17 27.0	70	10.6		73	21.4	0 12.3	131	33.0	-21 57.1
22	146	38.7	-17 25.6	100	15.6		103	22.6	0 14.6	161	33.8	-21 56.4
Δ		-1	7			6	12			4		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/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	8 47	.1	20 34	3.6
55	7 56	16 31	0 40	2 7	8 42	.3	20 35	3.3
50	7 38	16 49	0 35	1 52	8 39	.6	20 36	3.0
45	7 23	17 4	0 32	1 41	8 36	.8	20 37	2.8
40	7 11	17 16	0 29	1 33	8 33	.9	20 38	2.7
35	7 1	17 26	0 27	1 27	8 31	1.1	20 38	2.5
30	6 52	17 35	0 25	1 22	8 29	1.2	20 39	2.4
20	6 36	17 50	0 23	1 16	8 26	1.4	20 39	2.2
10	6 23	18 4	0 22	1 13	8 23	1.6	20 40	2.0
0	6 10	18 17	0 22	1 12	8 20	1.8	20 41	1.8
10	5 57	18 30	0 22	1 14	8 18	2.0	20 41	1.6
20	5 42	18 44	0 23	1 19	8 15	2.1	20 42	1.4
30	5 26	18 60	0 26	1 29	8 12	2.4	20 42	1.2
35	5 16	19 9	0 28	1 37	8 10	2.5	20 43	1.1
40	5 6	19 20	0 30	1 48	8 8	2.6	20 43	.9
45	4 53	19 33	0 34	2 5	8 5	2.8	20 43	.8
50	4 37	19 49	0 38	2 33	8 2	3.0	20 44	.6
55	4 16	20 9	0 46	:::	7 58	3.3	20 44	.4
60	3 48	20 36	0 59	:::	7 54	3.6	20 45	.1

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	°	'	°	'			
0	148	34.7	152 -5	39.8	145	180	24.1	-19 19.8	315	44.0	5 32.3
2	177	43.4	151 -5	11.8	145	210	27.8	-19 19.6	345	49.2	5 32.4
4	206	52.1	151 -4	43.7	145	240	31.5	-19 19.3	15	54.3	5 32.5
6	236	.8	150 -4	15.5	145	270	35.2	-19 19.0	45	59.5	5 32.6
8	265	9.5	150 -3	47.1	145	300	38.9	-19 18.7	76	4.6	5 32.7
10	294	18.2	149 -3	18.7	145	330	42.7	-19 18.4	106	9.8	5 32.9
12	323	26.9	148 -2	50.2	145	0	46.4	-19 18.1	136	14.9	5 33.0
14	352	35.5	148 -2	21.6	145	30	50.1	-19 17.9	166	20.1	5 33.1
16	21	44.2	147 -1	52.9	145	60	53.8	-19 17.6	196	25.2	5 33.2
18	50	52.8	146 -1	24.2	145	90	57.5	-19 17.3	226		

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	176 38.5	-17 24.2	130 20.5	133 23.8	0 17.0	191 34.6	-21 55.7
2	206 38.3	-17 22.8	160 25.4	163 25.0	0 19.3	221 35.5	-21 55.0
4	236 38.1	-17 21.4	190 30.4	193 26.2	0 21.7	251 36.3	-21 54.4
6	266 37.9	-17 20.0	220 35.3	223 27.4	0 24.0	281 37.2	-21 53.7
8	296 37.7	-17 18.6	250 40.2	253 28.6	0 26.3	311 38.0	-21 53.0
10	326 37.5	-17 17.2	280 45.1	283 29.8	0 28.7	341 38.8	-21 52.3
12	356 37.4	-17 15.8	310 50.1	313 31.1	0 31.0	11 39.7	-21 51.6
14	26 37.2	-17 14.4	340 55.0	343 32.3	0 33.4	41 40.5	-21 50.9
16	56 37.0	-17 13.0	10 59.9	13 33.5	0 35.7	71 41.4	-21 50.2
18	86 36.8	-17 11.6	41 4.8	43 34.8	0 38.0	101 42.2	-21 49.5
20	116 36.7	-17 10.1	71 9.8	73 36.0	0 40.4	131 43.1	-21 48.8
22	146 36.5	-17 8.7	101 14.7	103 37.3	0 42.7	161 43.9	-21 48.1
Δ	-1	7		6	12	4	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 18	16 9	0 48	2 28	8 48	.1	22 1	3.8
55	7 54	16 33	0 40	2 7	8 51	.4	21 54	3.4
50	7 36	16 51	0 35	1 52	8 52	.6	21 49	3.1
45	7 22	17 5	0 31	1 41	8 54	.8	21 45	2.9
40	7 10	17 17	0 29	1 33	8 55	1.0	21 42	2.7
35	7 0	17 27	0 27	1 27	8 57	1.1	21 39	2.6
30	6 51	17 36	0 25	1 22	8 58	1.2	21 36	2.5
20	6 36	17 51	0 23	1 16	8 60	1.4	21 31	2.2
10	6 23	18 4	0 22	1 13	9 1	1.6	21 27	2.0
0	6 10	18 17	0 22	1 12	9 3	1.8	21 24	1.9
10	5 57	18 30	0 22	1 14	9 4	2.0	21 20	1.7
20	5 43	18 43	0 23	1 19	9 6	2.2	21 16	1.5
30	5 27	18 59	0 26	1 29	9 8	2.4	21 11	1.3
35	5 18	19 9	0 28	1 37	9 9	2.6	21 8	1.1
40	5 7	19 19	0 30	1 47	9 11	2.7	21 5	1.0
45	4 54	19 32	0 33	2 4	9 12	2.9	21 2	.8
50	4 38	19 47	0 38	2 32	9 14	3.1	20 58	.6
55	4 18	20 7	0 46	:::	9 17	3.3	20 53	.4
60	3 51	20 34	0 59	:::	9 20	3.7	20 46	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	138 18.2	144 0	2.4	144	181 8.6	-19 16.4	316 45.8	5 33.7
2	167 26.5	143 0	31.3	144	211 12.4	-19 16.2	346 51.0	5 33.8
4	196 34.8	142 1	.3	143	241 16.1	-19 15.9	16 56.1	5 33.9
6	225 42.9	140 1	29.3	143	271 19.8	-19 15.6	47 1.3	5 34.0
8	254 51.0	139 1	58.3	142	301 23.5	-19 15.3	77 6.4	5 34.1
10	283 58.9	138 2	27.3	142	331 27.2	-19 15.0	107 11.6	5 34.2
12	313 6.7	137 2	56.3	141	1 30.9	-19 14.7	137 16.7	5 34.4
14	342 14.4	136 3	25.3	141	31 34.6	-19 14.5	167 21.9	5 34.5
16	11 22.0	134 3	54.3	140	61 38.3	-19 14.2	197 27.0	5 34.6
18	40 29.4	133 4	23.3	139	91 42.1	-19 13.9	227 32.2	5 34.7
20	69 36.6	132 4	52.2	139	121 45.8	-19 13.6	257 37.4	5 34.8
22	98 43.7	130 5	21.1	138	151 49.5	-19 13.3	287 42.5	5 35.0
Δ					19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 16.5	-.4	16.3	T <sub>m</sub>	15 13	1.8	56.0	15.3	
12	-13 21.3	T <sub>m</sub> ☉	12 h 13.4 min	Starost	3.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 7	.3	4	-4.4	♃	11 54	.0	52	-1.8
♂	11 13	.1	62	1.3	♄	2 52	.0	187	.8

1. FEBRUAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	176 36.3	-17 7.3	131 19.6	133 38.5	0 45.0	191 44.7	-21 47.4
2	206 36.1	-17 5.9	161 24.6	163 39.8	0 47.3	221 45.6	-21 46.7
4	236 36.0	-17 4.5	191 29.5	193 41.1	0 49.7	251 46.4	-21 46.0
6	266 35.8	-17 3.0	221 34.4	223 42.3	0 52.0	281 47.3	-21 45.3
8	296 35.6	-17 1.6	251 39.3	253 43.6	0 54.3	311 48.1	-21 44.6
10	326 35.5	-17 .2	281 44.3	283 44.9	0 56.6	341 49.0	-21 43.9
12	356 35.3	-16 58.7	311 49.2	313 46.2	0 59.0	11 49.8	-21 43.2
14	26 35.1	-16 57.3	341 54.1	343 47.5	1 1.3	41 50.7	-21 42.5
16	56 35.0	-16 55.9	11 59.1	13 48.8	1 3.6	71 51.5	-21 41.8
18	86 34.8	-16 54.4	42 4.0	43 50.1	1 5.9	101 52.4	-21 41.1
20	116 34.7	-16 53.0	72 8.9	73 51.4	1 8.2	131 53.2	-21 40.3
22	146 34.5	-16 51.6	102 13.8	103 52.7	1 10.6	161 54.1	-21 39.6
Δ	-1	7		6	12	4	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 16	16 12	0 48	2 27	8 50	.1	23 31	4.0
55	7 52	16 35	0 40	2 6	8 59	.4	23 16	3.6
50	7 35	16 53	0 35	1 52	9 7	.7	23 4	3.3
45	7 21	17 7	0 31	1 41	9 13	.9	22 55	3.0
40	7 9	17 18	0 29	1 33	9 19	1.1	22 48	2.9
35	6 60	17 28	0 27	1 27	9 23	1.2	22 41	2.7
30	6 51	17 36	0 25	1 22	9 27	1.3	22 35	2.6
20	6 36	17 51	0 23	1 16	9 34	1.6	22 25	2.4
10	6 23	18 5	0 22	1 13	9 41	1.7	22 16	2.2
0	6 10	18 17	0 22	1 12	9 47	1.9	22 8	2.0
10	5 57	18 30	0 22	1 14	9 53	2.1	22 0	1.8
20	5 44	18 43	0 23	1 19	9 59	2.3	21 52	1.6
30	5 28	18 59	0 26	1 29	10 6	2.5	21 42	1.4
35	5 19	19 8	0 28	1 36	10 11	2.7	21 36	1.3
40	5 8	19 18	0 30	1 47	10 16	2.8	21 30	1.1
45	4 55	19 31	0 33	2 3	10 21	3.0	21 22	1.0
50	4 40	19 46	0 38	2 30	10 28	3.2	21 13	.8
55	4 21	20 5	0 45	:::	10 37	3.5	21 2	.5
60	3 54	20 31	0 58	:::	10 48	3.9	20 48	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	127 50.6	129 5	50.0	137	181 53.2	-19 13.0	317 47.7	5 35.1
2	156 57.3	127 6	18.8	136	211 56.9	-19 12.8	347 52.8	5 35.2
4	186 3.8	125 6	47.5	135	242 .6	-19 12.5	17 58.0	5 35.3
6	215 10.1	124 7	16.2	134	272 4.3	-19 12.2	48 3.1	5 35.4
8	244 16.2	122 7	44.7	133	302 8.1	-19 11.9	78 8.3	5 35.6
10	273 22.1	120 8	13.2	132	332 11.8	-19 11.6	108 13.5	5 35.7
12	302 27.7	119 8	41.6	131	2 15.5	-19 11.3	138 18.6	5 35.8
14	331 33.1	117 9	9.9	130	32 19.2	-19 11.0	168 23.8	5 35.9
16	0 38.3	115 9	38.0	129	62 22.9	-19 10.8	198 29.0	5 36.0
18	29 43.1	113 10	6.1	127	92 26.6	-19 10.5	228 34.1	5 36.2
20	58 47.7	111 10	34.0	126	122 30.3	-19 10.2	258 39.3	5 36.3
22	87 52.0	109 11	1.7	125	152 34.1	-19 9.9	288 44.4	5 36.4
Δ					19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 26.0	-.4	16.3	T <sub>m</sub>	15 57	2.0	56.5	15.4	
12	-13 30.3	T <sub>m</sub> ☉	12 h 13.5 min	Starost	4.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 6	.3	3	-4.4	♃	11 51	.0	52	-1.8
♂	11 13	.1	61	1.3	♄	2 48	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	34.4	-16 50.1	132	18.8		133	54.0	1 12.9	191	54.9	-21 38.9
2	206	34.2	-16 48.7	162	23.7		163	55.4	1 15.2	221	55.8	-21 38.2
4	236	34.1	-16 47.2	192	28.6		193	56.7	1 17.5	251	56.6	-21 37.5
6	266	33.9	-16 45.8	222	33.6		223	58.0	1 19.8	281	57.5	-21 36.7
8	296	33.8	-16 44.3	252	38.5		253	59.4	1 22.1	311	58.3	-21 36.0
10	326	33.6	-16 42.9	282	43.4		284	.7	1 24.4	341	59.2	-21 35.3
12	356	33.5	-16 41.4	312	48.3		314	2.1	1 26.7	12	.0	-21 34.6
14	26	33.3	-16 39.9	342	53.3		344	3.4	1 29.0	42	.9	-21 33.8
16	56	33.2	-16 38.5	12	58.2		14	4.8	1 31.3	72	1.7	-21 33.1
18	86	33.0	-16 37.0	43	3.1		44	6.2	1 33.6	102	2.6	-21 32.4
20	116	32.9	-16 35.6	73	8.1		74	7.6	1 35.9	132	3.4	-21 31.6
22	146	32.8	-16 34.1	103	13.0		104	8.9	1 38.2	162	4.3	-21 30.9
Δ		-1	7				7	12		4		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 14	16 15	0 47	2 27	8 52	.2	...	.0
55	7 51	16 37	0 40	2 6	9 10	.6	...	.0
50	7 33	16 54	0 35	1 52	9 24	.9	...	.0
45	7 20	17 8	0 31	1 41	9 35	1.1	...	.0
40	7 9	17 19	0 29	1 33	9 44	1.2	23 56	3.0
35	6 59	17 29	0 27	1 27	9 52	1.4	23 46	2.8
30	6 50	17 37	0 25	1 22	9 59	1.5	23 37	2.7
20	6 36	17 52	0 23	1 16	10 12	1.7	23 22	2.5
10	6 22	18 5	0 22	1 12	10 23	1.9	23 9	2.3
0	6 10	18 17	0 22	1 12	10 33	2.1	22 56	2.2
10	5 58	18 30	0 22	1 14	10 43	2.3	22 44	2.0
20	5 44	18 43	0 23	1 19	10 54	2.4	22 31	1.8
30	5 29	18 58	0 26	1 28	11 7	2.7	22 16	1.6
35	5 20	19 7	0 27	1 36	11 15	2.8	22 7	1.5
40	5 9	19 17	0 30	1 46	11 23	2.9	21 57	1.4
45	4 57	19 30	0 33	2 2	11 33	3.1	21 45	1.2
50	4 42	19 44	0 38	2 28	11 45	3.3	21 32	1.0
55	4 23	20 3	0 45	3 48	12 1	3.7	21 14	.7
60	3 57	20 29	0 57	:::	12 21	4.1	20 51	.2

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	''	°	'	''	''			
0	116	56.1	107	11 29.3	123	182	37.8	-19 9.6	318	49.6	5 36.5
2	145	59.8	105	11 56.7	122	212	41.5	-19 9.3	348	54.8	5 36.6
4	175	3.2	103	12 24.0	120	242	45.2	-19 9.0	18	59.9	5 36.8
6	204	6.3	101	12 51.0	118	272	48.9	-19 8.8	49	5.1	5 36.9
8	233	9.1	99	13 17.9	117	302	52.6	-19 8.5	79	10.3	5 37.0
10	262	11.5	97	13 44.6	115	332	56.4	-19 8.2	109	15.4	5 37.1
12	291	13.6	94	14 11.0	113	3	.1	-19 7.9	139	20.6	5 37.2
14	320	15.3	92	14 37.2	111	33	3.8	-19 7.6	169	25.8	5 37.4
16	349	16.7	90	15 3.2	109	63	7.5	-19 7.3	199	30.9	5 37.5
18	18	17.7	88	15 28.9	107	93	11.2	-19 7.0	229	36.1	5 37.6
20	47	18.3	85	15 54.4	105	123	14.9	-19 6.7	259	41.3	5 37.7
22	76	18.5	83	16 19.6	103	153	18.7	-19 6.5	289	46.5	5 37.9
Δ						19	1		26		1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	-13 34.6	-.3	16.3	T <sub>m</sub>	16 44	2.1	57.1 15.6
12	-13 38.5	T <sub>m</sub> ☉	12 h 13.6 min	Starost	5.7 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h min	'	°	'	'
♀	15 5	.3	2	-4.4	♃	11 48	.0	51	-1.8
♂	11 12	.1	61	1.3	♄	2 44	.0	187	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	32.6	-16 32.6	133	17.9		134	10.3	1 40.5	192	5.1	-21 30.1
2	206	32.5	-16 31.1	163	22.8		164	11.7	1 42.8	222	6.0	-21 29.4
4	236	32.4	-16 29.7	193	27.8		194	13.1	1 45.1	252	6.8	-21 28.7
6	266	32.2	-16 28.2	223	32.7		224	14.5	1 47.4	282	7.7	-21 27.9
8	296	32.1	-16 26.7	253	37.6		254	15.9	1 49.7	312	8.6	-21 27.2
10	326	32.0	-16 25.2	283	42.6		284	17.4	1 52.0	342	9.4	-21 26.4
12	356	31.8	-16 23.8	313	47.5		314	18.8	1 54.3	12	10.3	-21 25.7
14	26	31.7	-16 22.3	343	52.4		344	20.2	1 56.6	42	11.1	-21 24.9
16	56	31.6	-16 20.8	13	57.3		14	21.6	1 58.9	72	12.0	-21 24.2
18	86	31.5	-16 19.3	44	2.3		44	23.1	2 1.2	102	12.9	-21 23.4
20	116	31.3	-16 17.8	74	7.2		74	24.5	2 3.4	132	13.7	-21 22.6
22	146	31.2	-16 16.3	104	12.1		104	26.0	2 5.7	162	14.6	-21 21.9
Δ		-1	7				7	11		4		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 11	16 17	0 47	2 26	8 57	.4	1 8	4.2
55	7 49	16 39	0 40	2 6	9 24	.8	0 42	3.7
50	7 32	16 56	0 35	1 51	9 45	1.1	0 23	3.4
45	7 19	17 9	0 31	1 41	10 1	1.4	0 9	3.2
40	7 8	17 20	0 29	1 33	10 14	1.5	...	.0
35	6 58	17 30	0 27	1 27	10 26	1.7	...	.0
30	6 50	17 38	0 25	1 22	10 36	1.8	...	.0
20	6 35	17 53	0 23	1 16	10 53	2.0	...	.0
10	6 22	18 5	0 22	1 12	11 8	2.1	...	.0
0	6 10	18 17	0 22	1 12	11 23	2.3	23 48	2.4
10	5 58	18 29	0 22	1 14	11 37	2.4	23 32	2.2
20	5 45	18 42	0 23	1 19	11 53	2.6	23 14	2.1
30	5 30	18 58	0 26	1 28	12 11	2.8	22 55	1.9
35	5 21	19 6	0 27	1 36	12 21	2.9	22 43	1.8
40	5 10	19 16	0 30	1 46	12 33	3.0	22 30	1.7
45	4 58	19 28	0 33	2 1	12 48	3.2	22 14	1.5
50	4 44	19 43	0 38	2 26	13 5	3.4	21 55	1.3
55	4 25	20 1	0 44	3 35	13 28	3.7	21 30	1.0
60	3 59	20 26	0 56	:::	14 0	4.3	20 56	.5

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	''	''	°	'	''	''			
0	105	18.4	81	16 44.5	100	183	22.4	-19 6.2	319	51.6	5 38.0
2	134	17.8	78	17 9.1	98	213	26.1	-19 5.9	349	56.8	5 38.1
4	163	16.8	76	17 33.4	96	243	29.8	-19 5.6	20	2.0	5 38.2
6	192	15.4	74	17 57.4	93	273	33.5	-19 5.3	50	7.1	5 38.4
8	221	13.6	72	18 21.1	91	303	37.2	-19 5.0	80	12.3	5 38.5
10	250	11.3	69	18 44.4	88	333	41.0	-19 4.7	110	17.5	5 38.6
12	279	8.6	67	19 7.3	85	3	44.7	-19 4.4	140	22.7	5 38.7
14	308	5.5	65	19 29.9	83	33	48.4	-19 4.2	170	27.8	5 38.9
16	337	2.0	62	19 52.1	80	63	52.1	-19 3.9	200	33.0	5 39.0
18	5	57.9	60	20 13.9	77	93	55.8	-19 3.6	230	38.2	5 39.1
20	34	53.5	58	20 35.2	74	123	59.5	-19 3.3	260	43.4	5 39.2
22	63	48.5	56	20 56.2	71	154	3.3	-19 3.0	290	48.5	5 39.4
Δ						19	1		26		1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	-13 42.4	-.3	16.3	T <sub>m</sub>	17 35	2.3	57.8 15.7
12	-13 45.9	T <sub>m</sub> ☉	12 h 13.8 min	Starost	6.7 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h min	'	°	'	'
♀	15 4	.3	2	-4.4	♃	11 45	.0	51	-1.8
♂	11 11	.1	60	1.3	♄	2 40	.0	188	.8

4. FEBRUAR

2009.

SREDA

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS						
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>				
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	31.1	-16	14.8	134	17.1	134	27.4	2	8.0	192	15.4	-21	21.1		
2	206	31.0	-16	13.3	164	22.0	164	28.9	2	10.3	222	16.3	-21	20.4		
4	236	30.9	-16	11.8	194	26.9	194	30.4	2	12.6	252	17.2	-21	19.6		
6	266	30.7	-16	10.3	224	31.8	224	31.8	2	14.8	282	18.0	-21	18.8		
8	296	30.6	-16	8.8	254	36.8	254	33.3	2	17.1	312	18.9	-21	18.1		
10	326	30.5	-16	7.3	284	41.7	284	34.8	2	19.4	342	19.7	-21	17.3		
12	356	30.4	-16	5.8	314	46.6	314	36.3	2	21.6	12	20.6	-21	16.5		
14	26	30.3	-16	4.3	344	51.5	344	37.8	2	23.9	42	21.5	-21	15.8		
16	56	30.2	-16	2.8	14	56.5	14	39.3	2	26.2	72	22.3	-21	15.0		
18	86	30.1	-16	1.3	45	1.4	44	40.8	2	28.4	102	23.2	-21	14.2		
20	116	30.0	-15	59.8	75	6.3	74	42.3	2	30.7	132	24.1	-21	13.4		
22	146	29.9	-15	58.3	105	11.3	104	43.8	2	33.0	162	24.9	-21	12.7		
Δ		-1		8				7		11				4		4

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24				
N	h min	h min	h min	h min	h min	min	h min	min				
60	8 9	16 20	0 47	2 26	9 5	.7	2 49	4.3				
55	7 47	16 42	0 40	2 5	9 44	1.3	2 11	3.7				
50	7 31	16 58	0 35	1 51	10 12	1.6	1 44	3.4				
45	7 17	17 11	0 31	1 41	10 33	1.8	1 24	3.2				
40	7 7	17 22	0 28	1 33	10 51	1.9	1 8	3.0				
35	6 57	17 31	0 26	1 26	11 5	2.0	0 54	2.9				
30	6 49	17 39	0 25	1 22	11 18	2.1	0 42	2.8				
20	6 35	17 53	0 23	1 15	11 40	2.2	0 22	2.6				
10	6 22	18 6	0 22	1 12	11 59	2.4	0 4	2.5				
0	6 10	18 17	0 22	1 12	12 17	2.5	...	.0				
10	5 58	18 29	0 22	1 14	12 35	2.6	...	.0				
20	5 45	18 42	0 23	1 19	12 55	2.7	...	.0				
30	5 30	18 57	0 26	1 28	13 17	2.8	23 41	2.3				
35	5 22	19 6	0 27	1 35	13 31	2.9	23 27	2.2				
40	5 12	19 15	0 30	1 45	13 46	3.0	23 10	2.1				
45	4 60	19 27	0 33	2 0	14 5	3.1	22 51	2.0				
50	4 45	19 41	0 37	2 25	14 28	3.3	22 27	1.9				
55	4 27	19 59	0 44	3 26	14 58	3.6	21 55	1.6				
60	4 2	20 24	0 56	:::	15 44	4.2	21 8	1.1				
S												

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	92	43.2	54	21	184	7.0	-19	2.7	320	53.7	5	39.5
2	121	37.3	52	21	214	10.7	-19	2.4	350	58.9	5	39.6
4	150	31.0	49	21	244	14.4	-19	2.1	21	4.1	5	39.7
6	179	24.2	47	22	274	18.1	-19	1.9	51	9.3	5	39.9
8	208	17.0	46	22	304	21.9	-19	1.6	81	14.4	5	40.0
10	237	9.3	44	22	334	25.6	-19	1.3	111	19.6	5	40.1
12	266	1.1	42	23	4	29.3	-19	1.0	141	24.8	5	40.2
14	294	52.5	40	23	34	33.0	-19	.7	171	30.0	5	40.4
16	323	43.5	38	23	64	36.7	-19	.4	201	35.2	5	40.5
18	352	33.9	37	23	94	40.5	-19	.1	231	40.3	5	40.6
20	21	24.0	35	24	124	44.2	-18	59.8	261	45.5	5	40.7
22	50	13.6	34	24	154	47.9	-18	59.5	291	50.7	5	40.9
Δ						19		1		26		1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 49.3	-.3	16.3	T <sub>m</sub> 18 31	2.5	58.4	15.9		
12	-13 52.4	T <sub>m☉</sub> 12 h 13.9 min	Starost 7.7 d	Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 3	.3	1	-4.4	♄	11 42	.0	51	-1.8
♂	11 11	.1	59	1.3	♅	2 36	.0	188	.8

5. FEBRUAR

ČETVRTAK

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS						
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>				
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	29.8	-15	56.8	135	16.2	134	45.4	2	35.2	192	25.8	-21	11.9		
2	206	29.7	-15	55.3	165	21.1	164	46.9	2	37.5	222	26.7	-21	11.1		
4	236	29.6	-15	53.7	195	26.0	194	48.4	2	39.8	252	27.5	-21	10.3		
6	266	29.5	-15	52.2	225	31.0	224	50.0	2	42.0	282	28.4	-21	9.5		
8	296	29.4	-15	50.7	255	35.9	254	51.5	2	44.3	312	29.3	-21	8.8		
10	326	29.3	-15	49.2	285	40.8	284	53.1	2	46.5	342	30.1	-21	8.0		
12	356	29.2	-15	47.6	315	45.8	314	54.7	2	48.8	12	31.0	-21	7.2		
14	26	29.1	-15	46.1	345	50.7	344	56.2	2	51.0	42	31.9	-21	6.4		
16	56	29.0	-15	44.6	15	55.6	14	57.8	2	53.3	72	32.8	-21	5.6		
18	86	28.9	-15	43.1	46	.5	44	59.4	2	55.5	102	33.6	-21	4.8		
20	116	28.8	-15	41.5	76	5.5	75	1.0	2	57.7	132	34.5	-21	4.0		
22	146	28.7	-15	40.0	106	10.4	105	2.6	2	60.0	162	35.4	-21	3.2		
Δ			0	8				8		11				4		4

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24				
N	h min	h min	h min	h min	h min	min	h min	min				
60	8 6	16 22	0 46	2 25	9 23	1.6	4 31	3.8				
55	7 45	16 44	0 39	2 5	10 16	2.1	3 39	3.3				
50	7 29	16 60	0 35	1 51	10 50	2.2	3 6	3.1				
45	7 16	17 12	0 31	1 40	11 16	2.3	2 41	3.0				
40	7 6	17 23	0 28	1 32	11 37	2.4	2 21	2.9				
35	6 56	17 32	0 26	1 26	11 54	2.4	2 4	2.9				
30	6 48	17 40	0 25	1 22	12 9	2.5	1 50	2.8				
20	6 34	17 54	0 23	1 15	12 34	2.5	1 25	2.7				
10	6 22	18 6	0 22	1 12	12 56	2.6	1 4	2.6				
0	6 10	18 17	0 22	1 12	13 17	2.6	0 45	2.6				
10	5 59	18 29	0 22	1 13	13 37	2.7	0 25	2.5				
20	5 46	18 42	0 23	1 18	13 59	2.7	0 5	2.4				
30	5 31	18 56	0 26	1 28	14 25	2.8	...	.0				
35	5 23	19 5	0 27	1 35	14 41	2.8	...	.0				
40	5 13	19 14	0 30	1 45	14 58	2.8	...	.0				
45	5 1	19 26	0 33	1 59	15 20	2.9	23 40	2.6				
50	4 47	19 40	0 37	2 23	15 47	2.9	23 12	2.6				
55	4 29	19 57	0 44	3 19	16 25	3.0	22 34	2.5				
60	4 5	20 21	0 55	:::	17 25	3.2	21 33	2.3				
S												

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	79	2.7	32	24	184	51.6	-18	59.3	321	55.9	5	41.0
2	107	51.4	31	24	214	55.3	-18	59.0	352	1.1	5	41.1
4	136	39.7	30	25	244	59.1	-18	58.7	22	6.3	5	41.3
6	165	27.6	29	25	275	2.8	-18	58.4	52	11.4	5	41.4
8	194	15.1	28	25	305	6.5	-18	58.1	82	16.6	5	41.5
10	223	2.2	27	25	335	10.2	-18	57.8	112	21.8	5	41.6
12	251	48.9	26	25	5	14.0	-18	57.5	142	27.0	5	41.8
14	280	35.3	26	26	35	17.7	-18	57.2	172	32.2	5	41.9
16	309	21.3	25	26	65	21.4	-18	56.9	202	37.4	5	42.0
18	338	7.0	25	26	95	25.1	-18	56.6	232	42.6	5	42.2
20	6	52.3	24	26	125	28.8	-18	56.4	262	47.7	5	42.3
22	35	37.3	24	26	155	32.6	-18	56.1	292	52.9	5	42.4
Δ						19		1		26		1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	28.7	-15 38.4	136	15.3	135	4.2	3 2.2	192	36.3	-21 2.4	
2	206	28.6	-15 36.9	166	20.3	165	5.8	3 4.5	222	37.1	-21 1.6	
4	236	28.5	-15 35.4	196	25.2	195	7.4	3 6.7	252	38.0	-21 0.8	
6	266	28.4	-15 33.8	226	30.1	225	9.0	3 8.9	282	38.9	-21 0.0	
8	296	28.3	-15 32.3	256	35.0	255	10.6	3 11.2	312	39.7	-20 59.2	
10	326	28.2	-15 30.7	286	40.0	285	12.3	3 13.4	342	40.6	-20 58.4	
12	356	28.2	-15 29.2	316	44.9	315	13.9	3 15.6	12	41.5	-20 57.6	
14	26	28.1	-15 27.6	346	49.8	345	15.5	3 17.9	42	42.4	-20 56.8	
16	56	28.0	-15 26.1	16	54.8	15	17.2	3 20.1	72	43.3	-20 56.0	
18	86	27.9	-15 24.5	46	59.7	45	18.9	3 22.3	102	44.1	-20 55.2	
20	116	27.9	-15 23.0	77	4.6	75	20.5	3 24.5	132	45.0	-20 54.3	
22	146	27.8	-15 21.4	107	9.5	105	22.2	3 26.7	162	45.9	-20 53.5	
Δ	0	8				8	11		4	4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 4	16 25	0 46	2 25	10 2	3.2	6 2	2.4
55	7 43	16 46	0 39	2 5	11 5	3.0	4 59	2.6
50	7 27	17 1	0 34	1 51	11 44	2.9	4 21	2.6
45	7 15	17 14	0 31	1 40	12 12	2.9	3 53	2.6
40	7 5	17 24	0 28	1 32	12 34	2.9	3 31	2.7
35	6 56	17 33	0 26	1 26	12 52	2.8	3 13	2.7
30	6 48	17 41	0 25	1 21	13 8	2.8	2 57	2.7
20	6 34	17 54	0 23	1 15	13 35	2.8	2 31	2.7
10	6 22	18 6	0 22	1 12	13 58	2.7	2 8	2.7
0	6 11	18 18	0 21	1 11	14 20	2.7	1 46	2.7
10	5 59	18 29	0 22	1 13	14 41	2.6	1 25	2.7
20	5 47	18 41	0 23	1 18	15 5	2.6	1 2	2.7
30	5 32	18 56	0 25	1 27	15 32	2.5	0 35	2.6
35	5 24	19 4	0 27	1 34	15 48	2.5	0 20	2.6
40	5 14	19 13	0 29	1 44	16 6	2.5	0 2	2.6
45	5 3	19 24	0 33	1 59	16 29	2.4	...	0
50	4 49	19 38	0 37	2 22	16 57	2.3	...	0
55	4 31	19 55	0 43	3 13	17 37	2.1	23 35	3.4
60	4 8	20 19	0 54	:::	18 42	1.7	22 29	3.9
S								

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	''	°	°	'	°	'	
0	64	22.1	24 26	43.5	-20	185	36.3	-18 55.8	
2	93	6.6	24 26	48.8	-24	215	40.0	-18 55.5	
4	121	50.8	24 26	53.4	-28	245	43.7	-18 55.2	
6	150	34.8	24 26	57.3	-32	275	47.5	-18 54.9	
8	179	18.5	25 27	.4	-36	305	51.2	-18 54.6	
10	208	2.1	25 27	2.7	-40	335	54.9	-18 54.3	
12	236	45.5	26 27	4.2	-44	5	58.6	-18 54.0	
14	265	28.7	26 27	5.0	-48	36	2.4	-18 53.7	
16	294	11.9	27 27	4.9	-52	66	6.1	-18 53.4	
18	322	54.9	28 27	4.1	-55	96	9.8	-18 53.1	
20	351	37.8	29 27	2.5	-59	126	13.5	-18 52.9	
22	20	20.6	30 27	.0	-63	156	17.3	-18 52.6	
Δ						19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-14	.7	-0.2	16.2	T <sub>m</sub>	20 35	2.7	59.7	16.3
12	-14	3.0	T <sub>m</sub> ☉	12 h 14.1 min	Starost	9.7 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	15 0	.3	359	-4.5	♃	11 36	.0	50	-1.8
♂	11 9	.1	57	1.3	♄	2 28	.0	188	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	27.7	-15 19.9	137	14.5	135	23.9	3 29.0	192	46.8	-20 52.7	
2	206	27.7	-15 18.3	167	19.4	165	25.5	3 31.2	222	47.7	-20 51.9	
4	236	27.6	-15 16.7	197	24.3	195	27.2	3 33.4	252	48.5	-20 51.1	
6	266	27.5	-15 15.2	227	29.3	225	28.9	3 35.6	282	49.4	-20 50.2	
8	296	27.5	-15 13.6	257	34.2	255	30.6	3 37.8	312	50.3	-20 49.4	
10	326	27.4	-15 12.0	287	39.1	285	32.3	3 40.0	342	51.2	-20 48.6	
12	356	27.4	-15 10.5	317	44.0	315	34.1	3 42.2	12	52.1	-20 47.8	
14	26	27.3	-15 8.9	347	49.0	345	35.8	3 44.4	42	52.9	-20 46.9	
16	56	27.2	-15 7.3	17	53.9	15	37.5	3 46.6	72	53.8	-20 46.1	
18	86	27.2	-15 5.7	47	58.8	45	39.2	3 48.8	102	54.7	-20 45.3	
20	116	27.1	-15 4.2	78	3.7	75	41.0	3 51.0	132	55.6	-20 44.4	
22	146	27.1	-15 2.6	108	8.7	105	42.7	3 53.2	162	56.5	-20 43.6	
Δ	0	8				9	11		4	4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 1	16 28	0 46	2 24	11 19	4.4	7 1	1.2
55	7 41	16 48	0 39	2 4	12 17	3.8	6 1	1.7
50	7 26	17 3	0 34	1 50	12 54	3.5	5 24	2.0
45	7 14	17 15	0 31	1 40	13 21	3.3	4 56	2.1
40	7 3	17 25	0 28	1 32	13 42	3.2	4 35	2.2
35	6 55	17 34	0 26	1 26	14 0	3.1	4 17	2.3
30	6 47	17 42	0 25	1 21	14 15	3.0	4 1	2.4
20	6 34	17 55	0 23	1 15	14 41	2.9	3 35	2.5
10	6 22	18 7	0 22	1 12	15 3	2.7	3 12	2.6
0	6 11	18 18	0 21	1 11	15 24	2.6	2 50	2.7
10	5 59	18 29	0 22	1 13	15 45	2.5	2 29	2.7
20	5 47	18 41	0 23	1 18	16 7	2.4	2 6	2.8
30	5 33	18 55	0 25	1 27	16 33	2.2	1 39	2.9
35	5 25	19 3	0 27	1 34	16 48	2.1	1 23	3.0
40	5 15	19 12	0 29	1 44	17 5	2.0	1 5	3.0
45	5 4	19 23	0 32	1 58	17 26	1.9	0 42	3.1
50	4 51	19 36	0 37	2 20	17 52	1.7	0 14	3.3
55	4 34	19 53	0 43	3 8	18 28	1.4	...	0
60	4 11	20 16	0 54	:::	19 22	.7	...	0
S								

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	''	°	°	'	°	'	
0	49	3.4	31 26	56.8	-67	186	21.0	-18 52.3	
2	77	46.2	32 26	52.8	-70	216	24.7	-18 52.0	
4	106	29.0	34 26	48.0	-74	246	28.4	-18 51.7	
6	135	11.8	35 26	42.4	-78	276	32.2	-18 51.4	
8	163	54.7	36 26	36.0	-81	306	35.9	-18 51.1	
10	192	37.6	38 26	28.8	-84	336	39.6	-18 50.8	
12	221	20.6	40 26	20.8	-88	6	43.3	-18 50.5	
14	250	3.7	41 26	12.0	-91	36	47.1	-18 50.2	
16	278	47.0	43 26	2.5	-94	66	50.8	-18 49.9	
18	307	30.4	45 25	52.2	-98	96	54.5	-18 49.6	
20	336	14.0	47 25	41.1	-101	126	58.2	-18 49.4	
22	4	57.8	48 25	29.3	-104	157	2.0	-18 49.1	
Δ						19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-14	5.2	-0.2	16.2	T <sub>m</sub>	21 39	2.6	60.2	16.4
12	-14	7.0	T <sub>m</sub> ☉	12 h 14.1 min	Starost	10.7 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	14 59	.3	359	-4.5	♃	11 33	.0	50	-1.8
♂	11 9	.1	57	1.3	♄	2 24	.0	188	.8



UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>				
0	176	27.0	-15	1.0	138	13.6	135	44.5	3	55.4	192	57.4	-20	42.8
2	206	27.0	-14	59.4	168	18.5	165	46.2	3	57.6	222	58.3	-20	41.9
4	236	26.9	-14	57.8	198	23.5	195	48.0	3	59.8	252	59.1	-20	41.1
6	266	26.9	-14	56.2	228	28.4	225	49.8	4	2.0	283	.0	-20	40.3
8	296	26.8	-14	54.7	258	33.3	255	51.6	4	4.2	313	.9	-20	39.4
10	326	26.8	-14	53.1	288	38.2	285	53.4	4	6.3	343	1.8	-20	38.6
12	356	26.7	-14	51.5	318	43.2	315	55.2	4	8.5	37	2.7	-20	37.7
14	26	26.7	-14	49.9	348	48.1	345	57.0	4	10.7	43	3.6	-20	36.9
16	56	26.7	-14	48.3	18	53.0	15	58.8	4	12.9	73	4.5	-20	36.0
18	86	26.6	-14	46.7	48	58.0	46	.6	4	15.0	103	5.4	-20	35.2
20	116	26.6	-14	45.1	79	2.9	76	2.4	4	17.2	133	6.3	-20	34.3
22	146	26.6	-14	43.5	109	7.8	106	4.2	4	19.4	163	7.2	-20	33.5
Δ	0 8						9 11			4 4				

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 59	16 30	0 46	2 24	13 3	4.7	7 29	.5
55	7 39	16 50	0 39	2 4	13 48	4.1	6 43	1.1
50	7 24	17 5	0 34	1 50	14 18	3.7	6 11	1.4
45	7 12	17 17	0 31	1 40	14 41	3.5	5 48	1.7
40	7 2	17 26	0 28	1 32	14 59	3.3	5 29	1.8
35	6 54	17 35	0 26	1 26	15 14	3.1	5 12	2.0
30	6 46	17 42	0 25	1 21	15 27	3.0	4 58	2.1
20	6 33	17 55	0 23	1 15	15 50	2.8	4 35	2.3
10	6 22	18 7	0 22	1 12	16 9	2.6	4 14	2.4
0	6 11	18 18	0 21	1 11	16 27	2.5	3 54	2.6
10	5 60	18 29	0 22	1 13	16 45	2.3	3 35	2.7
20	5 48	18 40	0 23	1 18	17 4	2.1	3 14	2.8
30	5 34	18 54	0 25	1 27	17 26	1.9	2 49	3.0
35	5 26	19 2	0 27	1 34	17 39	1.8	2 35	3.1
40	5 17	19 11	0 29	1 43	17 54	1.6	2 18	3.3
45	5 6	19 22	0 32	1 57	18 11	1.5	1 58	3.4
50	4 53	19 35	0 37	2 19	18 33	1.2	1 32	3.7
55	4 36	19 51	0 43	3 4	19 0	.9	0 57	4.0
60	4 13	20 13	0 53	:::	19 40	.3	0 4	4.7
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
0	33	41.8	50	25	16.7	-107	187	5.7	-18	48.8	325	2.8	5	45.7
2	62	26.0	52	25	3.3	-110	217	9.4	-18	48.5	355	8.0	5	45.9
4	91	10.4	54	24	49.3	-113	247	13.1	-18	48.2	25	13.2	5	46.0
6	119	55.2	56	24	34.5	-115	277	16.9	-18	47.9	55	18.4	5	46.1
8	148	40.2	58	24	19.0	-118	307	20.6	-18	47.6	85	23.6	5	46.3
10	177	25.5	60	24	2.8	-121	337	24.3	-18	47.3	115	28.8	5	46.4
12	206	11.1	62	23	45.9	-123	7	28.1	-18	47.0	145	34.0	5	46.5
14	234	57.0	64	23	28.3	-125	37	31.8	-18	46.7	175	39.2	5	46.7
16	263	43.3	66	23	10.0	-128	67	35.5	-18	46.4	205	44.4	5	46.8
18	292	29.9	68	22	51.1	-130	97	39.2	-18	46.1	235	49.7	5	47.0
20	321	16.8	70	22	31.6	-132	127	43.0	-18	45.8	265	54.9	5	47.1
22	350	4.1	73	22	11.4	-134	157	46.7	-18	45.5	296	.1	5	47.2
Δ							19		1		26		1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	h min	min	h min	
00	-14	8.9	-1	16.2	T <sub>m</sub>	22 41	2.5	60.6	16.5
12	-14	10.3	T <sub>m</sub> ☉	12 h 14.2 min		Starost 11.7 d Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	°	°	°	♃	h min	°	°	°
♂	14 58	.3	358	-4.5	♄	11 30	.0	50	-1.8
♂	11 8	.1	56	1.3	♄	2 19	.0	188	.8

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>				
0	176	26.5	-14	41.9	139	12.7	136	6.1	4	21.6	193	8.1	-20	32.6
2	206	26.5	-14	40.3	169	17.7	166	7.9	4	23.7	223	8.9	-20	31.8
4	236	26.5	-14	38.7	199	22.6	196	9.8	4	25.9	253	9.8	-20	30.9
6	266	26.4	-14	37.1	229	27.5	226	11.6	4	28.0	283	10.7	-20	30.0
8	296	26.4	-14	35.5	259	32.5	256	13.5	4	30.2	313	11.6	-20	29.2
10	326	26.4	-14	33.9	289	37.4	286	15.4	4	32.4	343	12.5	-20	28.3
12	356	26.3	-14	32.2	319	42.3	316	17.2	4	34.5	13	13.4	-20	27.5
14	26	26.3	-14	30.6	349	47.2	346	19.1	4	36.7	43	14.3	-20	26.6
16	56	26.3	-14	29.0	19	52.2	16	21.0	4	38.8	73	15.2	-20	25.7
18	86	26.3	-14	27.4	49	57.1	46	22.9	4	41.0	103	16.1	-20	24.9
20	116	26.2	-14	25.8	80	2.0	76	24.8	4	43.1	133	17.0	-20	24.0
22	146	26.2	-14	24.2	110	7.0	106	26.7	4	45.2	163	17.9	-20	23.1
Δ	0 8						9 11			4 4				

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 56	16 33	0 45	2 23	14 55	4.5	7 42	.3
55	7 37	16 52	0 39	2 4	15 25	4.0	7 10	.7
50	7 23	17 6	0 34	1 50	15 47	3.7	6 46	1.1
45	7 11	17 18	0 31	1 40	16 4	3.4	6 28	1.3
40	7 1	17 28	0 28	1 32	16 18	3.2	6 12	1.5
35	6 53	17 36	0 26	1 26	16 30	3.1	5 59	1.6
30	6 46	17 43	0 25	1 21	16 40	2.9	5 48	1.8
20	6 33	17 56	0 23	1 15	16 57	2.7	5 29	2.0
10	6 21	18 7	0 22	1 12	17 12	2.5	5 12	2.2
0	6 11	18 18	0 21	1 11	17 26	2.3	4 56	2.4
10	5 60	18 28	0 22	1 13	17 40	2.1	4 39	2.6
20	5 48	18 40	0 23	1 18	17 55	1.9	4 22	2.8
30	5 35	18 53	0 25	1 27	18 12	1.7	4 2	3.0
35	5 27	19 1	0 27	1 33	18 22	1.5	3 50	3.1
40	5 18	19 10	0 29	1 43	18 33	1.4	3 36	3.3
45	5 7	19 20	0 32	1 56	18 46	1.2	3 20	3.5
50	4 54	19 33	0 36	2 18	19 2	.9	2 60	3.7
55	4 38	19 49	0 43	3 0	19 22	.6	2 33	4.1
60	4 16	20 11	0 52	:::	19 48	.2	1 56	4.7
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
0	18	51.8	75	21	50.7	-136	187	50.4	-18	45.2	326	5.3	5	47.4
2	47	39.9	77	21	29.3	-138	217	54.2	-18	45.0	356	10.5	5	47.5
4	76	28.4	79	21	7.4	-140	247	57.9	-18	44.7	26	15.7	5	47.6
6	105	17.2	81	20	44.8	-142	278	1.6	-18	44.4	56	20.9	5	47.8
8	134	6.5	83	20	21.8	-144	308	5.4	-18	44.1	86	26.1	5	47.9
10	162	56.1	85	19	58.2	-145	338	9.1	-18	43.8	116	31.3	5	48.1
12	191	46.2	86	19	34.1	-147	8	12.8	-18	43.5	146	36.5	5	48.2
14	220	36.6	88	19	9.5	-148	38	16.5	-18	43.2	176	41.7	5	48.3
16	249	27.5	90	18	44.4	-149	68	20.3	-18	42.9	206	46.9	5	48.5
18	278	18.8	92	18	18.8	-151	98	24.0	-18	42.6	236	52.2	5	48.6
20	307	10.5	94	17	52.8	-152	128	27.7	-18	42.3	266	57.4	5	48.7
22	336	2.6	96	17	26.3	-153	158	31.5	-18	42.0	297	2.6	5	48.9
Δ							19		1		26		1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	h min	min	h min	
00	-14	11.7	-1	16.2	T <sub>m</sub>	23 40	2.2	60.6	16.5
12	-14	12.7	T <sub>m</sub> ☉	12 h 14.2 min		Starost 12.7 d Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	°	°	°					

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.2	-14	22.5	140	11.9	136	28.6	4	47.4	193	18.8	-20	22.2
2	206	26.2	-14	20.9	170	16.8	166	30.6	4	49.5	223	19.7	-20	21.4
4	236	26.2	-14	19.3	200	21.7	196	32.5	4	51.7	253	20.6	-20	20.5
6	266	26.2	-14	17.7	230	26.7	226	34.5	4	53.8	283	21.5	-20	19.6
8	296	26.1	-14	16.0	260	31.6	256	36.4	4	55.9	313	22.4	-20	18.7
10	326	26.1	-14	14.4	290	36.5	286	38.4	4	58.0	343	23.3	-20	17.8
12	356	26.1	-14	12.8	320	41.5	316	40.3	5	.2	13	24.2	-20	17.0
14	26	26.1	-14	11.1	350	46.4	346	42.3	5	2.3	43	25.1	-20	16.1
16	56	26.1	-14	9.5	20	51.3	16	44.3	5	4.4	73	26.0	-20	15.2
18	86	26.1	-14	7.9	50	56.2	46	46.3	5	6.5	103	26.9	-20	14.3
20	116	26.1	-14	6.2	81	1.2	76	48.2	5	8.6	133	27.8	-20	13.4
22	146	26.1	-14	4.6	111	6.1	106	50.2	5	10.8	163	28.8	-20	12.5
Δ	0 8				10			11			5 4			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 54	16 36	0 45	2 23	16 44	4.3	7 48	.2
55	7 35	16 54	0 39	2 4	17 2	3.9	7 28	.5
50	7 21	17 8	0 34	1 50	17 16	3.6	7 12	.8
45	7 10	17 19	0 31	1 39	17 27	3.3	6 59	1.1
40	7 0	17 29	0 28	1 32	17 36	3.1	6 48	1.3
35	6 52	17 37	0 26	1 26	17 43	2.9	6 39	1.4
30	6 45	17 44	0 25	1 21	17 50	2.8	6 31	1.6
20	6 32	17 56	0 23	1 15	18 2	2.5	6 17	1.8
10	6 21	18 7	0 22	1 12	18 12	2.3	6 4	2.0
0	6 11	18 18	0 21	1 11	18 21	2.1	5 53	2.2
10	6 0	18 28	0 22	1 13	18 30	1.9	5 41	2.4
20	5 49	18 39	0 23	1 17	18 40	1.7	5 28	2.6
30	5 36	18 52	0 25	1 26	18 52	1.5	5 14	2.9
35	5 28	19 0	0 27	1 33	18 58	1.3	5 5	3.0
40	5 19	19 9	0 29	1 42	19 5	1.2	4 55	3.2
45	5 9	19 19	0 32	1 56	19 14	1.0	4 44	3.4
50	4 56	19 31	0 36	2 16	19 24	.8	4 30	3.6
55	4 40	19 47	0 42	2 57	19 36	.5	4 12	4.0
60	4 19	20 8	0 52	:::	19 53	.1	3 48	4.4
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	4	55.1	97	16	59.4	-154	188	35.2	-18	41.7	327	7.8	5	49.0
2	33	48.0	99	16	32.2	-155	218	38.9	-18	41.4	357	13.0	5	49.2
4	62	41.3	101	16	4.5	-156	248	42.7	-18	41.1	27	18.2	5	49.3
6	91	35.0	102	15	36.5	-157	278	46.4	-18	40.8	57	23.4	5	49.4
8	120	29.1	104	15	8.1	-157	308	50.1	-18	40.5	87	28.6	5	49.6
10	149	23.7	105	14	39.4	-158	338	53.9	-18	40.2	117	33.9	5	49.7
12	178	18.6	107	14	10.4	-158	8	57.6	-18	39.9	147	39.1	5	49.9
14	207	13.8	108	13	41.0	-159	39	1.3	-18	39.7	177	44.3	5	50.0
16	236	9.5	110	13	11.4	-159	69	5.1	-18	39.4	207	49.5	5	50.1
18	265	5.5	111	12	41.5	-160	99	8.8	-18	39.1	237	54.7	5	50.3
20	294	2.0	112	12	11.4	-160	129	12.5	-18	38.8	267	59.9	5	50.4
22	322	58.7	114	11	41.0	-160	159	16.3	-18	38.5	298	5.2	5	50.6
Δ					19		1		26		1			

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14	13.7		-1	16.2	T <sub>m</sub>	1.0	60.5	16.5
12	-14	14.4		T <sub>m</sub> ☉	12 h 14.2 min	Starost 13.7 d Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 55	.3	357	-4.5	♄	11 24	.0	49	-1.8
♂	11 6	.1	54	1.3	♂	2 11	.0	188	.8

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.1	-14	2.9	141	11.0	136	52.2	5	12.9	193	29.7	-20	11.6
2	206	26.1	-14	1.3	171	16.0	166	54.3	5	15.0	223	30.6	-20	10.7
4	236	26.1	-13	59.7	201	20.9	196	56.3	5	17.1	253	31.5	-20	9.8
6	266	26.1	-13	58.0	231	25.8	226	58.3	5	19.2	283	32.4	-20	8.9
8	296	26.1	-13	56.4	261	30.7	257	.3	5	21.3	313	33.3	-20	8.0
10	326	26.1	-13	54.7	291	35.7	287	2.4	5	23.4	343	34.2	-20	7.1
12	356	26.1	-13	53.1	321	40.6	317	4.4	5	25.5	13	35.1	-20	6.2
14	26	26.1	-13	51.4	351	45.5	347	6.5	5	27.6	43	36.0	-20	5.3
16	56	26.1	-13	49.8	21	50.4	17	8.6	5	29.7	73	36.9	-20	4.4
18	86	26.1	-13	48.1	51	55.4	47	10.6	5	31.8	103	37.9	-20	3.5
20	116	26.1	-13	46.4	82	.3	77	12.7	5	33.8	133	38.8	-20	2.6
22	146	26.1	-13	44.8	112	5.2	107	14.8	5	35.9	163	39.7	-20	1.7
Δ	0 8				10			10			5 5			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 51	16 38	0 45	2 23	18 26	4.1	7 52	.1
55	7 33	16 56	0 38	2 3	18 35	3.7	7 41	.4
50	7 19	17 10	0 34	1 50	18 41	3.4	7 32	.7
45	7 8	17 21	0 31	1 39	18 46	3.2	7 24	.9
40	6 59	17 30	0 28	1 32	18 50	3.0	7 18	1.1
35	6 51	17 38	0 26	1 26	18 54	2.8	7 13	1.3
30	6 44	17 45	0 25	1 21	18 57	2.7	7 8	1.4
20	6 32	17 57	0 23	1 15	19 3	2.4	6 60	1.6
10	6 21	18 8	0 22	1 12	19 8	2.2	6 53	1.9
0	6 11	18 18	0 21	1 11	19 12	2.0	6 46	2.1
10	6 0	18 28	0 22	1 13	19 17	1.8	6 39	2.3
20	5 49	18 39	0 23	1 17	19 21	1.6	6 31	2.5
30	5 36	18 52	0 25	1 26	19 27	1.4	6 23	2.7
35	5 29	18 59	0 27	1 33	19 30	1.2	6 18	2.9
40	5 20	19 8	0 29	1 42	19 33	1.1	6 12	3.1
45	5 10	19 18	0 32	1 55	19 37	.9	6 5	3.2
50	4 58	19 30	0 36	2 15	19 42	.7	5 57	3.5
55	4 42	19 45	0 42	2 53	19 48	.4	5 47	3.8
60	4 22	20 5	0 51	:::	19 55	.1	5 34	4.2
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	351	55.8	115	11	10.4	-160	189	20.0	-18	38.2	328	10.4	5	50.7
2	20	53.3	116	10	39.7	-160	219	23.7	-18	37.9	358	15.6	5	50.8
4	49	51.1	117	10	8.7	-160	249	27.5	-18	37.6	28	20.8	5	51.0
6	78	49.2	118	9	37.5	-160	279	31.2	-18	37.3	58	26.0	5	51.1
8	107	47.7	119	9	6.2	-160	309	35.0	-18	37.0	88	31.3	5	51.3
10	136	46.5	120	8	34.8	-160	339	38.7	-18</					

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	26.2	-13 43.1	142	10.2	137	16.9	5	38.0	193	40.6	-20 .8
2	206	26.2	-13 41.5	172	15.1	167	19.0	5	40.1	223	41.5	-19 59.9
4	236	26.2	-13 39.8	202	20.0	197	21.1	5	42.2	253	42.4	-19 59.0
6	266	26.2	-13 38.1	232	24.9	227	23.2	5	44.2	283	43.3	-19 58.1
8	296	26.2	-13 36.5	262	29.9	257	25.4	5	46.3	313	44.3	-19 57.2
10	326	26.2	-13 34.8	292	34.8	287	27.5	5	48.4	343	45.2	-19 56.2
12	356	26.3	-13 33.1	322	39.7	317	29.7	5	50.4	373	46.1	-19 55.3
14	26	26.3	-13 31.5	352	44.7	347	31.8	5	52.5	403	47.0	-19 54.4
16	56	26.3	-13 29.8	22	49.6	17	34.0	5	54.6	433	47.9	-19 53.5
18	86	26.3	-13 28.1	52	54.5	47	36.1	5	56.6	463	48.8	-19 52.5
20	116	26.4	-13 26.4	82	59.4	77	38.3	5	58.7	493	49.8	-19 51.6
22	146	26.4	-13 24.8	113	4.4	107	40.5	6	.7	523	50.7	-19 50.7
Δ	0	8				11	10			5	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 49	16 41	0 45	2 22	20 4	3.9	7 55	.1
55	7 31	16 58	0 38	2 3	20 3	3.6	7 51	.4
50	7 18	17 12	0 34	1 49	20 3	3.3	7 49	.7
45	7 7	17 22	0 30	1 39	20 2	3.1	7 47	.9
40	6 58	17 31	0 28	1 31	20 2	2.9	7 45	1.0
35	6 50	17 39	0 26	1 25	20 2	2.7	7 43	1.2
30	6 43	17 46	0 25	1 21	20 1	2.6	7 42	1.3
20	6 31	17 57	0 23	1 15	20 1	2.3	7 39	1.6
10	6 21	18 8	0 22	1 11	20 1	2.1	7 37	1.8
0	6 11	18 18	0 21	1 11	20 0	1.9	7 35	2.0
10	6 1	18 28	0 22	1 13	19 60	1.7	7 33	2.2
20	5 50	18 38	0 23	1 17	19 60	1.5	7 31	2.4
30	5 37	18 51	0 25	1 26	19 59	1.3	7 28	2.6
35	5 30	18 58	0 27	1 32	19 59	1.2	7 27	2.8
40	5 21	19 6	0 29	1 41	19 59	1.0	7 25	2.9
45	5 12	19 16	0 32	1 54	19 58	.9	7 23	3.1
50	4 60	19 28	0 36	2 14	19 58	.6	7 21	3.3
55	4 44	19 43	0 42	2 50	19 58	.4	7 18	3.6
60	4 24	20 2	0 51	:::	19 57	.1	7 14	4.0
S								

UT	MESEC				JUPITER		SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	"/	°	'	"/	°	'	"/	
0	339	45.9	126	4	51.8	-157	190	4.8	-18 34.6	
2	8	46.9	126	4	19.7	-157	220	8.6	-18 34.3	
4	37	48.1	127	3	47.7	-156	250	12.3	-18 34.0	
6	66	49.5	127	3	15.6	-155	280	16.1	-18 33.7	
8	95	51.2	128	2	43.5	-155	310	19.8	-18 33.4	
10	124	53.0	128	2	11.4	-154	340	23.5	-18 33.1	
12	153	55.1	129	1	39.4	-153	10	27.3	-18 32.8	
14	182	57.3	129	1	7.4	-152	40	31.0	-18 32.5	
16	211	59.7	129	0	35.5	-151	70	34.7	-18 32.2	
18	241	2.3	130	0	3.6	-150	100	38.5	-18 31.9	
20	270	5.0	130	-0	28.2	-149	130	42.2	-18 31.6	
22	299	7.9	130	-0	59.9	-148	160	46.0	-18 31.4	
Δ							19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14 15.5	.0	16.2	T <sub>m</sub>	1 24	2.0	59.4 16.2		
12	-14 15.3	T <sub>m☉</sub>	12 h 14.3 min	Starost	15.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 51	.3	356	-4.5	♃	11 18	.0	49	-1.8
♂	11 5	.1	52	1.3	♄	2 3	.0	188	.8

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	26.4	-13 23.1	143	9.3	137	42.7	6	2.8	193	51.6	-19 49.8
2	206	26.5	-13 21.4	173	14.2	167	44.9	6	4.8	223	52.5	-19 48.8
4	236	26.5	-13 19.7	203	19.2	197	47.1	6	6.8	253	53.4	-19 47.9
6	266	26.5	-13 18.0	233	24.1	227	49.3	6	8.9	283	54.4	-19 47.0
8	296	26.5	-13 16.3	263	29.0	257	51.5	6	10.9	313	55.3	-19 46.0
10	326	26.6	-13 14.7	293	33.9	287	53.7	6	13.0	343	56.2	-19 45.1
12	356	26.6	-13 13.0	323	38.9	317	56.0	6	15.0	373	57.1	-19 44.2
14	26	26.7	-13 11.3	353	43.8	347	58.2	6	17.0	403	58.1	-19 43.2
16	56	26.7	-13 9.6	23	48.7	18	.5	6	19.0	433	59.0	-19 42.3
18	86	26.7	-13 7.9	53	53.7	48	2.7	6	21.1	463	59.9	-19 41.3
20	116	26.8	-13 6.2	83	58.6	78	5.0	6	23.1	493	.8	-19 40.4
22	146	26.8	-13 4.5	114	3.5	108	7.3	6	25.1	523	1.8	-19 39.5
Δ	0	8				11	10			5	5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 46	16 44	0 45	2 22	21 38	3.9	7 56	.1
55	7 29	17 0	0 38	2 3	21 29	3.5	8 1	.4
50	7 16	17 13	0 34	1 49	21 22	3.2	8 4	.7
45	7 5	17 24	0 30	1 39	21 16	3.0	8 7	.9
40	6 57	17 32	0 28	1 31	21 11	2.8	8 10	1.0
35	6 49	17 40	0 26	1 25	21 7	2.7	8 12	1.2
30	6 42	17 46	0 25	1 21	21 4	2.5	8 14	1.3
20	6 31	17 58	0 23	1 15	20 57	2.3	8 17	1.5
10	6 21	18 8	0 22	1 11	20 52	2.1	8 20	1.7
0	6 11	18 18	0 21	1 11	20 47	1.9	8 23	1.9
10	6 1	18 27	0 22	1 12	20 42	1.7	8 25	2.1
20	5 50	18 38	0 23	1 17	20 37	1.5	8 28	2.3
30	5 38	18 50	0 25	1 26	20 31	1.3	8 31	2.6
35	5 31	18 57	0 27	1 32	20 27	1.2	8 33	2.7
40	5 23	19 5	0 29	1 41	20 23	1.1	8 35	2.8
45	5 13	19 15	0 32	1 54	20 19	.9	8 38	3.0
50	5 1	19 26	0 36	2 13	20 14	.7	8 41	3.2
55	4 47	19 40	0 41	2 47	20 7	.4	8 45	3.5
60	4 27	19 60	0 50	:::	19 59	.1	8 50	3.9
S								

UT	MESEC				JUPITER		SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	"/	°	'	"/	°	'	"/	
0	328	11.0	130	-1	31.5	-147	190	49.7	-18 31.1	
2	357	14.1	130	-2	2.9	-146	220	53.4	-18 30.8	
4	26	17.4	130	-2	34.3	-145	250	57.2	-18 30.5	
6	55	20.8	130	-3	5.5	-143	281	.9	-18 30.2	
8	84	24.3	130	-3	36.6	-142	311	4.7	-18 29.9	
10	113	27.9	130	-4	7.5	-141	341	8.4	-18 29.6	
12	142	31.6	130	-4	38.3	-139	11	12.2	-18 29.3	
14	171	35.3	130	-5	8.9	-138	41	15.9	-18 29.0	
16	200	39.2	130	-5	39.3	-137	71	19.6	-18 28.7	
18	229	43.0	130	-6	9.5	-135	101	23.4	-18 28.4	
20	258	47.0	130	-6	39.5	-134	131	27.1	-18 28.1	
22	287	51.0	129	-7	9.3	-132	161	30.9	-18 27.8	
Δ							19	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14 15.2	.0	16.2	T <sub>m</sub>	2 11	2.0	58.5 16.0		
12	-14 14.7	T <sub>m☉</sub>	12 h 14.2 min	Starost	16.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 50	.3	355	-4.5	♃	11 15	.0	49	-1.8
♂	11 4	.1	52	1.3	♄	1 59	.0	188	.8

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	26.9	-13	2.8	144	8.4	138	9.6	6	27.1	194	2.7	-19	38.5
2	206	26.9	-13	1.1	174	13.4	168	11.9	6	29.1	224	3.6	-19	37.6
4	236	27.0	-12	59.4	204	18.3	198	14.2	6	31.1	254	4.6	-19	36.6
6	266	27.0	-12	57.7	234	23.2	228	16.5	6	33.1	284	5.5	-19	35.7
8	296	27.1	-12	56.0	264	28.2	258	18.8	6	35.1	314	6.4	-19	34.7
10	326	27.1	-12	54.3	294	33.1	288	21.1	6	37.1	344	7.4	-19	33.8
12	356	27.2	-12	52.6	324	38.0	318	23.5	6	39.1	14	8.3	-19	32.8
14	26	27.2	-12	50.9	354	42.9	348	25.8	6	41.1	44	9.2	-19	31.8
16	56	27.3	-12	49.2	24	47.9	18	28.1	6	43.1	74	10.2	-19	30.9
18	86	27.3	-12	47.5	54	52.8	48	30.5	6	45.1	104	11.1	-19	29.9
20	116	27.4	-12	45.7	84	57.7	78	32.9	6	47.1	134	12.0	-19	29.0
22	146	27.4	-12	44.0	115	2.6	108	35.3	6	49.1	164	13.0	-19	28.0
Δ	0		9				12		10		5			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 43	16 46	0 44	2 21	23 11	3.9	7 58	.1
55	7 27	17 3	0 38	2 3	22 53	3.4	8 11	.5
50	7 14	17 15	0 34	1 49	22 39	3.1	8 20	.7
45	7 4	17 25	0 30	1 39	22 28	2.9	8 28	.9
40	6 55	17 34	0 28	1 31	22 19	2.8	8 35	1.1
35	6 48	17 41	0 26	1 25	22 11	2.6	8 40	1.2
30	6 42	17 47	0 25	1 21	22 4	2.5	8 45	1.4
20	6 30	17 58	0 23	1 14	21 53	2.3	8 54	1.6
10	6 20	18 8	0 22	1 11	21 43	2.1	9 2	1.8
0	6 11	18 18	0 21	1 11	21 33	1.9	9 9	1.9
10	6 1	18 27	0 22	1 12	21 24	1.8	9 16	2.1
20	5 51	18 37	0 23	1 17	21 14	1.6	9 24	2.3
30	5 39	18 49	0 25	1 25	21 3	1.4	9 33	2.5
35	5 32	18 56	0 27	1 32	20 56	1.3	9 38	2.6
40	5 24	19 4	0 29	1 40	20 49	1.1	9 44	2.8
45	5 14	19 13	0 32	1 53	20 40	1.0	9 51	3.0
50	5 3	19 24	0 35	2 12	20 30	.8	9 59	3.2
55	4 49	19 38	0 41	2 45	20 18	.5	10 9	3.5
60	4 30	19 57	0 50	:::	20 1	.1	10 23	3.9
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	316	55.0	129	-7	38.9	-130	191	34.6	-18	27.5	331	18.5	5	55.9
2	345	59.0	129	-8	8.3	-129	221	38.3	-18	27.2	1	23.7	5	56.0
4	15	3.1	128	-8	37.4	-127	251	42.1	-18	26.9	31	29.0	5	56.2
6	44	7.2	128	-9	6.3	-126	281	45.8	-18	26.6	61	34.2	5	56.3
8	73	11.3	128	-9	35.0	-124	311	49.6	-18	26.3	91	39.4	5	56.4
10	102	15.4	127	-10	3.4	-122	341	53.3	-18	26.0	121	44.7	5	56.6
12	131	19.4	127	-10	31.5	-120	11	57.1	-18	25.7	151	49.9	5	56.7
14	160	23.5	126	-10	59.4	-119	42	.8	-18	25.4	181	55.1	5	56.9
16	189	27.5	126	-11	27.0	-117	72	4.6	-18	25.1	212	.4	5	57.0
18	218	31.5	125	-11	54.3	-115	102	8.3	-18	24.8	242	5.6	5	57.2
20	247	35.5	125	-12	21.3	-113	132	12.0	-18	24.5	272	10.9	5	57.3
22	276	39.4	124	-12	48.0	-111	162	15.8	-18	24.2	302	16.1	5	57.5
Δ							19		1		26			1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	'	
00	-14 14.1	.1	16.2	T <sub>m</sub>	2 58	1.9	57.7	15.7	
12	-14 13.2	T <sub>m☉</sub>	12 h 14.2 min	Starost 17.7 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 48	.3	355	-4.5	♄	11 12	.0	48	-1.8
♂	11 3	.1	51	1.3	♂	1 54	.0	188	.8

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.5	-12	42.3	145	7.6	138	37.6	6	51.0	194	13.9	-19	27.0
2	206	27.5	-12	40.6	175	12.5	168	40.0	6	53.0	224	14.8	-19	26.1
4	236	27.6	-12	38.9	205	17.4	198	42.4	6	55.0	254	15.8	-19	25.1
6	266	27.7	-12	37.2	235	22.4	228	44.8	6	57.0	284	16.7	-19	24.1
8	296	27.7	-12	35.4	265	27.3	258	47.3	6	58.9	314	17.6	-19	23.2
10	326	27.8	-12	33.7	295	32.2	288	49.7	7	.9	344	18.6	-19	22.2
12	356	27.9	-12	32.0	325	37.1	318	52.1	7	2.8	14	19.5	-19	21.2
14	26	27.9	-12	30.3	355	42.1	348	54.6	7	4.8	44	20.5	-19	20.2
16	56	28.0	-12	28.5	25	47.0	18	57.0	7	6.8	74	21.4	-19	19.3
18	86	28.1	-12	26.8	55	51.9	48	59.5	7	8.7	104	22.3	-19	18.3
20	116	28.1	-12	25.1	85	56.9	79	2.0	7	10.6	134	23.3	-19	17.3
22	146	28.2	-12	23.4	116	1.8	109	4.4	7	12.6	164	24.2	-19	16.3
Δ	0		9				12		10		5			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 41	16 49	0 44	2 21	...	.0	8 1	.2
55	7 25	17 5	0 38	2 2	...	.0	8 22	.6
50	7 12	17 17	0 33	1 49	23 54	3.1	8 38	.8
45	7 2	17 27	0 30	1 39	23 38	2.9	8 50	1.0
40	6 54	17 35	0 28	1 31	23 25	2.7	9 1	1.2
35	6 47	17 42	0 26	1 25	23 14	2.6	9 10	1.3
30	6 41	17 48	0 24	1 21	23 4	2.5	9 18	1.5
20	6 30	17 59	0 23	1 14	22 48	2.3	9 32	1.6
10	6 20	18 8	0 21	1 11	22 33	2.1	9 44	1.8
0	6 11	18 18	0 21	1 10	22 20	2.0	9 55	2.0
10	6 1	18 27	0 22	1 12	22 6	1.8	10 7	2.1
20	5 51	18 37	0 23	1 17	21 52	1.7	10 19	2.3
30	5 40	18 48	0 25	1 25	21 36	1.5	10 33	2.5
35	5 33	18 55	0 27	1 31	21 27	1.4	10 41	2.6
40	5 25	19 3	0 29	1 40	21 16	1.3	10 51	2.7
45	5 16	19 12	0 31	1 52	21 4	1.1	11 2	2.9
50	5 5	19 22	0 35	2 10	20 49	.9	11 15	3.1
55	4 51	19 36	0 41	2 42	20 30	.7	11 32	3.4
60	4 33	19 54	0 49	:::	20 5	.2	11 55	3.8
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	305	43.3	124	-13	14.4	-109	192	19.5	-18	23.9	332	21.3	5	57.6
2	334	47.1	123	-13	40.5	-107	222	23.3	-18	23.6	2	26.6	5	57.8
4	3	50.8	123	-14	6.3	-105	252	27.0	-18	23.3	32	31.8	5	57.9
6	32	54.5	122	-14	31.7	-103	282	30.8	-18	23.0	62	37.0	5	58.1
8	61	58.1	121	-14	56.8	-101	312	34.5	-18	22.7	92	42.3	5	58.2
10	91	1.7	121	-15	21.6	-99	342	38.3	-18	22.4	122	47.5	5	58.4
12	120	5.1	120	-15	46.0	-97	12	42.0	-18	22.1	152	52.8	5	58.5
14	149	8.5	119	-16	10.1	-95	42	45.8	-18	21.8	182	58.0	5	58.7
16	178	11.7	119	-16	33.8	-93	72	49.5	-18	21.5	213	3.2	5	58.8
18	207	14.9	118	-16	57.2	-91	102	53.3	-18	21.2	243	8.5	5	59.0
20	236	18.0	117	-17	20.2	-89	132	57.0	-18	20.9	273	13.7	5	59.1
22	265	20.9	117	-17	42.8	-87	163	.8	-18	20.6	303	19.0	5	59.3
Δ							19		1		26			1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'	'
00	-14 12.4	.1</						

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	'''	°	'	''	'''	°	'	''	'''		
0	176	28.3	-12	21.6	146	6.7	139	6.9	7	14.5	194	25.2	-19	15.4
2	206	28.4	-12	19.9	176	11.6	169	9.4	7	16.5	224	26.1	-19	14.4
4	236	28.4	-12	18.2	206	16.6	199	11.9	7	18.4	254	27.0	-19	13.4
6	266	28.5	-12	16.4	236	21.5	229	14.4	7	20.3	284	28.0	-19	12.4
8	296	28.6	-12	14.7	266	26.4	259	17.0	7	22.3	314	28.9	-19	11.4
10	326	28.7	-12	12.9	296	31.4	289	19.5	7	24.2	344	29.9	-19	10.4
12	356	28.8	-12	11.2	326	36.3	319	22.0	7	26.1	14	30.8	-19	9.4
14	26	28.8	-12	9.5	356	41.2	349	24.6	7	28.0	44	31.8	-19	8.4
16	56	28.9	-12	7.7	26	46.1	19	27.2	7	29.9	74	32.7	-19	7.5
18	86	29.0	-12	6.0	56	51.1	49	29.7	7	31.8	104	33.7	-19	6.5
20	116	29.1	-12	4.2	86	56.0	79	32.3	7	33.7	134	34.6	-19	5.5
22	146	29.2	-12	2.5	116	.9	109	34.9	7	35.6	164	35.6	-19	4.5
Δ	0		9				13		10		5			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 38	16 51	0 44	2 21	0 45	3.8	8 5	.3
55	7 22	17 7	0 38	2 2	0 16	3.3	8 36	.8
50	7 10	17 19	0 33	1 49	...	.0	8 58	1.0
45	7 1	17 28	0 30	1 39	...	.0	9 15	1.2
40	6 53	17 36	0 28	1 31	...	.0	9 30	1.4
35	6 46	17 43	0 26	1 25	...	.0	9 42	1.5
30	6 40	17 49	0 24	1 20	...	.0	9 53	1.6
20	6 29	17 59	0 22	1 14	23 42	2.3	10 11	1.8
10	6 20	18 9	0 21	1 11	23 24	2.2	10 27	1.9
0	6 11	18 18	0 21	1 10	23 8	2.0	10 42	2.0
10	6 2	18 27	0 22	1 12	22 51	1.9	10 58	2.1
20	5 52	18 36	0 23	1 16	22 33	1.8	11 14	2.3
30	5 40	18 47	0 25	1 25	22 13	1.7	11 33	2.4
35	5 34	18 54	0 26	1 31	22 1	1.6	11 44	2.5
40	5 26	19 1	0 29	1 40	21 47	1.5	11 56	2.7
45	5 17	19 10	0 31	1 52	21 31	1.4	12 11	2.8
50	5 7	19 21	0 35	2 9	21 11	1.2	12 30	3.0
55	4 53	19 34	0 41	2 40	20 46	.9	12 54	3.3
60	4 35	19 51	0 49	:::	20 11	.5	13 27	3.8
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	''	'''	°	'	''	'''						
0	294	23.8	116	-18	5.1	-84	193	4.5	-18	20.3	333	24.2	5	59.4
2	323	26.5	115	-18	26.9	-82	223	8.3	-18	20.0	3	29.5	5	59.6
4	352	29.2	115	-18	48.4	-80	253	12.0	-18	19.7	33	34.7	5	59.7
6	21	31.7	114	-19	9.5	-78	283	15.8	-18	19.4	63	39.9	5	59.9
8	50	34.0	113	-19	30.2	-75	313	19.5	-18	19.1	93	45.2	6	.0
10	79	36.3	113	-19	50.4	-73	343	23.3	-18	18.8	123	50.4	6	.2
12	108	38.4	112	-20	10.3	-71	13	27.0	-18	18.5	153	55.7	6	.3
14	137	40.5	112	-20	29.7	-68	43	30.8	-18	18.2	184	.9	6	.5
16	166	42.3	111	-20	48.8	-66	73	34.5	-18	17.9	214	6.2	6	.6
18	195	44.1	110	-21	7.4	-64	103	38.3	-18	17.6	244	11.4	6	.8
20	224	45.7	110	-21	25.5	-61	133	42.0	-18	17.3	274	16.7	6	.9
22	253	47.2	109	-21	43.3	-59	163	45.8	-18	17.0	304	21.9	6	1.1
Δ							19		2		26			1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14	9.9	.1	16.2	T <sub>m</sub>	4 31	2.0	56.0	15.2
12	-14	8.3	T <sub>m</sub> ☉	12 h 14.1 min	Starost	19.7 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 44	.3	353	-4.5	♄	11 6	.0	48	-1.8
♂	11 2	.1	49	1.3	♂	1 46	.0	188	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS					
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	'''	°	'	''	'''	°	'	''	'''		
0	176	29.3	-12	.7	147	5.9	139	37.5	7	37.5	194	36.5	-19	3.5
2	206	29.3	-11	59.0	177	10.8	169	40.1	7	39.4	224	37.5	-19	2.5
4	236	29.4	-11	57.2	207	15.7	199	42.7	7	41.3	254	38.4	-19	1.5
6	266	29.5	-11	55.5	237	20.6	229	45.3	7	43.2	284	39.4	-19	.5
8	296	29.6	-11	53.7	267	25.6	259	48.0	7	45.1	314	40.3	-18	59.5
10	326	29.7	-11	52.0	297	30.5	289	50.6	7	47.0	344	41.3	-18	58.5
12	356	29.8	-11	50.2	327	35.4	319	53.3	7	48.9	14	42.2	-18	57.4
14	26	29.9	-11	48.4	357	40.4	349	55.9	7	50.7	44	43.2	-18	56.4
16	56	30.0	-11	46.7	27	45.3	19	58.6	7	52.6	74	44.2	-18	55.4
18	86	30.1	-11	44.9	57	50.2	50	1.3	7	54.5	104	45.1	-18	54.4
20	116	30.2	-11	43.2	87	55.1	80	4.0	7	56.3	134	46.1	-18	53.4
22	146	30.3	-11	41.4	118	.1	110	6.7	7	58.2	164	47.0	-18	52.4
Δ	0		9				13		9		5			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 35	16 54	0 44	2 21	2 16	3.7	8 13	.6
55	7 20	17 9	0 38	2 2	1 36	3.1	8 54	1.1
50	7 9	17 20	0 33	1 49	1 8	2.9	9 23	1.3
45	6 59	17 29	0 30	1 38	0 47	2.7	9 45	1.5
40	6 52	17 37	0 28	1 31	0 30	2.6	10 3	1.6
35	6 45	17 44	0 26	1 25	0 16	2.5	10 18	1.7
30	6 39	17 50	0 24	1 20	0 3	2.4	10 31	1.8
20	6 29	17 60	0 22	1 14	...	.0	10 53	1.9
10	6 19	18 9	0 21	1 11	...	.0	11 13	2.0
0	6 11	18 17	0 21	1 10	23 57	2.1	11 31	2.1
10	6 2	18 26	0 22	1 12	23 37	2.0	11 49	2.2
20	5 52	18 36	0 23	1 16	23 17	2.0	12 9	2.3
30	5 41	18 46	0 25	1 25	22 53	1.9	12 31	2.4
35	5 35	18 53	0 26	1 31	22 39	1.8	12 45	2.4
40	5 27	18 60	0 28	1 39	22 23	1.7	13 0	2.5
45	5 19	19 8	0 31	1 51	22 4	1.7	13 19	2.6
50	5 8	19 19	0 35	2 8	21 40	1.5	13 42	2.8
55	4 55	19 32	0 40	2 38	21 8	1.3	14 12	3.0
60	4 38	19 48	0 49	:::	20 22	.9	14 58	3.5
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	''	'''	°	'	''	'''						
0	282	48.5	109	-22	.6	-56	193	49.5	-18	16.7	334	27.1	6	1.2
2	311	49.8	108	-22	17.5	-54	223	53.3	-18	16.4	4	32.4	6	1.4
4	340	50.8	108	-22	33.9	-51	253	57.0	-18	16.1	34	37.6	6	1.5
6	9	51.8	107	-22	49.8	-49	284	.8	-18	15.8	64	42.9	6	1.7
8	38	52.6	107	-23	5.3	-46	314	4.5	-18	15.5	94	48.1	6	1.8
10	67	53.3	106	-23	20.4	-44	344	8.3	-18	15.2	124	53.4	6	2.0
12	96	53.9	106	-23	35.0	-41	14	12.0	-18	14.9	154	58.6	6	2.1
14	125	54.3	105	-23	49.1	-39	44	15.8	-18	14.6	185	3.9	6	2.3
16	154	54.6	105	-24	2.7	-36	74	19.5	-18	14.3	215	9.1	6	2.4
18	183	54.8	105	-24	15.9	-34	104	23.3	-18	14.0	245	14.4	6	2.6
20	212	54.9	104	-24	28.6	-31	134	27.0	-18	13.7	275	19.6	6	2.7
22	241	54.8	104	-24	40.8	-29	164	30.8	-18	13.4	305	24.9	6	2.9
Δ							19		2		26			1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14	6.7	.2	16.2	T <sub>m</sub>	5 19	2.1	55.3	15.1
12	-14	4.7	T <sub>m</sub> ☉						

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	30.4	-11 39.6	148	5.0	140	9.4	8	.1	194	48.0	-18 51.4
2	206	30.5	-11 37.9	178	9.9	170	12.1	8	1.9	224	48.9	-18 50.4
4	236	30.6	-11 36.1	208	14.9	200	14.8	8	3.8	254	49.9	-18 49.3
6	266	30.7	-11 34.3	238	19.8	230	17.5	8	5.6	284	50.9	-18 48.3
8	296	30.8	-11 32.6	268	24.7	260	20.3	8	7.5	314	51.8	-18 47.3
10	326	30.9	-11 30.8	298	29.6	290	23.0	8	9.3	344	52.8	-18 46.3
12	356	31.0	-11 29.0	328	34.6	320	25.8	8	11.1	14	53.7	-18 45.3
14	26	31.1	-11 27.3	358	39.5	350	28.6	8	13.0	44	54.7	-18 44.2
16	56	31.3	-11 25.5	28	44.4	20	31.4	8	14.8	74	55.7	-18 43.2
18	86	31.4	-11 23.7	58	49.3	50	34.1	8	16.6	104	56.6	-18 42.2
20	116	31.5	-11 21.9	88	54.3	80	37.0	8	18.4	134	57.6	-18 41.1
22	146	31.6	-11 20.1	118	59.2	110	39.8	8	20.3	164	58.6	-18 40.1
Δ		1	9				14		9		5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 32	16 57	0 44	2 20	3 44	3.2	8 27	1.2
55	7 18	17 11	0 38	2 2	2 52	2.8	9 21	1.6
50	7 7	17 22	0 33	1 48	2 18	2.6	9 55	1.7
45	6 58	17 31	0 30	1 38	1 52	2.5	10 21	1.8
40	6 50	17 38	0 28	1 31	1 32	2.4	10 42	1.9
35	6 44	17 45	0 26	1 25	1 16	2.4	10 59	1.9
30	6 38	17 50	0 24	1 20	1 1	2.3	11 14	2.0
20	6 28	18 0	0 22	1 14	0 37	2.1	11 39	2.0
10	6 19	18 9	0 21	1 11	0 16	2.2	12 1	2.1
0	6 11	18 17	0 21	1 10	...	.0	12 21	2.1
10	6 2	18 26	0 21	1 12	...	.0	12 41	2.2
20	5 53	18 35	0 23	1 16	...	.0	13 3	2.2
30	5 42	18 46	0 25	1 24	23 38	2.1	13 28	2.2
35	5 36	18 52	0 26	1 30	23 22	2.0	13 43	2.3
40	5 29	18 59	0 28	1 39	23 5	2.0	14 1	2.3
45	5 20	19 7	0 31	1 50	22 43	2.0	14 22	2.4
50	5 10	19 17	0 35	2 7	22 16	1.9	14 48	2.4
55	4 57	19 29	0 40	2 36	21 40	1.9	15 24	2.5
60	4 41	19 46	0 48	3 54	20 42	1.6	16 21	2.8
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	'	"/	°	'	"/		
0	270	54.6	104 -24	52.6 -26	194	34.5 -18	13.1	335	30.1	6	3.0
2	299	54.4	103 -25	3.8 -23	224	38.3 -18	12.8	5	35.4	6	3.2
4	328	54.0	103 -25	14.6 -21	254	42.1 -18	12.5	35	40.6	6	3.3
6	357	53.5	103 -25	24.8 -18	284	45.8 -18	12.2	65	45.9	6	3.5
8	26	52.9	103 -25	34.6 -16	314	49.6 -18	11.9	95	51.1	6	3.6
10	55	52.2	103 -25	43.9 -13	344	53.3 -18	11.6	125	56.4	6	3.8
12	84	51.4	103 -25	52.6 -11	14	57.1 -18	11.3	156	1.6	6	3.9
14	113	50.5	103 -26	.9 -8	45	.8 -18	11.0	186	6.9	6	4.1
16	142	49.6	103 -26	8.7 -5	75	4.6 -18	10.7	216	12.2	6	4.2
18	171	48.6	103 -26	15.9 -3	105	8.4 -18	10.4	246	17.4	6	4.4
20	200	47.5	103 -26	22.7 0	135	12.1 -18	10.1	276	22.7	6	4.5
22	229	46.3	103 -26	28.9 2	165	15.9 -18	9.8	306	27.9	6	4.7
Δ						19	2		26		1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-14	2.8	.2	16.2	T <sub>m</sub>	6 9	2.1	54.7	14.9
12	-14	.5	T <sub>m☉</sub>	12 h 14.0 min	Starost	21.7 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	"/		h min	'	°	"/
♀	14 40	.3	353	-4.5	♃	11 0	.0	47	-1.8
♂	11 0	.1	48	1.3	♄	1 38	.0	188	.7

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	176	31.7	-11 18.4	149	4.1	140	42.6	8	22.1	194	59.5	-18 39.1
2	206	31.8	-11 16.6	179	9.1	170	45.4	8	23.9	225	.5	-18 38.0
4	236	31.9	-11 14.8	209	14.0	200	48.3	8	25.7	255	1.5	-18 37.0
6	266	32.1	-11 13.0	239	18.9	230	51.1	8	27.5	285	2.4	-18 36.0
8	296	32.2	-11 11.2	269	23.8	260	54.0	8	29.3	315	3.4	-18 34.9
10	326	32.3	-11 9.4	299	28.8	290	56.8	8	31.1	345	4.4	-18 33.9
12	356	32.4	-11 7.7	329	33.7	320	59.7	8	32.9	15	5.3	-18 32.9
14	26	32.6	-11 5.9	359	38.6	351	2.6	8	34.6	45	6.3	-18 31.8
16	56	32.7	-11 4.1	29	43.6	21	5.5	8	36.4	75	7.3	-18 30.8
18	86	32.8	-11 2.3	59	48.5	51	8.4	8	38.2	105	8.2	-18 29.7
20	116	32.9	-11 .5	89	53.4	81	11.4	8	40.0	135	9.2	-18 28.7
22	146	33.1	-10 58.7	119	58.3	111	14.3	8	41.7	165	10.2	-18 27.6
Δ		1	9				14		9		5	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 30	16 59	0 43	2 20	5 1	2.3	8 56	2.1
55	7 16	17 13	0 37	2 2	3 58	2.2	9 58	2.2
50	7 5	17 24	0 33	1 48	3 20	2.2	10 37	2.2
45	6 56	17 32	0 30	1 38	2 52	2.2	11 5	2.2
40	6 49	17 39	0 28	1 31	2 30	2.2	11 27	2.1
35	6 43	17 46	0 26	1 25	2 12	2.2	11 45	2.1
30	6 37	17 51	0 24	1 20	1 57	2.2	12 1	2.1
20	6 27	18 1	0 22	1 14	1 31	2.1	12 27	2.1
10	6 19	18 9	0 21	1 11	1 8	2.1	12 50	2.1
0	6 11	18 17	0 21	1 10	0 47	2.1	13 12	2.1
10	6 2	18 26	0 21	1 12	0 26	2.1	13 33	2.1
20	5 53	18 34	0 23	1 16	0 4	2.1	13 56	2.1
30	5 43	18 45	0 25	1 24	...	.0	14 22	2.1
35	5 37	18 51	0 26	1 30	...	.0	14 38	2.1
40	5 30	18 57	0 28	1 38	23 53	2.3	14 56	2.0
45	5 22	19 5	0 31	1 50	23 31	2.3	15 18	2.0
50	5 12	19 15	0 35	2 6	23 3	2.4	15 46	2.0
55	4 60	19 27	0 40	2 34	22 25	2.4	16 25	1.9
60	4 43	19 43	0 48	3 42	21 22	2.6	17 28	1.8
S								

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	"/	°	'	"/	°	'	"/		
0	258	45.1	103 -26	34.6 5	195	19.6 -18	9.5	336	33.2	6	4.8
2	287	43.8	103 -26	39.8 8	225	23.4 -18	9.2	6	38.4	6	5.0
4	316	42.5	103 -26	44.5 10	255	27.1 -18	8.9	36	43.7	6	5.2
6	345	41.1	104 -26	48.7 13	285	30.9 -18	8.6	66	48.9	6	5.3
8	14	39.7	104 -26	52.3 15	315	34.7 -18	8.3	96	54.2	6	5.5
10	43	38.3	104 -26	55.5 18	345	38.4 -18	8.0	126	59.5	6	5.6
12	72	36.9	105 -26	58.1 20	15	42.2 -18	7.6	157	4.7	6	5.8
14	101	35.4	105 -27	.2 23	45	45.9 -18	7.3	187	10.0	6	5.9
16	130	34.0	106 -27	1.8 26	75	49.7 -18	7.0	217	15.2	6	6.1
18	159	32.5	106 -27	2.9 28	105	53.5 -18	6.7	247	20.5	6	6.2
20	188	31.1	106 -27	3.4 31	135	57.2 -18	6.4	277	25.7	6	6.4
22	217	29.6	107 -27	3.4 33	166	1.0 -18	6.1	307	31.0	6	6.5
Δ						19	2		26		1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	-13	58.2	.2	16.2	T <sub>m</sub>	6 59	2.1	54.4	14.8
12	-13	55.6	T <sub>m☉</sub>	12 h 13.9 min	Starost	22.7 d	Faza	☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	"/		h min	'	°	"/
♀	14 38	.3	352	-4.5	♃	10 57	.0	47	-1.8
♂	10 60	.1	47	1.2	♄	1 34	.0	188	.7

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	33.2	-10 56.9	150	3.3	141	17.2	8 43.5	195	11.2	-18 26.6	
2	206	33.3	-10 55.1	180	8.2	171	20.2	8 45.3	225	12.1	-18 25.5	
4	236	33.5	-10 53.3	210	13.1	201	23.1	8 47.0	255	13.1	-18 24.5	
6	266	33.6	-10 51.5	240	18.1	231	26.1	8 48.8	285	14.1	-18 23.4	
8	296	33.7	-10 49.7	270	23.0	261	29.1	8 50.5	315	15.1	-18 22.4	
10	326	33.9	-10 47.9	300	27.9	291	32.1	8 52.3	345	16.0	-18 21.3	
12	356	34.0	-10 46.1	330	32.8	321	35.1	8 54.0	15	17.0	-18 20.3	
14	26	34.1	-10 44.3	0	37.8	351	38.1	8 55.8	45	18.0	-18 19.2	
16	56	34.3	-10 42.5	30	42.7	21	41.1	8 57.5	75	19.0	-18 18.1	
18	86	34.4	-10 40.7	60	47.6	51	44.2	8 59.2	105	20.0	-18 17.1	
20	116	34.5	-10 38.9	90	52.6	81	47.2	9 .9	135	20.9	-18 16.0	
22	146	34.7	-10 37.1	120	57.5	111	50.3	9 2.7	165	21.9	-18 15.0	
Δ	1	9				15	9		5	5		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 27	17 2	0 43	2 20	5 55	1.3	9 47	3.1
55	7 13	17 15	0 37	2 1	4 52	1.6	10 50	2.7
50	7 3	17 25	0 33	1 48	4 13	1.8	11 28	2.5
45	6 55	17 34	0 30	1 38	3 45	1.9	11 56	2.4
40	6 48	17 41	0 28	1 31	3 23	1.9	12 18	2.4
35	6 42	17 47	0 26	1 25	3 5	1.9	12 36	2.3
30	6 36	17 52	0 24	1 20	2 49	2.0	12 52	2.3
20	6 27	18 1	0 22	1 14	2 22	2.0	13 19	2.2
10	6 18	18 9	0 21	1 11	1 59	2.1	13 41	2.1
0	6 10	18 17	0 21	1 10	1 38	2.1	14 2	2.1
10	6 2	18 25	0 21	1 12	1 16	2.1	14 23	2.0
20	5 54	18 34	0 23	1 16	0 54	2.2	14 46	2.0
30	5 44	18 44	0 25	1 24	0 27	2.2	15 12	1.9
35	5 38	18 49	0 26	1 30	0 11	2.2	15 28	1.8
40	5 31	18 56	0 28	1 38	...	.0	15 45	1.8
45	5 23	19 4	0 31	1 49	...	.0	16 7	1.7
50	5 14	19 13	0 35	2 5	23 59	2.7	16 34	1.6
55	5 2	19 25	0 40	2 32	23 23	2.9	17 11	1.4
60	4 46	19 40	0 47	3 33	22 24	3.3	18 10	.9
S								

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>			S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	''	''	°	'	''	''	°	'	''	''
0	246	28.2	107 -27	2.9 36	196	4.8 -18	5.8	337 36.3	6 6.7			
2	275	26.8	108 -27	1.9 38	226	8.5 -18	5.5	7 41.5	6 6.9			
4	304	25.5	109 -27	.4 40	256	12.3 -18	5.2	37 46.8	6 7.0			
6	333	24.2	109 -26	58.4 43	286	16.0 -18	4.9	67 52.0	6 7.2			
8	2 22.9	110 -26	55.8 45	316 19.8 -18	4.6	97 57.3	6 7.3					
10	31 21.7	111 -26	52.7 48	346 23.6 -18	4.3	128 2.6	6 7.5					
12	60 20.6	111 -26	49.1 50	16 27.3 -18	4.0	158 7.8	6 7.6					
14	89 19.5	112 -26	45.1 52	46 31.1 -18	3.7	188 13.1	6 7.8					
16	118 18.6	113 -26	40.5 55	76 34.9 -18	3.4	218 18.3	6 7.9					
18	147 17.7	114 -26	35.3 57	106 38.6 -18	3.1	248 23.6	6 8.1					
20	176 16.8	114 -26	29.7 59	136 42.4 -18	2.8	278 28.9	6 8.2					
22	205 16.1	115 -26	23.6 62	166 46.2 -18	2.5	308 34.1	6 8.4					
Δ					19	2		26	1			

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 53.0	.2	16.2	T <sub>m</sub>	7 50	2.1	54.2 14.8		
12	-13 50.0	T <sub>m</sub> ☉	12 h 13.8 min	Starost	23.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 36	.3	352	-4.5	♄	10 54	.0	47	-1.8
♂	10 59	.1	46	1.2	♂	1 29	.0	189	.7

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	176	34.8	-10 35.3	151	2.4	141	53.3	9 4.4	195	22.9	-18 13.9	
2	206	35.0	-10 33.5	181	7.3	171	56.4	9 6.1	225	23.9	-18 12.8	
4	236	35.1	-10 31.7	211	12.3	201	59.5	9 7.8	255	24.9	-18 11.8	
6	266	35.3	-10 29.9	241	17.2	232	2.6	9 9.5	285	25.8	-18 10.7	
8	296	35.4	-10 28.0	271	22.1	262	5.7	9 11.2	315	26.8	-18 9.6	
10	326	35.6	-10 26.2	301	27.1	292	8.8	9 12.9	345	27.8	-18 8.5	
12	356	35.7	-10 24.4	331	32.0	322	12.0	9 14.6	15	28.8	-18 7.5	
14	26	35.9	-10 22.6	1 36.9	352	15.1	9 16.3	45	29.8	-18 6.4		
16	56	36.0	-10 20.8	31	41.8	22	18.2	9 17.9	75	30.8	-18 5.3	
18	86	36.2	-10 19.0	61	46.8	52	21.4	9 19.6	105	31.8	-18 4.2	
20	116	36.3	-10 17.1	91	51.7	82	24.6	9 21.3	135	32.7	-18 3.2	
22	146	36.5	-10 15.3	121	56.6	112	27.8	9 23.0	165	33.7	-18 2.1	
Δ	1	9				16	8		5	5		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 24	17 4	0 43	2 20	6 26	.7	11 0	3.6
55	7 11	17 17	0 37	2 1	5 31	1.1	11 55	3.1
50	7 1	17 27	0 33	1 48	4 56	1.4	12 29	2.8
45	6 53	17 35	0 30	1 38	4 29	1.5	12 55	2.6
40	6 46	17 42	0 28	1 30	4 9	1.6	13 15	2.5
35	6 40	17 48	0 26	1 25	3 51	1.7	13 32	2.4
30	6 35	17 53	0 24	1 20	3 36	1.8	13 47	2.4
20	6 26	18 2	0 22	1 14	3 11	1.9	14 11	2.2
10	6 18	18 10	0 21	1 11	2 49	2.0	14 33	2.1
0	6 10	18 17	0 21	1 10	2 28	2.1	14 52	2.0
10	6 3	18 25	0 21	1 11	2 8	2.1	15 12	1.9
20	5 54	18 33	0 23	1 16	1 46	2.2	15 33	1.8
30	5 44	18 43	0 25	1 24	1 20	2.3	15 57	1.7
35	5 39	18 48	0 26	1 30	1 5	2.4	16 11	1.6
40	5 32	18 55	0 28	1 38	0 47	2.5	16 28	1.5
45	5 25	19 2	0 31	1 49	0 26	2.6	16 47	1.4
50	5 15	19 11	0 34	2 5	...	.0	17 12	1.2
55	5 4	19 22	0 39	2 30	...	.0	17 44	1.0
60	4 49	19 37	0 47	3 26	23 45	3.6	18 32	.5
S								

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>			S <sub>♄</sub>	δ <sub>♄</sub>		
h	°	'	''	''	°	'	''	''	°	'	''	''
0	234	15.5	116 -26	17.0 64	196	49.9 -18	2.2	338 39.4	6 8.6			
2	263	15.0	117 -26	9.9 66	226	53.7 -18	1.9	8 44.7	6 8.7			
4	292	14.6	118 -26	2.3 69	256	57.4 -18	1.6	38 49.9	6 8.9			
6	321	14.4	119 -25	54.2 71	287	1.2 -18	1.3	68 55.2	6 9.0			
8	350	14.2	119 -25	45.6 73	317	5.0 -18	1.0	99 .4	6 9.2			
10	19	14.2	120 -25	36.5 75	347	8.7 -18	.7	129 5.7	6 9.3			
12	48	14.4	121 -25	27.0 77	17 12.5 -18	.4	159 11.0	6 9.5				
14	77	14.6	122 -25	16.9 79	47 16.3 -18	.1	189 16.2	6 9.6				
16	106	15.0	123 -25	6.4 81	77 20.1 -17	59.8	219 21.5	6 9.8				
18	135	15.6	124 -24	55.5 83	107 23.8 -17	59.5	249 26.8	6 10.0				
20	164	16.3	125 -24	44.0 85	137 27.6 -17	59.2	279 32.0	6 10.1				
22	193	17.2	126 -24	32.1 87	167 31.4 -17	58.9	309 37.3	6 10.3				
Δ					19	2		26	1			

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 47.1	.3	16.2	T <sub>m</sub>	8 40	2.0	54.1 14.7		
12	-13 43.8	T <sub>m</sub> ☉	12 h 13.7 min	Starost	24.7 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 33	.3	351	-4.5	♄	10 51	.0	47	-1.8
♂	10 58	.1	45	1.2	♂	1 25	.0	189	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	36.6	-10	13.5	152	1.6	142	31.0	9	24.6	195	34.7	-18	1.0
2	206	36.8	-10	11.7	182	6.5	172	34.2	9	26.3	225	35.7	-17	59.9
4	236	36.9	-10	9.9	212	11.4	202	37.4	9	27.9	255	36.7	-17	58.8
6	266	37.1	-10	8.0	242	16.3	232	40.6	9	29.6	285	37.7	-17	57.8
8	296	37.3	-10	6.2	272	21.3	262	43.8	9	31.2	315	38.7	-17	56.7
10	326	37.4	-10	4.4	302	26.2	292	47.1	9	32.9	345	39.7	-17	55.6
12	356	37.6	-10	2.5	332	31.1	322	50.4	9	34.5	15	40.7	-17	54.5
14	26	37.7	-10	.7	2	36.0	352	53.6	9	36.1	45	41.7	-17	53.4
16	56	37.9	-9	58.9	32	41.0	22	56.9	9	37.8	75	42.7	-17	52.3
18	86	38.1	-9	57.1	62	45.9	53	.2	9	39.4	105	43.7	-17	51.2
20	116	38.2	-9	55.2	92	50.8	83	3.5	9	41.0	135	44.7	-17	50.1
22	146	38.4	-9	53.4	122	55.8	113	6.8	9	42.6	165	45.7	-17	49.0
Δ	1 9				16 8				5 5					

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24				
N	h min	h min	h min	h min	h min	min	h min	min				
60	7 21	17 7	0 43	2 20	6 42	.3	12 26	3.7				
55	7 9	17 19	0 37	2 1	5 58	.8	13 8	3.2				
50	6 59	17 29	0 33	1 48	5 29	1.1	13 37	2.9				
45	6 51	17 36	0 30	1 38	5 6	1.2	13 58	2.8				
40	6 45	17 43	0 27	1 30	4 48	1.4	14 16	2.6				
35	6 39	17 48	0 26	1 25	4 32	1.5	14 31	2.5				
30	6 34	17 53	0 24	1 20	4 19	1.6	14 43	2.4				
20	6 25	18 2	0 22	1 14	3 56	1.7	15 5	2.2				
10	6 18	18 10	0 21	1 11	3 36	1.9	15 24	2.1				
0	6 10	18 17	0 21	1 10	3 18	2.0	15 41	1.9				
10	6 3	18 24	0 21	1 11	2 59	2.1	15 58	1.8				
20	5 55	18 32	0 22	1 16	2 39	2.2	16 16	1.7				
30	5 45	18 42	0 25	1 23	2 16	2.4	16 37	1.5				
35	5 40	18 47	0 26	1 29	2 2	2.5	16 50	1.4				
40	5 33	18 53	0 28	1 37	1 47	2.6	17 4	1.3				
45	5 26	19 0	0 31	1 48	1 28	2.7	17 20	1.1				
50	5 17	19 9	0 34	2 4	1 4	2.9	17 41	.9				
55	5 6	19 20	0 39	2 29	0 33	3.2	18 7	.7				
60	4 51	19 34	0 47	3 20	...	.0	18 44	.3				

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	222	18.2	127	-24	19.8	89	197	35.1	-17	58.6	339	42.6	6	10.4		
2	251	19.4	127	-24	6.9	91	227	38.9	-17	58.3	9	47.8	6	10.6		
4	280	20.8	128	-23	53.7	93	257	42.7	-17	58.0	39	53.1	6	10.7		
6	309	22.3	129	-23	40.0	95	287	46.4	-17	57.6	69	58.4	6	10.9		
8	338	24.0	130	-23	25.8	97	317	50.2	-17	57.3	100	3.6	6	11.1		
10	7	25.9	131	-23	11.3	99	347	54.0	-17	57.0	130	8.9	6	11.2		
12	36	27.9	132	-22	56.2	101	17	57.7	-17	56.7	160	14.2	6	11.4		
14	65	30.2	133	-22	40.8	102	48	1.5	-17	56.4	190	19.4	6	11.5		
16	94	32.6	134	-22	24.9	104	78	5.3	-17	56.1	220	24.7	6	11.7		
18	123	35.1	134	-22	8.7	106	108	9.1	-17	55.8	250	30.0	6	11.8		
20	152	37.9	135	-21	52.0	107	138	12.8	-17	55.5	280	35.2	6	12.0		
22	181	40.8	136	-21	34.9	109	168	16.6	-17	55.2	310	40.5	6	12.2		
Δ	19 2				26 1											

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	s	h min	min	'	'
00	-13 40.5	.3	16.2	T <sub>m</sub>	9 29	2.0	54.2 14.8
12	-13 36.9	T <sub>m</sub> ☉	12 h 13.6 min	Starost 25.7 d Faza ●			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	°		h min	'	°	°
♀	14 31	.3	351	-4.5	♃	10 48	.0	47	-1.8
♂	10 57	.1	45	1.2	♄	1 21	.0	189	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	38.6	-9	51.6	153	.7	143	10.1	9	44.2	195	46.6	-17	47.9
2	206	38.7	-9	49.7	183	5.6	173	13.5	9	45.8	225	47.6	-17	46.8
4	236	38.9	-9	47.9	213	10.5	203	16.8	9	47.4	255	48.6	-17	45.7
6	266	39.1	-9	46.0	243	15.5	233	20.2	9	49.0	285	49.6	-17	44.6
8	296	39.3	-9	44.2	273	20.4	263	23.6	9	50.6	315	50.6	-17	43.5
10	326	39.4	-9	42.4	303	25.3	293	27.0	9	52.2	345	51.6	-17	42.4
12	356	39.6	-9	40.5	333	30.3	323	30.4	9	53.8	15	52.6	-17	41.3
14	26	39.8	-9	38.7	3	35.2	353	33.8	9	55.4	45	53.7	-17	40.2
16	56	40.0	-9	36.8	33	40.1	23	37.2	9	56.9	75	54.7	-17	39.1
18	86	40.1	-9	35.0	63	45.0	53	40.6	9	58.5	105	55.7	-17	38.0
20	116	40.3	-9	33.2	93	50.0	83	44.1	10	.1	135	56.7	-17	36.9
22	146	40.5	-9	31.3	123	54.9	113	47.5	10	1.6	165	57.7	-17	35.8
Δ	1 9				17 8				5 6					

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24				
N	h min	h min	h min	h min	h min	min	h min	min				
60	7 18	17 10	0 43	2 19	6 50	.2	13 55	3.7				
55	7 6	17 21	0 37	2 1	6 18	.6	14 25	3.3				
50	6 57	17 31	0 33	1 48	5 54	.8	14 47	3.0				
45	6 50	17 38	0 30	1 38	5 36	1.0	15 5	2.8				
40	6 44	17 44	0 27	1 30	5 21	1.2	15 19	2.6				
35	6 38	17 49	0 26	1 24	5 8	1.3	15 30	2.5				
30	6 33	17 54	0 24	1 20	4 57	1.4	15 41	2.4				
20	6 25	18 2	0 22	1 14	4 38	1.6	15 58	2.2				
10	6 17	18 10	0 21	1 11	4 21	1.8	16 13	2.0				
0	6 10	18 17	0 21	1 10	4 5	1.9	16 27	1.9				
10	6 3	18 24	0 21	1 11	3 49	2.0	16 41	1.7				
20	5 55	18 32	0 22	1 15	3 32	2.2	16 56	1.5				
30	5 46	18 41	0 25	1 23	3 13	2.4	17 13	1.4				
35	5 41	18 46	0 26	1 29	3 2	2.5	17 23	1.2				
40	5 35	18 52	0 28	1 37	2 48	2.6	17 34	1.1				
45	5 27	18 59	0 31	1 48	2 33	2.8	17 47	1.0				
50	5 19	19 7	0 34	2 3	2 13	3.0	18 3	.8				
55	5 8	19 18	0 39	2 27	1 48	3.3	18 23	.5				
60	4 54	19 31	0 46	3 15	1 13	3.7	18 50	.2				

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	210	44.0	137	-21	17.4	111	198	20.4	-17	54.9	340	45.8	6	12.3		
2	239	47.3	138	-20	59.5	112	228	24.2	-17	54.6	10	51.1	6	12.5		
4	268	50.8	138	-20	41.3	114	258	27.9	-17	54.3	40	56.3	6	12.6		
6	297	54.4	139	-20	22.6	115	288	31.7	-17	54.0	71	1.6	6	12.8		
8	326	58.3	140	-20	3.6	117	318	35.5	-17	53.7	101	6.9	6	12.9		
10	356	2.3	141	-19	44.2	118	348	39.2	-17	53.4	131	12.1	6	13.1		
12	25	6.5	141	-19	24.4	120	18	43.0	-17	53.1	161	17.4	6	13.3		
14	54	10.8	142	-19	4.3	121	48	46.8	-17	52.8	191	22.7	6	13.4		
16	83	15.4	143	-18	43.9	122	78	50.6	-17	52.5	221	28.0	6	13.6		
18	112	20.1	143	-18	23.0	124	108	54.4	-17	52.2	251	33.2	6	13.7		
20	141	25.0	144	-18	1.9	125	138	58.1	-17	51.9	281	38.5	6	1		



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	176 40.7	- 9 29.5	153 59.8	143 51.0	10 3.2	195 58.7	-17 34.7
2	206 40.9	- 9 27.6	184 4.8	173 54.4	10 4.7	225 59.7	-17 33.6
4	236 41.0	- 9 25.8	214 9.7	203 57.9	10 6.2	256 .7	-17 32.4
6	266 41.2	- 9 23.9	244 14.6	234 1.4	10 7.8	286 1.7	-17 31.3
8	296 41.4	- 9 22.1	274 19.5	264 4.9	10 9.3	316 2.7	-17 30.2
10	326 41.6	- 9 20.2	304 24.5	294 8.5	10 10.8	346 3.7	-17 29.1
12	356 41.8	- 9 18.4	334 29.4	324 12.0	10 12.4	16 4.7	-17 28.0
14	26 42.0	- 9 16.5	4 34.3	354 15.6	10 13.9	46 5.7	-17 26.9
16	56 42.2	- 9 14.7	34 39.3	24 19.1	10 15.4	76 6.7	-17 25.7
18	86 42.3	- 9 12.8	64 44.2	54 22.7	10 16.9	106 7.8	-17 24.6
20	116 42.5	- 9 10.9	94 49.1	84 26.3	10 18.4	136 8.8	-17 23.5
22	146 42.7	- 9 9.1	124 54.0	114 29.9	10 19.9	166 9.8	-17 22.4
Δ	1	9		18	8	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 16	17 12	0 43	2 19	6 55	.1	15 23	3.6
55	7 4	17 24	0 37	2 1	6 32	.5	15 44	3.3
50	6 55	17 32	0 33	1 48	6 14	.7	15 59	3.0
45	6 48	17 39	0 30	1 38	6 1	.9	16 12	2.8
40	6 42	17 45	0 27	1 30	5 49	1.1	16 22	2.6
35	6 37	17 50	0 26	1 24	5 40	1.2	16 30	2.5
30	6 32	17 55	0 24	1 20	5 31	1.3	16 38	2.4
20	6 24	18 3	0 22	1 14	5 16	1.5	16 51	2.2
10	6 17	18 10	0 21	1 10	5 3	1.7	17 2	2.0
0	6 10	18 17	0 21	1 10	4 51	1.8	17 12	1.8
10	6 3	18 24	0 21	1 11	4 39	2.0	17 23	1.6
20	5 55	18 31	0 22	1 15	4 25	2.2	17 34	1.5
30	5 47	18 40	0 24	1 23	4 10	2.4	17 46	1.3
35	5 42	18 45	0 26	1 29	4 1	2.5	17 53	1.1
40	5 36	18 50	0 28	1 37	3 51	2.6	18 1	1.0
45	5 29	18 57	0 31	1 47	3 40	2.8	18 10	.8
50	5 21	19 5	0 34	2 2	3 25	3.0	18 22	.7
55	5 10	19 15	0 39	2 25	3 7	3.3	18 36	.4
60	4 57	19 28	0 46	3 11	2 42	3.7	18 54	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	199 35.2	145 -17	18.6	127	199 5.7	-17 51.3	341 49.0	6 14.2
2	228 40.6	145 -16	56.4	129	229 9.5	-17 51.0	11 54.3	6 14.4
4	257 46.1	146 -16	34.0	130	259 13.2	-17 50.7	41 59.6	6 14.5
6	286 51.8	146 -16	11.2	131	289 17.0	-17 50.4	72 4.9	6 14.7
8	315 57.6	147 -15	48.1	132	319 20.8	-17 50.1	102 10.1	6 14.8
10	345 3.6	147 -15	24.8	133	349 24.6	-17 49.7	132 15.4	6 15.0
12	14 9.7	148 -15	1.1	134	19 28.3	-17 49.4	162 20.7	6 15.2
14	43 16.0	148 -14	37.2	135	49 32.1	-17 49.1	192 26.0	6 15.3
16	72 22.3	148 -14	12.9	136	79 35.9	-17 48.8	222 31.2	6 15.5
18	101 28.8	148 -13	48.5	137	109 39.7	-17 48.5	252 36.5	6 15.6
20	130 35.5	149 -13	23.7	138	139 43.5	-17 48.2	282 41.8	6 15.8
22	159 42.2	149 -12	58.7	139	169 47.2	-17 47.9	312 47.1	6 16.0
Δ					19	2	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'		
00	-13 25.5	.4	16.2	T <sub>m</sub>	11 2	1.8	54.8	14.9	
12	-13 21.3	T <sub>m</sub> ☉	12 h 13.4 min	Starost 27.7 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 26	.4	350	-4.5	♄	10 42	.0	46	-1.8
♂	10 56	.1	43	1.2	♂	1 13	.0	189	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	176 42.9	- 9 7.2	154 59.0	144 33.5	10 21.4	196 10.8	-17 21.2
2	206 43.1	- 9 5.4	185 3.9	174 37.1	10 22.9	226 11.8	-17 20.1
4	236 43.3	- 9 3.5	215 8.8	204 40.7	10 24.3	256 12.8	-17 19.0
6	266 43.5	- 9 1.6	245 13.8	234 44.4	10 25.8	286 13.8	-17 17.8
8	296 43.7	- 8 59.8	275 18.7	264 48.0	10 27.3	316 14.9	-17 16.7
10	326 43.9	- 8 57.9	305 23.6	294 51.7	10 28.7	346 15.9	-17 15.6
12	356 44.1	- 8 56.1	335 28.5	324 55.4	10 30.2	16 16.9	-17 14.4
14	26 44.3	- 8 54.2	5 33.5	354 59.1	10 31.7	46 17.9	-17 13.3
16	56 44.5	- 8 52.3	35 38.4	25 2.8	10 33.1	76 18.9	-17 12.2
18	86 44.7	- 8 50.5	65 43.3	55 6.5	10 34.5	106 19.9	-17 11.0
20	116 44.9	- 8 48.6	95 48.2	85 10.2	10 36.0	136 21.0	-17 9.9
22	146 45.1	- 8 46.7	125 53.2	115 14.0	10 37.4	166 22.0	-17 8.7
Δ	1	9		18	7	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 13	17 15	0 42	2 19	6 57	.1	16 51	3.6
55	7 2	17 26	0 37	2 1	6 43	.4	17 3	3.3
50	6 53	17 34	0 33	1 48	6 31	.6	17 12	3.0
45	6 46	17 41	0 30	1 38	6 22	.8	17 19	2.8
40	6 41	17 46	0 27	1 30	6 15	1.0	17 25	2.7
35	6 36	17 51	0 26	1 24	6 8	1.1	17 30	2.5
30	6 31	17 56	0 24	1 20	6 2	1.2	17 35	2.4
20	6 23	18 3	0 22	1 14	5 52	1.4	17 43	2.2
10	6 17	18 10	0 21	1 10	5 43	1.6	17 49	2.0
0	6 10	18 17	0 21	1 10	5 35	1.8	17 56	1.8
10	6 3	18 23	0 21	1 11	5 27	2.0	18 2	1.6
20	5 56	18 30	0 22	1 15	5 18	2.2	18 9	1.4
30	5 47	18 39	0 24	1 23	5 7	2.4	18 16	1.2
35	5 42	18 43	0 26	1 29	5 1	2.5	18 20	1.1
40	5 37	18 49	0 28	1 36	4 55	2.6	18 25	1.0
45	5 30	18 55	0 30	1 47	4 47	2.8	18 31	.8
50	5 22	19 3	0 34	2 1	4 37	3.0	18 37	.6
55	5 12	19 13	0 39	2 24	4 25	3.3	18 46	.4
60	4 59	19 25	0 46	3 7	4 9	3.6	18 56	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	188 49.1	149 -12	33.4	139	199 51.0	-17 47.6	342 52.3	6 16.1
2	217 56.1	149 -12	7.9	140	229 54.8	-17 47.3	12 57.6	6 16.3
4	247 3.1	149 -11	42.2	141	259 58.6	-17 47.0	43 2.9	6 16.4
6	276 10.3	149 -11	16.2	141	290 2.4	-17 46.7	73 8.2	6 16.6
8	305 17.6	149 -10	50.1	142	320 6.2	-17 46.4	103 13.4	6 16.8
10	334 24.9	149 -10	23.7	143	350 9.9	-17 46.1	133 18.7	6 16.9
12	3 32.4	149 -9	57.1	143	20 13.7	-17 45.8	163 24.0	6 17.1
14	32 39.9	149 -9	30.2	144	50 17.5	-17 45.5	193 29.3	6 17.2
16	61 47.4	149 -9	3.2	144	80 21.3	-17 45.2	223 34.5	6 17.4
18	90 55.1	149 -8	36.0	145	110 25.1	-17 44.9	253 39.8	6 17.6
20	120 2.7	149 -8	8.7	145	140 28.9	-17 44.6	283 45.1	6 17.7
22	149 10.5	149 -7	41.1	146	170 32.6	-17 44.3	313 50.4	6 17.9
Δ					19	2	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'		
00	-13 17.1	.4	16.2	T <sub>m</sub>	11 45	1.8	55.2	15.1	
12	-13 12.6	T <sub>m</sub> ☉	12 h 13.2 min	Starost 28.7 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 23	.4	350	-					

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	176 45.3	- 8 44.8	155 58.1	145 17.7	10 38.8	196 23.0	-17 7.6
2	206 45.5	- 8 43.0	186 3.0	175 21.5	10 40.3	226 24.0	-17 6.5
4	236 45.7	- 8 41.1	216 8.0	205 25.3	10 41.7	256 25.1	-17 5.3
6	266 45.9	- 8 39.2	246 12.9	235 29.1	10 43.1	286 26.1	-17 4.2
8	296 46.2	- 8 37.4	276 17.8	265 32.9	10 44.5	316 27.1	-17 3.0
10	326 46.4	- 8 35.5	306 22.7	295 36.7	10 45.9	346 28.1	-17 1.9
12	356 46.6	- 8 33.6	336 27.7	325 40.5	10 47.3	16 29.2	-17 7.7
14	26 46.8	- 8 31.7	6 32.6	355 44.4	10 48.7	46 30.2	-16 59.6
16	56 47.0	- 8 29.9	36 37.5	25 48.2	10 50.0	76 31.2	-16 58.4
18	86 47.2	- 8 28.0	66 42.5	55 52.1	10 51.4	106 32.2	-16 57.3
20	116 47.4	- 8 26.1	96 47.4	85 56.0	10 52.8	136 33.3	-16 56.1
22	146 47.6	- 8 24.2	126 52.3	115 59.9	10 54.1	166 34.3	-16 54.9
Δ	1	9		19	7	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 10	17 17	0 42	2 19	6 59	.1	18 17	3.7
55	6 59	17 28	0 37	2 1	6 52	.4	18 21	3.3
50	6 51	17 36	0 33	1 48	6 46	.6	18 24	3.1
45	6 45	17 42	0 30	1 38	6 42	.8	18 27	2.9
40	6 39	17 47	0 27	1 30	6 38	.9	18 29	2.7
35	6 34	17 52	0 26	1 24	6 35	1.1	18 30	2.5
30	6 30	17 56	0 24	1 20	6 32	1.2	18 32	2.4
20	6 23	18 4	0 22	1 14	6 27	1.4	18 34	2.2
10	6 16	18 10	0 21	1 10	6 22	1.6	18 37	2.0
0	6 10	18 16	0 21	1 10	6 18	1.8	18 39	1.8
10	6 3	18 23	0 21	1 11	6 14	2.0	18 41	1.6
20	5 56	18 30	0 22	1 15	6 10	2.2	18 43	1.4
30	5 48	18 38	0 24	1 23	6 4	2.4	18 45	1.2
35	5 43	18 42	0 26	1 28	6 1	2.5	18 47	1.1
40	5 38	18 47	0 28	1 36	5 58	2.7	18 48	.9
45	5 32	18 54	0 30	1 46	5 54	2.8	18 50	.8
50	5 24	19 1	0 34	2 0	5 50	3.0	18 52	.6
55	5 15	19 10	0 38	2 3	5 44	3.3	18 54	.4
60	5 2	19 22	0 45	3 3	5 36	3.6	18 57	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	178 18.2	148 - 7	13.4	146	200 36.4	-17 44.0	343 55.7	6 18.0
2	207 26.0	148 - 6	45.5	146	230 40.2	-17 43.7	14 .9	6 18.2
4	236 33.9	148 - 6	17.5	146	260 44.0	-17 43.3	44 6.2	6 18.4
6	265 41.7	147 - 5	49.4	147	290 47.8	-17 43.0	74 11.5	6 18.5
8	294 49.6	147 - 5	21.1	147	320 51.6	-17 42.7	104 16.8	6 18.7
10	323 57.5	146 - 4	52.7	147	350 55.4	-17 42.4	134 22.1	6 18.8
12	353 5.4	146 - 4	24.1	147	20 59.1	-17 42.1	164 27.3	6 19.0
14	22 13.2	145 - 3	55.5	147	51 2.9	-17 41.8	194 32.6	6 19.2
16	51 21.1	145 - 3	26.7	147	81 6.7	-17 41.5	224 37.9	6 19.3
18	80 28.9	144 - 2	57.8	147	111 10.5	-17 41.2	254 43.2	6 19.5
20	109 36.7	143 - 2	28.9	147	141 14.3	-17 40.9	284 48.5	6 19.6
22	138 44.4	143 - 1	59.9	147	171 18.1	-17 40.6	314 53.7	6 19.8
Δ					19	2	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-13 8.1	.4	16.2	T <sub>m</sub>	12 28	1.8	55.7 15.2		
12	-13 3.3	T <sub>m☉</sub>	12 h 13.1 min	Starost 29.7 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 20	.4	350	-4.5	♄	10 36	.0	46	-1.8
♂	10 54	.1	41	1.2	♄	1 4	.0	189	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	176 47.9	- 8 22.3	156 57.2	146 3.8	10 55.5	196 35.3	-16 53.8
2	206 48.1	- 8 20.5	187 2.2	176 7.7	10 56.8	226 36.4	-16 52.6
4	236 48.3	- 8 18.6	217 7.1	206 11.6	10 58.2	256 37.4	-16 51.5
6	266 48.5	- 8 16.7	247 12.0	236 15.6	10 59.5	286 38.4	-16 50.3
8	296 48.7	- 8 14.8	277 17.0	266 19.5	11 .9	316 39.5	-16 49.2
10	326 49.0	- 8 12.9	307 21.9	296 23.5	11 2.2	346 40.5	-16 48.0
12	356 49.2	- 8 11.0	337 26.8	326 27.5	11 3.5	16 41.5	-16 46.8
14	26 49.4	- 8 9.2	7 31.7	356 31.5	11 4.8	46 42.6	-16 45.7
16	56 49.6	- 8 7.3	37 36.7	26 35.5	11 6.1	76 43.6	-16 44.5
18	86 49.9	- 8 5.4	67 41.6	56 39.5	11 7.4	106 44.6	-16 43.3
20	116 50.1	- 8 3.5	97 46.5	86 43.6	11 8.7	136 45.7	-16 42.2
22	146 50.3	- 8 1.6	127 51.5	116 47.6	11 10.0	166 46.7	-16 41.0
Δ	1	9		20	7	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 7	17 20	0 42	2 19	7 1	.1	19 45	3.8
55	6 57	17 30	0 37	2 1	7 1	.4	19 41	3.4
50	6 49	17 37	0 33	1 48	7 1	.6	19 38	3.1
45	6 43	17 43	0 30	1 38	7 1	.8	19 35	2.9
40	6 38	17 49	0 27	1 30	7 1	1.0	19 33	2.8
35	6 33	17 53	0 25	1 24	7 1	1.1	19 31	2.6
30	6 29	17 57	0 24	1 20	7 1	1.2	19 30	2.5
20	6 22	18 4	0 22	1 13	7 1	1.5	19 27	2.2
10	6 16	18 10	0 21	1 10	7 1	1.6	19 24	2.0
0	6 10	18 16	0 21	1 9	7 1	1.8	19 22	1.9
10	6 3	18 22	0 21	1 11	7 1	2.0	19 20	1.7
20	5 57	18 29	0 22	1 15	7 2	2.2	19 17	1.5
30	5 49	18 36	0 24	1 22	7 2	2.4	19 14	1.3
35	5 44	18 41	0 26	1 28	7 2	2.6	19 13	1.1
40	5 39	18 46	0 28	1 35	7 2	2.7	19 11	1.0
45	5 33	18 52	0 30	1 46	7 2	2.9	19 9	.8
50	5 26	18 59	0 34	1 60	7 3	3.1	19 6	.6
55	5 17	19 8	0 38	2 21	7 3	3.4	19 3	.4
60	5 5	19 19	0 45	3 0	7 3	3.7	18 59	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	167 52.1	142 - 1	30.8	146	201 21.9	-17 40.3	344 59.0	6 20.0
2	196 59.8	141 - 1	1.6	146	231 25.7	-17 40.0	15 4.3	6 20.1
4	226 7.4	140 - 0	32.4	146	261 29.5	-17 39.7	45 9.6	6 20.3
6	255 14.9	139 - 0	3.1	146	291 33.2	-17 39.4	75 14.9	6 20.4
8	284 22.3	138 0	26.2	145	321 37.0	-17 39.1	105 20.1	6 20.6
10	313 29.7	137 0	55.6	145	351 40.8	-17 38.8	135 25.4	6 20.8
12	342 36.9	136 1	24.9	144	21 44.6	-17 38.5	165 30.7	6 20.9
14	11 44.1	135 1	54.3	144	51 48.4	-17 38.2	195 36.0	6 21.1
16	40 51.1	134 2	23.7	143	81 52.2	-17 37.9	225 41.3	6 21.2
18	69 58.1	133 2	53.1	143	111 56.0	-17 37.6	255 46.6	6 21.4
20	99 4.9	132 3	22.5	142	141 59.8	-17 37.3	285 51.8	6 21.6
22	128 11.5	131 3	51.8	141	172 3.6	-17 36.9	315 57.1	6 21.7
Δ					19	2	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	-12 58.5	.4	16.2	T <sub>m</sub>	13 12	1.8	56.2 15.3		
12	-12 53.4	T <sub>m☉</sub>	12 h 12.9 min	Starost .9 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 17	.4	349	-4.5	♄	10 33	.0	45	-1.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS										
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>									
h	°	'	°	'	'	'	'									
0	176	50.5	-7	59.7	157	56.4	146	51.7	11	11.3	196	47.7	-16	39.8		
2	206	50.8	-7	57.8	188	1.3	176	55.8	11	12.6	226	48.8	-16	38.6		
4	236	51.0	-7	55.9	218	6.2	206	59.9	11	13.9	256	49.8	-16	37.5		
6	266	51.2	-7	54.0	248	11.2	237	4.0	11	15.1	286	50.9	-16	36.3		
8	296	51.5	-7	52.1	278	16.1	267	8.1	11	16.4	316	51.9	-16	35.1		
10	326	51.7	-7	50.3	308	21.0	297	12.2	11	17.7	346	53.0	-16	33.9		
12	356	51.9	-7	48.4	338	26.0	327	16.4	11	18.9	376	54.0	-16	32.8		
14	26	52.2	-7	46.5	8	30.9	357	20.5	11	20.2	46	55.0	-16	31.6		
16	56	52.4	-7	44.6	38	35.8	27	24.7	11	21.4	76	56.1	-16	30.4		
18	86	52.6	-7	42.7	68	40.7	57	28.9	11	22.6	106	57.1	-16	29.2		
20	116	52.9	-7	40.8	98	45.7	87	33.1	11	23.9	136	58.2	-16	28.0		
22	146	53.1	-7	38.9	128	50.6	117	37.3	11	25.1	166	59.2	-16	26.8		
Δ		1		9				21		6				5		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 4	17 23	0 42	2 19	7 2	.1	21 15	3.9
55	6 55	17 32	0 37	2 1	7 10	.4	21 3	3.5
50	6 47	17 39	0 33	1 48	7 15	.7	20 53	3.3
45	6 41	17 45	0 30	1 38	7 20	.9	20 46	3.0
40	6 36	17 50	0 27	1 30	7 24	1.0	20 39	2.9
35	6 32	17 54	0 25	1 24	7 27	1.2	20 34	2.7
30	6 28	17 58	0 24	1 20	7 31	1.3	20 29	2.6
20	6 21	18 4	0 22	1 13	7 36	1.5	20 21	2.3
10	6 15	18 10	0 21	1 10	7 41	1.7	20 14	2.1
0	6 9	18 16	0 21	1 9	7 45	1.9	20 7	2.0
10	6 3	18 22	0 21	1 11	7 50	2.1	20 0	1.8
20	5 57	18 28	0 22	1 15	7 55	2.3	19 53	1.6
30	5 50	18 35	0 24	1 22	8 0	2.5	19 45	1.4
35	5 45	18 40	0 26	1 28	8 4	2.7	19 40	1.3
40	5 40	18 44	0 28	1 35	8 7	2.8	19 35	1.1
45	5 34	18 50	0 30	1 45	8 12	3.0	19 29	.9
50	5 27	18 57	0 34	1 59	8 17	3.2	19 21	.7
55	5 19	19 5	0 38	2 20	8 24	3.5	19 12	.5
60	5 7	19 17	0 45	2 57	8 32	3.9	19 1	.1

UT	MESEC				JUPITER		SATURN									
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>								
h	°	'	°	'	'	'	'	'								
0	157	18.0	129	4	21.2	141	202	7.4	-17	36.6	346	2.4	6	21.9		
2	186	24.4	128	4	50.4	140	232	11.2	-17	36.3	16	7.7	6	22.1		
4	215	30.6	127	5	19.7	139	262	15.0	-17	36.0	46	13.0	6	22.2		
6	244	36.6	125	5	48.9	138	292	18.8	-17	35.7	76	18.3	6	22.4		
8	273	42.4	124	6	18.0	137	322	22.6	-17	35.4	106	23.5	6	22.5		
10	302	48.1	122	6	47.1	136	352	26.3	-17	35.1	136	28.8	6	22.7		
12	331	53.6	121	7	16.0	135	22	30.1	-17	34.8	166	34.1	6	22.9		
14	0	58.8	119	7	44.9	134	52	33.9	-17	34.5	196	39.4	6	23.0		
16	30	3.9	118	8	13.7	133	82	37.7	-17	34.2	226	44.7	6	23.2		
18	59	8.7	116	8	42.3	131	112	41.5	-17	33.9	256	50.0	6	23.3		
20	88	13.3	114	9	10.9	130	142	45.3	-17	33.6	286	55.2	6	23.5		
22	117	17.6	113	9	39.3	129	172	49.1	-17	33.3	317	.5	6	23.7		
Δ								19		2				26		1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	-12 48.4	.4	16.2	T <sub>m</sub>	13 56	2.0	56.7	15.4
12	-12 43.0	T <sub>m</sub> ☉	12 h 12.7 min	Starost	1.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	14 14	.4	349	-4.5	♃	10 30	.0	45	-1.8
♂	10 52	.1	40	1.2	♄	0 56	.0	189	.7

1. MART

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS										
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>									
h	°	'	°	'	'	'	'									
0	176	53.3	-7	37.0	158	55.5	147	41.5	11	26.3	197	.3	-16	25.7		
2	206	53.6	-7	35.1	189	.5	177	45.8	11	27.5	227	1.3	-16	24.5		
4	236	53.8	-7	33.2	219	5.4	207	50.0	11	28.7	257	2.4	-16	23.3		
6	266	54.1	-7	31.3	249	10.3	237	54.3	11	29.9	287	3.4	-16	22.1		
8	296	54.3	-7	29.4	279	15.2	267	58.6	11	31.1	317	4.5	-16	20.9		
10	326	54.6	-7	27.5	309	20.2	298	2.9	11	32.2	347	5.5	-16	19.7		
12	356	54.8	-7	25.6	339	25.1	328	7.2	11	33.4	377	6.6	-16	18.5		
14	26	55.0	-7	23.7	9	30.0	358	11.5	11	34.6	47	7.6	-16	17.3		
16	56	55.3	-7	21.7	39	34.9	28	15.8	11	35.7	77	8.7	-16	16.1		
18	86	55.5	-7	19.8	69	39.9	58	20.2	11	36.9	107	9.7	-16	14.9		
20	116	55.8	-7	17.9	99	44.8	88	24.5	11	38.0	137	10.8	-16	13.7		
22	146	56.0	-7	16.0	129	49.7	118	28.9	11	39.2	167	11.8	-16	12.5		
Δ		1		10				22		6				5		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 1	17 25	0 42	2 19	7 5	.2	22 50	4.1
55	6 52	17 34	0 37	2 1	7 20	.5	22 28	3.7
50	6 45	17 41	0 33	1 48	7 32	.8	22 11	3.4
45	6 40	17 46	0 30	1 38	7 41	1.0	21 58	3.1
40	6 35	17 51	0 27	1 30	7 49	1.2	21 48	2.9
35	6 31	17 55	0 25	1 24	7 56	1.3	21 39	2.8
30	6 27	17 58	0 24	1 20	8 2	1.5	21 31	2.7
20	6 21	18 5	0 22	1 13	8 13	1.7	21 17	2.5
10	6 15	18 10	0 21	1 10	8 22	1.9	21 5	2.3
0	6 9	18 16	0 21	1 9	8 31	2.0	20 54	2.1
10	6 4	18 21	0 21	1 11	8 40	2.2	20 43	1.9
20	5 57	18 27	0 22	1 15	8 50	2.4	20 31	1.8
30	5 50	18 34	0 24	1 22	9 1	2.6	20 18	1.6
35	5 46	18 38	0 26	1 28	9 7	2.8	20 10	1.4
40	5 41	18 43	0 28	1 35	9 15	2.9	20 1	1.3
45	5 36	18 48	0 30	1 45	9 23	3.1	19 51	1.1
50	5 29	18 55	0 33	1 58	9 34	3.3	19 39	.9
55	5 21	19 3	0 38	2 19	9 47	3.6	19 23	.6
60	5 10	19 14	0 44	2 54	10 5	4.1	19 3	.2

UT	MESEC				JUPITER		SATURN									
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>								
h	°	'	°	'	'	'	'	'								
0	146	21.8	111	10	7.5	127	202	52.9	-17	33.0	347	5.8	6	23.8		
2	175	25.6	109	10	35.6	126	232	56.7	-17	32.7	17	11.1	6	24.0		
4	204	29.2	108	11	3.6	124	263	.5	-17	32.4	47	16.4	6	24.1		
6	233	32.5	106	11	31.4	123	293	4.3	-17	32.1	77	21.7	6	24.3		
8	262	35.6	104	11	58.9	121	323	8.1	-17	31.8	107	27.0	6	24.5		
10	291	38.3	102	12	26.3	119	353	11.9	-17	31.5	137	32.2	6	24.6		
12	320	40.8	100	12	53.5	117	23	15.7	-17	31.1	167	37.5	6	24.8		
14	349	43.0	98	13	20.5	116	53	19.5	-17	30.8	197	42.8	6	25.0		
16	18	44.8	96	13	47.2	114	83	23.3	-17	30.5	227	48.1	6	25.1		
18	47	46.3	94	14	13.7	112	113	27.1	-17	30.2	257	53.4	6	25.3		
20	76	47.6	92	14	40.0	110	143	30.9	-17	29.9	287	58.7	6	25.4		
22	105	48.4	91	15	6.0	108	173	34.7	-17	29.6	318	4.0	6	25.6		
Δ								19		2				26		1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	-12 37.7	.5	16.2	T <sub>m</sub>	14 43	2.0	57.2	15.6
12	-12 32.0	T <sub>m</sub> ☉	12 h 12.5 min	Starost	2.9 d	Faza	☉	

PLANETE							
Pl.	T <sub>m</sub>	π	360				

2. MART

2009.

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 56.3 - 7 14.1	159 54.7	148 33.3	11 40.3	197 12.9 -16 11.3		
2	206 56.5 - 7 12.2	189 59.6	178 37.7	11 41.4	227 13.9 -16 10.1		
4	236 56.8 - 7 10.3	220 4.5	208 42.1	11 42.6	257 15.0 -16 8.9		
6	266 57.0 - 7 8.4	250 9.4	238 46.6	11 43.7	287 16.1 -16 7.7		
8	296 57.3 - 7 6.5	280 14.4	268 51.0	11 44.8	317 17.1 -16 6.5		
10	326 57.5 - 7 4.6	310 19.3	298 55.5	11 45.9	347 18.2 -16 5.3		
12	356 57.8 - 7 2.7	340 24.2	328 60.0	11 47.0	17 19.2 -16 4.1		
14	26 58.1 - 7 .7	10 29.2	359 4.5	11 48.1	47 20.3 -16 2.9		
16	56 58.3 - 6 58.8	40 34.1	29 9.0	11 49.1	77 21.4 -16 1.7		
18	86 58.6 - 6 56.9	70 39.0	59 13.5	11 50.2	107 22.4 -16 .5		
20	116 58.8 - 6 55.0	100 43.9	89 18.0	11 51.3	137 23.5 -15 59.3		
22	146 59.1 - 6 53.1	130 48.9	119 22.6	11 52.3	167 24.6 -15 58.1		
Δ	1	10		22	5	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 58	17 28	0 42	2 19	7 9	.3	.. . .	.0
55	6 50	17 36	0 36	2 1	7 33	.8	23 56	3.7
50	6 43	17 42	0 32	1 48	7 51	1.0	23 32	3.4
45	6 38	17 48	0 29	1 38	8 6	1.3	23 13	3.2
40	6 33	17 52	0 27	1 30	8 18	1.4	22 59	3.0
35	6 29	17 56	0 25	1 24	8 28	1.6	22 46	2.9
30	6 26	17 59	0 24	1 20	8 37	1.7	22 35	2.8
20	6 20	18 5	0 22	1 13	8 53	1.9	22 16	2.6
10	6 14	18 11	0 21	1 10	9 7	2.0	21 60	2.4
0	6 9	18 16	0 21	1 9	9 20	2.2	21 45	2.3
10	6 4	18 21	0 21	1 11	9 33	2.4	21 30	2.1
20	5 58	18 27	0 22	1 15	9 48	2.5	21 14	2.0
30	5 51	18 33	0 24	1 22	10 4	2.7	20 55	1.8
35	5 47	18 37	0 26	1 27	10 14	2.8	20 45	1.7
40	5 43	18 41	0 28	1 35	10 25	3.0	20 32	1.6
45	5 37	18 47	0 30	1 44	10 38	3.2	20 18	1.4
50	5 31	18 53	0 33	1 58	10 54	3.4	20 1	1.2
55	5 23	19 1	0 38	2 18	11 14	3.7	19 38	.9
60	5 13	19 11	0 44	2 52	11 42	4.2	19 8	.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	134 49.0	89 15 31.7	106	203 38.5	-17 29.3	348 9.2	6 25.8	
2	163 49.2	87 15 57.2	103	233 42.3	-17 29.0	18 14.5	6 25.9	
4	192 49.0	85 16 22.3	101	263 46.1	-17 28.7	48 19.8	6 26.1	
6	221 48.5	83 16 47.1	99	293 49.9	-17 28.4	78 25.1	6 26.2	
8	250 47.7	81 17 11.7	96	323 53.8	-17 28.1	108 30.4	6 26.4	
10	279 46.5	79 17 35.9	94	353 57.6	-17 27.8	138 35.7	6 26.6	
12	308 44.9	77 17 59.7	92	24 1.4	-17 27.5	168 41.0	6 26.7	
14	337 42.9	75 18 23.2	89	54 5.2	-17 27.2	198 46.3	6 26.9	
16	6 40.5	73 18 46.3	86	84 9.0	-17 26.9	228 51.6	6 27.1	
18	35 37.8	71 19 9.1	84	114 12.8	-17 26.6	258 56.8	6 27.2	
20	64 34.7	69 19 31.4	81	144 16.6	-17 26.3	289 2.1	6 27.4	
22	93 31.2	67 19 53.4	78	174 20.4	-17 26.0	319 7.4	6 27.5	
Δ				19	2	26	1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	-12 26.4	.5	16.2	T <sub>m</sub>	15 32	2.2	57.6
12	-12 20.5	T <sub>m☉</sub>	12 h 12.3 min	Starost	3.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
	h min	'	°	°		h min	'
♀	14 7	.4	349	-4.5	♃	10 24	.0
♂	10 51	.1	38	1.2	♄	0 47	.0

3. MART

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 59.4 - 6 51.2	160 53.8	149 27.1	11 53.4	197 25.6 -15 56.9		
2	206 59.6 - 6 49.3	190 58.7	179 31.7	11 54.4	227 26.7 -15 55.6		
4	236 59.9 - 6 47.3	221 3.7	209 36.3	11 55.5	257 27.7 -15 54.4		
6	267 .1 - 6 45.4	251 8.6	239 40.9	11 56.5	287 28.8 -15 53.2		
8	297 .4 - 6 43.5	281 13.5	269 45.5	11 57.5	317 29.9 -15 52.0		
10	327 .7 - 6 41.6	311 18.4	299 50.2	11 58.5	347 30.9 -15 50.8		
12	357 .9 - 6 39.7	341 23.4	329 54.8	11 59.5	17 32.0 -15 49.5		
14	27 1.2 - 6 37.7	11 28.3	359 59.5	12 .5	47 33.1 -15 48.3		
16	57 1.5 - 6 35.8	41 33.2	30 4.2	12 1.5	77 34.2 -15 47.1		
18	87 1.7 - 6 33.9	71 38.2	60 8.9	12 2.5	107 35.2 -15 45.9		
20	117 2.0 - 6 32.0	101 43.1	90 13.6	12 3.5	137 36.3 -15 44.7		
22	147 2.3 - 6 30.0	131 48.0	120 18.3	12 4.5	167 37.4 -15 43.4		
Δ	1	10		23	5	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 55	17 30	0 42	2 19	7 16	.6	0 30	4.2
55	6 47	17 38	0 36	2 1	7 51	1.1	.. . .	.0
50	6 41	17 44	0 32	1 48	8 16	1.4	.. . .	.0
45	6 36	17 49	0 29	1 38	8 36	1.6	.. . .	.0
40	6 32	17 53	0 27	1 30	8 52	1.8	.. . .	.0
35	6 28	17 57	0 25	1 24	9 6	1.9	23 55	2.8
30	6 25	17 60	0 24	1 20	9 18	2.0	23 41	2.8
20	6 19	18 6	0 22	1 13	9 38	2.1	23 18	2.6
10	6 14	18 11	0 21	1 10	9 56	2.2	22 58	2.5
0	6 9	18 15	0 21	1 9	10 13	2.4	22 40	2.5
10	6 4	18 20	0 21	1 11	10 30	2.5	22 21	2.4
20	5 58	18 26	0 22	1 14	10 48	2.6	22 1	2.3
30	5 52	18 32	0 24	1 22	11 9	2.8	21 39	2.1
35	5 48	18 36	0 26	1 27	11 22	2.9	21 25	2.0
40	5 44	18 40	0 28	1 34	11 36	3.0	21 10	1.9
45	5 39	18 45	0 30	1 44	11 53	3.1	20 52	1.8
50	5 33	18 51	0 33	1 57	12 15	3.3	20 29	1.7
55	5 25	18 58	0 38	2 17	12 43	3.6	19 60	1.4
60	5 15	19 8	0 44	2 50	13 24	4.2	19 17	.8
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	122 27.3	65 20 15.0	75	204 24.2	-17 25.7	349 12.7	6 27.7	
2	151 23.0	63 20 36.1	72	234 28.0	-17 25.3	19 18.0	6 27.9	
4	180 18.3	61 20 56.8	69	264 31.8	-17 25.0	49 23.3	6 28.0	
6	209 13.2	60 21 17.0	66	294 35.6	-17 24.7	79 28.6	6 28.2	
8	238 7.7	58 21 36.7	63	324 39.4	-17 24.4	109 33.9	6 28.4	
10	267 1.8	56 21 56.0	60	354 43.2	-17 24.1	139 39.2	6 28.5	
12	295 55.6	55 22 14.8	57	24 47.1	-17 23.8	169 44.4	6 28.7	
14	324 48.9	53 22 33.1	54	54 50.9	-17 23.5	199 49.7	6 28.8	
16	353 41.8	52 22 50.9	51	84 54.7	-17 23.2	229 55.0	6 29.0	
18	22 34.4	50 23 8.2	47	114 58.5	-17 22.9	260 .3	6 29.2	
20	51 26.5	49 23 24.9	44	145 2.3	-17 22.6	290 5.6	6 29.3	
22	80 18.3	47 23 41.1	41	175 6.1	-17 22.3	320 10.9	6 29.5	
Δ				19	2	26	1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	-12 14.7	.5	16.2	T <sub>m</sub>	16 26	2.4	58.1
12	-12 8.5	T <sub>m☉</sub>	12 h 12.1 min	Starost	4.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
	h min	'	°	°		h min	'
♀	14 4	.4	349	-4.5	♃	10 21	.0
♂	10 50	.1	38	1.2	♄	0 43	.0

4. MART

2009.

SREDA

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 2.5 - 6 28.1	161 52.9	150 23.0 12 5.4	197 38.4 -15 42.2			
2	207 2.8 - 6 26.2	191 57.9	180 27.8 12 6.4	227 39.5 -15 41.0			
4	237 3.1 - 6 24.3	222 2.8	210 32.6 12 7.3	257 40.6 -15 39.7			
6	267 3.4 - 6 22.3	252 7.7	240 37.3 12 8.3	287 41.7 -15 38.5			
8	297 3.6 - 6 20.4	282 12.7	270 42.1 12 9.2	317 42.7 -15 37.3			
10	327 3.9 - 6 18.5	312 17.6	300 46.9 12 10.1	347 43.8 -15 36.0			
12	357 4.2 - 6 16.6	342 22.5	330 51.8 12 11.0	17 44.9 -15 34.8			
14	27 4.5 - 6 14.6	12 27.4	0 56.6 12 12.0	47 46.0 -15 33.6			
16	57 4.7 - 6 12.7	42 32.4	31 1.5 12 12.9	77 47.0 -15 32.3			
18	87 5.0 - 6 10.8	72 37.3	61 6.3 12 13.8	107 48.1 -15 31.1			
20	117 5.3 - 6 8.8	102 42.2	91 11.2 12 14.6	137 49.2 -15 29.9			
22	147 5.6 - 6 6.9	132 47.1	121 16.1 12 15.5	167 50.3 -15 28.6			
Δ	1 10		24 5	5 6			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 52	17 33	0 42	2 19	7 30	1.2	2 12	3.9
55	6 45	17 40	0 36	2 1	8 18	1.7	1 24	3.4
50	6 39	17 46	0 32	1 48	8 50	2.0	0 53	3.2
45	6 34	17 50	0 29	1 38	9 15	2.1	0 29	3.0
40	6 30	17 54	0 27	1 30	9 34	2.2	0 11	2.9
35	6 27	17 57	0 25	1 24	9 50	2.2	...	0
30	6 24	18 1	0 24	1 19	10 5	2.3	...	0
20	6 18	18 6	0 22	1 13	10 29	2.4	...	0
10	6 13	18 11	0 21	1 10	10 50	2.5	23 59	2.6
0	6 9	18 15	0 21	1 9	11 10	2.5	23 39	2.6
10	6 4	18 20	0 21	1 10	11 30	2.6	23 18	2.5
20	5 59	18 25	0 22	1 14	11 51	2.6	22 55	2.5
30	5 52	18 31	0 24	1 22	12 16	2.7	22 30	2.5
35	5 49	18 34	0 26	1 27	12 31	2.8	22 14	2.4
40	5 45	18 38	0 28	1 34	12 48	2.8	21 57	2.4
45	5 40	18 43	0 30	1 43	13 8	2.9	21 36	2.3
50	5 34	18 49	0 33	1 57	13 34	3.0	21 9	2.3
55	5 27	18 56	0 38	2 16	14 10	3.2	20 33	2.1
60	5 18	19 5	0 44	2 47	15 5	3.5	19 37	1.8
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	109 9.7 46 23 56.8 37	205 9.9 -17 22.0	350 16.2 6 29.7					
2	138 .7 45 24 11.8 34	235 13.7 -17 21.7	20 21.5 6 29.8					
4	166 51.4 44 24 26.3 30	265 17.6 -17 21.4	50 26.8 6 30.0					
6	195 41.7 43 24 40.2 27	295 21.4 -17 21.1	80 32.1 6 30.1					
8	224 31.6 42 24 53.5 23	325 25.2 -17 20.8	110 37.3 6 30.3					
10	253 21.2 41 25 6.1 19	355 29.0 -17 20.5	140 42.6 6 30.5					
12	282 10.5 40 25 18.2 16	25 32.8 -17 20.2	170 47.9 6 30.6					
14	310 59.4 39 25 29.6 12	55 36.6 -17 19.9	200 53.2 6 30.8					
16	339 48.1 39 25 40.4 8	85 40.4 -17 19.5	230 58.5 6 30.9					
18	8 36.4 38 25 50.5 5	115 44.3 -17 19.2	261 3.8 6 31.1					
20	37 24.4 38 25 59.9 1	145 48.1 -17 18.9	291 9.1 6 31.3					
22	66 12.2 37 26 8.7 -3	175 51.9 -17 18.6	321 14.4 6 31.4					
Δ		19 2	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	-12 2.4	.5	16.2	T <sub>m</sub>	17 24	2.5	58.5 15.9		
12	-11 56.0	T <sub>m☉</sub>	12 h 11.9 min	Starost	5.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	'		h min	'	°	'
♀	14 0	.4	349	-4.5	♃	10 18	.0	44	-1.8
♂	10 49	.1	37	1.2	♄	0 39	.0	189	.7

5. MART

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 5.8 - 6 5.0	162 52.1	151 21.0 12 16.4	197 51.4 -15 27.4			
2	207 6.1 - 6 3.1	192 57.0	181 26.0 12 17.3	227 52.5 -15 26.2			
4	237 6.4 - 6 1.1	223 1.9	211 30.9 12 18.1	257 53.5 -15 24.9			
6	267 6.7 - 5 59.2	253 6.9	241 35.9 12 19.0	287 54.6 -15 23.7			
8	297 7.0 - 5 57.3	283 11.8	271 40.9 12 19.8	317 55.7 -15 22.4			
10	327 7.3 - 5 55.3	313 16.7	301 45.8 12 20.6	347 56.8 -15 21.2			
12	357 7.5 - 5 53.4	343 21.6	331 50.9 12 21.5	17 57.9 -15 19.9			
14	27 7.8 - 5 51.5	13 26.6	1 55.9 12 22.3	47 59.0 -15 18.7			
16	57 8.1 - 5 49.5	43 31.5	32 .9 12 23.1	78 .0 -15 17.4			
18	87 8.4 - 5 47.6	73 36.4	62 6.0 12 23.9	108 1.1 -15 16.2			
20	117 8.7 - 5 45.6	103 41.4	92 11.0 12 24.7	138 2.2 -15 14.9			
22	147 9.0 - 5 43.7	133 46.3	122 16.1 12 25.5	168 3.3 -15 13.7			
Δ	1 10		25 4	5 6			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 49	17 35	0 42	2 20	7 60	2.5	3 46	2.9
55	6 42	17 42	0 36	2 1	8 60	2.6	2 46	2.8
50	6 37	17 47	0 32	1 48	9 37	2.6	2 9	2.7
45	6 33	17 52	0 29	1 38	10 4	2.6	1 42	2.7
40	6 29	17 55	0 27	1 30	10 26	2.6	1 21	2.7
35	6 26	17 58	0 25	1 24	10 44	2.6	1 3	2.7
30	6 23	18 1	0 24	1 19	10 60	2.6	0 48	2.6
20	6 18	18 6	0 22	1 13	11 26	2.6	0 22	2.6
10	6 13	18 11	0 21	1 10	11 49	2.6	...	0
0	6 8	18 15	0 21	1 9	12 10	2.6	...	0
10	6 4	18 19	0 21	1 10	12 32	2.6	...	0
20	5 59	18 24	0 22	1 14	12 55	2.6	23 55	2.7
30	5 53	18 30	0 24	1 21	13 22	2.5	23 29	2.7
35	5 50	18 33	0 26	1 27	13 37	2.5	23 13	2.8
40	5 46	18 37	0 27	1 34	13 56	2.5	22 54	2.8
45	5 41	18 41	0 30	1 43	14 18	2.5	22 32	2.8
50	5 36	18 47	0 33	1 56	14 46	2.4	22 3	2.9
55	5 29	18 53	0 37	2 15	15 26	2.4	21 24	3.0
60	5 20	19 2	0 44	2 45	16 30	2.1	20 20	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	94 59.7 37 26 16.8 -6	205 55.7 -17 18.3	351 19.7 6 31.6					
2	123 46.9 37 26 24.2 -10	235 59.5 -17 18.0	21 25.0 6 31.8					
4	152 33.9 37 26 30.9 -14	266 3.3 -17 17.7	51 30.3 6 31.9					
6	181 20.6 37 26 37.0 -17	296 7.2 -17 17.4	81 35.6 6 32.1					
8	210 7.2 37 26 42.3 -21	326 11.0 -17 17.1	111 40.8 6 32.2					
10	238 53.6 37 26 46.9 -25	356 14.8 -17 16.8	141 46.1 6 32.4					
12	267 39.7 38 26 50.7 -29	26 18.6 -17 16.5	171 51.4 6 32.6					
14	296 25.8 38 26 53.9 -32	56 22.4 -17 16.2	201 56.7 6 32.7					
16	325 11.6 38 26 56.3 -36	86 26.3 -17 15.9	232 2.0 6 32.9					
18	353 57.4 39 26 58.0 -40	116 30.1 -17 15.6	262 7.3 6 33.1					
20	22 43.1 40 26 59.0 -43	146 33.9 -17 15.3	292 12.6 6 33.2					
22	51 28.6 40 26 59.2 -47	176 37.7 -17 15.0	322 17.9 6 33.4					
Δ		19 2	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	-11 49.7	.6	16.2	T <sub>m</sub>	18 25	2.6	58.9 16.1		
12	-11 43.0	T <sub>m☉</sub>	12 h 11.7 min	Starost	6.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	'		h min	'	°	'
♀									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177	9.3	-5	163	51.2	152	21.2
2	207	9.5	-5	193	56.1	182	26.3
4	237	9.8	-5	224	1.1	212	31.4
6	267	10.1	-5	254	6.0	242	36.6
8	297	10.4	-5	284	10.9	272	41.7
10	327	10.7	-5	314	15.9	302	46.9
12	357	11.0	-5	344	20.8	332	52.1
14	27	11.3	-5	14	25.7	2	57.3
16	57	11.6	-5	44	30.6	33	2.5
18	87	11.9	-5	74	35.6	63	7.8
20	117	12.2	-5	104	40.5	93	13.0
22	147	12.5	-5	134	45.4	123	18.3
Δ	1	10		26	4	5	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	6 47	17 38	0 42	2 20	9 0	3.9	4 54
55	6 40	17 44	0 36	2 1	10 2	3.4	3 53
50	6 35	17 49	0 32	1 48	10 39	3.2	3 15
45	6 31	17 53	0 29	1 38	11 7	3.1	2 47
40	6 27	17 56	0 27	1 30	11 29	3.0	2 25
35	6 24	17 59	0 25	1 24	11 47	2.9	2 7
30	6 22	18 2	0 24	1 19	12 2	2.8	1 51
20	6 17	18 7	0 22	1 13	12 29	2.7	1 25
10	6 12	18 11	0 21	1 10	12 51	2.6	1 2
0	6 8	18 15	0 21	1 9	13 13	2.6	0 40
10	6 4	18 19	0 21	1 10	13 34	2.5	0 19
20	5 59	18 23	0 22	1 14	13 56	2.4	...
30	5 54	18 29	0 24	1 21	14 23	2.3	...
35	5 51	18 32	0 26	1 27	14 38	2.2	...
40	5 47	18 35	0 27	1 33	14 56	2.1	...
45	5 43	18 39	0 30	1 43	15 18	2.0	23 40
50	5 38	18 44	0 33	1 55	15 45	1.8	23 13
55	5 31	18 51	0 37	2 14	16 22	1.6	22 37
60	5 23	18 59	0 43	2 43	17 22	1.0	21 38
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	80	14.1	41	26	58.7	-50	206	41.6
2	108	59.5	42	26	57.4	-54	236	45.4
4	137	45.0	43	26	55.4	-58	266	49.2
6	166	30.3	44	26	52.6	-61	296	53.0
8	195	15.7	45	26	49.1	-64	326	56.8
10	224	1.1	46	26	44.9	-68	357	.7
12	252	46.6	47	26	39.9	-71	27	4.5
14	281	32.1	49	26	34.1	-75	57	8.3
16	310	17.7	50	26	27.7	-78	87	12.2
18	339	3.4	51	26	20.5	-81	117	16.0
20	7	49.1	53	26	12.5	-84	147	19.8
22	36	35.1	54	26	3.9	-87	177	23.6
Δ							19	2

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-11 36.5	.6	16.2	T <sub>m</sub>	19 27	2.5	59.3
12	-11 29.6	T <sub>m</sub> ☉	12 h 11.5 min	Starost	7.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	h min	'	°	h min
♃	13 52	.4	348	-4.5	♀	10 12	.0
♄	10 47	.1	35	1.2	♄	0 30	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177	12.8	-5	164	50.4	153	23.6
2	207	13.1	-5	194	55.3	183	28.9
4	237	13.4	-5	225	.2	213	34.2
6	267	13.7	-5	255	5.1	243	39.5
8	297	14.0	-5	285	10.1	273	44.8
10	327	14.3	-5	315	15.0	303	50.2
12	357	14.6	-5	345	19.9	333	55.6
14	27	14.9	-5	15	24.9	4	9
16	57	15.2	-5	45	29.8	34	6.3
18	87	15.5	-5	75	34.7	64	11.8
20	117	15.8	-4	105	39.6	94	17.2
22	147	16.1	-4	135	44.6	124	22.6
Δ	2	10		27	3	6	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	6 44	17 40	0 42	2 20	10 33	4.4	5 32
55	6 38	17 46	0 36	2 1	11 23	3.8	4 40
50	6 33	17 51	0 32	1 48	11 56	3.5	4 6
45	6 29	17 54	0 29	1 38	12 20	3.3	3 41
40	6 26	17 57	0 27	1 30	12 40	3.1	3 21
35	6 23	18 0	0 25	1 24	12 56	3.0	3 4
30	6 20	18 3	0 24	1 19	13 10	2.9	2 49
20	6 16	18 7	0 22	1 13	13 34	2.7	2 24
10	6 12	18 11	0 21	1 10	13 55	2.6	2 2
0	6 8	18 15	0 21	1 9	14 14	2.4	1 42
10	6 4	18 18	0 21	1 10	14 33	2.3	1 22
20	5 60	18 23	0 22	1 14	14 54	2.2	0 60
30	5 54	18 28	0 24	1 21	15 17	2.0	0 34
35	5 51	18 30	0 26	1 26	15 31	1.9	0 19
40	5 48	18 34	0 27	1 33	15 47	1.7	0 1
45	5 44	18 38	0 30	1 42	16 6	1.6	...
50	5 39	18 42	0 33	1 55	16 29	1.3	...
55	5 33	18 48	0 37	2 13	17 0	1.0	...
60	5 25	18 56	0 43	2 42	17 46	.5	23 20
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	65	21.1	56	25	54.5	-90	207	27.5
2	94	7.3	57	25	44.4	-93	237	31.3
4	122	53.7	59	25	33.6	-96	267	35.1
6	151	40.3	61	25	22.1	-99	297	38.9
8	180	27.1	62	25	9.9	-102	327	42.8
10	209	14.1	64	24	57.0	-105	357	46.6
12	238	1.3	66	24	43.4	-108	27	50.4
14	266	48.8	67	24	29.1	-110	57	54.3
16	295	36.5	69	24	14.2	-113	87	58.1
18	324	24.5	71	23	58.6	-115	118	1.9
20	353	12.8	73	23	42.4	-118	148	5.8
22	22	1.4	74	23	25.6	-120	178	9.6
Δ							19	2

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-11 22.8	.6	16.1	T <sub>m</sub>	20 28	2.4	59.5
12	-11 15.7	T <sub>m</sub> ☉	12 h 11.3 min	Starost	8.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	h min	'	°	h min
♃	13 48	.4	348	-4.4	♀	10 9	.0
♄	10 46	.1	34	1.2	♄	0 26	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177	16.4	-4	165	49.5	154	28.1
2	207	16.7	-4	195	54.4	184	33.6
4	237	17.0	-4	225	59.4	214	39.1
6	267	17.3	-4	256	4.3	244	44.6
8	297	17.6	-4	286	9.2	274	50.1
10	327	18.0	-4	316	14.1	304	55.7
12	357	18.3	-4	346	19.1	335	1.2
14	27	18.6	-4	16	24.0	5	6.8
16	57	18.9	-4	46	28.9	35	12.4
18	87	19.2	-4	76	33.8	65	18.0
20	117	19.5	-4	106	38.8	95	23.6
22	147	19.8	-4	136	43.7	125	29.2
Δ	2	10				28	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 41	17 43	0 42	2 20	12 19	4.5	5 49	.4
55	6 35	17 48	0 36	2 1	12 55	3.9	5 11	.9
50	6 31	17 52	0 32	1 48	13 20	3.6	4 44	1.2
45	6 27	17 56	0 29	1 38	13 40	3.4	4 24	1.4
40	6 24	17 58	0 27	1 30	13 56	3.2	4 7	1.6
35	6 22	18 1	0 25	1 24	14 9	3.0	3 53	1.7
30	6 19	18 3	0 24	1 19	14 20	2.9	3 40	1.8
20	6 15	18 7	0 22	1 13	14 40	2.7	3 19	2.0
10	6 11	18 11	0 21	1 10	14 57	2.5	2 60	2.2
0	6 8	18 14	0 21	1 9	15 13	2.3	2 42	2.4
10	6 4	18 18	0 21	1 10	15 28	2.1	2 25	2.5
20	5 60	18 22	0 22	1 14	15 45	1.9	2 6	2.7
30	5 55	18 26	0 24	1 21	16 4	1.7	1 44	2.9
35	5 52	18 29	0 25	1 26	16 16	1.6	1 31	3.0
40	5 49	18 32	0 27	1 33	16 28	1.4	1 16	3.2
45	5 45	18 36	0 30	1 42	16 43	1.2	0 58	3.4
50	5 41	18 40	0 33	1 54	17 2	1.0	0 35	3.6
55	5 35	18 46	0 37	2 12	17 25	.7	0 5	3.9
60	5 28	18 53	0 43	2 40	17 57	.2	...	.0

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	50	50.3	76	23	8.1	-122	208	13.4
2	79	39.4	78	22	50.0	-125	238	17.3
4	108	28.9	79	22	31.3	-127	268	21.1
6	137	18.7	81	22	12.1	-129	298	24.9
8	166	8.8	83	21	52.2	-131	328	28.8
10	194	59.3	85	21	31.8	-133	358	32.6
12	223	50.0	86	21	10.8	-135	28	36.4
14	252	41.2	88	20	49.3	-136	58	40.3
16	281	32.6	90	20	27.3	-138	88	44.1
18	310	24.4	91	20	4.7	-140	118	47.9
20	339	16.6	93	19	41.7	-141	148	51.8
22	8	9.1	94	19	18.1	-143	178	55.6
Δ							19	2

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r
h	min	s	s	h min	min	'	'	
00	-11	8.7	.6	16.1	T <sub>m</sub>	21 26	2.3	59.7
12	-11	1.4	T <sub>m</sub> ☉	12 h 11.0 min	Starost 9.9 d Faza ☉			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	13 44	.4	349	-4.4	♃	10 6	.0	43	-1.8
♁	10 46	.1	34	1.2	♄	0 22	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177	20.1	-4	166	48.6	155	34.9
2	207	20.5	-4	196	53.6	185	40.5
4	237	20.8	-4	226	58.5	215	46.2
6	267	21.1	-4	257	3.4	245	51.9
8	297	21.4	-4	287	8.3	275	57.6
10	327	21.7	-4	317	13.3	306	3.4
12	357	22.0	-4	347	18.2	336	9.1
14	27	22.4	-4	17	23.1	6	14.9
16	57	22.7	-4	47	28.1	36	20.6
18	87	23.0	-4	77	33.0	66	26.4
20	117	23.3	-4	107	37.9	96	32.2
22	147	23.6	-4	137	42.8	126	38.0
Δ	2	10				29	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 38	17 45	0 42	2 20	14 6	4.3	5 58	.2
55	6 33	17 50	0 36	2 1	14 29	3.9	5 32	.6
50	6 29	17 54	0 32	1 48	14 47	3.5	5 13	.9
45	6 25	17 57	0 29	1 38	15 0	3.3	4 57	1.1
40	6 23	17 60	0 27	1 30	15 12	3.1	4 45	1.3
35	6 20	18 2	0 25	1 24	15 21	2.9	4 34	1.5
30	6 18	18 4	0 24	1 19	15 30	2.8	4 24	1.6
20	6 14	18 8	0 22	1 13	15 44	2.6	4 8	1.8
10	6 11	18 11	0 21	1 10	15 56	2.3	3 53	2.0
0	6 7	18 14	0 21	1 9	16 8	2.2	3 39	2.2
10	6 4	18 17	0 21	1 10	16 19	2.0	3 26	2.4
20	6 0	18 21	0 22	1 14	16 32	1.7	3 11	2.6
30	5 56	18 25	0 24	1 21	16 45	1.5	2 54	2.8
35	5 53	18 28	0 25	1 26	16 54	1.4	2 43	3.0
40	5 50	18 31	0 27	1 33	17 3	1.2	2 32	3.2
45	5 47	18 34	0 30	1 42	17 13	1.0	2 18	3.3
50	5 43	18 38	0 33	1 54	17 26	.8	2 2	3.6
55	5 37	18 43	0 37	2 11	17 42	.5	1 40	3.9
60	5 30	18 50	0 43	2 38	18 3	.1	1 10	4.4

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	37	1.9	96	18	54.1	-144	208	59.5
2	65	55.1	98	18	29.7	-146	239	3.3
4	94	48.7	99	18	4.7	-147	269	7.1
6	123	42.6	100	17	39.4	-148	299	11.0
8	152	36.8	102	17	13.6	-149	329	14.8
10	181	31.4	103	16	47.5	-151	359	18.7
12	210	26.3	105	16	20.9	-152	29	22.5
14	239	21.6	106	15	54.0	-153	59	26.3
16	268	17.2	107	15	26.7	-153	89	30.2
18	297	13.1	109	14	59.0	-154	119	34.0
20	326	9.4	110	14	31.1	-155	149	37.9
22	355	6.0	111	14	2.8	-156	179	41.7
Δ							19	2

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r
h	min	s	s	h min	min	'	'	
00	-10	54.2	.6	16.1	T <sub>m</sub>	22 20	2.1	59.7
12	-10	46.7	T <sub>m</sub> ☉	12 h 10.8 min	Starost 10.9 d Faza ☉			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	13 40	.4	349	-4.4	♃	10 3	.0	43	-1.8
♁	10 45	.1	33	1.2	♄	0 18	.0	190	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS		
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>	
h	°	'	°	'	°	'	°	'	°	'
0	177	24.0	-4	8.2	167	47.8	156	43.9	12	53.6
2	207	24.3	-4	6.3	197	52.7	186	49.7	12	54.0
4	237	24.6	-4	4.3	227	57.6	216	55.6	12	54.3
6	267	24.9	-4	2.3	258	2.6	247	1.5	12	54.6
8	297	25.3	-4	.4	288	7.5	277	7.4	12	54.9
10	327	25.6	-3	58.4	318	12.4	307	13.3	12	55.3
12	357	25.9	-3	56.5	348	17.3	337	19.2	12	55.6
14	27	26.2	-3	54.5	18	22.3	7	25.1	12	55.9
16	57	26.6	-3	52.5	48	27.2	37	31.1	12	56.1
18	87	26.9	-3	50.6	78	32.1	67	37.1	12	56.4
20	117	27.2	-3	48.6	108	37.1	97	43.0	12	56.7
22	147	27.5	-3	46.7	138	42.0	127	49.0	12	56.9
Δ	2	10					30	1	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 35	17 48	0 42	2 21	15 49	4.1	6 3	.1
55	6 30	17 52	0 36	2 2	16 2	3.7	5 47	.5
50	6 27	17 55	0 32	1 48	16 12	3.4	5 34	.8
45	6 24	17 58	0 29	1 38	16 20	3.2	5 24	1.0
40	6 21	18 1	0 27	1 30	16 26	3.0	5 16	1.2
35	6 19	18 3	0 25	1 24	16 32	2.8	5 9	1.3
30	6 17	18 5	0 24	1 19	16 37	2.7	5 3	1.4
20	6 13	18 8	0 22	1 13	16 45	2.5	4 52	1.7
10	6 10	18 11	0 21	1 10	16 52	2.2	4 42	1.9
0	6 7	18 14	0 21	1 9	16 59	2.0	4 33	2.1
10	6 4	18 17	0 21	1 10	17 6	1.8	4 23	2.3
20	6 1	18 20	0 22	1 14	17 14	1.6	4 13	2.5
30	5 56	18 24	0 24	1 21	17 22	1.4	4 2	2.8
35	5 54	18 26	0 25	1 26	17 27	1.3	3 55	2.9
40	5 51	18 29	0 27	1 33	17 32	1.1	3 48	3.1
45	5 48	18 32	0 30	1 41	17 38	.9	3 39	3.3
50	5 44	18 36	0 33	1 53	17 45	.7	3 28	3.5
55	5 39	18 41	0 37	2 10	17 54	.4	3 14	3.8
60	5 33	18 47	0 43	2 37	18 6	.1	2 56	4.2

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	24	2.9	112	13	34.2	-156	209	45.6
2	53	.1	113	13	5.3	-157	239	49.4
4	81	57.6	114	12	36.2	-157	269	53.2
6	110	55.4	115	12	6.7	-158	299	57.1
8	139	53.5	116	11	37.1	-158	330	.9
10	168	51.8	117	11	7.2	-158	0	4.8
12	197	50.5	118	10	37.1	-159	30	8.6
14	226	49.4	119	10	6.8	-159	60	12.5
16	255	48.6	120	9	36.3	-159	90	16.3
18	284	48.1	120	9	5.6	-159	120	20.2
20	313	47.8	121	8	34.7	-159	150	24.0
22	342	47.8	122	8	3.7	-159	180	27.9
Δ							19	2

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-10 39.2	.6	16.1	T <sub>m</sub>	23 11	2.0	59.6
12	-10 31.6	T <sub>m</sub> ☉	12 h 10.5 min	Starost	11.9 d	Faza	☉

PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♂	13 35	.4	349	-4.4	♄	9 60	.0
♂	10 44	.1	32	1.2	♄	0 13	.0

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	°	'	°	'	
0	177	27.9	-3	44.7	168	46.9	157	55.1	
2	207	28.2	-3	42.7	198	51.8	188	1.1	
4	237	28.5	-3	40.8	228	56.8	218	7.1	
6	267	28.9	-3	38.8	259	1.7	248	13.2	
8	297	29.2	-3	36.8	289	6.6	278	19.3	
10	327	29.5	-3	34.9	319	11.6	308	25.4	
12	357	29.9	-3	32.9	349	16.5	338	31.5	
14	27	30.2	-3	31.0	19	21.4	8	37.6	
16	57	30.5	-3	29.0	49	26.3	38	43.7	
18	87	30.9	-3	27.0	79	31.3	68	49.9	
20	117	31.2	-3	25.1	109	36.2	98	56.0	
22	147	31.5	-3	23.1	139	41.1	129	2.2	
Δ	2	10					31	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 32	17 50	0 41	2 21	17 27	4.0	6 6	.1
55	6 28	17 54	0 36	2 2	17 31	3.6	5 58	.4
50	6 24	17 57	0 32	1 48	17 34	3.3	5 52	.7
45	6 22	17 60	0 29	1 38	17 36	3.1	5 48	.9
40	6 20	18 2	0 27	1 30	17 38	2.9	5 44	1.1
35	6 18	18 4	0 25	1 24	17 40	2.8	5 40	1.2
30	6 16	18 5	0 24	1 19	17 41	2.6	5 37	1.4
20	6 13	18 8	0 22	1 13	17 44	2.4	5 32	1.6
10	6 10	18 11	0 21	1 10	17 46	2.2	5 27	1.8
0	6 7	18 14	0 21	1 9	17 48	2.0	5 23	2.0
10	6 4	18 16	0 21	1 10	17 50	1.8	5 18	2.2
20	6 1	18 19	0 22	1 14	17 53	1.6	5 13	2.4
30	5 57	18 23	0 24	1 21	17 55	1.3	5 8	2.7
35	5 55	18 25	0 25	1 26	17 57	1.2	5 5	2.8
40	5 52	18 27	0 27	1 32	17 58	1.0	5 1	3.0
45	5 49	18 30	0 30	1 41	18 0	.9	4 57	3.2
50	5 46	18 34	0 33	1 53	18 2	.7	4 52	3.4
55	5 41	18 38	0 37	2 10	18 5	.4	4 45	3.7
60	5 35	18 44	0 42	2 35	18 8	.1	4 37	4.0

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	11	47.9	122	7	32.6	-159	210	31.7
2	40	48.4	123	7	1.3	-158	240	35.6
4	69	49.0	123	6	30.0	-158	270	39.4
6	98	49.8	124	5	58.5	-158	300	43.3
8	127	50.9	124	5	27.0	-157	330	47.1
10	156	52.1	125	4	55.4	-157	0	51.0
12	185	53.5	125	4	23.7	-157	30	54.8
14	214	55.1	126	3	52.0	-156	60	58.7
16	243	56.9	126	3	20.2	-155	91	2.5
18	272	58.8	126	2	48.5	-155	121	6.4
20	302	.8	126	2	16.7	-154	151	10.2
22	331	3.1	127	1	44.9	-153	181	14.1
Δ							19	2

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-10 24.0	.7	16.1	T <sub>m</sub>	23 60	2.0	59.2
12	-10 16.1	T <sub>m</sub> ☉	12 h 10.3 min	Starost	12.9 d	Faza	☉

PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♂	13 30	.5	349	-4.4	♄	9 57	.0
♂	10 43	.1	31	1.2	♄	0 9	.0



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 31.9 - 3 21.1		169 46.0	159 8.4 12 59.4	199 24.7 -13 39.5		
2	207 32.2 - 3 19.2		199 51.0	189 14.6 12 59.5	229 25.8 -13 38.2		
4	237 32.5 - 3 17.2		229 55.9	219 20.9 12 59.6	259 26.9 -13 36.9		
6	267 32.9 - 3 15.2		260 .8	249 27.1 12 59.7	289 28.1 -13 35.6		
8	297 33.2 - 3 13.3		290 5.8	279 33.4 12 59.8	319 29.2 -13 34.2		
10	327 33.5 - 3 11.3		320 10.7	309 39.6 12 59.9	349 30.4 -13 32.9		
12	357 33.9 - 3 9.3		350 15.6	339 45.9 12 59.9	19 31.5 -13 31.6		
14	27 34.2 - 3 7.4		20 20.5	9 52.2 12 60.0	49 32.7 -13 30.2		
16	57 34.6 - 3 5.4		50 25.5	39 58.5 13 .0	79 33.8 -13 28.9		
18	87 34.9 - 3 3.4		80 30.4	70 4.8 13 .1	109 34.9 -13 27.6		
20	117 35.2 - 3 1.4		110 35.3	100 11.2 13 .1	139 36.1 -13 26.2		
22	147 35.6 - 2 59.5		140 40.3	130 17.5 13 .1	169 37.2 -13 24.9		
Δ	2 10			31 0	6 7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 29	17 53	0 41	2 21	19 3	3.9	6 8	.1
55	6 25	17 56	0 36	2 2	18 58	3.6	6 8	.4
50	6 22	17 59	0 32	1 48	18 54	3.3	6 9	.7
45	6 20	18 1	0 29	1 38	18 51	3.1	6 9	.9
40	6 18	18 3	0 27	1 30	18 49	2.9	6 9	1.0
35	6 16	18 4	0 25	1 24	18 46	2.7	6 10	1.2
30	6 15	18 6	0 24	1 19	18 44	2.6	6 10	1.3
20	6 12	18 8	0 22	1 13	18 41	2.3	6 10	1.6
10	6 9	18 11	0 21	1 10	18 38	2.1	6 11	1.8
0	6 7	18 13	0 21	1 9	18 36	1.9	6 11	2.0
10	6 4	18 16	0 21	1 10	18 33	1.8	6 11	2.2
20	6 1	18 19	0 22	1 14	18 30	1.6	6 11	2.4
30	5 58	18 22	0 24	1 20	18 27	1.3	6 12	2.6
35	5 56	18 24	0 25	1 26	18 25	1.2	6 12	2.7
40	5 53	18 26	0 27	1 32	18 23	1.1	6 12	2.9
45	5 51	18 28	0 30	1 41	18 21	.9	6 12	3.1
50	5 47	18 32	0 33	1 53	18 18	.7	6 13	3.3
55	5 43	18 35	0 37	2 9	18 15	.4	6 13	3.6
60	5 38	18 41	0 42	2 34	18 10	.1	6 14	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	0 5.4 127 1	13.2	-153		211 17.9 -16 52.8	358 44.4 6 45.1		
2	29 7.9 127 0	41.4	-152		241 21.8 -16 52.5	28 49.7 6 45.3		
4	58 10.5 127 0	9.7	-151		271 25.7 -16 52.2	58 55.0 6 45.5		
6	87 13.2 127 -0	21.9	-150		301 29.5 -16 51.9	89 .3 6 45.6		
8	116 16.0 127 -0	53.5	-149		331 33.4 -16 51.6	119 5.6 6 45.8		
10	145 18.9 127 -1	25.0	-148		1 37.2 -16 51.3	149 10.9 6 45.9		
12	174 21.8 127 -1	56.4	-147		31 41.1 -16 51.0	179 16.2 6 46.1		
14	203 24.9 127 -2	27.7	-146		61 44.9 -16 50.7	209 21.4 6 46.3		
16	232 28.0 126 -2	58.9	-144		91 48.8 -16 50.4	239 26.7 6 46.4		
18	261 31.2 126 -3	30.0	-143		121 52.7 -16 50.1	269 32.0 6 46.6		
20	290 34.4 126 -4	.9	-142		151 56.5 -16 49.8	299 37.3 6 46.7		
22	319 37.7 126 -4	31.8	-141		182 .4 -16 49.5	329 42.6 6 46.9		
Δ					19 2	26 1		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	-10 8.3	.7	16.1	T <sub>m</sub>	1.0	58.7	16.0		
12	-10 .3	T <sub>m</sub> ☉	12 h 10.0 min	Starost 13.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	13 26	.5	349	-4.4	♄	9 54	.0	43	-1.8
♂	10 42	.1	31	1.2	♅	0 5	.0	190	.7

13. MART

PETAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 35.9 - 2 57.5		170 45.2	160 23.9 13 .1	199 38.4 -13 23.6		
2	207 36.3 - 2 55.5		200 50.1	190 30.3 13 .1	229 39.5 -13 22.2		
4	237 36.6 - 2 53.6		230 55.0	220 36.7 13 .1	259 40.7 -13 20.9		
6	267 36.9 - 2 51.6		261 .0	250 43.1 13 .1	289 41.8 -13 19.6		
8	297 37.3 - 2 49.6		291 4.9	280 49.5 13 .0	319 43.0 -13 18.2		
10	327 37.6 - 2 47.7		321 9.8	310 56.0 13 .0	349 44.1 -13 16.9		
12	357 38.0 - 2 45.7		351 14.8	341 2.4 12 59.9	19 45.3 -13 15.5		
14	27 38.3 - 2 43.7		21 19.7	11 8.9 12 59.9	49 46.4 -13 14.2		
16	57 38.7 - 2 41.7		51 24.6	41 15.4 12 59.8	79 47.6 -13 12.9		
18	87 39.0 - 2 39.8		81 29.5	71 21.9 12 59.7	109 48.7 -13 11.5		
20	117 39.4 - 2 37.8		111 34.5	101 28.4 12 59.6	139 49.9 -13 10.2		
22	147 39.7 - 2 35.8		141 39.4	131 34.9 12 59.5	169 51.0 -13 8.8		
Δ	2 10			32 0	6 7		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 26	17 55	0 41	2 22	20 37	3.9	6 10	.1
55	6 23	17 58	0 36	2 2	20 23	3.5	6 18	.4
50	6 20	18 0	0 32	1 48	20 13	3.2	6 25	.7
45	6 18	18 2	0 29	1 38	20 4	3.0	6 30	.9
40	6 16	18 4	0 27	1 30	19 58	2.8	6 34	1.1
35	6 15	18 5	0 25	1 24	19 52	2.7	6 38	1.2
30	6 13	18 6	0 24	1 19	19 46	2.6	6 42	1.4
20	6 11	18 9	0 22	1 13	19 37	2.3	6 48	1.6
10	6 9	18 11	0 21	1 10	19 30	2.1	6 53	1.8
0	6 6	18 13	0 21	1 9	19 22	2.0	6 58	2.0
10	6 4	18 15	0 21	1 10	19 15	1.8	7 3	2.1
20	6 2	18 18	0 22	1 14	19 8	1.6	7 8	2.3
30	5 58	18 21	0 24	1 20	18 59	1.4	7 14	2.6
35	5 57	18 22	0 25	1 25	18 54	1.3	7 18	2.7
40	5 55	18 24	0 27	1 32	18 48	1.1	7 22	2.9
45	5 52	18 27	0 29	1 41	18 42	1.0	7 26	3.0
50	5 49	18 29	0 33	1 52	18 34	.7	7 32	3.3
55	5 45	18 33	0 37	2 8	18 25	.5	7 39	3.5
60	5 40	18 38	0 42	2 33	18 13	.1	7 48	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	348 41.0 126 -5	2.4	-139		212 4.2 -16 49.2	359 47.9 6 47.1		
2	17 44.3 125 -5	32.9	-138		242 8.1 -16 48.8	29 53.2 6 47.2		
4	46 47.7 125 -6	3.3	-136		272 12.0 -16 48.5	59 58.5 6 47.4		
6	75 51.0 125 -6	33.4	-135		302 15.8 -16 48.2	90 3.8 6 47.5		
8	104 54.4 124 -7	3.4	-133		332 19.7 -16 47.9	120 9.1 6 47.7		
10	133 57.8 124 -7	33.2	-132		2 23.6 -16 47.6	150 14.4 6 47.8		
12	163 1.1 123 -8	2.8	-130		32 27.4 -16 47.3	180 19.7 6 48.0		
14	192 4.5 123 -8	32.1	-129		62 31.3 -16 47.0	210 25.0 6 48.2		
16	221 7.8 122 -9	1.2	-127		92 35.1 -16 46.7	240 30.3 6 48.3		
18	250 11.1 122 -9	30.1	-125		122 39.0 -16 46.4	270 35.6 6 48.5		
20	279 14.3 121 -9	58.7	-123		152 42.9 -16 46.1	300 40.9 6 48.6		
22	308 17.6 121 -10	27.1	-122		182 46.7 -16 45.8	330 46.2 6 48.8		
Δ					19 2	26 1		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	-9 52.4	.7	16.1	T <sub>m</sub>	0 47	2.0	58.1	15.8	
12	-9 44.3	T <sub>m</sub> ☉	12 h 9.7 min	Starost 14.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	13 21</								

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177 40.0	- 2 33.9	171 44.3	161 41.5	12 59.4	199 52.2	-13 7.5
2	207 40.4	- 2 31.9	201 49.3	191 48.0	12 59.3	229 53.3	-13 6.1
4	237 40.7	- 2 29.9	231 54.2	221 54.6	12 59.2	259 54.5	-13 4.8
6	267 41.1	- 2 27.9	261 59.1	252 1.2	12 59.0	289 55.7	-13 3.4
8	297 41.4	- 2 26.0	292 4.0	282 7.8	12 58.9	319 56.8	-13 2.1
10	327 41.8	- 2 24.0	322 9.0	312 14.4	12 58.7	349 58.0	-13 .7
12	357 42.1	- 2 22.0	352 13.9	342 21.0	12 58.5	19 59.1	-12 59.4
14	27 42.5	- 2 20.1	22 18.8	12 27.7	12 58.3	50 .3	-12 58.0
16	57 42.8	- 2 18.1	52 23.8	42 34.3	12 58.1	80 1.5	-12 56.7
18	87 43.2	- 2 16.1	82 28.7	72 41.0	12 57.9	110 2.6	-12 55.3
20	117 43.5	- 2 14.1	112 33.6	102 47.7	12 57.7	140 3.8	-12 54.0
22	147 43.9	- 2 12.2	142 38.5	132 54.4	12 57.5	170 4.9	-12 52.6
Δ	2	10		33	-1	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 23	17 58	0 41	2 22	22 11	3.9	6 12	.2
55	6 20	17 60	0 36	2 3	21 48	3.5	6 29	.5
50	6 18	18 2	0 32	1 48	21 30	3.2	6 42	.8
45	6 16	18 3	0 29	1 38	21 17	3.0	6 52	1.0
40	6 15	18 5	0 27	1 30	21 6	2.8	7 0	1.2
35	6 13	18 6	0 25	1 24	20 56	2.7	7 8	1.3
30	6 12	18 7	0 24	1 20	20 48	2.5	7 14	1.4
20	6 10	18 9	0 22	1 13	20 33	2.3	7 25	1.6
10	6 8	18 11	0 21	1 10	20 21	2.2	7 35	1.8
0	6 6	18 13	0 21	1 9	20 10	2.0	7 45	2.0
10	6 4	18 15	0 21	1 10	19 58	1.9	7 54	2.2
20	6 2	18 17	0 22	1 14	19 46	1.7	8 4	2.3
30	5 59	18 19	0 24	1 20	19 32	1.5	8 16	2.5
35	5 57	18 21	0 25	1 25	19 24	1.4	8 23	2.7
40	5 56	18 23	0 27	1 32	19 15	1.2	8 30	2.8
45	5 53	18 25	0 29	1 40	19 5	1.1	8 39	3.0
50	5 51	18 27	0 32	1 52	18 52	.9	8 50	3.2
55	5 47	18 30	0 36	2 8	18 37	.6	9 4	3.5
60	5 43	18 35	0 42	2 32	18 16	.2	9 22	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	337 20.7	120 -10	55.2 -120		212 50.6	-16 45.5	0 51.4	6 49.0
2	6 23.8	120 -11	23.1 -118		242 54.5	-16 45.2	30 56.7	6 49.1
4	35 26.9	119 -11	50.6 -116		272 58.3	-16 44.9	61 2.0	6 49.3
6	64 29.9	119 -12	17.9 -114		303 2.2	-16 44.6	91 7.3	6 49.4
8	93 32.8	118 -12	44.9 -112		333 6.1	-16 44.3	121 12.6	6 49.6
10	122 35.7	117 -13	11.6 -110		3 10.0	-16 44.0	151 17.9	6 49.8
12	151 38.4	117 -13	38.0 -108		33 13.8	-16 43.7	181 23.2	6 49.9
14	180 41.1	116 -14	4.0 -106		63 17.7	-16 43.4	211 28.5	6 50.1
16	209 43.7	116 -14	29.7 -104		93 21.6	-16 43.1	241 33.8	6 50.2
18	238 46.2	115 -14	55.1 -102		123 25.4	-16 42.8	271 39.1	6 50.4
20	267 48.6	114 -15	20.1 -100		153 29.3	-16 42.5	301 44.4	6 50.5
22	296 50.9	114 -15	44.8 -98		183 33.2	-16 42.2	331 49.7	6 50.7
Δ					19	2	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	- 9 36.1	.7	16.1	T <sub>m</sub>	1 34	2.0	57.4 15.6
12	- 9 27.9	T <sub>m☉</sub>	12 h 9.5 min	Starost	15.9 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°		♄	h min	'	°	
♃	13 16	.5	350	-4.3	♄	9 47	.0	42	-1.8
♅	10 40	.1	29	1.2	♅	23 52	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	177 44.2	- 2 10.2	172 43.5	163 1.1	12 57.2	200 6.1	-12 51.2
2	207 44.6	- 2 8.2	202 48.4	193 7.8	12 57.0	230 7.3	-12 49.9
4	237 44.9	- 2 6.2	232 53.3	223 14.5	12 56.7	260 8.4	-12 48.5
6	267 45.3	- 2 4.3	262 58.3	253 21.3	12 56.5	290 9.6	-12 47.2
8	297 45.6	- 2 2.3	293 3.2	283 28.0	12 56.2	320 10.7	-12 45.8
10	327 46.0	- 2 .3	323 8.1	313 34.8	12 55.9	350 11.9	-12 44.4
12	357 46.3	- 1 58.3	353 13.0	343 41.6	12 55.6	20 13.1	-12 43.1
14	27 46.7	- 1 56.4	23 18.0	13 48.4	12 55.3	50 14.2	-12 41.7
16	57 47.1	- 1 54.4	53 22.9	43 55.2	12 54.9	80 15.4	-12 40.4
18	87 47.4	- 1 52.4	83 27.8	74 2.0	12 54.6	110 16.6	-12 39.0
20	117 47.8	- 1 50.4	113 32.7	104 8.8	12 54.3	140 17.8	-12 37.6
22	147 48.1	- 1 48.5	143 37.7	134 15.7	12 53.9	170 18.9	-12 36.3
Δ	2	10		34	-2	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 20	18 0	0 41	2 23	23 45	3.8	6 16	.3
55	6 18	18 2	0 36	2 3	23 11	3.3	6 42	.7
50	6 16	18 3	0 32	1 49	22 46	3.0	7 1	1.0
45	6 14	18 5	0 29	1 38	22 28	2.8	7 16	1.2
40	6 13	18 6	0 27	1 30	22 12	2.7	7 28	1.3
35	6 12	18 7	0 25	1 24	21 60	2.6	7 39	1.5
30	6 11	18 8	0 24	1 20	21 49	2.5	7 49	1.6
20	6 9	18 9	0 22	1 13	21 30	2.3	8 5	1.7
10	6 8	18 11	0 21	1 10	21 13	2.2	8 19	1.9
0	6 6	18 12	0 21	1 9	20 58	2.1	8 33	2.0
10	6 4	18 14	0 21	1 10	20 43	1.9	8 46	2.2
20	6 2	18 16	0 22	1 13	20 27	1.8	9 0	2.3
30	5 60	18 18	0 24	1 20	20 8	1.6	9 17	2.5
35	5 58	18 20	0 25	1 25	19 57	1.5	9 27	2.6
40	5 57	18 21	0 27	1 32	19 45	1.4	9 38	2.8
45	5 55	18 23	0 29	1 40	19 31	1.3	9 51	2.9
50	5 52	18 25	0 32	1 51	19 13	1.1	10 7	3.1
55	5 49	18 28	0 36	2 7	18 51	.8	10 28	3.4
60	5 45	18 31	0 42	2 31	18 21	.4	10 56	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	325 53.1	113 -16	9.2 -96		213 37.0	-16 41.9	1 55.0	6 50.9
2	354 55.1	112 -16	33.1 -93		243 40.9	-16 41.6	32 .3	6 51.0
4	23 57.1	112 -16	56.7 -91		273 44.8	-16 41.3	62 5.6	6 51.2
6	52 59.0	111 -17	20.0 -89		303 48.7	-16 41.0	92 10.9	6 51.3
8	82 .7	110 -17	42.8 -87		333 52.5	-16 40.7	122 16.1	6 51.5
10	111 2.3	110 -18	5.2 -84		3 56.4	-16 40.4	152 21.4	6 51.6
12	140 3.8	109 -18	27.3 -82		34 .3	-16 40.1	182 26.7	6 51.8
14	169 5.2	109 -18	48.9 -80		64 4.2	-16 39.8	212 32.0	6 52.0
16	198 6.4	108 -19	10.2 -77		94 8.0	-16 39.5	242 37.3	6 52.1
18	227 7.5	107 -19	31.0 -75		124 11.9	-16 39.2	272 42.6	6 52.3
20	256 8.5	107 -19	51.4 -72		154 15.8	-16 38.9	302 47.9	6 52.4
22	285 9.3	106 -20	11.4 -70		184 19.7	-16 38.6	332 53.2	6 52.6
Δ					19	2	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	- 9 19.6	.7	16.1	T <sub>m</sub>	2 21	2.0	56.6 15.4
12	- 9 11.3	T <sub>m☉</sub>	12 h 9.2 min	Starost	16.9 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°		♄	h min	'	°	
♃	13 10	.5	350	-4.3	♄	9 44	.0	42	-1.9
♅	10 39	.1	28						

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 48.5 - 1 46.5	173 42.6	164 22.5 12 53.5	200 20.1 -12 34.9			
2	207 48.8 - 1 44.5	203 47.5	194 29.4 12 53.2	230 21.3 -12 33.5			
4	237 49.2 - 1 42.5	233 52.5	224 36.3 12 52.8	260 22.4 -12 32.2			
6	267 49.5 - 1 40.6	263 57.4	254 43.2 12 52.4	290 23.6 -12 30.8			
8	297 49.9 - 1 38.6	294 2.3	284 50.1 12 52.0	320 24.8 -12 29.4			
10	327 50.3 - 1 36.6	324 7.2	314 57.0 12 51.6	350 25.9 -12 28.0			
12	357 50.6 - 1 34.6	354 12.2	345 4.0 12 51.1	20 27.1 -12 26.7			
14	27 51.0 - 1 32.7	24 17.1	15 10.9 12 50.7	50 28.3 -12 25.3			
16	57 51.3 - 1 30.7	54 22.0	45 17.9 12 50.2	80 29.5 -12 23.9			
18	87 51.7 - 1 28.7	84 27.0	75 24.8 12 49.8	110 30.6 -12 22.5			
20	117 52.0 - 1 26.7	114 31.9	105 31.8 12 49.3	140 31.8 -12 21.2			
22	147 52.4 - 1 24.8	144 36.8	135 38.8 12 48.8	170 33.0 -12 19.8			
Δ	2 10		35 -2	6 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 17	18 3	0 41	2 23	...	.0	6 23	.5
55	6 15	18 4	0 36	2 3	...	.0	6 59	1.0
50	6 14	18 5	0 32	1 49	23 59	2.8	7 24	1.2
45	6 13	18 6	0 29	1 38	23 36	2.6	7 44	1.4
40	6 12	18 7	0 27	1 30	23 17	2.5	8 0	1.5
35	6 11	18 8	0 25	1 24	23 2	2.5	8 14	1.6
30	6 10	18 8	0 24	1 20	22 48	2.4	8 26	1.7
20	6 8	18 10	0 22	1 13	22 25	2.3	8 47	1.9
10	6 7	18 11	0 21	1 10	22 6	2.2	9 5	2.0
0	6 6	18 12	0 21	1 9	21 47	2.1	9 21	2.1
10	6 4	18 14	0 21	1 10	21 29	2.0	9 38	2.2
20	6 2	18 15	0 22	1 13	21 10	1.9	9 56	2.3
30	6 0	18 17	0 24	1 20	20 47	1.8	10 17	2.5
35	5 59	18 18	0 25	1 25	20 34	1.7	10 30	2.5
40	5 58	18 19	0 27	1 31	20 19	1.7	10 44	2.6
45	5 56	18 21	0 29	1 40	20 2	1.6	11 1	2.8
50	5 54	18 23	0 32	1 51	19 40	1.4	11 22	2.9
55	5 51	18 25	0 36	2 7	19 11	1.2	11 49	3.2
60	5 48	18 28	0 42	2 30	18 30	.7	12 29	3.7

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	314 10.1 106 -20 30.9 -67	214 23.6 -16 38.3	2 58.5 6 52.7					
2	343 10.7 105 -20 50.0 -65	244 27.4 -16 38.0	33 3.8 6 52.9					
4	12 11.1 105 -21 8.7 -62	274 31.3 -16 37.7	63 9.1 6 53.1					
6	41 11.5 104 -21 26.9 -60	304 35.2 -16 37.4	93 14.4 6 53.2					
8	70 11.7 104 -21 44.7 -57	334 39.1 -16 37.1	123 19.7 6 53.4					
10	99 11.8 103 -22 2.0 -55	4 43.0 -16 36.8	153 24.9 6 53.5					
12	128 11.7 103 -22 18.8 -52	34 46.8 -16 36.5	183 30.2 6 53.7					
14	157 11.5 102 -22 35.2 -50	64 50.7 -16 36.2	213 35.5 6 53.8					
16	186 11.3 102 -22 51.1 -47	94 54.6 -16 35.9	243 40.8 6 54.0					
18	215 10.8 102 -23 6.5 -45	124 58.5 -16 35.6	273 46.1 6 54.1					
20	244 10.3 101 -23 21.5 -42	155 2.4 -16 35.3	303 51.4 6 54.3					
22	273 9.7 101 -23 35.9 -39	185 6.3 -16 35.0	333 56.7 6 54.5					
Δ		19 2	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	- 9 2.9	.7	16.1	T <sub>m</sub>	3 10	2.1	55.9 15.2		
12	- 8 54.4	T <sub>m☉</sub>	12 h 8.9 min	Starost 17.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	13 5	.5	350	-4.3	♃	9 41	.0	42	-1.9
♂	10 38	.1	28	1.2	♄	23 44	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 52.8 - 1 22.8	174 41.7	165 45.8 12 48.3	200 34.2 -12 18.4			
2	207 53.1 - 1 20.8	204 46.7	195 52.8 12 47.8	230 35.4 -12 17.0			
4	237 53.5 - 1 18.8	234 51.6	225 59.9 12 47.3	260 36.5 -12 15.7			
6	267 53.8 - 1 16.8	264 56.5	256 6.9 12 46.8	290 37.7 -12 14.3			
8	297 54.2 - 1 14.9	295 1.5	286 14.0 12 46.3	320 38.9 -12 12.9			
10	327 54.6 - 1 12.9	325 6.4	316 21.0 12 45.7	350 40.1 -12 11.5			
12	357 54.9 - 1 10.9	355 11.3	346 28.1 12 45.2	20 41.3 -12 10.1			
14	27 55.3 - 1 8.9	25 16.2	16 35.2 12 44.6	50 42.4 -12 8.8			
16	57 55.7 - 1 7.0	55 21.2	46 42.3 12 44.0	80 43.6 -12 7.4			
18	87 56.0 - 1 5.0	85 26.1	76 49.4 12 43.5	110 44.8 -12 6.0			
20	117 56.4 - 1 3.0	115 31.0	106 56.5 12 42.9	140 46.0 -12 4.6			
22	147 56.7 - 1 1.0	145 36.0	137 3.7 12 42.3	170 47.2 -12 3.2			
Δ	2 10		35 -3	6 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 14	18 5	0 42	2 24	1 17	3.5	6 34	.9
55	6 12	18 6	0 36	2 3	0 31	3.0	7 22	1.4
50	6 11	18 7	0 32	1 49	...	.0	7 54	1.6
45	6 11	18 7	0 29	1 38	...	.0	8 18	1.7
40	6 10	18 8	0 27	1 30	...	.0	8 37	1.8
35	6 9	18 8	0 25	1 24	...	.0	8 54	1.9
30	6 9	18 9	0 24	1 20	23 46	2.3	9 8	1.9
20	6 8	18 10	0 22	1 13	23 20	2.2	9 32	2.0
10	6 6	18 11	0 21	1 10	22 59	2.2	9 52	2.1
0	6 5	18 12	0 21	1 9	22 38	2.1	10 12	2.1
10	6 4	18 13	0 21	1 10	22 18	2.1	10 31	2.2
20	6 3	18 14	0 22	1 13	21 56	2.1	10 52	2.3
30	6 1	18 16	0 24	1 20	21 31	2.0	11 16	2.3
35	5 60	18 17	0 25	1 25	21 16	2.0	11 31	2.4
40	5 59	18 18	0 27	1 31	20 59	1.9	11 47	2.4
45	5 57	18 19	0 29	1 40	20 39	1.9	12 7	2.5
50	5 56	18 21	0 32	1 51	20 13	1.8	12 32	2.6
55	5 53	18 23	0 36	2 6	19 39	1.6	13 5	2.8
60	5 50	18 25	0 42	2 29	18 47	1.3	13 57	3.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	302 8.9 101 -23 49.9 -37	215 10.1 -16 34.7	4 2.0 6 54.6					
2	331 8.1 101 -24 3.4 -34	245 14.0 -16 34.4	34 7.3 6 54.8					
4	0 7.1 101 -24 16.4 -32	275 17.9 -16 34.1	64 12.6 6 54.9					
6	29 6.0 100 -24 28.9 -29	305 21.8 -16 33.8	94 17.9 6 55.1					
8	58 4.9 100 -24 40.9 -26	335 25.7 -16 33.5	124 23.2 6 55.2					
10	87 3.6 100 -24 52.3 -24	5 29.6 -16 33.2	154 28.4 6 55.4					
12	116 2.3 100 -25 3.3 -21	35 33.5 -16 32.9	184 33.7 6 55.5					
14	145 .8 100 -25 13.8 -19	65 37.3 -16 32.6	214 39.0 6 55.7					
16	173 59.3 100 -25 23.7 -16	95 41.2 -16 32.3	244 44.3 6 55.9					
18	202 57.8 100 -25 33.2 -13	125 45.1 -16 32.0	274 49.6 6 56.0					
20	231 56.1 100 -25 42.1 -11	155 49.0 -16 31.7	304 54.9 6 56.2					
22	260 54.4 100 -25 50.5 -8	185 52.9 -16 31.4	335 .2 6 56.3					
Δ		19 1	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	- 8 45.9	.7	16.1	T <sub>m</sub>	3 60	2.1	55.3 15.1		
12	- 8 37.3	T <sub>m☉</sub>	12 h 8.6 min	Starost 18.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	12 59	.5	351	-4.2	♃	9 38	.0	41	-1.9
♂	10 37	.1	27	1.2	♄	23 40	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 57.1 - 0 59.1	175 40.9	167 10.8 12 41.6	200 48.4 -12 1.8			
2	207 57.5 - 0 57.1	205 45.8	197 17.9 12 41.0	230 49.5 -12 .4			
4	237 57.8 - 0 55.1	235 50.7	227 25.1 12 40.4	260 50.7 -11 59.0			
6	267 58.2 - 0 53.1	265 55.7	257 32.3 12 39.7	290 51.9 -11 57.7			
8	297 58.6 - 0 51.1	296 .6	287 39.5 12 39.1	320 53.1 -11 56.3			
10	327 58.9 - 0 49.2	326 5.5	317 46.7 12 38.4	350 54.3 -11 54.9			
12	357 59.3 - 0 47.2	356 10.5	347 53.9 12 37.7	20 55.5 -11 53.5			
14	27 59.6 - 0 45.2	26 15.4	18 1.1 12 37.0	50 56.7 -11 52.1			
16	58 .0 - 0 43.2	56 20.3	48 8.3 12 36.3	80 57.9 -11 50.7			
18	88 .4 - 0 41.3	86 25.2	78 15.5 12 35.6	110 59.0 -11 49.3			
20	118 .7 - 0 39.3	116 30.2	108 22.8 12 34.9	141 .2 -11 47.9			
22	148 1.1 - 0 37.3	146 35.1	138 30.0 12 34.2	171 1.4 -11 46.5			
Δ	2 10		36 -3	6 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 11	18 7	0 42	2 24	2 41	2.7	6 57	1.7
55	6 10	18 8	0 36	2 4	1 43	2.5	7 55	1.9
50	6 9	18 8	0 32	1 49	1 6	2.4	8 32	2.0
45	6 9	18 9	0 29	1 39	0 39	2.4	8 59	2.0
40	6 8	18 9	0 27	1 31	0 18	2.3	9 20	2.1
35	6 8	18 9	0 25	1 24	0 1	2.3	9 38	2.1
30	6 8	18 10	0 24	1 20	...	.0	9 53	2.1
20	6 7	18 10	0 22	1 13	...	.0	10 19	2.1
10	6 6	18 11	0 21	1 10	23 51	2.1	10 42	2.1
0	6 5	18 12	0 21	1 9	23 29	2.1	11 3	2.1
10	6 4	18 12	0 21	1 10	23 8	2.1	11 24	2.1
20	6 3	18 13	0 22	1 13	22 45	2.1	11 46	2.2
30	6 2	18 15	0 24	1 20	22 19	2.2	12 12	2.2
35	6 1	18 15	0 25	1 25	22 4	2.2	12 28	2.2
40	5 60	18 16	0 27	1 31	21 46	2.2	12 46	2.2
45	5 59	18 17	0 29	1 39	21 24	2.2	13 7	2.2
50	5 57	18 19	0 32	1 50	20 56	2.2	13 34	2.2
55	5 55	18 20	0 36	2 6	20 19	2.2	14 12	2.2
60	5 53	18 22	0 42	2 28	19 18	2.2	15 12	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	289 52.7 101 -25 58.4 -5	215 56.8 -16 31.1	5 5.5	6 56.5				
2	318 50.9 101 -26 5.8 -3	246 .7 -16 30.8	35 10.8	6 56.6				
4	347 49.0 101 -26 12.6 0	276 4.6 -16 30.5	65 16.1	6 56.8				
6	16 47.1 101 -26 19.0 2	306 8.5 -16 30.2	95 21.3	6 56.9				
8	45 45.2 102 -26 24.8 5	336 12.4 -16 29.9	125 26.6	6 57.1				
10	74 43.3 102 -26 30.0 8	6 16.3 -16 29.6	155 31.9	6 57.3				
12	103 41.3 102 -26 34.8 10	36 20.1 -16 29.3	185 37.2	6 57.4				
14	132 39.3 103 -26 39.0 13	66 24.0 -16 29.0	215 42.5	6 57.6				
16	161 37.4 103 -26 42.7 15	96 27.9 -16 28.7	245 47.8	6 57.7				
18	190 35.4 104 -26 45.9 18	126 31.8 -16 28.4	275 53.1	6 57.9				
20	219 33.5 104 -26 48.5 21	156 35.7 -16 28.1	305 58.4	6 58.0				
22	248 31.5 105 -26 50.6 23	186 39.6 -16 27.8	336 3.7	6 58.2				
Δ		19 1	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 8 28.8	.7	16.1	T <sub>m</sub>	4 50	2.2	54.8 14.9		
12	- 8 20.1	T <sub>m☉</sub>	12 h 8.3 min	Starost	19.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	12 54	.5	351	-4.2	♄	9 35	.0	41	-1.9
♂	10 36	.1	26	1.2	♂	23 35	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 1.5 - 0 35.3	176 40.0	168 37.3 12 33.4	201 2.6 -11 45.1			
2	208 1.8 - 0 33.3	206 44.9	198 44.6 12 32.7	231 3.8 -11 43.7			
4	238 2.2 - 0 31.4	236 49.9	228 51.9 12 31.9	261 5.0 -11 42.3			
6	268 2.6 - 0 29.4	266 54.8	258 59.2 12 31.1	291 6.2 -11 40.9			
8	298 2.9 - 0 27.4	296 59.7	289 6.5 12 30.3	321 7.4 -11 39.5			
10	328 3.3 - 0 25.4	327 4.7	319 13.8 12 29.5	351 8.6 -11 38.1			
12	358 3.7 - 0 23.5	357 9.6	349 21.1 12 28.7	21 9.8 -11 36.7			
14	28 4.0 - 0 21.5	27 14.5	19 28.4 12 27.9	51 11.0 -11 35.3			
16	58 4.4 - 0 19.5	57 19.4	49 35.8 12 27.1	81 12.2 -11 33.9			
18	88 4.8 - 0 17.5	87 24.4	79 43.1 12 26.3	111 13.4 -11 32.5			
20	118 5.2 - 0 15.6	117 29.3	109 50.5 12 25.4	141 14.6 -11 31.1			
22	148 5.5 - 0 13.6	147 34.2	139 57.8 12 24.6	171 15.8 -11 29.7			
Δ	2 10		37 -4	6 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 8	18 10	0 42	2 25	3 45	1.7	7 38	2.7
55	6 7	18 10	0 36	2 4	2 42	1.9	8 41	2.5
50	6 7	18 10	0 32	1 49	2 4	2.0	9 20	2.4
45	6 7	18 10	0 29	1 39	1 36	2.0	9 48	2.3
40	6 7	18 10	0 27	1 31	1 14	2.0	10 10	2.3
35	6 7	18 10	0 25	1 24	0 56	2.0	10 28	2.3
30	6 6	18 10	0 24	1 20	0 40	2.1	10 44	2.2
20	6 6	18 11	0 22	1 13	0 13	2.1	11 10	2.2
10	6 5	18 11	0 21	1 10	...	.0	11 33	2.1
0	6 5	18 11	0 21	1 9	...	.0	11 54	2.1
10	6 4	18 12	0 21	1 10	23 59	2.1	12 15	2.1
20	6 3	18 13	0 22	1 13	23 37	2.2	12 38	2.0
30	6 2	18 13	0 24	1 20	23 11	2.3	13 4	2.0
35	6 2	18 14	0 25	1 25	22 56	2.3	13 20	1.9
40	6 1	18 15	0 27	1 31	22 38	2.4	13 38	1.9
45	5 60	18 15	0 29	1 39	22 16	2.5	13 60	1.8
50	5 59	18 16	0 32	1 50	21 49	2.6	14 27	1.7
55	5 57	18 18	0 36	2 5	21 12	2.7	15 5	1.6
60	5 55	18 19	0 42	2 27	20 12	3.1	16 5	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	277 29.6 105 -26 52.2 26	216 43.5 -16 27.5	6 8.9	6 58.3				
2	306 27.7 106 -26 53.3 28	246 47.4 -16 27.2	36 14.2	6 58.5				
4	335 25.9 106 -26 53.8 31	276 51.3 -16 26.9	66 19.5	6 58.6				
6	4 24.1 107 -26 53.9 33	306 55.2 -16 26.6	96 24.8	6 58.8				
8	33 22.4 108 -26 53.4 36	336 59.1 -16 26.3	126 30.1	6 58.9				
10	62 20.7 108 -26 52.3 38	7 3.0 -16 26.0	156 35.4	6 59.1				
12	91 19.1 109 -26 50.8 40	37 6.9 -16 25.7	186 40.7	6 59.2				
14	120 17.6 110 -26 48.7 43	67 10.8 -16 25.4	216 46.0	6 59.4				
16	149 16.1 111 -26 46.1 45	97 14.7 -16 25.1	246 51.3	6 59.6				
18	178 14.8 111 -26 43.1 48	127 18.6 -16 24.8	276 56.5	6 59.7				
20	207 13.5 112 -26 39.5 50	157 22.5 -16 24.6	307 1.8	6 59.9				
22	236 12.3 113 -26 35.3 52	187 26.4 -16 24.3	337 7.1	7 .0				
Δ		20 1	26 1					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 8 11.4	.7	16.1	T <sub>m</sub>	5 42	2.1	54.4 14.8		
12	- 8 2.6	T <sub>m☉</sub>	12 h 8.0 min	Starost	20.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	12 48	.5	351	-4.2	♄	9 32	.0	41	-1.9
♂	10 35	.1	25	1.2	♂	23 31	.0	190	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178	5.9	-0	11.6	177	39.2	
2	208	6.3	-0	9.6	207	44.1	
4	238	6.6	-0	7.6	237	49.0	
6	268	7.0	-0	5.7	267	53.9	
8	298	7.4	-0	3.7	297	58.9	
10	328	7.7	-0	1.7	328	3.8	
12	358	8.1	0	.3	358	8.7	
14	28	8.5	0	2.2	28	13.7	
16	58	8.8	0	4.2	58	18.6	
18	88	9.2	0	6.2	88	23.5	
20	118	9.6	0	8.2	118	28.4	
22	148	10.0	0	10.1	148	33.4	
Δ	2	10			37	-5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 5	18 12	0 42	2 26	4 26	.9	8 44	3.4
55	6 5	18 12	0 36	2 4	3 28	1.3	9 41	2.9
50	6 5	18 11	0 32	1 50	2 51	1.5	10 17	2.7
45	6 5	18 11	0 29	1 39	2 24	1.7	10 44	2.6
40	6 5	18 11	0 27	1 31	2 3	1.7	11 5	2.5
35	6 5	18 11	0 25	1 25	1 45	1.8	11 22	2.4
30	6 5	18 11	0 24	1 20	1 30	1.9	11 37	2.3
20	6 5	18 11	0 22	1 13	1 4	1.9	12 2	2.2
10	6 5	18 11	0 21	1 10	0 41	2.0	12 24	2.1
0	6 4	18 11	0 21	1 9	0 20	2.1	12 45	2.0
10	6 4	18 11	0 21	1 10	...	.0	13 5	2.0
20	6 4	18 12	0 22	1 13	...	.0	13 26	1.9
30	6 3	18 12	0 24	1 20	...	.0	13 51	1.8
35	6 2	18 13	0 25	1 25	23 52	2.4	14 6	1.7
40	6 2	18 13	0 27	1 31	23 35	2.5	14 23	1.6
45	6 1	18 14	0 29	1 39	23 15	2.6	14 43	1.5
50	6 0	18 14	0 32	1 50	22 50	2.8	15 9	1.3
55	5 59	18 15	0 36	2 5	22 17	3.0	15 43	1.1
60	5 58	18 16	0 42	2 26	21 26	3.5	16 35	.7

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	265	11.2	114	-26	30.7	55	217	30.3
2	294	10.3	115	-26	25.6	57	247	34.2
4	323	9.4	116	-26	20.0	59	277	38.1
6	352	8.7	116	-26	13.9	61	307	42.0
8	21	8.1	117	-26	7.3	64	337	45.9
10	50	7.7	118	-26	.2	66	7	49.9
12	79	7.4	119	-25	52.6	68	37	53.8
14	108	7.2	120	-25	44.5	70	67	57.7
16	137	7.2	121	-25	35.9	72	98	1.6
18	166	7.3	122	-25	26.9	74	128	5.5
20	195	7.6	123	-25	17.4	76	158	9.4
22	224	8.0	124	-25	7.4	78	188	13.3
Δ							20	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-7 53.9	.7	16.1	T <sub>m</sub>	6 33	2.0	54.3
12	-7 45.1	T <sub>m☉</sub>	12 h 7.8 min	Starost 21.9 d Faza ☉			

PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
h min	'	°	°	°	h min	'	°
♀	12 42	.5	352	-4.1	♃	9 29	.0
♂	10 34	.1	25	1.2	♄	23 27	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178	10.3	0	12.1	178	38.3	
2	208	10.7	0	14.1	208	43.2	
4	238	11.1	0	16.1	238	48.2	
6	268	11.4	0	18.0	268	53.1	
8	298	11.8	0	20.0	298	58.0	
10	328	12.2	0	22.0	329	2.9	
12	358	12.6	0	24.0	359	7.9	
14	28	12.9	0	25.9	29	12.8	
16	58	13.3	0	27.9	59	17.7	
18	88	13.7	0	29.9	89	22.7	
20	118	14.0	0	31.9	119	27.6	
22	148	14.4	0	33.8	149	32.5	
Δ	2	10			38	-5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 2	18 15	0 42	2 27	4 47	.5	10 5	3.6
55	6 2	18 14	0 36	2 5	3 59	.9	10 51	3.1
50	6 3	18 13	0 32	1 50	3 28	1.2	11 22	2.9
45	6 3	18 13	0 29	1 39	3 4	1.3	11 45	2.7
40	6 3	18 12	0 27	1 31	2 44	1.5	12 4	2.6
35	6 4	18 12	0 25	1 25	2 28	1.6	12 19	2.5
30	6 4	18 11	0 24	1 20	2 14	1.7	12 33	2.4
20	6 4	18 11	0 22	1 13	1 50	1.8	12 56	2.2
10	6 4	18 11	0 21	1 10	1 29	1.9	13 15	2.1
0	6 4	18 11	0 21	1 9	1 10	2.0	13 34	2.0
10	6 4	18 11	0 21	1 10	0 51	2.1	13 52	1.8
20	6 4	18 11	0 22	1 13	0 30	2.2	14 11	1.7
30	6 3	18 11	0 24	1 20	0 6	2.3	14 33	1.6
35	6 3	18 11	0 25	1 24	...	.0	14 46	1.5
40	6 3	18 11	0 27	1 31	...	.0	15 1	1.4
45	6 2	18 12	0 29	1 39	...	.0	15 19	1.2
50	6 2	18 12	0 32	1 49	23 58	2.9	15 41	1.0
55	6 1	18 13	0 36	2 4	23 30	3.2	16 10	.8
60	6 0	18 13	0 41	2 25	22 50	3.6	16 50	.4

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	253	8.6	124	-24	56.9	81	218	17.2
2	282	9.4	125	-24	46.0	83	248	21.1
4	311	10.3	126	-24	34.7	85	278	25.0
6	340	11.4	127	-24	22.8	86	308	28.9
8	9	12.7	128	-24	10.6	88	338	32.9
10	38	14.2	129	-23	57.8	90	8	36.8
12	67	15.8	130	-23	44.7	92	38	40.7
14	96	17.6	131	-23	31.1	94	68	44.6
16	125	19.6	132	-23	17.1	96	98	48.5
18	154	21.7	132	-23	2.6	98	128	52.4
20	183	24.1	133	-22	47.7	99	158	56.3
22	212	26.6	134	-22	32.4	101	189	.3
Δ							20	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	-7 36.3	.7	16.1	T <sub>m</sub>	7 22	2.0	54.2
12	-7 27.4	T <sub>m☉</sub>	12 h 7.5 min	Starost 22.9 d Faza ☉			

PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
h min	'	°	°	°	h min	'	°
♀	12 37	.5	352	-4.1	♃	9 26	.0
♂	10 33	.1	24	1.2	♄	23 23	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 14.8	0 35.8	179 37.4	173 4.4	11 60.0	201 45.9	-10 54.3
2	208 15.2	0 37.8	209 42.4	203 12.0	11 58.8	231 47.2	-10 52.9
4	238 15.5	0 39.8	239 47.3	233 19.6	11 57.7	261 48.4	-10 51.5
6	268 15.9	0 41.7	269 52.2	263 27.1	11 56.6	291 49.6	-10 50.1
8	298 16.3	0 43.7	299 57.2	293 34.7	11 55.4	321 50.8	-10 48.6
10	328 16.7	0 45.7	330 2.1	323 42.3	11 54.3	351 52.0	-10 47.2
12	358 17.0	0 47.7	0 7.0	353 49.8	11 53.1	21 53.2	-10 45.8
14	28 17.4	0 49.6	30 11.9	23 57.4	11 52.0	51 54.4	-10 44.3
16	58 17.8	0 51.6	60 16.9	54 5.0	11 50.8	81 55.7	-10 42.9
18	88 18.2	0 53.6	90 21.8	84 12.6	11 49.6	111 56.9	-10 41.5
20	118 18.5	0 55.6	120 26.7	114 20.2	11 48.4	141 58.1	-10 40.1
22	148 18.9	0 57.5	150 31.6	144 27.8	11 47.2	171 59.3	-10 38.6
Δ	2	10		38	-6	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 58	18 17	0 42	2 27	4 58	.3	11 32	3.7
55	5 60	18 16	0 36	2 5	4 22	.7	12 7	3.2
50	6 1	18 15	0 32	1 50	3 56	.9	12 31	3.0
45	6 1	18 14	0 29	1 39	3 36	1.1	12 50	2.8
40	6 2	18 13	0 27	1 31	3 20	1.3	13 5	2.6
35	6 2	18 13	0 25	1 25	3 6	1.4	13 18	2.5
30	6 3	18 12	0 24	1 20	2 54	1.5	13 30	2.4
20	6 3	18 11	0 22	1 13	2 33	1.6	13 49	2.2
10	6 4	18 11	0 21	1 10	2 15	1.8	14 5	2.0
0	6 4	18 10	0 21	1 9	1 58	1.9	14 21	1.9
10	6 4	18 10	0 21	1 10	1 41	2.1	14 36	1.7
20	6 4	18 10	0 22	1 13	1 23	2.2	14 52	1.6
30	6 4	18 10	0 24	1 20	1 2	2.4	15 11	1.4
35	6 4	18 10	0 25	1 24	0 50	2.5	15 22	1.3
40	6 4	18 10	0 27	1 31	0 36	2.6	15 34	1.2
45	6 4	18 10	0 29	1 39	0 19	2.7	15 48	1.0
50	6 3	18 10	0 32	1 49	...	.0	16 6	.8
55	6 3	18 10	0 36	2 4	...	.0	16 28	.6
60	6 3	18 10	0 41	2 25	...	.0	16 59	.2

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	241 29.3	135 -22	16.7	103	219 4.2	-16 16.8	9 19.2	7 3.8
2	270 32.2	136 -22	.6	105	249 8.1	-16 16.6	39 24.5	7 3.9
4	299 35.3	136 -21	44.1	106	279 12.0	-16 16.3	69 29.8	7 4.1
6	328 38.5	137 -21	27.2	108	309 15.9	-16 16.0	99 35.1	7 4.2
8	357 42.0	138 -21	9.9	110	339 19.8	-16 15.7	129 40.4	7 4.4
10	26 45.6	139 -20	52.2	111	9 23.8	-16 15.4	159 45.6	7 4.5
12	55 49.4	139 -20	34.1	113	39 27.7	-16 15.1	189 50.9	7 4.7
14	84 53.3	140 -20	15.7	114	69 31.6	-16 14.8	219 56.2	7 4.8
16	113 57.4	141 -19	56.9	116	99 35.5	-16 14.5	250 1.5	7 5.0
18	143 1.7	141 -19	37.7	117	129 39.5	-16 14.2	280 6.8	7 5.1
20	172 6.2	142 -19	18.2	119	159 43.4	-16 13.9	310 12.1	7 5.3
22	201 10.9	142 -18	58.3	120	189 47.3	-16 13.6	340 17.3	7 5.4
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 7 18.5	.7	16.1	T <sub>m</sub>	8 10	1.9	54.4	14.8	
12	- 7 9.6	T <sub>m</sub> ☉	12 h 7.2 min	Starost 23.9 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	12 31	.5	353	-4.1	♃	9 22	.0	40	-1.9
♁	10 33	.1	23	1.2	♄	23 19	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 19.3	0 59.5	180 36.6	174 35.4	11 46.0	202 .5 -10	37.2
2	208 19.7	1 1.5	210 41.5	204 43.0	11 44.8	232 1.8 -10	35.8
4	238 20.0	1 3.4	240 46.4	234 50.6	11 43.5	262 3.0 -10	34.3
6	268 20.4	1 5.4	270 51.4	264 58.3	11 42.3	292 4.2 -10	32.9
8	298 20.8	1 7.4	300 56.3	295 5.9	11 41.1	322 5.4 -10	31.5
10	328 21.2	1 9.4	331 1.2	325 13.5	11 39.8	352 6.7 -10	30.0
12	358 21.5	1 11.3	1 6.1	355 21.1	11 38.5	22 7.9 -10	28.6
14	28 21.9	1 13.3	31 11.1	25 28.8	11 37.3	52 9.1 -10	27.1
16	58 22.3	1 15.3	61 16.0	55 36.4	11 36.0	82 10.3 -10	25.7
18	88 22.7	1 17.2	91 20.9	85 44.1	11 34.7	112 11.6 -10	24.3
20	118 23.0	1 19.2	121 25.9	115 51.7	11 33.4	142 12.8 -10	22.8
22	148 23.4	1 21.2	151 30.8	145 59.3	11 32.1	172 14.0 -10	21.4
Δ	2	10		38	-6	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 55	18 20	0 42	2 28	5 4	.2	12 60	3.6
55	5 57	18 18	0 36	2 6	4 38	.5	13 24	3.3
50	5 58	18 16	0 32	1 51	4 18	.8	13 42	3.0
45	5 59	18 15	0 29	1 39	4 3	1.0	13 56	2.8
40	6 0	18 14	0 27	1 31	3 50	1.1	14 8	2.6
35	6 1	18 13	0 25	1 25	3 39	1.2	14 18	2.5
30	6 1	18 13	0 24	1 20	3 29	1.3	14 27	2.4
20	6 2	18 12	0 22	1 13	3 13	1.5	14 41	2.0
10	6 3	18 11	0 21	1 10	2 58	1.7	14 54	2.2
0	6 4	18 10	0 21	1 9	2 44	1.9	15 6	1.8
10	6 4	18 10	0 21	1 10	2 31	2.0	15 18	1.7
20	6 4	18 9	0 22	1 13	2 16	2.2	15 30	1.5
30	6 5	18 9	0 24	1 20	1 59	2.4	15 45	1.3
35	6 5	18 8	0 25	1 24	1 49	2.5	15 53	1.2
40	6 5	18 8	0 27	1 30	1 38	2.6	16 2	1.1
45	6 5	18 8	0 29	1 38	1 25	2.8	16 13	.9
50	6 5	18 8	0 32	1 49	1 8	3.0	16 26	.7
55	6 5	18 7	0 36	2 3	0 47	3.3	16 42	.5
60	6 5	18 7	0 41	2 24	0 19	3.6	17 4	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	230 15.7	143 -18	38.0	121	219 51.2	-16 13.3	10 22.6	7 5.6
2	259 20.6	143 -18	17.4	123	249 55.1	-16 13.0	40 27.9	7 5.7
4	288 25.7	144 -17	56.5	124	279 59.1	-16 12.7	70 33.2	7 5.9
6	317 31.0	144 -17	35.2	125	310 3.0	-16 12.4	100 38.5	7 6.0
8	346 36.4	145 -17	13.6	127	340 6.9	-16 12.1	130 43.7	7 6.2
10	15 42.0	145 -16	51.7	128	10 10.8	-16 11.8	160 49.0	7 6.3
12	44 47.7	145 -16	29.5	129	40 14.8	-16 11.6	190 54.3	7 6.5
14	73 53.5	146 -16	6.9	130	70 18.7	-16 11.3	220 59.6	7 6.6
16	102 59.5	146 -15	44.1	131	100 22.6	-16 11.0	251 4.9	7 6.8
18	132 5.6	146 -15	20.9	132	130 26.6	-16 10.7	281 10.1	7 6.9
20	161 11.8	147 -14	57.5	133	160 30.5	-16 10.4	311 15.4	7 7.0
22	190 18.2	147 -14	33.8	134	190 34.4	-16 10.1	341 20.7	7 7.2
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 7 .6	.7	16.1	T <sub>m</sub>	8 55	1.9	54.7	14.9	
12	- 6 51.7	T <sub>m</sub> ☉	12 h 6.9 min	Starost 24.9 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	12 25	.5	353	-4.1	♃	9 19	.0	40	-1.9
♁	10 32	.1	22	1.2	♄	23 14	.0	191	

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.8	1 23.2	181 35.7	176 7.0	11 30.8	202 15.2	-10 20.0
2	208 24.2	1 25.1	211 40.6	206 14.6	11 29.4	232 16.5	-10 18.5
4	238 24.5	1 27.1	241 45.6	236 22.3	11 28.1	262 17.7	-10 17.1
6	268 24.9	1 29.1	271 50.5	266 30.0	11 26.7	292 18.9	-10 15.6
8	298 25.3	1 31.0	301 55.4	296 37.6	11 25.4	322 20.2	-10 14.2
10	328 25.7	1 33.0	332 59.4	326 45.3	11 24.0	352 21.4	-10 12.7
12	358 26.0	1 35.0	2 5.3	356 53.0	11 22.7	22 22.6	-10 11.3
14	28 26.4	1 36.9	32 10.2	27 6	11 21.3	52 23.9	-10 9.9
16	58 26.8	1 38.9	62 15.1	57 8.3	11 19.9	82 25.1	-10 8.4
18	88 27.2	1 40.9	92 20.1	87 16.0	11 18.5	112 26.3	-10 7.0
20	118 27.5	1 42.8	122 25.0	117 23.6	11 17.1	142 27.5	-10 5.5
22	148 27.9	1 44.8	152 29.9	147 31.3	11 15.7	172 28.8	-10 4.1
Δ	2	10		38	-7	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 52	18 22	0 42	2 29	5 8	.1	14 27	3.6
55	5 55	18 20	0 36	2 6	4 50	.4	14 43	3.3
50	5 56	18 18	0 32	1 51	4 36	.7	14 54	3.0
45	5 58	18 16	0 29	1 40	4 25	.9	15 4	2.8
40	5 59	18 15	0 27	1 31	4 16	1.0	15 11	2.7
35	5 60	18 14	0 25	1 25	4 8	1.1	15 18	2.5
30	6 0	18 13	0 24	1 20	4 2	1.3	15 23	2.4
20	6 2	18 12	0 22	1 13	3 50	1.5	15 33	2.2
10	6 2	18 11	0 21	1 10	3 39	1.6	15 42	2.0
0	6 3	18 10	0 21	1 9	3 29	1.8	15 50	1.8
10	6 4	18 9	0 21	1 10	3 19	2.0	15 58	1.6
20	6 5	18 8	0 22	1 13	3 8	2.2	16 6	1.4
30	6 5	18 7	0 24	1 20	2 56	2.4	16 16	1.2
35	6 6	18 7	0 25	1 24	2 49	2.5	16 21	1.1
40	6 6	18 7	0 27	1 30	2 41	2.6	16 27	1.0
45	6 6	18 6	0 29	1 38	2 31	2.8	16 35	.8
50	6 7	18 6	0 32	1 49	2 20	3.0	16 43	.6
55	6 7	18 5	0 36	2 3	2 5	3.3	16 53	.4
60	6 8	18 4	0 41	2 23	1 46	3.6	17 7	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	219 24.6	147 -14	9.8	135	220 38.4	-16 9.8	11 26.0	7 7.3
2	248 31.2	147 -13	45.5	136	250 42.3	-16 9.5	41 31.2	7 7.5
4	277 37.9	147 -13	21.0	137	280 46.2	-16 9.2	71 36.5	7 7.6
6	306 44.6	147 -12	56.1	138	310 50.1	-16 8.9	101 41.8	7 7.8
8	335 51.5	147 -12	31.1	139	340 54.1	-16 8.6	131 47.1	7 7.9
10	4 58.4	147 -12	5.8	140	10 58.0	-16 8.3	161 52.4	7 8.1
12	34 5.5	147 -11	40.2	141	41 1.9	-16 8.0	191 57.6	7 8.2
14	63 12.6	147 -11	14.4	141	71 5.9	-16 7.7	222 2.9	7 8.4
16	92 19.7	147 -10	48.4	142	101 9.8	-16 7.5	252 8.2	7 8.5
18	121 26.9	147 -10	22.1	143	131 13.8	-16 7.2	282 13.5	7 8.7
20	150 34.2	147 -9	55.6	144	161 17.7	-16 6.9	312 18.7	7 8.8
22	179 41.5	147 -9	28.9	144	191 21.6	-16 6.6	342 24.0	7 8.9
Δ					20	1	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 6 42.7	.8	16.1	T <sub>m</sub>	9 40	1.8	55.2
12	- 6 33.7	T <sub>m</sub> ☉	12 h 6.6 min	Starost	25.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	' / "	°	' / "	♃	h min	' / "
♃	12 19	.5	354	-4.0	♄	9 16	.0
♄	10 31	.1	22	1.2	♅	23 10	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 28.3	1 46.8	182 34.9	177 39.0	11 14.3	202 30.0	-10 2.6
2	208 28.7	1 48.7	212 39.8	207 46.7	11 12.9	232 31.3	-10 1.2
4	238 29.0	1 50.7	242 44.7	237 54.4	11 11.4	262 32.5	-9 59.7
6	268 29.4	1 52.7	272 49.6	268 2.0	11 10.0	292 33.7	-9 58.3
8	298 29.8	1 54.6	302 54.6	298 9.7	11 8.5	322 35.0	-9 56.8
10	328 30.2	1 56.6	332 59.5	328 17.4	11 7.1	352 36.2	-9 55.4
12	358 30.6	1 58.6	3 4.4	358 25.1	11 5.6	22 37.4	-9 53.9
14	28 30.9	2 5	33 9.4	28 32.8	11 4.2	52 38.7	-9 52.5
16	58 31.3	2 2.5	63 14.3	58 40.4	11 2.7	82 39.9	-9 51.0
18	88 31.7	2 4.5	93 19.2	88 48.1	11 1.2	112 41.2	-9 49.6
20	118 32.1	2 6.4	123 24.1	118 55.8	10 59.7	142 42.4	-9 48.1
22	148 32.4	2 8.4	153 29.1	149 3.5	10 58.2	172 43.6	-9 46.7
Δ	2	10		38	-7	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 49	18 25	0 42	2 30	5 10	.1	15 54	3.7
55	5 52	18 22	0 36	2 7	5 0	.4	16 1	3.3
50	5 54	18 19	0 32	1 51	4 52	.6	16 7	3.1
45	5 56	18 18	0 29	1 40	4 46	.8	16 11	2.9
40	5 57	18 16	0 27	1 31	4 41	1.0	16 15	2.7
35	5 58	18 15	0 25	1 25	4 36	1.1	16 18	2.5
30	5 59	18 14	0 24	1 20	4 32	1.2	16 21	2.4
20	6 1	18 12	0 22	1 13	4 25	1.4	16 25	2.2
10	6 2	18 11	0 21	1 10	4 18	1.6	16 29	2.0
0	6 3	18 10	0 21	1 9	4 13	1.8	16 33	1.8
10	6 4	18 8	0 21	1 10	4 7	2.0	16 37	1.6
20	6 5	18 7	0 22	1 13	4 0	2.2	16 41	1.4
30	6 6	18 6	0 24	1 19	3 53	2.4	16 46	1.2
35	6 6	18 6	0 25	1 24	3 49	2.5	16 48	1.1
40	6 7	18 5	0 27	1 30	3 44	2.7	16 51	1.0
45	6 8	18 4	0 29	1 38	3 39	2.8	16 54	.8
50	6 8	18 3	0 32	1 49	3 32	3.0	16 58	.6
55	6 9	18 2	0 36	2 3	3 24	3.3	17 3	.4
60	6 10	18 1	0 41	2 23	3 13	3.6	17 9	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	208 48.9	146 -9	2.0	145	221 25.6	-16 6.3	12 29.3	7 9.1
2	237 56.3	146 -8	34.9	145	251 29.5	-16 6.0	42 34.6	7 9.2
4	267 3.7	146 -8	7.6	146	281 33.4	-16 5.7	72 39.8	7 9.4
6	296 11.2	145 -7	40.2	146	311 37.4	-16 5.4	102 45.1	7 9.5
8	325 18.7	145 -7	12.5	147	341 41.3	-16 5.1	132 50.4	7 9.7
10	354 26.1	144 -6	44.7	147	11 45.3	-16 4.8	162 55.7	7 9.8
12	23 33.6	144 -6	16.7	147	41 49.2	-16 4.5	193 59.9	7 10.0
14	52 41.1	143 -5	48.6	147	71 53.1	-16 4.3	223 6.2	7 10.1
16	81 48.5	143 -5	20.3	148	101 57.1	-16 4.0	253 11.5	7 10.2
18	110 55.9	142 -4	51.8	148	132 1.0	-16 3.7	283 16.8	7 10.4
20	140 3.3	141 -4	23.2	148	162 5.0	-16 3.4	313 22.0	7 10.5
22	169 10.7	141 -3	54.5	148	192 8.9	-16 3.1	343 27.3	7 10.7
Δ					20	1	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 6 24.7	.8	16.1	T <sub>m</sub>	10 23	1.8	55.7
12	- 6 15.7	T <sub>m</sub> ☉	12 h 6.3 min	Starost	26.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	' / "	°	' / "	♃	h min	' / "
♃	12 12	.5	355	-4.0	♄	9 13	.0
♄	10 30	.1	21	1.2	♅	23 6	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 32.8	2 10.4	183 34.0	179 11.2	10 56.7	202 44.9	- 9 45.2
2	208 33.2	2 12.3	213 38.9	209 18.9	10 55.2	232 46.1	- 9 43.8
4	238 33.6	2 14.3	243 43.8	239 26.5	10 53.7	262 47.4	- 9 42.3
6	268 33.9	2 16.2	273 48.8	269 34.2	10 52.1	292 48.6	- 9 40.8
8	298 34.3	2 18.2	303 53.7	299 41.9	10 50.6	322 49.8	- 9 39.4
10	328 34.7	2 20.2	333 58.6	329 49.6	10 49.1	352 51.1	- 9 37.9
12	358 35.1	2 22.1	4 3.6	359 57.3	10 47.5	22 52.3	- 9 36.5
14	28 35.4	2 24.1	34 8.5	30 5.0	10 45.9	52 53.6	- 9 35.0
16	58 35.8	2 26.0	64 13.4	60 12.6	10 44.4	82 54.8	- 9 33.5
18	88 36.2	2 28.0	94 18.3	90 20.3	10 42.8	112 56.1	- 9 32.1
20	118 36.6	2 30.0	124 23.3	120 28.0	10 41.2	142 57.3	- 9 30.6
22	148 37.0	2 31.9	154 28.2	150 35.7	10 39.7	172 58.6	- 9 29.2
Δ	2	10		38	-8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 46	18 27	0 42	2 31	5 12	.1	17 22	3.8
55	5 49	18 24	0 37	2 7	5 9	.4	17 21	3.4
50	5 52	18 21	0 32	1 52	5 7	.6	17 20	3.2
45	5 54	18 19	0 29	1 40	5 5	.8	17 20	2.9
40	5 55	18 17	0 27	1 32	5 4	1.0	17 19	2.8
35	5 57	18 16	0 25	1 25	5 2	1.1	17 19	2.6
30	5 58	18 15	0 24	1 20	5 1	1.2	17 19	2.5
20	5 60	18 12	0 22	1 14	4 59	1.5	17 18	2.3
10	6 1	18 11	0 21	1 10	4 58	1.7	17 17	2.1
0	6 3	18 9	0 21	1 9	4 56	1.8	17 17	1.9
10	6 4	18 8	0 21	1 10	4 54	2.0	17 16	1.7
20	6 5	18 6	0 22	1 13	4 53	2.2	17 16	1.5
30	6 7	18 5	0 24	1 19	4 51	2.5	17 15	1.3
35	6 7	18 4	0 25	1 24	4 50	2.6	17 15	1.1
40	6 8	18 3	0 27	1 30	4 48	2.7	17 14	1.0
45	6 9	18 2	0 29	1 38	4 47	2.9	17 13	.8
50	6 10	18 1	0 32	1 48	4 45	3.1	17 13	.6
55	6 11	17 60	0 36	2 2	4 43	3.4	17 12	.4
60	6 12	17 58	0 41	2 22	4 40	3.7	17 11	.1

UT	MESEC				JUPITER			SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'	°	'
0	198 18.0	140 - 3	25.7	148	222 12.9	-16 2.8	13 32.6	7 10.8	43 37.8	7 11.0
2	227 25.2	139 - 2	56.8	148	252 16.8	-16 2.5	73 43.1	7 11.1	73 43.1	7 11.1
4	256 32.4	138 - 2	27.8	148	282 20.8	-16 2.2	103 48.4	7 11.3	133 53.7	7 11.4
6	285 39.6	137 - 1	58.6	148	312 24.7	-16 1.9	163 58.9	7 11.5	163 58.9	7 11.5
8	314 46.6	136 - 1	29.4	148	342 28.6	-16 1.6	194 4.2	7 11.7	224 9.5	7 11.8
10	343 53.6	135 - 1	.1	148	12 32.6	-16 1.3	224 9.5	7 11.8	254 14.7	7 12.0
12	13 .4	134 - 0	30.7	147	42 36.5	-16 1.1	284 20.0	7 12.1	314 25.0	7 12.2
14	42 7.2	133 - 0	1.3	147	72 40.5	-16 .8	344 30.6	7 12.4	344 30.6	7 12.4
16	71 13.8	132 0	28.2	147	102 44.4	-16 .5				
18	100 20.4	131 0	57.7	146	132 48.4	-16 .2				
20	129 26.8	130 1	27.3	146	162 52.3	-15 59.9				
22	158 33.0	129 1	56.9	145	192 56.3	-15 59.6				
Δ					20	1	26	1		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 6 6.6	.8	16.1	T <sub>m</sub>	11 6	1.9	56.3 15.3		
12	- 5 57.6	T <sub>m</sub> ☉	12 h 6.0 min	Starost	27.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♃	12 6	.5	355	-4.0	♄	9 10	.0	40	-1.9
♂	10 29	.1	20	1.2	♅	23 2	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 37.3	2 33.9	184 33.1	180 43.3	10 38.1	202 59.8	- 9 27.7
2	208 37.7	2 35.8	214 38.1	210 51.0	10 36.5	233 1.1	- 9 26.2
4	238 38.1	2 37.8	244 43.0	240 58.7	10 34.9	263 2.3	- 9 24.8
6	268 38.5	2 39.8	274 47.9	271 6.3	10 33.3	293 3.6	- 9 23.3
8	298 38.8	2 41.7	304 52.8	301 14.0	10 31.7	323 4.8	- 9 21.8
10	328 39.2	2 43.7	334 57.8	331 21.7	10 30.0	353 6.1	- 9 20.4
12	358 39.6	2 45.6	5 2.7	1 29.3	10 28.4	23 7.3	- 9 18.9
14	28 40.0	2 47.6	35 7.6	31 37.0	10 26.8	53 8.6	- 9 17.4
16	58 40.3	2 49.5	65 12.6	61 44.6	10 25.1	83 9.8	- 9 16.0
18	88 40.7	2 51.5	95 17.5	91 52.3	10 23.5	113 11.1	- 9 14.5
20	118 41.1	2 53.5	125 22.4	121 59.9	10 21.8	143 12.3	- 9 13.0
22	148 41.5	2 55.4	155 27.3	152 7.6	10 20.2	173 13.6	- 9 11.6
Δ	2	10		38	-8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 43	18 29	0 42	2 32	5 14	.1	18 52	3.9
55	5 47	18 26	0 37	2 8	5 19	.4	18 43	3.6
50	5 50	18 23	0 33	1 52	5 22	.7	18 36	3.3
45	5 52	18 20	0 29	1 40	5 25	.9	18 31	3.1
40	5 54	18 18	0 27	1 32	5 27	1.0	18 26	2.9
35	5 55	18 17	0 25	1 25	5 29	1.2	18 22	2.7
30	5 57	18 15	0 24	1 20	5 31	1.3	18 18	2.6
20	5 59	18 13	0 22	1 14	5 34	1.5	18 12	2.4
10	6 1	18 11	0 21	1 10	5 37	1.7	17 8	2.2
0	6 2	18 9	0 21	1 9	5 40	1.9	18 2	2.0
10	6 4	18 7	0 21	1 10	5 43	2.1	17 57	1.8
20	6 5	18 6	0 22	1 13	5 46	2.3	17 51	1.6
30	6 7	18 4	0 24	1 19	5 49	2.5	17 45	1.4
35	6 8	18 3	0 25	1 24	5 52	2.7	17 42	1.2
40	6 9	18 2	0 27	1 30	5 54	2.8	17 38	1.1
45	6 10	18 0	0 29	1 38	5 57	3.0	17 33	.9
50	6 11	17 59	0 32	1 48	5 60	3.2	17 28	.7
55	6 13	17 57	0 36	2 2	6 4	3.5	17 21	.5
60	6 15	17 55	0 41	2 22	6 9	3.9	17 13	.1

UT	MESEC				JUPITER			SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'	°	'
0	187 39.1	127 2	26.6	145	223 .2	-15 59.3	14 35.8	7 12.5	44 41.1	7 12.7
2	216 45.1	126 2	56.2	144	253 4.2	-15 59.0	74 46.4	7 12.8	74 46.4	7 12.8
4	245 50.9	125 3	25.8	144	283 8.2	-15 58.7	104 51.6	7 13.0	134 56.9	7 13.1
6	274 56.6	123 3	55.4	143	313 12.1	-15 58.5	165 2.2	7 13.2	165 2.2	7 13.2
8	304 2.0	122 4	25.1	142	343 16.1	-15 58.2	195 7.4	7 13.4	225 12.7	7 13.5
10	333 7.3	121 4	54.6	141	13 20.0	-15 57.9	255 18.0	7 13.7	255 18.0	7 13.7
12	2 12.4	119 5	24.2	140	43 24.0	-15 57.6				
14	31 17.3	118 5	53.7	139	73 27.9	-15 57.3				
16	60 22.0	116 6	23.1	138	103 31.9	-15 57.0				
18	89 26.4	114 6	52.5	137	133 35.8	-15 56.7				
20	118 30.6	113 7	21.8	136	163 39.8	-15 56.4				
22	147 34.6	111 7	51.0	135	193 43.8	-15 56.2				
Δ					20	1	26	1		

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	- 5 48.6	.8	16.1	T <sub>m</sub>	11 51	2.0	56.9 15.5
12	- 5 39.5	T <sub>m</sub> ☉	12 h 5.7 min	Starost	28.9 d	Faza	●



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 41.9	2 57.4	185 32.3	182 15.2	10 18.5	203 14.8	- 9 10.1
2	208 42.2	2 59.3	215 37.2	212 22.9	10 16.9	233 16.1	- 9 8.6
4	238 42.6	3 1.3	245 42.1	242 30.5	10 15.2	263 17.3	- 9 7.2
6	268 43.0	3 3.2	275 47.1	272 38.1	10 13.5	293 18.6	- 9 5.7
8	298 43.4	3 5.2	305 52.0	302 45.8	10 11.8	323 19.9	- 9 4.2
10	328 43.7	3 7.1	335 56.9	332 53.4	10 10.1	353 21.1	- 9 2.8
12	358 44.1	3 9.1	6 1.8	3 1.0	10 8.4	23 22.4	- 9 1.3
14	28 44.5	3 11.0	36 6.8	33 8.6	10 6.7	53 23.6	- 8 59.8
16	58 44.9	3 13.0	66 11.7	63 16.2	10 5.0	83 24.9	- 8 58.3
18	88 45.2	3 14.9	96 16.6	93 23.9	10 3.3	113 26.2	- 8 56.9
20	118 45.6	3 16.9	126 21.6	123 31.5	10 1.6	143 27.4	- 8 55.4
22	148 46.0	3 18.8	156 26.5	153 39.1	9 59.9	173 28.7	- 8 53.9
Δ	2	10		38	-8	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 40	18 32	0 42	2 33	5 17	.2	20 27	4.1
55	5 44	18 28	0 37	2 9	5 29	.5	20 8	3.7
50	5 48	18 24	0 33	1 52	5 38	.8	19 55	3.4
45	5 50	18 21	0 30	1 41	5 46	1.0	19 44	3.2
40	5 52	18 19	0 27	1 32	5 52	1.2	19 35	3.0
35	5 54	18 17	0 25	1 25	5 58	1.3	19 27	2.8
30	5 55	18 16	0 24	1 20	6 3	1.4	19 20	2.7
20	5 58	18 13	0 22	1 14	6 11	1.7	19 9	2.5
10	6 0	18 11	0 21	1 10	6 19	1.9	18 59	2.3
0	6 2	18 9	0 21	1 9	6 26	2.0	18 49	2.1
10	6 4	18 7	0 21	1 10	6 33	2.2	18 40	1.9
20	6 6	18 5	0 22	1 13	6 41	2.4	18 30	1.7
30	6 8	18 3	0 24	1 19	6 50	2.6	18 18	1.5
35	6 9	18 1	0 25	1 24	6 56	2.8	18 12	1.4
40	6 10	18 0	0 27	1 30	7 2	2.9	18 4	1.3
45	6 11	17 59	0 29	1 38	7 9	3.1	17 55	1.1
50	6 13	17 57	0 32	1 48	7 17	3.3	17 45	.9
55	6 15	17 55	0 36	2 2	7 28	3.6	17 32	.6
60	6 17	17 52	0 41	2 21	7 42	4.1	17 15	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	176 38.4	109 8	20.1	134	223 47.7	-15 55.9	15 39.0	7 14.2
2	205 41.9	108 8	49.0	132	253 51.7	-15 55.6	45 44.3	7 14.4
4	234 45.1	106 9	17.9	131	283 55.6	-15 55.3	75 49.6	7 14.5
6	263 48.1	104 9	46.6	130	313 59.6	-15 55.0	105 54.8	7 14.6
8	292 50.8	102 10	15.2	128	344 3.6	-15 54.7	136 .1	7 14.8
10	321 53.2	101 10	43.6	127	14 7.5	-15 54.4	166 5.4	7 14.9
12	350 55.3	99 11	11.9	125	44 11.5	-15 54.1	196 10.6	7 15.1
14	19 57.1	97 11	40.0	123	74 15.5	-15 53.9	226 15.9	7 15.2
16	48 58.6	95 12	7.9	121	104 19.4	-15 53.6	256 21.1	7 15.3
18	77 59.8	93 12	35.6	120	134 23.4	-15 53.3	286 26.4	7 15.5
20	107 .7	91 13	3.0	118	164 27.4	-15 53.0	316 31.7	7 15.6
22	136 1.3	89 13	30.3	116	194 31.3	-15 52.7	346 36.9	7 15.7
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 5 30.5	.8	16.1	T <sub>m</sub>	12 38	2.0	57.5		
12	- 5 21.4	T <sub>m</sub> ☉	12 h 5.4 min	Starost	29.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 54	.5	356	-3.9	♄	9 4	.0	39	-1.9
♂	10 27	.1	19	1.2	♂	22 53	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 46.4	3 20.8	186 31.4	183 46.7	9 58.2	203 29.9	- 8 52.4
2	208 46.7	3 22.7	216 36.3	213 54.2	9 56.5	233 31.2	- 8 51.0
4	238 47.1	3 24.7	246 41.3	244 1.8	9 54.7	263 32.5	- 8 49.5
6	268 47.5	3 26.6	276 46.2	274 9.4	9 53.0	293 33.7	- 8 48.0
8	298 47.9	3 28.6	306 51.1	304 17.0	9 51.2	323 35.0	- 8 46.5
10	328 48.2	3 30.5	336 56.1	334 24.6	9 49.5	353 36.2	- 8 45.1
12	358 48.6	3 32.5	7 1.0	4 32.1	9 47.7	23 37.5	- 8 43.6
14	28 49.0	3 34.4	37 5.9	34 39.7	9 46.0	53 38.8	- 8 42.1
16	58 49.4	3 36.4	67 10.8	64 47.2	9 44.2	83 40.0	- 8 40.6
18	88 49.7	3 38.3	97 15.8	94 54.8	9 42.5	113 41.3	- 8 39.1
20	118 50.1	3 40.3	127 20.7	125 2.3	9 40.7	143 42.6	- 8 37.7
22	148 50.5	3 42.2	157 25.6	155 9.9	9 38.9	173 43.8	- 8 36.2
Δ	2	10		38	-9	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 37	18 34	0 42	2 34	5 21	.3	22 6	4.3
55	5 42	18 29	0 37	2 9	5 41	.7	21 37	3.8
50	5 45	18 26	0 33	1 53	5 57	1.0	21 16	3.4
45	5 48	18 23	0 30	1 41	6 10	1.2	20 60	3.2
40	5 51	18 20	0 27	1 32	6 20	1.4	20 46	3.0
35	5 52	18 18	0 25	1 26	6 29	1.5	20 35	2.9
30	5 54	18 16	0 24	1 21	6 37	1.6	20 25	2.8
20	5 57	18 13	0 22	1 14	6 51	1.9	20 8	2.6
10	5 60	18 11	0 21	1 10	7 4	2.0	19 53	2.4
0	6 2	18 8	0 21	1 9	7 15	2.2	19 40	2.3
10	6 4	18 6	0 21	1 10	7 27	2.4	19 26	2.1
20	6 6	18 4	0 22	1 13	7 39	2.5	19 11	2.0
30	6 8	18 1	0 24	1 19	7 54	2.8	18 55	1.8
35	6 10	17 60	0 25	1 24	8 2	2.9	18 45	1.6
40	6 11	17 58	0 27	1 30	8 12	3.0	18 34	1.5
45	6 13	17 57	0 29	1 38	8 23	3.2	18 21	1.3
50	6 15	17 55	0 32	1 48	8 37	3.4	18 6	1.1
55	6 17	17 52	0 36	2 2	8 55	3.8	17 46	.8
60	6 20	17 49	0 41	2 21	9 19	4.3	17 20	.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	165 1.5	87 13	57.3	114	224 35.3	-15 52.4	16 42.2	7 15.9
2	194 1.4	85 14	24.0	112	254 39.3	-15 52.1	46 47.5	7 16.0
4	223 .9	83 14	50.5	109	284 43.2	-15 51.9	76 52.7	7 16.2
6	252 .1	82 15	16.7	107	314 47.2	-15 51.6	106 58.0	7 16.3
8	280 59.0	80 15	42.7	105	344 51.2	-15 51.3	137 3.2	7 16.4
10	309 57.5	78 16	8.3	102	14 55.1	-15 51.0	167 8.5	7 16.6
12	338 55.6	76 16	33.6	100	44 59.1	-15 50.7	197 13.8	7 16.7
14	7 53.3	74 16	58.5	98	75 3.1	-15 50.4	227 19.0	7 16.8
16	36 50.7	72 17	23.2	95	105 7.0	-15 50.1	257 24.3	7 17.0
18	65 47.7	70 17	47.4	92	135 11.0	-15 49.9	287 29.6	7 17.1
20	94 44.3	68 18	11.3	90	165 15.0	-15 49.6	317 34.8	7 17.3
22	123 40.6	66 18	34.9	87	195 19.0	-15 49.3	347 40.1	7 17.4
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 5 12.4	.8	16.1	T <sub>m</sub>	13 27	2.3	58.1		
12	- 5 3.4	T <sub>m</sub> ☉	12 h 5.1 min	Starost	30.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 48	.5	357	-3.9	♄	9 0	.0	39	-1.9
♂	10 26	.1</							

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 50.9	3 44.1	187 30.5	185 17.4	9 37.2	203 45.1	- 8 34.7
2	208 51.2	3 46.1	217 35.5	215 24.9	9 35.4	233 46.4	- 8 33.2
4	238 51.6	3 48.0	247 40.4	245 32.4	9 33.6	263 47.6	- 8 31.7
6	268 52.0	3 50.0	277 45.3	275 39.9	9 31.8	293 48.9	- 8 30.2
8	298 52.4	3 51.9	307 50.3	305 47.4	9 30.0	323 50.2	- 8 28.8
10	328 52.7	3 53.9	337 55.2	335 54.9	9 28.2	353 51.5	- 8 27.3
12	358 53.1	3 55.8	8 .1	6 2.4	9 26.4	23 52.7	- 8 25.8
14	28 53.5	3 57.7	38 5.0	36 9.9	9 24.6	53 54.0	- 8 24.3
16	58 53.9	3 59.7	68 10.0	66 17.4	9 22.8	83 55.3	- 8 22.8
18	88 54.2	4 1.6	98 14.9	96 24.9	9 21.0	113 56.5	- 8 21.3
20	118 54.6	4 3.6	128 19.8	126 32.3	9 19.2	143 57.8	- 8 19.8
22	148 55.0	4 5.5	158 24.8	156 39.8	9 17.4	173 59.1	- 8 18.4
Δ	2	10		37	-9	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 34	18 37	0 43	2 36	5 27	.5	23 49	4.1
55	5 39	18 31	0 37	2 10	5 58	1.0	23 7	3.6
50	5 43	18 27	0 33	1 53	6 21	1.3	22 39	3.3
45	5 46	18 24	0 30	1 41	6 39	1.5	22 17	3.1
40	5 49	18 21	0 27	1 32	6 53	1.7	21 60	3.0
35	5 51	18 19	0 25	1 26	7 6	1.8	21 45	2.9
30	5 53	18 17	0 24	1 21	7 17	1.9	21 32	2.8
20	5 56	18 14	0 22	1 14	7 36	2.1	21 11	2.7
10	5 59	18 11	0 21	1 10	7 52	2.2	20 52	2.6
0	6 1	18 8	0 21	1 9	8 8	2.4	20 34	2.4
10	6 4	18 6	0 21	1 10	8 24	2.5	20 17	2.3
20	6 6	18 3	0 22	1 13	8 40	2.6	19 58	2.2
30	6 9	18 0	0 24	1 19	9 0	2.8	19 37	2.1
35	6 10	17 59	0 25	1 24	9 12	2.9	19 25	2.0
40	6 12	17 57	0 27	1 30	9 25	3.0	19 11	1.9
45	6 14	17 55	0 29	1 38	9 41	3.2	18 54	1.7
50	6 16	17 53	0 32	1 48	10 0	3.4	18 33	1.5
55	6 19	17 50	0 36	2 1	10 25	3.7	18 6	1.2
60	6 22	17 46	0 41	2 21	11 2	4.3	17 28	.7

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	152 36.4	65 18 58.0	84	225 22.9	-15 49.0	17 45.3	7 17.5	
2	181 31.9	63 19 20.7	81	255 26.9	-15 48.7	47 50.6	7 17.7	
4	210 27.0	61 19 43.0	78	285 30.9	-15 48.4	77 55.8	7 17.8	
6	239 21.6	59 20 4.9	75	315 34.9	-15 48.1	108 1.1	7 17.9	
8	268 16.0	58 20 26.3	72	345 38.8	-15 47.9	138 6.4	7 18.1	
10	297 9.9	56 20 47.2	69	375 42.8	-15 47.6	168 11.6	7 18.2	
12	326 3.4	55 21 7.7	66	405 46.8	-15 47.3	198 16.9	7 18.3	
14	354 56.5	53 21 27.7	63	435 50.8	-15 47.0	228 22.1	7 18.5	
16	23 49.3	52 21 47.2	60	465 54.8	-15 46.7	258 27.4	7 18.6	
18	52 41.7	50 22 6.2	56	495 58.7	-15 46.4	288 32.6	7 18.7	
20	81 33.7	49 22 24.7	53	525 62.7	-15 46.2	318 37.9	7 18.9	
22	110 25.3	48 22 42.6	50	555 66.7	-15 45.9	348 43.2	7 19.0	
Δ				20	1	26	1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	- 4 54.4	.8	16.0	T <sub>m</sub>	14 21	2.4	58.5
12	- 4 45.3	T <sub>m</sub> ☉	12 h 4.8 min	Starost	31.9 d	Faza	●

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°	'	♄	h min	'	°	'
♃	11 42	.5	357	-3.9	♄	8 57	.0	39	-1.9
♅	10 25	.1	17	1.2	♅	22 45	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 55.4	4 7.4	188 29.7	186 47.2	9 15.6	204 .4	- 8 16.9
2	208 55.7	4 9.4	218 34.6	216 54.7	9 13.8	234 1.6	- 8 15.4
4	238 56.1	4 11.3	248 39.5	247 2.1	9 12.0	264 2.9	- 8 13.9
6	268 56.5	4 13.2	278 44.5	277 9.5	9 10.1	294 4.2	- 8 12.4
8	298 56.8	4 15.2	308 49.4	307 16.9	9 8.3	324 5.5	- 8 10.9
10	328 57.2	4 17.1	338 54.3	337 24.4	9 6.5	354 6.7	- 8 9.4
12	358 57.6	4 19.0	8 59.3	7 31.8	9 4.6	24 8.0	- 8 7.9
14	28 58.0	4 21.0	39 4.2	37 39.1	9 2.8	54 9.3	- 8 6.4
16	58 58.3	4 22.9	69 9.1	67 46.5	9 1.0	84 10.6	- 8 4.9
18	88 58.7	4 24.8	99 14.0	97 53.9	8 59.1	114 11.8	- 8 3.5
20	118 59.1	4 26.8	129 19.0	128 1.3	8 57.3	144 13.1	- 8 2.0
22	148 59.4	4 28.7	159 23.9	158 8.6	8 55.5	174 14.4	- 8 .5
Δ	2	10		37	-9	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 31	18 39	0 43	2 37	5 39	1.0	. . .	.0
55	5 37	18 33	0 37	2 11	6 23	1.6	. . .	.0
50	5 41	18 29	0 33	1 54	6 52	1.8	23 58	2.9
45	5 44	18 25	0 30	1 41	7 15	2.0	23 32	2.8
40	5 47	18 22	0 27	1 33	7 34	2.1	23 12	2.8
35	5 50	18 20	0 25	1 26	7 49	2.2	22 55	2.7
30	5 52	18 18	0 24	1 21	8 3	2.2	22 40	2.7
20	5 55	18 14	0 22	1 14	8 26	2.3	22 15	2.7
10	5 58	18 11	0 21	1 10	8 46	2.4	21 53	2.6
0	6 1	18 8	0 21	1 9	9 5	2.5	21 33	2.6
10	6 4	18 5	0 21	1 10	9 24	2.6	21 13	2.5
20	6 7	18 2	0 22	1 13	9 44	2.7	20 51	2.4
30	6 10	17 59	0 24	1 19	10 8	2.8	20 27	2.4
35	6 11	17 57	0 25	1 24	10 22	2.8	20 12	2.3
40	6 13	17 55	0 27	1 30	10 38	2.9	19 55	2.3
45	6 15	17 53	0 29	1 38	10 57	3.0	19 35	2.2
50	6 18	17 50	0 32	1 48	11 22	3.1	19 10	2.1
55	6 21	17 47	0 36	2 1	11 55	3.4	18 36	1.9
60	6 25	17 43	0 41	2 20	12 45	3.8	17 45	1.5

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	139 16.6	46 23 .0	46	226 10.7	-15 45.6	18 48.4	7 19.1	
2	168 7.5	45 23 16.8	43	256 14.7	-15 45.3	48 53.7	7 19.3	
4	196 58.1	44 23 33.0	39	286 18.7	-15 45.0	78 58.9	7 19.4	
6	225 48.3	43 23 48.7	36	316 22.6	-15 44.8	109 4.2	7 19.5	
8	254 38.1	42 24 3.8	32	346 26.6	-15 44.5	139 9.4	7 19.7	
10	283 27.7	42 24 18.2	29	376 30.6	-15 44.2	169 14.7	7 19.8	
12	312 16.9	41 24 32.1	25	406 34.6	-15 43.9	199 19.9	7 19.9	
14	341 5.8	40 24 45.3	22	436 38.6	-15 43.6	229 25.2	7 20.1	
16	9 54.4	40 24 57.9	18	466 42.6	-15 43.3	259 30.4	7 20.2	
18	38 42.7	39 25 9.8	14	496 46.6	-15 43.1	289 35.7	7 20.3	
20	67 30.7	39 25 21.1	11	526 50.6	-15 42.8	319 40.9	7 20.5	
22	96 18.5	39 25 31.7	7	556 54.6	-15 42.5	349 46.2	7 20.6	
Δ				20	1	26	1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	- 4 36.4	.7	16.0	T <sub>m</sub>	15 19	2.5	58.8
12	- 4 27.4	T <sub>m</sub> ☉	12 h 4.5 min	Starost	32.9 d	Faza	●

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♃	h min	'	°	'	♄	h min	'	°	'
♃	11 36	.5	358	-3.9	♄	8 54	.0	39	-1.9
♅	10 24	.1	16	1.2	♅	22 41	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 59.8	4 30.6	189 28.8	188 16.0	8 53.6	204 15.7	- 7 59.0
2	209 .2	4 32.6	219 33.8	218 23.3	8 51.8	234 17.0	- 7 57.5
4	239 .6	4 34.5	249 38.7	248 30.7	8 49.9	264 18.3	- 7 56.0
6	269 .9	4 36.4	279 43.6	278 38.0	8 48.1	294 19.5	- 7 54.5
8	299 1.3	4 38.4	309 48.5	308 45.3	8 46.2	324 20.8	- 7 53.0
10	329 1.7	4 40.3	339 53.5	338 52.6	8 44.4	354 22.1	- 7 51.5
12	359 2.0	4 42.2	9 58.4	8 59.9	8 42.5	24 23.4	- 7 50.0
14	29 2.4	4 44.1	40 3.3	39 7.2	8 40.6	54 24.7	- 7 48.5
16	59 2.8	4 46.1	70 8.3	69 14.5	8 38.8	84 25.9	- 7 47.0
18	89 3.2	4 48.0	100 13.2	99 21.7	8 36.9	114 27.2	- 7 45.5
20	119 3.5	4 49.9	130 18.1	129 29.0	8 35.1	144 28.5	- 7 44.0
22	149 3.9	4 51.8	160 23.0	159 36.2	8 33.2	174 29.8	- 7 42.5
Δ	2	10		36	-9	6	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 28	18 42	0 43	2 39	6 4	2.1	1 29	3.2
55	5 34	18 35	0 37	2 11	6 60	2.3	0 33	3.0
50	5 39	18 30	0 33	1 54	7 36	2.4	...	.0
45	5 43	18 27	0 30	1 42	8 2	2.5	...	.0
40	5 46	18 23	0 27	1 33	8 23	2.5	...	.0
35	5 48	18 21	0 25	1 26	8 41	2.5	...	.0
30	5 51	18 18	0 24	1 21	8 56	2.5	23 45	2.5
20	5 55	18 14	0 22	1 14	9 22	2.5	23 18	2.5
10	5 58	18 11	0 21	1 10	9 44	2.6	22 56	2.6
0	6 1	18 7	0 21	1 9	10 5	2.6	22 34	2.6
10	6 4	18 4	0 21	1 10	10 26	2.6	22 13	2.6
20	6 7	18 1	0 22	1 13	10 48	2.6	21 50	2.6
30	6 10	17 58	0 24	1 19	11 14	2.6	21 24	2.6
35	6 12	17 56	0 25	1 24	11 30	2.6	21 8	2.7
40	6 14	17 54	0 27	1 30	11 48	2.6	20 50	2.7
45	6 16	17 51	0 29	1 38	12 10	2.6	20 28	2.7
50	6 19	17 48	0 32	1 48	12 37	2.6	19 60	2.7
55	6 23	17 45	0 36	2 1	13 15	2.6	19 22	2.8
60	6 27	17 40	0 41	2 20	14 17	2.6	18 20	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	125 6.0	38 25 41.7	3	226 58.5	-15 42.2	19 51.4	7 20.7	
2	153 53.3	38 25 50.9	0	257 2.5	-15 41.9	49 56.7	7 20.9	
4	182 40.4	38 25 59.5	-4	287 6.5	-15 41.7	80 1.9	7 21.0	
6	211 27.2	38 26 7.4	-8	317 10.5	-15 41.4	110 7.2	7 21.1	
8	240 13.9	39 26 14.6	-11	347 14.5	-15 41.1	140 12.4	7 21.3	
10	269 .3	39 26 21.0	-15	17 18.5	-15 40.8	170 17.7	7 21.4	
12	297 46.7	39 26 26.8	-19	47 22.5	-15 40.5	200 22.9	7 21.5	
14	326 32.8	40 26 31.9	-22	77 26.5	-15 40.3	230 28.2	7 21.6	
16	355 18.9	40 26 36.2	-26	107 30.5	-15 40.0	260 33.4	7 21.8	
18	24 4.8	41 26 39.8	-30	137 34.5	-15 39.7	290 38.7	7 21.9	
20	52 50.7	42 26 42.6	-33	167 38.5	-15 39.4	320 43.9	7 22.0	
22	81 36.4	42 26 44.8	-37	197 42.5	-15 39.1	350 49.2	7 22.2	
Δ				20	1	26	1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 4 18.4	.7	16.0	T <sub>m</sub>	16 20	2.5	59.1		
12	- 4 9.5	T <sub>m☉</sub>	12 h 4.2 min	Starost	33.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 30	.5	358	-4.0	♄	8 51	.0	38	-1.9
♂	10 23	.1	16	1.2	♂	22 37	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 4.3	4 53.8	190 28.0	189 43.5	8 31.3	204 31.1	- 7 41.0
2	209 4.6	4 55.7	220 32.9	219 50.7	8 29.5	234 32.4	- 7 39.5
4	239 5.0	4 57.6	250 37.8	249 57.9	8 27.6	264 33.7	- 7 38.0
6	269 5.4	4 59.5	280 42.7	280 5.1	8 25.7	294 35.0	- 7 36.5
8	299 5.7	5 1.5	310 47.7	310 12.3	8 23.9	324 36.2	- 7 35.0
10	329 6.1	5 3.4	340 52.6	340 19.5	8 22.0	354 37.5	- 7 33.5
12	359 6.5	5 5.3	10 57.5	10 26.7	8 20.1	24 38.8	- 7 32.0
14	29 6.8	5 7.2	41 2.5	40 33.8	8 18.3	54 40.1	- 7 30.5
16	59 7.2	5 9.1	71 7.4	70 41.0	8 16.4	84 41.4	- 7 29.0
18	89 7.6	5 11.0	101 12.3	100 48.1	8 14.5	114 42.7	- 7 27.5
20	119 7.9	5 13.0	131 17.2	130 55.3	8 12.7	144 44.0	- 7 26.0
22	149 8.3	5 14.9	161 22.2	161 2.4	8 10.8	174 45.3	- 7 24.5
Δ	2	10		36	-9	6	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 25	18 44	0 43	2 40	6 55	3.5	2 46	1.9
55	5 32	18 37	0 37	2 12	7 56	3.1	1 46	2.2
50	5 37	18 32	0 33	1 54	8 34	3.0	1 8	2.3
45	5 41	18 28	0 30	1 42	9 1	2.9	0 40	2.4
40	5 44	18 24	0 27	1 33	9 23	2.8	0 18	2.4
35	5 47	18 21	0 26	1 26	9 41	2.8	0 0	2.5
30	5 49	18 19	0 24	1 21	9 56	2.7	...	.0
20	5 54	18 14	0 22	1 14	10 23	2.7	...	.0
10	5 57	18 11	0 21	1 10	10 46	2.6	23 57	2.4
0	6 1	18 7	0 21	1 9	11 7	2.5	23 36	2.5
10	6 4	18 4	0 21	1 10	11 28	2.5	23 15	2.6
20	6 7	18 0	0 22	1 13	11 51	2.4	22 53	2.7
30	6 11	17 57	0 24	1 19	12 17	2.3	22 27	2.8
35	6 13	17 54	0 25	1 24	12 33	2.3	22 12	2.9
40	6 15	17 52	0 27	1 30	12 51	2.2	21 54	3.0
45	6 18	17 49	0 29	1 37	13 13	2.1	21 32	3.1
50	6 21	17 46	0 32	1 47	13 40	2.0	21 5	3.2
55	6 25	17 42	0 36	2 1	14 18	1.8	20 28	3.4
60	6 29	17 37	0 41	2 20	15 19	1.3	19 27	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	110 22.2	43 26 46.2	-40	227 46.5	-15 38.9	20 54.4	7 22.3	
2	139 7.8	44 26 46.8	-44	257 50.5	-15 38.6	50 59.7	7 22.4	
4	167 53.5	45 26 46.8	-47	287 54.5	-15 38.3	81 4.9	7 22.5	
6	196 39.2	46 26 46.0	-51	317 58.5	-15 38.0	111 10.2	7 22.7	
8	225 24.9	47 26 44.4	-54	348 2.5	-15 37.7	141 15.4	7 22.8	
10	254 10.6	49 26 42.2	-57	18 6.5	-15 37.5	171 20.7	7 22.9	
12	282 56.3	50 26 39.2	-61	48 10.5	-15 37.2	201 25.9	7 23.1	
14	311 42.2	51 26 35.4	-64	78 14.5	-15 36.9	231 31.2	7 23.2	
16	340 28.1	53 26 31.0	-67	108 18.5	-15 36.6	261 36.4	7 23.3	
18	9 14.2	54 26 25.8	-70	138 22.5	-15 36.3	291 41.6	7 23.4	
20	38 .4	56 26 19.9	-73	168 26.5	-15 36.1	321 46.9	7 23.6	
22	66 46.7	57 26 13.2	-77	198 30.5	-15 35.8	351 52.1	7 23.7	
Δ				20	1	26	1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 4 .5	.7	16.0	T <sub>m</sub>	17 21	2.5	59.2		
12	- 3 51.6	T <sub>m☉</sub>	12 h 3.9 min	Starost	34.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 24	.5	359	-4.0	♄	8 48	.0	38	-1.9
♂	10 21	.1	15	1.2	♂	22 32	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 8.7	5 16.8	191 27.1	191 9.5	8 8.9	204 46.6	- 7 23.0
2	209 9.0	5 18.7	221 32.0	221 16.6	8 7.0	234 47.9	- 7 21.5
4	239 9.4	5 20.6	251 37.0	251 23.7	8 5.2	264 49.1	- 7 20.0
6	269 9.8	5 22.5	281 41.9	281 30.7	8 3.3	294 50.4	- 7 18.5
8	299 10.1	5 24.5	311 46.8	311 37.8	8 1.4	324 51.7	- 7 17.0
10	329 10.5	5 26.4	341 51.7	341 44.9	7 59.6	354 53.0	- 7 15.5
12	359 10.9	5 28.3	11 56.7	11 51.9	7 57.7	24 54.3	- 7 14.0
14	29 11.2	5 30.2	42 1.6	41 58.9	7 55.8	54 55.6	- 7 12.5
16	59 11.6	5 32.1	72 6.5	69 21.0	7 54.0	84 56.9	- 7 10.9
18	89 12.0	5 34.0	102 11.5	102 13.0	7 52.1	114 58.2	- 7 9.4
20	119 12.3	5 35.9	132 16.4	132 20.0	7 50.2	144 59.5	- 7 7.9
22	149 12.7	5 37.8	162 21.3	162 26.9	7 48.4	175 .8	- 7 6.4
Δ	2	10		35	-9	6	8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	95 33.1	59 26	5.9	-80	228 34.5	-15 35.5	21 57.4	7 23.8
2	124 19.8	60 25	57.8	-83	258 38.5	-15 35.2	52 2.6	7 24.0
4	153 6.6	62 25	49.1	-85	288 42.5	-15 35.0	82 7.9	7 24.1
6	181 53.7	64 25	39.7	-88	318 46.5	-15 34.7	112 13.1	7 24.2
8	210 40.9	65 25	29.5	-91	348 50.5	-15 34.4	142 18.3	7 24.3
10	239 28.4	67 25	18.7	-94	18 54.5	-15 34.1	172 23.6	7 24.5
12	268 16.1	69 25	7.3	-97	48 58.6	-15 33.8	202 28.8	7 24.6
14	297 4.1	70 24	55.1	-99	79 2.6	-15 33.6	232 34.1	7 24.7
16	325 52.4	72 24	42.3	-102	109 6.6	-15 33.3	262 39.3	7 24.8
18	354 40.9	74 24	28.9	-104	139 10.6	-15 33.0	292 44.5	7 25.0
20	23 29.7	76 24	14.8	-107	169 14.6	-15 32.7	322 49.8	7 25.1
22	52 18.8	78 24	.1	-109	199 18.6	-15 32.5	352 55.0	7 25.2
Δ					20	1	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 22	18 47	0 43	2 42	8 18	4.2	3 32	.9
55	5 29	18 39	0 37	2 13	9 11	3.7	2 39	1.5
50	5 35	18 34	0 33	1 55	9 45	3.4	2 3	1.7
45	5 39	18 29	0 30	1 42	10 11	3.2	1 37	1.9
40	5 42	18 25	0 27	1 33	10 31	3.0	1 17	2.0
35	5 46	18 22	0 26	1 26	10 48	2.9	0 59	2.1
30	5 48	18 19	0 24	1 21	11 2	2.8	0 44	2.2
20	5 53	18 15	0 22	1 14	11 27	2.7	0 19	2.3
10	5 57	18 11	0 21	1 10	11 48	2.6	...	.0
0	6 0	18 7	0 21	1 9	12 8	2.4	...	.0
10	6 4	18 3	0 21	1 10	12 28	2.3	...	.0
20	6 7	17 59	0 22	1 13	12 49	2.2	23 58	2.7
30	6 11	17 55	0 24	1 19	13 13	2.0	23 35	2.8
35	6 14	17 53	0 25	1 24	13 27	1.9	23 21	3.0
40	6 16	17 50	0 27	1 30	13 44	1.8	23 5	3.1
45	6 19	17 47	0 29	1 37	14 4	1.7	22 46	3.2
50	6 22	17 44	0 32	1 47	14 28	1.5	22 22	3.5
55	6 26	17 40	0 36	2 1	15 1	1.2	21 51	3.8
60	6 32	17 34	0 41	2 20	15 50	.6	21 3	4.4

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 3 42.8	.7	16.0	T <sub>m</sub>	18 22	2.4	59.3		
12	- 3 33.9	T <sub>m</sub> ☉	12 h 3.6 min	Starost	35.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♃	11 18	.5	359	-4.0	♄	8 45	.0	38	-1.9
♅	10 20	.1	14	1.2	♁	22 28	.0	191	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 13.1	5 39.7	192 26.2	192 33.9	7 46.5	205 2.1	- 7 4.9
2	209 13.4	5 41.6	222 31.2	222 40.9	7 44.6	235 3.4	- 7 3.4
4	239 13.8	5 43.5	252 36.1	252 47.8	7 42.8	265 4.7	- 7 1.9
6	269 14.2	5 45.5	282 41.0	282 54.7	7 40.9	295 6.0	- 7 .4
8	299 14.5	5 47.4	312 46.0	313 1.7	7 39.0	325 7.3	- 6 58.9
10	329 14.9	5 49.3	342 50.9	343 8.6	7 37.2	355 8.6	- 6 57.4
12	359 15.2	5 51.2	12 55.8	13 15.5	7 35.3	25 9.9	- 6 55.8
14	29 15.6	5 53.1	43 .7	43 22.4	7 33.4	55 11.2	- 6 54.3
16	59 16.0	5 55.0	73 5.7	73 29.2	7 31.6	85 12.5	- 6 52.8
18	89 16.3	5 56.9	103 10.6	103 36.1	7 29.7	115 13.8	- 6 51.3
20	119 16.7	5 58.8	133 15.5	133 42.9	7 27.9	145 15.1	- 6 49.8
22	149 17.1	6 .7	163 20.5	163 49.8	7 26.0	175 16.4	- 6 48.3
Δ	2	10		34	-9	7	8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	81 8.2	79 23	44.8	-112	229 22.6	-15 32.2	23 .3	7 25.3
2	109 58.0	81 23	28.9	-114	259 26.7	-15 31.9	53 5.5	7 25.5
4	138 48.0	83 23	12.4	-116	289 30.7	-15 31.6	83 10.7	7 25.6
6	167 38.4	85 22	55.3	-118	319 34.7	-15 31.4	113 16.0	7 25.7
8	196 29.1	86 22	37.6	-120	349 38.7	-15 31.1	143 21.2	7 25.8
10	225 20.2	88 22	19.4	-122	19 42.7	-15 30.8	173 26.4	7 26.0
12	254 11.6	90 22	.6	-124	49 46.7	-15 30.5	203 31.7	7 26.1
14	283 3.3	91 21	41.3	-126	79 50.8	-15 30.3	233 36.9	7 26.2
16	311 55.4	93 21	21.4	-128	109 54.8	-15 30.0	263 42.1	7 26.3
18	340 47.9	95 21	1.0	-130	139 58.8	-15 29.7	293 47.4	7 26.4
20	9 40.6	96 20	40.2	-131	170 2.8	-15 29.4	323 52.6	7 26.6
22	38 33.8	98 20	18.8	-133	200 6.8	-15 29.2	353 57.8	7 26.7
Δ					20	1	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 19	18 49	0 43	2 44	9 59	4.3	3 55	.5
55	5 27	18 41	0 37	2 14	10 39	3.8	3 14	1.0
50	5 32	18 35	0 33	1 55	11 6	3.5	2 45	1.3
45	5 37	18 30	0 30	1 43	11 27	3.3	2 23	1.5
40	5 41	18 26	0 27	1 34	11 44	3.1	2 5	1.6
35	5 44	18 23	0 26	1 27	11 58	2.9	1 50	1.8
30	5 47	18 20	0 24	1 21	12 10	2.8	1 37	1.9
20	5 52	18 15	0 22	1 14	12 31	2.6	1 14	2.1
10	5 56	18 11	0 21	1 10	12 50	2.4	0 55	2.2
0	5 60	18 7	0 21	1 9	13 6	2.3	0 36	2.4
10	6 4	18 3	0 21	1 10	13 23	2.1	0 18	2.5
20	6 8	17 59	0 22	1 13	13 41	1.9	...	.0
30	6 12	17 54	0 24	1 19	14 2	1.7	...	.0
35	6 14	17 52	0 25	1 24	14 14	1.6	...	.0
40	6 17	17 49	0 27	1 30	14 27	1.5	...	.0
45	6 20	17 46	0 29	1 37	14 44	1.3	...	.0
50	6 24	17 42	0 32	1 47	15 3	1.1	23 46	3.5
55	6 28	17 37	0 36	2 1	15 29	.8	23 21	3.8
60	6 34	17 31	0 41	2 19	16 4	.3	22 47	4.3

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 3 25.1	.7	16.0	T <sub>m</sub>	19 20	2.2	59.2		
12	- 3 16.3	T <sub>m</sub> ☉	12 h 3.3 min	Starost	36.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♃	11 13	.5	360	-4.0	♄	8 41	.0	38	-1.9
♅	10 19	.1	14	1.2	♁	22 24	.0	192	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	179	17.4	6	2.6	193	25.4	193	56.6	7	24.2	205	17.7 - 6 46.8	
2	209	17.8	6	4.5	223	30.3	224	3.4	7	22.3	235	19.0 - 6 45.3	
4	239	18.1	6	6.4	253	35.2	254	10.2	7	20.5	265	20.3 - 6 43.7	
6	269	18.5	6	8.3	283	40.2	284	17.0	7	18.6	295	21.6 - 6 42.2	
8	299	18.9	6	10.2	313	45.1	314	23.7	7	16.8	325	22.9 - 6 40.7	
10	329	19.2	6	12.1	343	50.0	344	30.5	7	14.9	355	24.2 - 6 39.2	
12	359	19.6	6	14.0	13	55.0	14	37.2	7	13.1	25	25.6 - 6 37.7	
14	29	19.9	6	15.8	43	59.9	44	43.9	7	11.2	55	26.9 - 6 36.2	
16	59	20.3	6	17.7	74	4.8	74	50.7	7	9.4	85	28.2 - 6 34.6	
18	89	20.7	6	19.6	104	9.7	104	57.4	7	7.6	115	29.5 - 6 33.1	
20	119	21.0	6	21.5	134	14.7	135	4.0	7	5.7	145	30.8 - 6 31.6	
22	149	21.4	6	23.4	164	19.6	165	10.7	7	3.9	175	32.1 - 6 30.1	
Δ	2		9					34		-9		7 8	

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	5 16	18 51	0 44	2 45	11 43	4.2	4 6	.3		
55	5 24	18 43	0 37	2 15	12 10	3.8	3 37	.7		
50	5 30	18 37	0 33	1 56	12 30	3.5	3 15	1.0		
45	5 35	18 32	0 30	1 43	12 46	3.2	2 58	1.2		
40	5 39	18 27	0 27	1 34	12 58	3.0	2 44	1.4		
35	5 43	18 24	0 26	1 27	13 9	2.9	2 32	1.5		
30	5 46	18 21	0 24	1 21	13 18	2.7	2 22	1.6		
20	5 51	18 15	0 22	1 14	13 34	2.5	2 4	1.8		
10	5 56	18 11	0 21	1 10	13 48	2.3	1 48	2.0		
0	5 60	18 6	0 21	1 9	14 1	2.1	1 33	2.2		
10	6 4	18 2	0 21	1 10	14 14	2.0	1 18	2.4		
20	6 8	17 58	0 22	1 13	14 28	1.8	1 2	2.6		
30	6 13	17 53	0 24	1 19	14 44	1.5	0 43	2.8		
35	6 15	17 50	0 25	1 24	14 53	1.4	0 32	2.9		
40	6 18	17 47	0 27	1 30	15 3	1.3	0 19	3.1		
45	6 21	17 44	0 29	1 37	15 15	1.1	0 4	3.3		
50	6 25	17 40	0 32	1 47	15 29	.9	...	.0		
55	6 30	17 35	0 36	2 1	15 48	.6	...	.0		
60	6 37	17 28	0 42	2 19	16 12	.2	...	.0		

UT	MESEC				JUPITER		SATURN					
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>				
h	°	'	°	'	°	'	°	'				
0	67	27.3	100	19 57.0	-135	230	10.9	-15 28.9	24	3.1	7 26.8	
2	96	21.2	101	19 34.7	-136	260	14.9	-15 28.6	54	8.3	7 26.9	
4	125	15.4	103	19 11.9	-138	290	18.9	-15 28.3	84	13.5	7 27.1	
6	154	10.0	104	18 48.7	-139	320	22.9	-15 28.1	114	18.8	7 27.2	
8	183	4.9	106	18 25.1	-140	350	27.0	-15 27.8	144	24.0	7 27.3	
10	212	.1	107	18 1.0	-141	20	31.0	-15 27.5	174	29.2	7 27.4	
12	240	55.8	108	17 36.6	-143	50	35.0	-15 27.3	204	34.5	7 27.5	
14	269	51.7	110	17 11.7	-144	80	39.1	-15 27.0	234	39.7	7 27.7	
16	298	48.0	111	16 46.5	-145	110	43.1	-15 26.7	264	44.9	7 27.8	
18	327	44.7	112	16 20.9	-146	140	47.1	-15 26.4	294	50.2	7 27.9	
20	356	41.6	114	15 55.0	-147	170	51.1	-15 26.2	324	55.4	7 28.0	
22	25	38.9	115	15 28.7	-148	200	55.2	-15 25.9	355	.6	7 28.1	
Δ					20		1		26		1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 3	7.5	.7	16.0	T <sub>m</sub>	20 14	2.1	59.1	16.1
12	- 2 58.8	T <sub>m☉</sub>	12 h	3.0 min	Starost	37.9 d	Faza	●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♃	11 7	.5	0	-4.1	♃	8 38	.0	38	-1.9
♄	10 18	.1	13	1.2	♄	22 20	.0	192	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>				S <sub>♀</sub>	δ <sub>♀</sub>			S <sub>♂</sub>	δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	179	21.7	6	25.3	194	24.5	195	17.4	7	2.1	205	33.4 - 6 28.6	
2	209	22.1	6	27.2	224	29.4	225	24.0	7	.2	235	34.7 - 6 27.1	
4	239	22.4	6	29.1	254	34.4	255	30.7	6	58.4	265	36.0 - 6 25.5	
6	269	22.8	6	31.0	284	39.3	285	37.3	6	56.6	295	37.3 - 6 24.0	
8	299	23.2	6	32.9	314	44.2	315	43.9	6	54.8	325	38.6 - 6 22.5	
10	329	23.5	6	34.7	344	49.2	345	50.5	6	53.0	355	40.0 - 6 21.0	
12	359	23.9	6	36.6	14	54.1	15	57.0	6	51.2	25	41.3 - 6 19.5	
14	29	24.2	6	38.5	44	59.0	46	3.6	6	49.3	55	42.6 - 6 17.9	
16	59	24.6	6	40.4	75	3.9	76	10.2	6	47.5	85	43.9 - 6 16.4	
18	89	24.9	6	42.3	105	8.9	106	16.7	6	45.7	115	45.2 - 6 14.9	
20	119	25.3	6	44.2	135	13.8	136	23.2	6	43.9	145	46.5 - 6 13.4	
22	149	25.6	6	46.0	165	18.7	166	29.7	6	42.1	175	47.8 - 6 11.9	
Δ	2		9					33		-9		7 8	

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	5 13	18 54	0 44	2 47	13 24	4.0	4 12	.5		
55	5 22	18 45	0 38	2 16	13 41	3.7	3 53	.2		
50	5 28	18 38	0 33	1 57	13 53	3.4	3 39	.8		
45	5 33	18 33	0 30	1 44	14 3	3.1	3 27	1.0		
40	5 38	18 28	0 28	1 34	14 11	3.0	3 17	1.2		
35	5 41	18 25	0 26	1 27	14 18	2.8	3 9	1.3		
30	5 45	18 21	0 24	1 22	14 24	2.7	3 1	1.5		
20	5 50	18 15	0 22	1 14	14 35	2.4	2 48	1.7		
10	5 55	18 11	0 21	1 10	14 44	2.2	2 37	1.9		
0	5 59	18 6	0 21	1 9	14 52	2.0	2 26	2.1		
10	6 4	18 2	0 21	1 10	15 1	1.8	2 15	2.3		
20	6 8	17 57	0 22	1 13	15 10	1.6	2 3	2.5		
30	6 13	17 52	0 24	1 19	15 20	1.4	1 50	2.7		
35	6 16	17 49	0 25	1 24	15 26	1.3	1 42	2.8		
40	6 19	17 46	0 27	1 30	15 33	1.1	1 33	3.0		
45	6 23	17 42	0 29	1 37	15 41	.9	1 23	3.2		
50	6 27	17 38	0 32	1 47	15 50	.7	1 10	3.4		
55	6 32	17 32	0 36	2 1	16 2	.5	0 54	3.7		
60	6 39	17 25	0 42	2 19	16 16	.1	0 32	4.1		

UT	MESEC				JUPITER		SATURN				
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'			
0	54	36.5	116	15 2.1	-149	230	59.2	-15 25.6	25	5.8	7 28.3
2	83	34.4	117	14 35.2	-149	261	3.2	-15 25.3	55	11.1	7 28.4
4	112	32.7	118	14 8.0	-150	291	7.3	-15 25.1	85	16.3	7 28.5
6	141	31.2	119	13 40.5	-151	321	11.3	-15 24.8	115	21.5	7 28.6
8	170	30.0	120	13 12.7	-151	351	15.3	-15 24.5	145	26.8	7 28.7
10	199	29.2	121	12 44.7	-152	21	19.4	-15 24.3	175	32.0	7 28.9
12	228	28.6	122	12 16.4	-152	51	23.4	-15 24.0	205	37.2	7 29.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 26.0	6 47.9	195 23.7	196 36.2	6 40.3	205 49.1	- 6 10.3
2	209 26.4	6 49.8	225 28.6	226 42.7	6 38.5	235 50.5	- 6 8.8
4	239 26.7	6 51.7	255 33.5	256 49.1	6 36.7	265 51.8	- 6 7.3
6	269 27.1	6 53.6	285 38.4	286 55.6	6 35.0	295 53.1	- 6 5.8
8	299 27.4	6 55.4	315 43.4	317 2.0	6 33.2	325 54.4	- 6 4.2
10	329 27.8	6 57.3	345 48.3	347 8.4	6 31.4	355 55.7	- 6 2.7
12	359 28.1	6 59.2	15 53.2	17 14.8	6 29.6	25 57.0	- 6 1.2
14	29 28.5	7 1.1	45 58.2	47 21.2	6 27.9	55 58.4	- 5 59.7
16	59 28.8	7 2.9	76 3.1	77 27.6	6 26.1	85 59.7	- 5 58.1
18	89 29.2	7 4.8	106 8.0	107 34.0	6 24.3	116 1.0	- 5 56.6
20	119 29.5	7 6.7	136 12.9	137 40.3	6 22.6	146 2.3	- 5 55.1
22	149 29.9	7 8.6	166 17.9	167 46.6	6 20.8	176 3.6	- 5 53.6
Δ	2	9		32	-9	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 10	18 56	0 44	2 49	15 1	3.9	4 16	.1
55	5 19	18 47	0 38	2 17	15 8	3.6	4 6	.4
50	5 26	18 40	0 33	1 57	15 14	3.3	3 57	.7
45	5 31	18 34	0 30	1 44	15 18	3.1	3 51	.9
40	5 36	18 29	0 28	1 34	15 22	2.9	3 45	1.1
35	5 40	18 25	0 26	1 27	15 25	2.7	3 40	1.2
30	5 43	18 22	0 24	1 22	15 28	2.6	3 36	1.4
20	5 49	18 16	0 22	1 14	15 33	2.4	3 29	1.6
10	5 54	18 10	0 21	1 11	15 37	2.1	3 22	1.8
0	5 59	18 6	0 21	1 9	15 41	1.9	3 16	2.0
10	6 4	18 1	0 21	1 10	15 45	1.8	3 9	2.2
20	6 8	17 56	0 22	1 13	15 49	1.6	3 3	2.4
30	6 14	17 51	0 24	1 19	15 54	1.3	2 55	2.6
35	6 17	17 48	0 25	1 24	15 57	1.2	2 50	2.8
40	6 20	17 44	0 27	1 30	15 60	1.0	2 45	2.9
45	6 24	17 40	0 29	1 37	16 3	.9	2 39	3.1
50	6 29	17 35	0 32	1 47	16 7	.7	2 32	3.3
55	6 34	17 30	0 36	2 1	16 13	.4	2 23	3.6
60	6 41	17 22	0 42	2 19	16 19	.1	2 11	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	42 30.5	126	9 22.0	-154	231 47.6	-15 22.4	26 8.6	7 29.7
2	71 31.6	127	8 52.3	-154	261 51.7	-15 22.1	56 13.8	7 29.8
4	100 33.0	127	8 22.4	-154	291 55.7	-15 21.8	86 19.0	7 29.9
6	129 34.6	128	7 52.4	-154	321 59.8	-15 21.6	116 24.2	7 30.0
8	158 36.4	128	7 22.2	-154	352 3.8	-15 21.3	146 29.4	7 30.2
10	187 38.4	129	6 52.0	-154	22 7.8	-15 21.0	176 34.7	7 30.3
12	216 40.6	129	6 21.6	-154	52 11.9	-15 20.8	206 39.9	7 30.4
14	245 43.0	129	5 51.1	-154	82 15.9	-15 20.5	236 45.1	7 30.5
16	274 45.5	130	5 20.5	-154	112 20.0	-15 20.2	266 50.3	7 30.6
18	303 48.2	130	4 49.9	-153	142 24.0	-15 20.0	296 55.5	7 30.7
20	332 51.0	130	4 19.2	-153	172 28.1	-15 19.7	327 .8	7 30.8
22	1 54.0	130	3 48.4	-152	202 32.1	-15 19.4	357 6.0	7 31.0
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 2 32.9	.7	16.0	T <sub>m</sub>	21 52	2.0	58.7 16.0		
12	- 2 24.3	T <sub>m☉</sub>	12 h 2.4 min	Starost	39.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 56	.5	1	-4.1	♄	8 32	.0	37	-1.9
♂	10 16	.1	11	1.2	♂	22 12	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 30.2	7 10.4	196 22.8	197 52.9	6 19.0	206 5.0	- 5 52.0
2	209 30.6	7 12.3	226 27.7	227 59.2	6 17.3	236 6.3	- 5 50.5
4	239 30.9	7 14.2	256 32.7	258 5.5	6 15.6	266 7.6	- 5 49.0
6	269 31.3	7 16.0	286 37.6	288 11.8	6 13.8	296 8.9	- 5 47.5
8	299 31.6	7 17.9	316 42.5	318 18.0	6 12.1	326 10.2	- 5 45.9
10	329 32.0	7 19.8	346 47.4	348 24.3	6 10.3	356 11.6	- 5 44.4
12	359 32.3	7 21.6	16 52.4	18 30.5	6 8.6	26 12.9	- 5 42.9
14	29 32.6	7 23.5	46 57.3	48 36.7	6 6.9	56 14.2	- 5 41.4
16	59 33.0	7 25.4	77 2.2	78 42.9	6 5.2	86 15.5	- 5 39.8
18	89 33.3	7 27.2	107 7.2	108 49.1	6 3.4	116 16.8	- 5 38.3
20	119 33.7	7 29.1	137 12.1	138 55.3	6 1.7	146 18.2	- 5 36.8
22	149 34.0	7 30.9	167 17.0	169 1.4	6 .0	176 19.5	- 5 35.2
Δ	2	9		31	-9	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 7	18 59	0 44	2 52	16 35	3.9	4 19	.1
55	5 17	18 49	0 38	2 18	16 34	3.5	4 16	.4
50	5 24	18 41	0 33	1 58	16 33	3.2	4 14	.7
45	5 30	18 35	0 30	1 44	16 32	3.0	4 12	.9
40	5 35	18 30	0 28	1 35	16 31	2.8	4 11	1.0
35	5 39	18 26	0 26	1 27	16 31	2.7	4 10	1.2
30	5 42	18 22	0 24	1 22	16 30	2.6	4 9	1.3
20	5 49	18 16	0 22	1 15	16 29	2.3	4 7	1.5
10	5 54	18 10	0 21	1 11	16 28	2.1	4 5	1.7
0	5 59	18 5	0 21	1 9	16 28	1.9	4 3	1.9
10	6 4	18 0	0 21	1 10	16 27	1.7	4 2	2.1
20	6 9	17 55	0 22	1 13	16 26	1.5	3 60	2.3
30	6 14	17 50	0 24	1 19	16 26	1.3	3 58	2.6
35	6 18	17 46	0 25	1 24	16 25	1.2	3 57	2.7
40	6 21	17 43	0 27	1 30	16 25	1.0	3 55	2.9
45	6 25	17 38	0 29	1 37	16 24	.9	3 54	3.0
50	6 30	17 33	0 32	1 47	16 23	.7	3 52	3.3
55	6 36	17 27	0 36	2 0	16 23	.4	3 50	3.5
60	6 44	17 19	0 42	2 19	16 22	.1	3 47	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	30 57.1	130	3 17.6	-152	232 36.2	-15 19.1	27 11.2	7 31.1
2	60 .4	130	2 46.8	-151	262 40.2	-15 18.9	57 16.4	7 31.2
4	89 3.7	131	2 15.9	-151	292 44.3	-15 18.6	87 21.6	7 31.3
6	118 7.2	131	1 45.1	-150	322 48.3	-15 18.3	117 26.9	7 31.4
8	147 10.8	130	1 14.2	-150	352 52.4	-15 18.1	147 32.1	7 31.5
10	176 14.4	130	0 43.3	-149	22 56.4	-15 17.8	177 37.3	7 31.7
12	205 18.2	130	0 12.5	-148	53 .5	-15 17.5	207 42.5	7 31.8
14	234 22.0	130	- 0 18.3	-147	83 4.5	-15 17.3	237 47.7	7 31.9
16	263 25.8	130	- 0 49.0	-146	113 8.6	-15 17.0	267 52.9	7 32.0
18	292 29.8	130	- 1 19.7	-145	143 12.6	-15 16.7	297 58.2	7 32.1
20	321 33.8	129	- 1 50.4	-145	173 16.7	-15 16.5	328 3.4	7 32.2
22	350 37.8	129	- 2 20.9	-144	203 20.8	-15 16.2	358 8.6	7 32.3
Δ					20	1	26	1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 2 15.8	.7	16.0	T <sub>m</sub>	22 39	1.9	58.3 15.9		
12	- 2 7.4	T <sub>m☉</sub>	12 h 2.1 min	Starost	40.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 34.4	7 32.8	197 21.9	199 7.5	5 58.3	206 20.8	- 5 33.7
2	209 34.7	7 34.7	227 26.9	229 13.7	5 56.6	236 22.1	- 5 32.2
4	239 35.1	7 36.5	257 31.8	259 19.8	5 54.9	266 23.5	- 5 30.6
6	269 35.4	7 38.4	287 36.7	289 25.8	5 53.2	296 24.8	- 5 29.1
8	299 35.7	7 40.2	317 41.6	319 31.9	5 51.6	326 26.1	- 5 27.6
10	329 36.1	7 42.1	347 46.6	349 38.0	5 49.9	356 27.4	- 5 26.1
12	359 36.4	7 43.9	17 51.5	19 44.0	5 48.2	26 28.8	- 5 24.5
14	29 36.8	7 45.8	47 56.4	49 50.0	5 46.5	56 30.1	- 5 23.0
16	59 37.1	7 47.7	78 1.4	79 56.0	5 44.9	86 31.4	- 5 21.5
18	89 37.5	7 49.5	108 6.3	110 2.0	5 43.2	116 32.8	- 5 19.9
20	119 37.8	7 51.4	138 11.2	140 8.0	5 41.5	146 34.1	- 5 18.4
22	149 38.1	7 53.2	168 16.1	170 14.0	5 39.9	176 35.4	- 5 16.9
Δ	2	9		30	-8	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 4	19 1	0 45	2 54	18 8	3.9	4 21	.1
55	5 14	18 51	0 38	2 19	17 58	3.5	4 26	.4
50	5 22	18 43	0 33	1 58	17 50	3.2	4 30	.7
45	5 28	18 37	0 30	1 45	17 44	3.0	4 33	.9
40	5 33	18 31	0 28	1 35	17 39	2.8	4 36	1.1
35	5 37	18 27	0 26	1 28	17 35	2.7	4 38	1.2
30	5 41	18 23	0 24	1 22	17 31	2.5	4 40	1.3
20	5 48	18 16	0 22	1 15	17 25	2.3	4 44	1.5
10	5 53	18 10	0 21	1 11	17 19	2.1	4 47	1.7
0	5 59	18 5	0 21	1 9	17 14	1.9	4 50	1.9
10	6 4	17 60	0 21	1 10	17 9	1.8	4 53	2.1
20	6 9	17 54	0 22	1 13	17 3	1.6	4 56	2.3
30	6 15	17 48	0 24	1 19	16 57	1.4	4 59	2.5
35	6 18	17 45	0 25	1 24	16 53	1.2	5 2	2.7
40	6 22	17 41	0 27	1 30	16 49	1.1	5 4	2.8
45	6 26	17 37	0 29	1 37	16 45	.9	5 7	3.0
50	6 32	17 31	0 32	1 47	16 39	.7	5 10	3.2
55	6 38	17 25	0 36	2 0	16 33	.5	5 14	3.5
60	6 46	17 16	0 42	2 19	16 24	.1	5 20	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	19 41.8	129 - 2	51.4	-142	233 24.8	-15 16.0	28 13.8	7 32.4
2	48 45.9	129 - 3	21.8	-141	263 28.9	-15 15.7	58 19.0	7 32.6
4	77 50.0	128 - 3	52.1	-140	293 32.9	-15 15.4	88 24.2	7 32.7
6	106 54.1	128 - 4	22.3	-139	323 37.0	-15 15.2	118 29.4	7 32.8
8	135 58.2	127 - 4	52.3	-138	353 41.1	-15 14.9	148 34.6	7 32.9
10	165 2.3	127 - 5	22.2	-137	23 45.1	-15 14.6	178 39.9	7 33.0
12	194 6.4	126 - 5	52.0	-135	53 49.2	-15 14.4	208 45.1	7 33.1
14	223 10.4	126 - 6	21.6	-134	83 53.2	-15 14.1	238 50.3	7 33.2
16	252 14.5	125 - 6	51.0	-132	113 57.3	-15 13.8	268 55.5	7 33.3
18	281 18.5	125 - 7	20.3	-131	144 1.4	-15 13.6	299 .7	7 33.4
20	310 22.4	124 - 7	49.4	-130	174 5.4	-15 13.3	329 5.9	7 33.6
22	339 26.3	124 - 8	18.3	-128	204 9.5	-15 13.0	359 11.1	7 33.7
Δ					20	1	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min s	s	'	h min	min	'	'
00	- 1 59.0	.7	16.0	T <sub>m</sub>	23 25	2.0	57.9 15.8
12	- 1 50.6	T <sub>m</sub> ☉	12 h 1.8 min	Starost 41.9 d Faza ●			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	10 46	.5	1	-4.2	♃	8 25	.0	37	-2.0
♁	10 14	.1	10	1.2	♄	22 3	.0	192	.7

10. APRIL

PETAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 38.5	7 55.1	198 21.1	200 19.9	5 38.3	206 36.7	- 5 15.3
2	209 38.8	7 56.9	228 26.0	230 25.9	5 36.6	236 38.1	- 5 13.8
4	239 39.1	7 58.8	258 30.9	260 31.8	5 35.0	266 39.4	- 5 12.3
6	269 39.5	8 .6	288 35.9	290 37.7	5 33.3	296 40.7	- 5 10.7
8	299 39.8	8 2.4	318 40.8	320 43.6	5 31.7	326 42.1	- 5 9.2
10	329 40.2	8 4.3	348 45.7	350 49.4	5 30.1	356 43.4	- 5 7.7
12	359 40.5	8 6.1	18 50.6	20 55.3	5 28.5	26 44.7	- 5 6.1
14	29 40.8	8 8.0	48 55.6	51 1.1	5 26.9	56 46.1	- 5 4.6
16	59 41.2	8 9.8	79 .5	81 6.9	5 25.3	86 47.4	- 5 3.1
18	89 41.5	8 11.7	109 5.4	111 12.7	5 23.7	116 48.7	- 5 1.5
20	119 41.8	8 13.5	139 10.4	141 18.5	5 22.1	146 50.1	- 4 60.0
22	149 42.2	8 15.3	169 15.3	171 24.3	5 20.5	176 51.4	- 4 58.5
Δ	2	9		29	-8	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 1	19 4	0 45	2 57	19 40	3.9	4 24	.2
55	5 12	18 53	0 38	2 20	19 22	3.5	4 36	.5
50	5 20	18 45	0 34	1 59	19 7	3.2	4 46	.8
45	5 26	18 38	0 30	1 45	18 56	3.0	4 54	1.0
40	5 31	18 32	0 28	1 35	18 47	2.8	5 1	1.1
35	5 36	18 28	0 26	1 28	18 39	2.7	5 7	1.3
30	5 40	18 24	0 24	1 22	18 32	2.5	5 12	1.4
20	5 47	18 17	0 22	1 15	18 20	2.3	5 21	1.6
10	5 53	18 10	0 21	1 11	18 10	2.2	5 29	1.8
0	5 58	18 5	0 21	1 9	18 0	2.0	5 36	2.0
10	6 4	17 59	0 21	1 10	17 51	1.8	5 43	2.1
20	6 9	17 54	0 22	1 13	17 41	1.6	5 51	2.3
30	6 16	17 47	0 24	1 19	17 29	1.4	6 1	2.5
35	6 19	17 44	0 25	1 24	17 23	1.3	6 6	2.7
40	6 23	17 39	0 27	1 30	17 15	1.2	6 12	2.8
45	6 28	17 35	0 29	1 37	17 7	1.0	6 19	3.0
50	6 33	17 29	0 32	1 47	16 56	.8	6 27	3.2
55	6 40	17 22	0 36	2 0	16 44	.6	6 38	3.5
60	6 49	17 13	0 42	2 19	16 27	.2	6 52	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	8 30.1	123 - 8	47.0	-126	234 13.6	-15 12.8	29 16.3	7 33.8
2	37 33.9	122 - 9	15.5	-125	264 17.6	-15 12.5	59 21.5	7 33.9
4	66 37.6	122 - 9	43.8	-123	294 21.7	-15 12.3	89 26.7	7 34.0
6	95 41.2	121 -10	11.8	-121	324 25.8	-15 12.0	119 31.9	7 34.1
8	124 44.8	120 -10	39.6	-120	354 29.8	-15 11.7	149 37.1	7 34.2
10	153 48.3	119 -11	7.2	-118	24 33.9	-15 11.5	179 42.4	7 34.3
12	182 51.6	119 -11	34.5	-116	54 38.0	-15 11.2	209 47.6	7 34.4
14	211 54.9	118 -12	1.5	-114	84 42.0	-15 10.9	239 52.8	7 34.5
16	240 58.1	117 -12	28.3	-112	114 46.1	-15 10.7	269 58.0	7 34.6
18	270 1.1	117 -12	54.8	-111	144 50.2	-15 10.4	300 3.2	7 34.7
20	299 4.1	116 -13	21.0	-109	174 54.3	-15 10.2	330 8.4	7 34.9
22	328 6.9	115 -13	46.9	-107	204 58.3	-15 9.9	0 13.6	7 35.0
Δ					20	1	26	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min s	s	'	h min	min	'	'
00	- 1 42.3	.7	16.0	T <sub>m</sub>	.. .	1.0	57.3 15.6
12	- 1 34.1	T <sub>m</sub> ☉	12 h 1.6 min	Starost 42.9 d Faza ●			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	10 41	.5	2	-4.2	♃	8 22	.0	37	-2.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 42.5	8 17.2	199 20.2	201 30.1	5 18.9	206 52.7	- 4 56.9
2	209 42.8	8 19.0	229 25.1	231 35.8	5 17.3	236 54.1	- 4 55.4
4	239 43.2	8 20.8	259 30.1	261 41.5	5 15.8	266 55.4	- 4 53.8
6	269 43.5	8 22.7	289 35.0	291 47.2	5 14.2	296 56.7	- 4 52.3
8	299 43.8	8 24.5	319 39.9	321 52.9	5 12.6	326 58.1	- 4 50.8
10	329 44.2	8 26.4	349 44.9	351 58.6	5 11.1	356 59.4	- 4 49.2
12	359 44.5	8 28.2	19 49.8	22 4.3	5 9.5	27 .7	- 4 47.7
14	29 44.8	8 30.0	49 54.7	52 9.9	5 8.0	57 2.1	- 4 46.2
16	59 45.1	8 31.8	79 59.6	82 15.6	5 6.5	87 3.4	- 4 44.6
18	89 45.5	8 33.7	110 4.6	112 21.2	5 4.9	117 4.7	- 4 43.1
20	119 45.8	8 35.5	140 9.5	142 26.8	5 3.4	147 6.1	- 4 41.5
22	149 46.1	8 37.3	170 14.4	172 32.4	5 1.9	177 7.4	- 4 40.0
Δ	2	9		28	-8	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 58	19 6	0 45	2 60	21 14	3.9	4 27	.2
55	5 9	18 55	0 38	2 21	20 45	3.4	4 48	.6
50	5 17	18 46	0 34	1 60	20 24	3.1	5 4	.9
45	5 24	18 39	0 30	1 46	20 8	2.9	5 17	1.1
40	5 30	18 33	0 28	1 35	19 54	2.8	5 28	1.3
35	5 35	18 29	0 26	1 28	19 43	2.6	5 37	1.4
30	5 39	18 24	0 24	1 22	19 33	2.5	5 45	1.5
20	5 46	18 17	0 22	1 15	19 16	2.3	5 59	1.7
10	5 52	18 10	0 21	1 11	19 2	2.2	6 12	1.9
0	5 58	18 5	0 21	1 9	18 48	2.1	6 23	2.0
10	6 4	17 59	0 21	1 10	18 35	1.9	6 35	2.2
20	6 10	17 53	0 22	1 13	18 20	1.8	6 47	2.3
30	6 16	17 46	0 24	1 20	18 4	1.6	7 2	2.5
35	6 20	17 42	0 25	1 24	17 55	1.5	7 10	2.7
40	6 24	17 38	0 27	1 30	17 44	1.4	7 19	2.8
45	6 29	17 33	0 29	1 37	17 31	1.2	7 31	2.9
50	6 35	17 27	0 32	1 47	17 16	1.0	7 44	3.2
55	6 42	17 20	0 36	2 0	16 57	.7	8 2	3.4
60	6 51	17 11	0 42	2 19	16 32	.3	8 25	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	357 9.6	114 -14	12.5	-105	235 2.4	-15 9.6	30 18.8	7 35.1
2	26 12.2	113 -14	37.8	-102	265 6.5	-15 9.4	60 24.0	7 35.2
4	55 14.6	113 -15	2.8	-100	295 10.6	-15 9.1	90 29.2	7 35.3
6	84 16.9	112 -15	27.4	-98	325 14.6	-15 8.9	120 34.4	7 35.4
8	113 19.1	111 -15	51.7	-96	355 18.7	-15 8.6	150 39.6	7 35.5
10	142 21.1	110 -16	15.6	-94	25 22.8	-15 8.3	180 44.8	7 35.6
12	171 23.0	110 -16	39.2	-92	55 26.9	-15 8.1	210 50.0	7 35.7
14	200 24.8	109 -17	2.5	-89	85 31.0	-15 7.8	240 55.2	7 35.8
16	229 26.4	108 -17	25.3	-87	115 35.0	-15 7.6	271 .4	7 35.9
18	258 27.8	107 -17	47.8	-85	145 39.1	-15 7.3	301 5.6	7 36.0
20	287 29.2	107 -18	9.9	-83	175 43.2	-15 7.0	331 10.8	7 36.1
22	316 30.3	106 -18	31.6	-80	205 47.3	-15 6.8	1 16.0	7 36.2
Δ					20	1	26	1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'	'
00	- 1 25.9	.7	16.0	T <sub>m</sub>	0 12	2.0	56.8	15.5
12	- 1 17.9	T <sub>m</sub> ☉	12 h 1.3 min	Starost 43.9 d Faza ●				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	10 37	.5	2	-4.2	♃	8 19	.0	37	-2.0
♂	10 12	.1	9	1.2	♄	21 55	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 46.4	8 39.2	200 19.4	202 37.9	5 .4	207 8.8	- 4 38.5
2	209 46.8	8 41.0	230 24.3	232 43.5	4 58.9	237 10.1	- 4 36.9
4	239 47.1	8 42.8	260 29.2	262 49.0	4 57.4	267 11.4	- 4 35.4
6	269 47.4	8 44.6	290 34.1	292 54.5	4 55.9	297 12.8	- 4 33.8
8	299 47.7	8 46.5	320 39.1	323 .0	4 54.4	327 14.1	- 4 32.3
10	329 48.1	8 48.3	350 44.0	353 5.5	4 52.9	357 15.5	- 4 30.8
12	359 48.4	8 50.1	20 48.9	23 11.0	4 51.4	27 16.8	- 4 29.2
14	29 48.7	8 51.9	50 53.9	53 16.5	4 49.9	57 18.1	- 4 27.7
16	59 49.0	8 53.7	80 58.8	83 21.9	4 48.5	87 19.5	- 4 26.1
18	89 49.4	8 55.6	111 3.7	113 27.3	4 47.0	117 20.8	- 4 24.6
20	119 49.7	8 57.4	141 8.6	143 32.7	4 45.6	147 22.2	- 4 23.1
22	149 50.0	8 59.2	171 13.6	173 38.1	4 44.1	177 23.5	- 4 21.5
Δ	2	9		27	-7	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 55	19 9	0 45	3 3	22 47	3.7	4 33	.4
55	5 7	18 57	0 39	2 22	22 7	3.2	5 4	.9
50	5 15	18 48	0 34	2 0	21 39	2.9	5 26	1.1
45	5 22	18 40	0 30	1 46	21 18	2.8	5 44	1.3
40	5 28	18 34	0 28	1 36	21 1	2.6	5 58	1.5
35	5 33	18 29	0 26	1 28	20 46	2.5	6 11	1.6
30	5 38	18 25	0 24	1 23	20 34	2.5	6 21	1.7
20	5 45	18 17	0 22	1 15	20 13	2.3	6 40	1.8
10	5 52	18 10	0 21	1 11	19 54	2.2	6 56	2.0
0	5 58	18 4	0 21	1 9	19 38	2.1	7 12	2.1
10	6 4	17 58	0 21	1 10	19 21	2.0	7 27	2.2
20	6 10	17 52	0 22	1 13	19 3	1.9	7 43	2.3
30	6 17	17 45	0 24	1 20	18 42	1.8	8 2	2.5
35	6 21	17 41	0 25	1 24	18 30	1.7	8 14	2.6
40	6 25	17 36	0 27	1 30	18 17	1.6	8 26	2.7
45	6 30	17 31	0 30	1 37	18 0	1.5	8 41	2.8
50	6 36	17 25	0 33	1 47	17 41	1.3	9 0	3.0
55	6 44	17 17	0 37	2 0	17 15	1.0	9 24	3.3
60	6 53	17 8	0 42	2 19	16 39	.6	9 58	3.8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	345 31.3	105 -18	52.9	-78	235 51.4	-15 6.5	31 21.2	7 36.3
2	14 32.2	105 -19	13.8	-75	265 55.5	-15 6.3	61 26.4	7 36.4
4	43 32.9	104 -19	34.3	-73	295 59.5	-15 6.0	91 31.6	7 36.5
6	72 33.4	104 -19	54.4	-71	326 3.6	-15 5.7	121 36.8	7 36.6
8	101 33.8	103 -20	14.1	-68	356 7.7	-15 5.5	151 42.0	7 36.7
10	130 34.0	102 -20	33.3	-66	26 11.8	-15 5.2	181 47.1	7 36.9
12	159 34.1	102 -20	52.1	-63	56 15.9	-15 5.0	211 52.3	7 37.0
14	188 34.1	101 -21	10.4	-61	86 20.0	-15 4.7	241 57.5	7 37.1
16	217 33.8	101 -21	28.3	-58	116 24.1	-15 4.5	272 2.7	7 37.2
18	246 33.5	100 -21	45.7	-55	146 28.2	-15 4.2	302 7.9	7 37.3
20	275 33.0	100 -22	2.7	-53	176 32.3	-15 3.9	332 13.1	7 37.4
22	304 32.3	100 -22	19.2	-50	206 36.4	-15 3.7	2 18.3	7 37.5
Δ					20	1	26	1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'	'
00	- 1 9.8	.7	16.0	T <sub>m</sub>	0 60	2.1	56.2	15.3
12	- 1 1.9	T <sub>m</sub> ☉	12 h 1.0 min	Starost 44.9 d Faza ●				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	10 32	.5	2	-4.2	♃	8 15	.0		



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 50.3	9 1.0	201 18.5	203 43.5	4 42.7	207 24.8	- 4 20.0
2	209 50.6	9 2.8	231 23.4	233 48.9	4 41.2	237 26.2	- 4 18.4
4	239 51.0	9 4.6	261 28.3	263 54.2	4 39.8	267 27.5	- 4 16.9
6	269 51.3	9 6.4	291 33.3	293 59.5	4 38.4	297 28.9	- 4 15.4
8	299 51.6	9 8.2	321 38.2	324 4.9	4 37.0	327 30.2	- 4 13.8
10	329 51.9	9 10.1	351 43.1	354 10.2	4 35.6	357 31.6	- 4 12.3
12	359 52.2	9 11.9	21 48.1	24 15.4	4 34.2	27 32.9	- 4 10.7
14	29 52.5	9 13.7	51 53.0	54 20.7	4 32.8	57 34.2	- 4 9.2
16	59 52.9	9 15.5	81 57.9	84 26.0	4 31.4	87 35.6	- 4 7.6
18	89 53.2	9 17.3	112 2.8	114 31.2	4 30.0	117 36.9	- 4 6.1
20	119 53.5	9 19.1	142 7.8	144 36.4	4 28.6	147 38.3	- 4 4.6
22	149 53.8	9 20.9	172 12.7	174 41.6	4 27.3	177 39.6	- 4 3.0
Δ	2	9		26	-7	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 52	19 11	0 46	3 6	.. .	.0	4 43	.7
55	5 4	18 59	0 39	2 24	23 23	2.7	5 24	1.2
50	5 13	18 49	0 34	2 1	22 49	2.6	5 53	1.4
45	5 21	18 42	0 30	1 46	22 24	2.5	6 16	1.6
40	5 27	18 35	0 28	1 36	22 4	2.4	6 33	1.7
35	5 32	18 30	0 26	1 29	21 47	2.4	6 48	1.8
30	5 37	18 25	0 24	1 23	21 33	2.3	7 2	1.9
20	5 44	18 17	0 22	1 15	21 9	2.3	7 24	2.0
10	5 51	18 10	0 21	1 11	20 48	2.2	7 44	2.1
0	5 57	18 4	0 21	1 10	20 28	2.2	8 2	2.1
10	6 4	17 58	0 21	1 10	20 9	2.1	8 20	2.2
20	6 10	17 51	0 22	1 13	19 48	2.0	8 40	2.3
30	6 17	17 44	0 24	1 20	19 24	1.9	9 2	2.4
35	6 21	17 40	0 25	1 24	19 10	1.9	9 16	2.5
40	6 26	17 35	0 27	1 30	18 54	1.8	9 31	2.6
45	6 31	17 29	0 30	1 38	18 35	1.8	9 50	2.6
50	6 38	17 23	0 33	1 47	18 11	1.6	10 13	2.8
55	6 46	17 15	0 37	2 1	17 40	1.5	10 44	3.0
60	6 56	17 5	0 42	2 19	16 53	1.1	11 29	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	333 31.6	99 -22	35.3	-48	236 40.4	-15 3.4	32 23.5	7 37.6
2	2 30.7	99 -22	50.8	-45	266 44.5	-15 3.2	62 28.7	7 37.7
4	31 29.6	99 -23	5.9	-42	296 48.6	-15 2.9	92 33.9	7 37.8
6	60 28.4	98 -23	20.5	-40	326 52.7	-15 2.7	122 39.1	7 37.9
8	89 27.1	98 -23	34.6	-37	356 56.8	-15 2.4	152 44.3	7 38.0
10	118 25.7	98 -23	48.2	-35	27 9	-15 2.1	182 49.4	7 38.1
12	147 24.2	98 -24	1.4	-32	57 5.0	-15 1.9	212 54.6	7 38.2
14	176 22.6	98 -24	14.0	-29	87 9.1	-15 1.6	242 59.8	7 38.3
16	205 20.8	98 -24	26.1	-27	117 13.2	-15 1.4	273 5.0	7 38.4
18	234 19.0	98 -24	37.7	-24	147 17.3	-15 1.1	303 10.2	7 38.5
20	263 17.0	98 -24	48.8	-21	177 21.4	-15 .9	333 15.4	7 38.6
22	292 15.0	98 -24	59.3	-19	207 25.5	-15 .6	3 20.6	7 38.7
Δ					20	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 0 54.0	.6	16.0	T <sub>m</sub>	1 50	2.1	55.6	15.2	
12	- 0 46.3	T <sub>m☉</sub>	12 h .8 min	Starost	45.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	10 28	.5	2	-4.3	♄	8 12	.0	36	-2.0
♂	10 10	.1	7	1.2	♅	21 47	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 54.1	9 22.7	202 17.6	204 46.8	4 25.9	207 41.0	- 4 1.5
2	209 54.4	9 24.5	232 22.6	234 52.0	4 24.6	237 42.3	- 3 59.9
4	239 54.7	9 26.3	262 27.5	264 57.1	4 23.2	267 43.7	- 3 58.4
6	269 55.0	9 28.1	292 32.4	295 2.3	4 21.9	297 45.0	- 3 56.8
8	299 55.4	9 29.9	322 37.3	325 7.4	4 20.5	327 46.4	- 3 55.3
10	329 55.7	9 31.7	352 42.3	355 12.5	4 19.2	357 47.7	- 3 53.7
12	359 56.0	9 33.5	22 47.2	25 17.6	4 17.9	27 49.1	- 3 52.2
14	29 56.3	9 35.3	52 52.1	55 22.7	4 16.6	57 50.4	- 3 50.7
16	59 56.6	9 37.1	82 57.1	85 27.7	4 15.3	87 51.8	- 3 49.1
18	89 56.9	9 38.9	113 2.0	115 32.8	4 14.0	117 53.1	- 3 47.6
20	119 57.2	9 40.6	143 6.9	145 37.8	4 12.7	147 54.5	- 3 46.0
22	149 57.5	9 42.4	173 11.8	175 42.8	4 11.4	177 55.8	- 3 44.5
Δ	2	9		25	-7	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 49	19 13	0 46	3 10	0 16	3.1	5 1	1.4
55	5 2	19 1	0 39	2 25	.. .	.0	5 54	1.7
50	5 11	18 51	0 34	2 2	23 51	2.2	6 28	1.8
45	5 19	18 43	0 31	1 47	23 24	2.2	6 54	1.9
40	5 25	18 36	0 28	1 36	23 2	2.2	7 14	2.0
35	5 31	18 31	0 26	1 29	22 45	2.2	7 31	2.0
30	5 35	18 26	0 24	1 23	22 29	2.2	7 46	2.0
20	5 44	18 18	0 22	1 15	22 3	2.2	8 11	2.1
10	5 51	18 10	0 21	1 11	21 41	2.2	8 33	2.1
0	5 57	18 4	0 21	1 10	21 20	2.1	8 53	2.2
10	6 4	17 57	0 21	1 10	20 59	2.1	9 13	2.2
20	6 10	17 50	0 22	1 14	20 37	2.1	9 35	2.2
30	6 18	17 43	0 24	1 20	20 11	2.1	10 0	2.3
35	6 22	17 38	0 26	1 24	19 56	2.1	10 15	2.3
40	6 27	17 33	0 27	1 30	19 38	2.1	10 33	2.3
45	6 33	17 28	0 30	1 38	19 17	2.1	10 53	2.3
50	6 39	17 21	0 33	1 47	18 51	2.1	11 20	2.4
55	6 48	17 13	0 37	2 1	18 15	2.0	11 55	2.5
60	6 58	17 2	0 42	2 19	17 18	1.9	12 51	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	321 12.9	98 -25	9.4	-16	237 29.6	-15 .4	33 25.7	7 38.8
2	350 10.8	98 -25	18.9	-13	267 33.7	-15 .1	63 30.9	7 38.9
4	19 8.5	98 -25	27.9	-11	297 37.8	-14 59.9	93 36.1	7 39.0
6	48 6.2	98 -25	36.4	-8	327 41.9	-14 59.6	123 41.3	7 39.1
8	77 3.9	98 -25	44.4	-5	357 46.0	-14 59.3	153 46.5	7 39.2
10	106 1.5	99 -25	51.8	-3	27 50.1	-14 59.1	183 51.7	7 39.3
12	134 59.1	99 -25	58.7	0	57 54.3	-14 58.8	213 56.8	7 39.4
14	163 56.6	99 -26	5.1	3	87 58.4	-14 58.6	244 2.0	7 39.4
16	192 54.1	100 -26	10.9	5	118 2.5	-14 58.3	274 7.2	7 39.5
18	221 51.6	100 -26	16.3	8	148 6.6	-14 58.1	304 12.4	7 39.6
20	250 49.1	101 -26	21.0	10	178 10.7	-14 57.8	334 17.6	7 39.7
22	279 46.6	101 -26	25.3	13	208 14.8	-14 57.6	4 22.7	7 39.8
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 0 38.5	.6	16.0	T <sub>m</sub>	2 41	2.1	55.1	15.0	
12	- 0 30.9	T <sub>m☉</sub>	12 h .5 min	Starost	46.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 57.8	9 44.2	203 16.8	205 47.8	4 10.1	207 57.2	- 3 42.9
2	209 58.1	9 46.0	233 21.7	235 52.8	4 8.8	237 58.5	- 3 41.4
4	239 58.4	9 47.8	263 26.6	265 57.8	4 7.6	267 59.9	- 3 39.8
6	269 58.7	9 49.6	293 31.6	296 2.7	4 6.3	298 1.2	- 3 38.3
8	299 59.0	9 51.4	323 36.5	326 7.7	4 5.0	328 2.6	- 3 36.7
10	329 59.3	9 53.2	353 41.4	356 12.6	4 3.8	358 3.9	- 3 35.2
12	359 59.6	9 54.9	23 46.3	26 17.5	4 2.6	28 5.3	- 3 33.6
14	29 59.9	9 56.7	53 51.3	56 22.4	4 1.3	58 6.6	- 3 32.1
16	60 .2	9 58.5	83 56.2	86 27.3	4 .1	88 8.0	- 3 30.6
18	90 .5	10 .3	114 1.1	116 32.1	3 58.9	118 9.3	- 3 29.0
20	120 .8	10 2.1	144 6.1	146 37.0	3 57.7	148 10.7	- 3 27.5
22	150 1.1	10 3.8	174 11.0	176 41.8	3 56.5	178 12.0	- 3 25.9
Δ	2	9		24	-6	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 46	19 16	0 46	3 14	1 29	2.1	5 34	2.3
55	4 59	19 3	0 39	2 27	0 29	2.1	6 35	2.3
50	5 9	18 52	0 34	2 3	.. .	.0	7 12	2.3
45	5 17	18 44	0 31	1 47	.. .	.0	7 40	2.2
40	5 24	18 37	0 28	1 37	23 54	1.9	8 2	2.2
35	5 29	18 32	0 26	1 29	23 36	1.9	8 20	2.2
30	5 34	18 27	0 25	1 23	23 21	1.9	8 35	2.2
20	5 43	18 18	0 22	1 15	22 55	2.0	9 1	2.2
10	5 50	18 11	0 21	1 11	22 32	2.1	9 24	2.2
0	5 57	18 4	0 21	1 10	22 12	2.1	9 45	2.1
10	6 4	17 57	0 21	1 10	21 51	2.1	10 6	2.1
20	6 11	17 50	0 22	1 14	21 28	2.2	10 28	2.1
30	6 19	17 42	0 24	1 20	21 2	2.2	10 55	2.1
35	6 23	17 37	0 26	1 24	20 47	2.3	11 10	2.0
40	6 28	17 32	0 27	1 30	20 29	2.3	11 28	2.0
45	6 34	17 26	0 30	1 38	20 7	2.4	11 50	2.0
50	6 41	17 19	0 33	1 47	19 40	2.4	12 17	1.9
55	6 49	17 10	0 37	2 1	19 3	2.5	12 54	1.8
60	7 1	16 59	0 42	2 19	18 3	2.8	13 54	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	308 44.2	102 -26	29.0	16	238 18.9	-14 57.3	34 27.9	7 39.9
2	337 41.7	102 -26	32.2	18	268 23.0	-14 57.1	64 33.1	7 40.0
4	6 39.2	103 -26	34.8	21	298 27.1	-14 56.8	94 38.3	7 40.1
6	35 36.8	104 -26	36.9	23	328 31.3	-14 56.6	124 43.5	7 40.2
8	64 34.5	104 -26	38.5	26	358 35.4	-14 56.3	154 48.6	7 40.3
10	93 32.2	105 -26	39.5	28	28 39.5	-14 56.1	184 53.8	7 40.4
12	122 29.9	106 -26	40.1	31	58 43.6	-14 55.8	214 59.0	7 40.5
14	151 27.7	107 -26	40.1	33	88 47.7	-14 55.6	245 4.2	7 40.6
16	180 25.6	107 -26	39.5	36	118 51.8	-14 55.3	275 9.3	7 40.7
18	209 23.6	108 -26	38.5	38	148 56.0	-14 55.1	305 14.5	7 40.8
20	238 21.6	109 -26	36.9	40	179 .1	-14 54.8	335 19.7	7 40.9
22	267 19.8	110 -26	34.8	43	209 4.2	-14 54.6	5 24.9	7 41.0
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 0 23.4	.6	16.0	T <sub>m</sub>	3 32	2.2	54.7	14.9	
12	- 0 15.9	T <sub>m</sub> ☉	12 h .3 min	Starost	47.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	10 19	.5	2	-4.3	♄	8 6	.0	36	-2.0
♂	10 8	.1	6	1.2	♄	21 38	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 1.4	10 5.6	204 15.9	206 46.6	3 55.3	208 13.4	- 3 24.4
2	210 1.7	10 7.4	234 20.8	236 51.4	3 54.1	238 14.7	- 3 22.8
4	240 2.0	10 9.2	264 25.8	266 56.2	3 52.9	268 16.1	- 3 21.3
6	270 2.3	10 10.9	294 30.7	297 1.0	3 51.7	298 17.5	- 3 19.7
8	300 2.6	10 12.7	324 35.6	327 5.7	3 50.6	328 18.8	- 3 18.2
10	330 2.9	10 14.5	354 40.5	357 10.4	3 49.4	358 20.2	- 3 16.6
12	0 3.2	10 16.2	24 45.5	27 15.2	3 48.2	28 21.5	- 3 15.1
14	30 3.5	10 18.0	54 50.4	57 19.9	3 47.1	58 22.9	- 3 13.5
16	60 3.8	10 19.8	84 55.3	87 24.6	3 45.9	88 24.2	- 3 12.0
18	90 4.1	10 21.5	115 .3	117 29.2	3 44.8	118 25.6	- 3 10.4
20	120 4.4	10 23.3	145 5.2	147 33.9	3 43.7	148 26.9	- 3 8.9
22	150 4.7	10 25.1	175 10.1	177 38.5	3 42.6	178 28.3	- 3 7.3
Δ	1	9		24	-6	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 43	19 18	0 47	3 19	2 20	1.2	6 30	3.1
55	4 57	19 5	0 39	2 28	1 20	1.6	7 30	2.8
50	5 7	18 54	0 34	2 3	0 43	1.7	8 6	2.6
45	5 15	18 46	0 31	1 48	0 16	1.8	8 33	2.5
40	5 22	18 39	0 28	1 37	.. .	.0	8 55	2.4
35	5 28	18 33	0 26	1 29	.. .	.0	9 12	2.3
30	5 33	18 27	0 25	1 23	.. .	.0	9 28	2.3
20	5 42	18 18	0 22	1 16	23 43	1.8	9 53	2.2
10	5 50	18 11	0 21	1 11	23 22	1.9	10 15	2.1
0	5 57	18 3	0 21	1 10	23 2	2.0	10 36	2.1
10	6 4	17 56	0 21	1 11	22 42	2.1	10 57	2.0
20	6 11	17 49	0 22	1 14	22 21	2.2	11 19	1.9
30	6 19	17 41	0 24	1 20	21 56	2.3	11 44	1.8
35	6 24	17 36	0 26	1 24	21 41	2.4	11 59	1.8
40	6 29	17 30	0 27	1 30	21 24	2.5	12 16	1.7
45	6 35	17 24	0 30	1 38	21 4	2.6	12 37	1.6
50	6 42	17 17	0 33	1 48	20 38	2.7	13 3	1.5
55	6 51	17 8	0 37	2 1	20 4	2.9	13 38	1.3
60	7 3	16 56	0 43	2 19	19 9	3.3	14 33	.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	296 18.0	111 -26	32.2	45	239 8.3	-14 54.3	35 30.0	7 41.1
2	325 16.4	112 -26	29.1	48	269 12.4	-14 54.1	65 35.2	7 41.2
4	354 14.9	113 -26	25.4	50	299 16.6	-14 53.8	95 40.4	7 41.2
6	23 13.5	114 -26	21.3	52	329 20.7	-14 53.6	125 45.6	7 41.3
8	52 12.2	115 -26	16.6	54	359 24.8	-14 53.3	155 50.7	7 41.4
10	81 11.1	115 -26	11.5	57	29 28.9	-14 53.1	185 55.9	7 41.5
12	110 10.1	116 -26	5.8	59	59 33.1	-14 52.8	216 1.1	7 41.6
14	139 9.3	117 -25	59.7	61	89 37.2	-14 52.6	246 6.2	7 41.7
16	168 8.6	118 -25	53.0	63	119 41.3	-14 52.3	276 11.4	7 41.8
18	197 8.1	119 -25	45.9	65	149 45.4	-14 52.1	306 16.6	7 41.9
20	226 7.8	120 -25	38.3	67	179 49.6	-14 51.9	336 21.7	7 42.0
22	255 7.6	121 -25	30.2	70	209 53.7	-14 51.6	6 26.9	7 42.1
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 0 8.5	.6	16.0	T <sub>m</sub>	4 24	2.1	54.4	14.8	
12	- 0 1.3	T <sub>m</sub> ☉	12 h .0 min	Starost	48.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	180	4.9	10 26.8	205	15.0		207	43.2	3 41.5	208	29.7	- 3 5.8
2	210	5.2	10 28.6	235	20.0		237	47.8	3 40.4	238	31.0	- 3 4.2
4	240	5.5	10 30.3	265	24.9		267	52.4	3 39.3	268	32.4	- 3 2.7
6	270	5.8	10 32.1	295	29.8		297	57.0	3 38.2	298	33.7	- 3 1.1
8	300	6.1	10 33.9	325	34.8		328	1.5	3 37.1	328	35.1	- 2 59.6
10	330	6.4	10 35.6	355	39.7		358	6.1	3 36.0	358	36.4	- 2 58.0
12	0	6.7	10 37.4	25	44.6		28	10.6	3 34.9	28	37.8	- 2 56.5
14	30	7.0	10 39.1	55	49.5		58	15.2	3 33.9	58	39.2	- 2 54.9
16	60	7.2	10 40.9	85	54.5		88	19.7	3 32.8	88	40.5	- 2 53.4
18	90	7.5	10 42.6	115	59.4		118	24.2	3 31.8	118	41.9	- 2 51.8
20	120	7.8	10 44.4	146	4.3		148	28.6	3 30.7	148	43.2	- 2 50.3
22	150	8.1	10 46.1	176	9.3		178	33.1	3 29.7	178	44.6	- 2 48.7
Δ		1	9					23	-5		7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 21	0 47	3 24	2 48	.6	7 46	3.5
55	4 54	19 6	0 39	2 30	1 57	1.1	8 36	3.0
50	5 5	18 56	0 34	2 4	1 24	1.3	9 9	2.8
45	5 14	18 47	0 31	1 48	0 59	1.5	9 33	2.6
40	5 21	18 40	0 28	1 38	0 39	1.6	9 52	2.5
35	5 27	18 33	0 26	1 30	0 22	1.7	10 9	2.4
30	5 32	18 28	0 25	1 24	0 8	1.7	10 23	2.3
20	5 41	18 19	0 23	1 16	...	.0	10 46	2.2
10	5 49	18 11	0 21	1 11	...	.0	11 7	2.1
0	5 56	18 3	0 21	1 10	23 51	1.9	11 26	2.0
10	6 4	17 56	0 21	1 11	23 33	2.1	11 45	1.9
20	6 11	17 48	0 22	1 14	23 14	2.2	12 5	1.8
30	6 20	17 39	0 24	1 20	22 52	2.3	12 28	1.6
35	6 25	17 35	0 26	1 24	22 38	2.4	12 42	1.5
40	6 30	17 29	0 27	1 30	22 23	2.5	12 57	1.4
45	6 36	17 23	0 30	1 38	22 6	2.7	13 16	1.3
50	6 44	17 15	0 33	1 48	21 43	2.9	13 39	1.2
55	6 53	17 5	0 37	2 1	21 13	3.1	14 10	.9
60	7 5	16 53	0 43	2 19	20 30	3.6	14 54	.5
S								

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	''	''	°	'	°	'	
0	284	7.6	122 -25	21.6	72	239 57.8	-14 51.4	36 32.1	7 42.2
2	313	7.7	123 -25	12.6	74	270 2.0	-14 51.1	66 37.2	7 42.2
4	342	8.1	124 -25	3.1	76	300 6.1	-14 50.9	96 42.4	7 42.3
6	11	8.6	125 -24	53.1	78	330 10.2	-14 50.6	126 47.6	7 42.4
8	40	9.3	126 -24	42.7	80	0 14.4	-14 50.4	156 52.7	7 42.5
10	69	10.2	127 -24	31.8	82	30 18.5	-14 50.1	186 57.9	7 42.6
12	98	11.3	128 -24	20.4	84	60 22.6	-14 49.9	217 3.1	7 42.7
14	127	12.6	129 -24	8.7	85	90 26.8	-14 49.6	247 8.2	7 42.8
16	156	14.1	130 -23	56.5	87	120 30.9	-14 49.4	277 13.4	7 42.9
18	185	15.8	131 -23	43.8	89	150 35.1	-14 49.2	307 18.6	7 43.0
20	214	17.7	132 -23	30.7	91	180 39.2	-14 48.9	337 23.7	7 43.0
22	243	19.8	133 -23	17.2	93	210 43.3	-14 48.7	7 28.9	7 43.1
Δ						21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	0 5.9	.6	16.0	T <sub>m</sub>	5 14	2.0	54.3 14.8		
12	0 13.0	T <sub>m</sub> ☉	11 h 59.8 min	Starost	49.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 11	.4	3	-4.3	♄	7 59	.0	36	-2.0
	10 6	.1	4	1.2	♅	21 30	.0	192	.7

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	180	8.4	10 47.9	206	14.2		208	37.6	3 28.7	208	46.0	- 2 47.2
2	210	8.6	10 49.6	236	19.1		238	42.0	3 27.7	238	47.3	- 2 45.6
4	240	8.9	10 51.4	266	24.0		268	46.4	3 26.6	268	48.7	- 2 44.1
6	270	9.2	10 53.1	296	29.0		298	50.8	3 25.6	298	50.1	- 2 42.5
8	300	9.5	10 54.8	326	33.9		328	55.2	3 24.6	328	51.4	- 2 41.0
10	330	9.8	10 56.6	356	38.8		358	59.6	3 23.7	358	52.8	- 2 39.4
12	0	10.0	10 58.3	26	43.8		29	3.9	3 22.7	28	54.1	- 2 37.9
14	30	10.3	11 .1	56	48.7		59	8.3	3 21.7	58	55.5	- 2 36.3
16	60	10.6	11 1.8	86	53.6		89	12.6	3 20.7	88	56.9	- 2 34.8
18	90	10.9	11 3.5	116	58.5		119	16.9	3 19.8	118	58.2	- 2 33.2
20	120	11.1	11 5.3	147	3.5		149	21.2	3 18.8	148	59.6	- 2 31.7
22	150	11.4	11 7.0	177	8.4		179	25.5	3 17.9	179	1.0	- 2 30.1
Δ		1	9					22	-5		7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 37	19 23	0 47	3 30	3 3	.3	9 10	3.6
55	4 52	19 8	0 40	2 31	2 23	.8	9 49	3.2
50	5 3	18 57	0 35	2 5	1 55	1.0	10 16	2.9
45	5 12	18 48	0 31	1 49	1 34	1.2	10 36	2.7
40	5 19	18 41	0 28	1 38	1 17	1.3	10 53	2.6
35	5 26	18 34	0 26	1 30	1 2	1.4	11 7	2.4
30	5 31	18 29	0 25	1 24	0 49	1.5	11 19	2.3
20	5 40	18 19	0 23	1 16	0 27	1.7	11 39	2.2
10	5 49	18 11	0 21	1 12	0 8	1.8	11 57	2.0
0	5 56	18 3	0 21	1 10	...	.0	12 13	1.9
10	6 4	17 55	0 21	1 11	...	.0	12 30	1.8
20	6 12	17 47	0 22	1 14	...	.0	12 47	1.6
30	6 20	17 38	0 24	1 20	23 48	2.3	13 7	1.5
35	6 25	17 33	0 26	1 24	23 37	2.5	13 19	1.4
40	6 31	17 27	0 27	1 30	23 25	2.6	13 32	1.2
45	6 38	17 21	0 30	1 38	23 10	2.7	13 48	1.1
50	6 45	17 13	0 33	1 48	22 52	2.9	14 7	.9
55	6 55	17 3	0 37	2 1	22 28	3.2	14 32	.7
60	7 8	16 50	0 43	2 19	21 55	3.6	15 6	.3
S								

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	''	''	°	'	°	'	
0	272	22.1	134 -23	3.3	94	240 47.5	-14 48.4	37 34.0	7 43.2
2	301	24.5	135 -22	49.0	96	270 51.6	-14 48.2	67 39.2	7 43.3
4	330	27.2	136 -22	34.2	98	300 55.8	-14 47.9	97 44.4	7 43.4
6	359	30.1	137 -22	19.1	100	330 59.9	-14 47.7	127 49.5	7 43.5
8	28	33.2	138 -22	3.5	101	1 4.0	-14 47.5	157 54.7	7 43.6
10	57	36.5	138 -21	47.6	103	31 8.2	-14 47.2	187 59.8	7 43.6
12	86	40.0	139 -21	31.3	104	61 12.3	-14 47.0	218 5.0	7 43.7
14	115	43.7	140 -21	14.6	106	91 16.5	-14 46.7	248 10.1	7 43.8
16	144	47.5	141 -20	57.5	108	121 20.6	-14 46.5	278 15.3	7 43.9
18	173	51.6	141 -20	40.0	109	151 24.8	-14 46.2	308 20.5	7 44.0
20	202	55.9	142 -20	22.2	111	181 28.9	-14 46.0	338 25.6	7 44.1
22	232	.3	143 -20	4.0	112	211 33.1	-14 45.8	8 30.8	7 44.2
Δ						21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	0 20.0	.6	16.0	T <sub>m</sub>	6 2	1.9	54.3 14.8		
12	0 26.8	T <sub>m</sub> ☉	11 h 59.6 min	Starost	50.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 8	.4	2	-4.3	♄	7 56	.0	36	-2.0
	10 4	.1	4	1.2	♅	21 26	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS									
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>								
h	°	'	°	'	°	'	°	'							
0	180	11.7	11	8.7	207	13.3	209	29.8	3	16.9	209	2.3	-2	28.6	
2	210	12.0	11	10.5	237	18.3	239	34.1	3	16.0	239	3.7	-2	27.0	
4	240	12.2	11	12.2	267	23.2	269	38.3	3	15.1	269	5.1	-2	25.5	
6	270	12.5	11	13.9	297	28.1	299	42.5	3	14.2	299	6.4	-2	23.9	
8	300	12.8	11	15.6	327	33.0	329	46.7	3	13.3	329	7.8	-2	22.4	
10	330	13.0	11	17.4	357	38.0	359	51.0	3	12.4	359	9.1	-2	20.8	
12	0	13.3	11	19.1	27	42.9	29	55.1	3	11.5	29	10.5	-2	19.3	
14	30	13.6	11	20.8	57	47.8	59	59.3	3	10.6	59	11.9	-2	17.7	
16	60	13.8	11	22.5	87	52.8	90	3.5	3	9.7	89	13.2	-2	16.2	
18	90	14.1	11	24.3	117	57.7	120	7.6	3	8.8	119	14.6	-2	14.6	
20	120	14.4	11	26.0	148	2.6	150	11.7	3	8.0	149	16.0	-2	13.1	
22	150	14.6	11	27.7	178	7.5	180	15.9	3	7.1	179	17.3	-2	11.5	
Δ		1		9				21		-4			7		8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 34	19 26	0 48	3 38	3 12	.2	10 37	3.6
55	4 50	19 10	0 40	2 33	2 42	.6	11 5	3.2
50	5 1	18 59	0 35	2 6	2 20	.8	11 25	2.9
45	5 10	18 49	0 31	1 50	2 3	1.0	11 41	2.7
40	5 18	18 42	0 28	1 38	1 49	1.2	11 54	2.6
35	5 24	18 35	0 26	1 30	1 37	1.3	12 5	2.5
30	5 30	18 29	0 25	1 24	1 26	1.4	12 15	2.3
20	5 40	18 19	0 23	1 16	1 8	1.6	12 31	2.1
10	5 48	18 11	0 21	1 12	0 52	1.7	12 46	2.0
0	5 56	18 3	0 21	1 10	0 37	1.9	12 59	1.8
10	6 4	17 55	0 21	1 11	0 22	2.0	13 12	1.7
20	6 12	17 47	0 22	1 14	0 6	2.2	13 26	1.5
30	6 21	17 37	0 24	1 20	...	.0	13 42	1.3
35	6 26	17 32	0 26	1 25	...	.0	13 51	1.2
40	6 32	17 26	0 28	1 30	...	.0	14 2	1.1
45	6 39	17 19	0 30	1 38	...	.0	14 14	.9
50	6 47	17 11	0 33	1 48	...	.0	14 29	.8
55	6 57	17 1	0 37	2 1	23 45	3.2	14 47	.5
60	7 10	16 47	0 43	2 19	23 22	3.6	15 12	.2
S								

UT	MESEC				JUPITER		SATURN								
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>							
h	°	'	°	'	°	'	°	'							
0	261	5.0	143	-19	45.4	114	241	37.2	-14	45.5	38	35.9	7	44.2	
2	290	9.8	144	-19	26.5	115	271	41.4	-14	45.3	68	41.1	7	44.3	
4	319	14.0	145	-19	7.3	116	301	45.5	-14	45.0	98	46.2	7	44.4	
6	348	20.0	145	-18	47.7	118	331	49.7	-14	44.8	128	51.4	7	44.5	
8	17	25.3	146	-18	27.8	119	1	53.8	-14	44.6	158	56.5	7	44.6	
10	46	30.8	146	-18	7.5	120	31	58.0	-14	44.3	189	1.7	7	44.7	
12	75	36.5	147	-17	46.9	122	62	2.1	-14	44.1	219	6.8	7	44.7	
14	104	42.3	147	-17	26.0	123	92	6.3	-14	43.8	249	12.0	7	44.8	
16	133	48.3	148	-17	4.8	124	122	10.5	-14	43.6	279	17.1	7	44.9	
18	162	54.5	148	-16	43.3	125	152	14.6	-14	43.4	309	22.3	7	45.0	
20	192	.8	148	-16	21.5	126	182	18.8	-14	43.1	339	27.4	7	45.1	
22	221	7.2	149	-15	59.3	128	212	22.9	-14	42.9	9	32.6	7	45.1	
Δ								21		1			26		0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	0 33.7	.6	16.0	T <sub>m</sub>	6 48	1.8	54.5	14.8	
12	0 40.3	T <sub>m☉</sub>	11 h 59.3 min	Starost	51.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 4	.4	2	-4.4	♄	7 52	.0	35	-2.0
	10 3	.1	3	1.2	♅	21 22	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS									
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>								
h	°	'	°	'	°	'	°	'							
0	180	14.9	11	29.4	208	12.5	210	20.0	3	6.3	209	18.7	-2	9.9	
2	210	15.2	11	31.1	238	17.4	240	24.1	3	5.4	239	20.1	-2	8.4	
4	240	15.4	11	32.8	268	22.3	270	28.1	3	4.6	269	21.4	-2	6.8	
6	270	15.7	11	34.6	298	27.2	300	32.2	3	3.7	299	22.8	-2	5.3	
8	300	15.9	11	36.3	328	32.2	330	36.2	3	2.9	329	24.2	-2	3.7	
10	330	16.2	11	38.0	358	37.1	0	40.3	3	2.1	359	25.6	-2	2.2	
12	0	16.5	11	39.7	28	42.0	30	44.3	3	1.3	29	26.9	-2	.6	
14	30	16.7	11	41.4	58	47.0	60	48.3	3	.5	59	28.3	-1	59.1	
16	60	17.0	11	43.1	88	51.9	90	52.3	2	59.7	89	29.7	-1	57.5	
18	90	17.2	11	44.8	118	56.8	120	56.3	2	58.9	119	31.0	-1	56.0	
20	120	17.5	11	46.5	149	1.7	151	.2	2	58.2	149	32.4	-1	54.4	
22	150	17.7	11	48.2	179	6.7	181	4.2	2	57.4	179	33.8	-1	52.9	
Δ		1		9				20		-4			7		8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 32	19 28	0 48	3 48	3 17	.1	12 3	3.6
55	4 47	19 12	0 40	2 35	2 56	.5	12 22	3.2
50	4 59	19 0	0 35	2 7	2 40	.7	12 36	3.0
45	5 8	18 51	0 31	1 50	2 27	.9	12 47	2.8
40	5 16	18 43	0 28	1 39	2 16	1.0	12 56	2.6
35	5 23	18 36	0 26	1 30	2 7	1.2	13 4	2.5
30	5 29	18 30	0 25	1 24	1 59	1.3	13 11	2.3
20	5 39	18 20	0 23	1 16	1 45	1.5	13 23	2.1
10	5 48	18 11	0 21	1 12	1 33	1.6	13 33	2.0
0	5 56	18 2	0 21	1 10	1 22	1.8	13 43	1.8
10	6 4	17 54	0 21	1 11	1 10	2.0	13 52	1.6
20	6 12	17 46	0 22	1 14	0 58	2.1	14 3	1.4
30	6 22	17 36	0 24	1 20	0 44	2.3	14 14	1.2
35	6 27	17 31	0 26	1 25	0 36	2.5	14 20	1.1
40	6 33	17 25	0 28	1 30	0 27	2.6	14 28	1.0
45	6 40	17 17	0 30	1 38	0 16	2.8	14 37	.8
50	6 49	17 9	0 33	1 48	0 2	3.0	14 47	.7
55	6 59	16 58	0 37	2 1	...	.0	14 60	.4
60	7 13	16 45	0 43	2 20	...	.0	15 16	.1
S								

UT	MESEC				JUPITER		SATURN								
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>							
h	°	'	°	'	°	'	°	'							
0	250	13.8	149	-15	36.9	129	242	27.1	-14	42.6	39	37.7	7	45.2	
2	279	20.5	149	-15	14.2	130	272	31.3	-14	42.4	69	42.9	7	45.3	
4	308	27.3	149	-14	51.2	131	302	35.4	-14	42.2	99	48.0	7	45.4	
6	337	34.2	149	-14	27.9	132	332	39.6	-14	41.9	129	53.2	7	45.5	
8	6	41.3	150	-14	4.4	133	2	43.7	-14	41.7	159	58.3	7	45.5	
10	35	48.4	150	-13	40.6	134	32	47.9	-14	41.5	190	3.4	7	45.6	
12	64	55.7	150	-13	16.5	135	62	52.1	-14	41.2	220	8.6	7	45.7	
14	94	3.0	150	-12	52.2	136	92	56.2	-14	41.0	250	13.7	7	45.8	
16	123	10.5	150	-12	27.6	137	123	.4	-14	40.8	280	18.9	7	45.9	
18	152	18.0	150	-12	2.8	137	153	4.6	-14	40.5	310	24.0	7	45.9	
20	181	25.6	149	-11	37.7	138	183	8.7	-14	40.3	340	29.2	7	46.0	
22	210	33.3	149	-11	12.4	139	213	12.9	-14	40.0	10	34.3	7	46.1	
Δ								21		1			26		0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	0 46.9	.5	16.0	T <sub>m</sub>	7 32	1.8	54.8	14.9
12	0 53.4	T <sub>m☉</sub>	11 h 59.1 min	Starost	52.9 d	Faza	●	
PLANETE								
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	180 18.0	11 49.9	209 11.6	211 8.1	2 56.6	209 35.1	- 1 51.3
2	210 18.3	11 51.6	239 16.5	241 12.0	2 55.9	239 36.5	- 1 49.8
4	240 18.5	11 53.3	269 21.5	271 15.9	2 55.1	269 37.9	- 1 48.2
6	270 18.8	11 55.0	299 26.4	301 19.8	2 54.4	299 39.3	- 1 46.7
8	300 19.0	11 56.7	329 31.3	331 23.7	2 53.6	329 40.6	- 1 45.1
10	330 19.3	11 58.4	359 36.2	1 27.6	2 52.9	359 42.0	- 1 43.6
12	0 19.5	12 .1	29 41.2	31 31.4	2 52.2	29 43.4	- 1 42.0
14	30 19.8	12 1.8	59 46.1	61 35.3	2 51.5	59 44.7	- 1 40.5
16	60 20.0	12 3.5	89 51.0	91 39.1	2 50.8	89 46.1	- 1 38.9
18	90 20.3	12 5.1	119 56.0	121 42.9	2 50.1	119 47.5	- 1 37.3
20	120 20.5	12 6.8	150 .9	151 46.7	2 49.4	149 48.9	- 1 35.8
22	150 20.7	12 8.5	180 5.8	181 50.5	2 48.7	179 50.2	- 1 34.2
Δ	1	8		19	-4	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 29	19 31	0 48	4 3	3 20	.1	13 29	3.6
55	4 45	19 14	0 40	2 37	3 7	.4	13 39	3.3
50	4 57	19 2	0 35	2 8	2 57	.6	13 47	3.0
45	5 7	18 52	0 31	1 51	2 48	.8	13 54	2.8
40	5 15	18 44	0 28	1 39	2 41	1.0	13 59	2.6
35	5 22	18 37	0 26	1 31	2 35	1.1	14 3	2.5
30	5 28	18 30	0 25	1 24	2 30	1.2	14 7	2.4
20	5 38	18 20	0 23	1 16	2 21	1.4	14 14	2.2
10	5 47	18 11	0 22	1 12	2 13	1.6	14 20	2.0
0	5 56	18 2	0 21	1 10	2 5	1.8	14 26	1.8
10	6 4	17 54	0 21	1 11	1 58	2.0	14 31	1.6
20	6 12	17 45	0 22	1 14	1 50	2.1	14 37	1.4
30	6 22	17 35	0 24	1 20	1 40	2.4	14 44	1.2
35	6 28	17 30	0 26	1 25	1 35	2.5	14 48	1.1
40	6 34	17 23	0 28	1 31	1 29	2.6	14 52	1.0
45	6 41	17 16	0 30	1 38	1 22	2.8	14 57	.8
50	6 50	17 7	0 33	1 48	1 13	3.0	15 3	.6
55	7 1	16 56	0 37	2 1	1 2	3.2	15 10	.4
60	7 15	16 42	0 43	2 20	0 48	3.6	15 19	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	239 41.0	149 -10	46.9	140	243 17.1	-14 39.8	40 39.4	7 46.2
2	268 48.8	149 -10	21.2	140	273 21.3	-14 39.6	70 44.6	7 46.2
4	297 56.6	149 -9	55.2	141	303 25.4	-14 39.3	100 49.7	7 46.3
6	327 4.5	148 -9	29.0	142	333 29.6	-14 39.1	130 54.9	7 46.4
8	356 12.4	148 -9	2.7	142	3 33.8	-14 38.9	161 .0	7 46.5
10	25 20.3	147 -8	36.1	143	33 38.0	-14 38.6	191 5.1	7 46.6
12	54 28.2	147 -8	9.3	144	63 42.1	-14 38.4	221 10.3	7 46.6
14	83 36.2	147 -7	42.3	144	93 46.3	-14 38.2	251 15.4	7 46.7
16	112 44.1	146 -7	15.2	145	123 50.5	-14 37.9	281 20.6	7 46.8
18	141 52.1	145 -6	47.9	145	153 54.7	-14 37.7	311 25.7	7 46.9
20	171 .0	145 -6	20.4	145	183 58.8	-14 37.5	341 30.8	7 46.9
22	200 7.9	144 -5	52.8	146	214 3.0	-14 37.2	11 36.0	7 47.0
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	0 59.8	.5	15.9	T <sub>m</sub>	8 16	1.8	55.3		
12	1 6.0	T <sub>m☉</sub>	11 h 58.9 min	Starost	53.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 57	.4	2	-4.4	♃	7 46	.0	35	-2.0
♂	10 1	.1	1	1.2	♄	21 14	.0	192	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	180 21.0	12 10.2	210 10.7	211 54.3	2 48.0	209 51.6	- 1 32.7
2	210 21.2	12 11.9	240 15.7	241 58.0	2 47.4	239 53.0	- 1 31.1
4	240 21.5	12 13.6	270 20.6	272 1.8	2 46.7	269 54.4	- 1 29.6
6	270 21.7	12 15.3	300 25.5	302 5.5	2 46.1	299 55.7	- 1 28.0
8	300 22.0	12 16.9	330 30.5	332 9.2	2 45.4	329 57.1	- 1 26.5
10	330 22.2	12 18.6	0 35.4	2 12.9	2 44.8	359 58.5	- 1 24.9
12	0 22.4	12 20.3	30 40.3	32 16.6	2 44.1	29 59.8	- 1 23.4
14	30 22.7	12 22.0	60 45.2	62 20.3	2 43.5	60 1.2	- 1 21.8
16	60 22.9	12 23.6	90 50.2	92 24.0	2 42.9	90 2.6	- 1 20.3
18	90 23.2	12 25.3	120 55.1	122 27.6	2 42.3	120 4.0	- 1 18.7
20	120 23.4	12 27.0	151 .0	152 31.3	2 41.7	150 5.4	- 1 17.2
22	150 23.6	12 28.6	181 5.0	182 34.9	2 41.1	180 6.7	- 1 15.6
Δ	1	8		18	-3	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 26	19 33	0 49	:::	3 22	.1	14 55	3.7
55	4 42	19 16	0 41	2 39	3 16	.4	14 57	3.4
50	4 55	19 3	0 35	2 9	3 12	.6	14 59	3.1
45	5 5	18 53	0 31	1 51	3 8	.8	15 1	2.9
40	5 13	18 45	0 29	1 39	3 5	1.0	15 2	2.7
35	5 21	18 37	0 26	1 31	3 2	1.1	15 3	2.6
30	5 27	18 31	0 25	1 25	2 60	1.2	15 4	2.4
20	5 38	18 20	0 23	1 16	2 55	1.4	15 6	2.2
10	5 47	18 11	0 22	1 12	2 52	1.6	15 8	2.0
0	5 55	18 2	0 21	1 10	2 48	1.8	15 9	1.8
10	6 4	17 53	0 21	1 11	2 45	2.0	15 10	1.7
20	6 13	17 44	0 22	1 14	2 41	2.2	15 12	1.5
30	6 23	17 34	0 24	1 20	2 37	2.4	15 13	1.2
35	6 29	17 28	0 26	1 25	2 35	2.5	15 14	1.1
40	6 35	17 22	0 28	1 31	2 32	2.7	15 15	1.0
45	6 43	17 14	0 30	1 38	2 29	2.9	15 16	.8
50	6 52	17 5	0 33	1 48	2 25	3.1	15 17	.6
55	7 3	16 54	0 38	2 2	2 20	3.3	15 19	.4
60	7 17	16 39	0 44	2 20	2 14	3.6	15 21	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	229 15.7	143 -5	24.9	146	244 7.2	-14 37.0	41 41.1	7 47.1
2	258 23.6	143 -4	57.0	146	274 11.4	-14 36.8	71 46.2	7 47.2
4	287 31.3	142 -4	28.9	147	304 15.6	-14 36.6	101 51.4	7 47.2
6	316 39.1	141 -4	.6	147	334 19.8	-14 36.3	131 56.5	7 47.3
8	345 46.7	140 -3	32.3	147	4 23.9	-14 36.1	162 1.6	7 47.4
10	14 54.3	139 -3	3.8	147	34 28.1	-14 35.9	192 6.8	7 47.5
12	44 1.8	138 -2	35.2	147	64 32.3	-14 35.6	222 11.9	7 47.5
14	73 9.2	137 -2	6.5	147	94 36.5	-14 35.4	252 17.0	7 47.6
16	102 16.5	136 -1	37.6	147	124 40.7	-14 35.2	282 22.1	7 47.7
18	131 23.7	135 -1	8.7	147	154 44.9	-14 34.9	312 27.3	7 47.7
20	160 30.8	134 -0	39.7	147	184 49.1	-14 34.7	342 32.4	7 47.8
22	189 37.7	132 -0	10.7	147	214 53.3	-14 34.5	12 37.5	7 47.9
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	1 12.2	.5	15.9	T <sub>m</sub>	8 59	1.8	56.0		
12	1 18.2	T <sub>m☉</sub>	11 h 58.7 min	Starost	54.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 54	.4	2	-4.4	♃	7 42	.0	35	-2.0
♂	10 0	.1	1	1.2	♄				

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 23.9	12 30.3	211 9.9	212 38.5	2 40.5	210 8.1	- 1 14.1
2	210 24.1	12 32.0	241 14.8	242 42.1	2 39.9	240 9.5	- 1 12.5
4	240 24.3	12 33.6	271 19.7	272 45.7	2 39.3	270 10.9	- 1 11.0
6	270 24.6	12 35.3	301 24.7	302 49.3	2 38.8	300 12.2	- 1 9.4
8	300 24.8	12 37.0	331 29.6	332 52.9	2 38.2	330 13.6	- 1 7.8
10	330 25.0	12 38.6	1 34.5	2 56.4	2 37.7	0 15.0	- 1 6.3
12	0 25.3	12 40.3	31 39.5	32 60.0	2 37.1	30 16.4	- 1 4.7
14	30 25.5	12 41.9	61 44.4	63 3.5	2 36.6	60 17.7	- 1 3.2
16	60 25.7	12 43.6	91 49.3	93 7.0	2 36.0	90 19.1	- 1 1.6
18	90 25.9	12 45.2	121 54.2	123 10.5	2 35.5	120 20.5	- 1 .1
20	120 26.2	12 46.9	151 59.2	153 14.0	2 35.0	150 21.9	- 0 58.5
22	150 26.4	12 48.6	182 4.1	183 17.5	2 34.5	180 23.3	- 0 57.0
Δ	1	8		18	-3	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 23	19 36	0 49	: : :	3 25	.1	16 23	3.9
55	4 40	19 18	0 41	2 41	3 26	.4	16 18	3.5
50	4 53	19 5	0 35	2 10	3 27	.7	16 14	3.2
45	5 3	18 54	0 31	1 52	3 27	.9	16 10	3.0
40	5 12	18 46	0 29	1 40	3 28	1.0	16 8	2.8
35	5 19	18 38	0 27	1 31	3 29	1.2	16 5	2.7
30	5 26	18 32	0 25	1 25	3 29	1.3	16 3	2.6
20	5 37	18 20	0 23	1 17	3 30	1.5	15 59	2.3
10	5 46	18 11	0 22	1 12	3 31	1.7	15 56	2.1
0	5 55	18 2	0 21	1 10	3 32	1.9	15 53	1.9
10	6 4	17 53	0 21	1 11	3 33	2.1	15 50	1.7
20	6 13	17 44	0 22	1 14	3 34	2.3	15 47	1.6
30	6 23	17 33	0 24	1 20	3 35	2.5	15 43	1.3
35	6 29	17 27	0 26	1 25	3 35	2.6	15 41	1.2
40	6 36	17 20	0 28	1 31	3 36	2.8	15 39	1.1
45	6 44	17 13	0 30	1 38	3 37	3.0	15 36	.9
50	6 53	17 3	0 33	1 48	3 38	3.2	15 32	.7
55	7 5	16 51	0 38	2 2	3 40	3.4	15 28	.4
60	7 20	16 36	0 44	2 20	3 41	3.8	15 23	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	218 44.6	131 0	18.5	146	244 57.4	-14 34.3	42 42.7	7 48.0
2	247 51.2	130 0	47.7	146	275 1.6	-14 34.0	72 47.8	7 48.0
4	276 57.8	128 1	17.0	146	305 5.8	-14 33.8	102 52.9	7 48.1
6	306 4.1	127 1	46.3	145	335 10.0	-14 33.6	132 58.0	7 48.2
8	335 10.3	126 2	15.6	145	5 14.2	-14 33.3	163 3.2	7 48.2
10	4 16.3	124 2	45.0	144	35 18.4	-14 33.1	193 8.3	7 48.3
12	33 22.1	122 3	14.4	144	65 22.6	-14 32.9	223 13.4	7 48.4
14	62 27.7	121 3	43.8	143	95 26.8	-14 32.7	253 18.5	7 48.5
16	91 33.1	119 4	13.3	143	125 31.0	-14 32.4	283 23.6	7 48.5
18	120 38.3	118 4	42.7	142	155 35.2	-14 32.2	313 28.8	7 48.6
20	149 43.3	116 5	12.1	141	185 39.4	-14 32.0	343 33.9	7 48.7
22	178 48.0	114 5	41.4	140	215 43.6	-14 31.8	13 39.0	7 48.7
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	1 24.1	.5	15.9	T <sub>m</sub>	9 42	1.9	56.7		
12	1 29.9	T <sub>m</sub> ☉	11 h 58.5 min	Starost	55.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 51	.4	2	-4.4	♃	7 39	.0	35	-2.0
♂	9 59	.1	360	1.2	♄	21 6	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 26.6	12 50.2	212 9.0	213 20.9	2 34.0	210 24.6	- 0 55.4
2	210 26.8	12 51.9	242 13.9	243 24.4	2 33.5	240 26.0	- 0 53.9
4	240 27.1	12 53.5	272 18.9	273 27.8	2 33.0	270 27.4	- 0 52.3
6	270 27.3	12 55.1	302 23.8	303 31.3	2 32.5	300 28.8	- 0 50.8
8	300 27.5	12 56.8	332 28.7	333 34.7	2 32.0	330 30.1	- 0 49.2
10	330 27.7	12 58.4	2 33.7	3 38.1	2 31.6	0 31.5	- 0 47.7
12	0 28.0	13 .1	32 38.6	33 41.5	2 31.1	30 32.9	- 0 46.1
14	30 28.2	13 1.7	62 43.5	63 44.9	2 30.6	60 34.3	- 0 44.6
16	60 28.4	13 3.3	92 48.4	93 48.2	2 30.2	90 35.7	- 0 43.0
18	90 28.6	13 5.0	122 53.4	123 51.6	2 29.8	120 37.0	- 0 41.5
20	120 28.8	13 6.6	152 58.3	153 54.9	2 29.3	150 38.4	- 0 39.9
22	150 29.0	13 8.3	183 3.2	183 58.3	2 28.9	180 39.8	- 0 38.4
Δ	1	8		17	-2	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 20	19 38	0 50	: : :	3 27	.2	17 56	4.1
55	4 38	19 20	0 41	2 43	3 36	.5	17 42	3.7
50	4 51	19 6	0 35	2 11	3 42	.7	17 31	3.4
45	5 2	18 56	0 32	1 53	3 48	1.0	17 23	3.2
40	5 11	18 47	0 29	1 40	3 52	1.1	17 16	3.0
35	5 18	18 39	0 27	1 32	3 56	1.3	17 10	2.8
30	5 25	18 32	0 25	1 25	3 60	1.4	17 4	2.7
20	5 36	18 21	0 23	1 17	4 6	1.6	16 55	2.5
10	5 46	18 11	0 22	1 12	4 12	1.8	16 47	2.3
0	5 55	18 2	0 21	1 10	4 17	2.0	16 40	2.1
10	6 4	17 53	0 21	1 11	4 22	2.2	16 32	1.9
20	6 13	17 43	0 23	1 14	4 28	2.4	16 24	1.7
30	6 24	17 32	0 24	1 20	4 35	2.6	16 15	1.5
35	6 30	17 26	0 26	1 25	4 38	2.8	16 10	1.4
40	6 37	17 19	0 28	1 31	4 43	2.9	16 4	1.2
45	6 45	17 11	0 30	1 39	4 48	3.1	15 57	1.0
50	6 55	17 1	0 33	1 49	4 54	3.3	15 49	.8
55	7 7	16 49	0 38	2 2	5 2	3.6	15 39	.5
60	7 22	16 34	0 44	2 21	5 12	4.0	15 26	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	207 52.4	112 6	10.8	139	245 47.8	-14 31.5	43 44.1	7 48.8
2	236 56.7	111 6	40.0	138	275 52.0	-14 31.3	73 49.3	7 48.9
4	266 .6	109 7	9.3	137	305 56.2	-14 31.1	103 54.4	7 48.9
6	295 4.3	107 7	38.4	136	336 .4	-14 30.9	133 59.5	7 49.0
8	324 7.7	105 8	7.5	135	6 4.6	-14 30.6	164 4.6	7 49.1
10	353 10.8	103 8	36.5	134	36 8.8	-14 30.4	194 9.7	7 49.1
12	22 13.6	101 9	5.4	132	66 13.0	-14 30.2	224 14.8	7 49.2
14	51 16.1	99 9	34.2	131	96 17.2	-14 30.0	254 20.0	7 49.3
16	80 18.3	97 10	2.8	129	126 21.5	-14 29.7	284 25.1	7 49.3
18	109 20.1	95 10	31.3	128	156 25.7	-14 29.5	314 30.2	7 49.4
20	138 21.7	93 10	59.7	126	186 29.9	-14 29.3	344 35.3	7 49.5
22	167 22.9	91 11	27.9	125	216 34.1	-14 29.1	14 40.4	7 49.5
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s	'	h min	min	'	'		
00	1 35.6	.5	15.9	T <sub>m</sub>	10 28	2.0	57.5		
12	1 41.2	T <sub>m</sub> ☉	11 h 58.3 min	Starost	56.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 48	.4							

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	180 29.3	13 9.9	213 8.2	214 1.6	2 28.5	210 41.2	- 0 36.8
2	210 29.5	13 11.5	243 13.1	244 4.9	2 28.1	240 42.6	- 0 35.3
4	240 29.7	13 13.1	273 18.0	274 8.2	2 27.7	270 44.0	- 0 33.7
6	270 29.9	13 14.8	303 22.9	304 11.5	2 27.3	300 45.3	- 0 32.2
8	300 30.1	13 16.4	333 27.9	334 14.7	2 26.9	330 46.7	- 0 30.6
10	330 30.3	13 18.0	3 32.8	4 18.0	2 26.5	0 48.1	- 0 29.1
12	0 30.5	13 19.6	33 37.7	34 21.2	2 26.1	30 49.5	- 0 27.5
14	30 30.7	13 21.3	63 42.7	64 24.5	2 25.7	60 50.9	- 0 26.0
16	60 30.9	13 22.9	93 47.6	94 27.7	2 25.4	90 52.2	- 0 24.4
18	90 31.2	13 24.5	123 52.5	124 30.9	2 25.0	120 53.6	- 0 22.9
20	120 31.4	13 26.1	153 57.4	154 34.1	2 24.7	150 55.0	- 0 21.3
22	150 31.6	13 27.7	184 2.4	184 37.3	2 24.3	180 56.4	- 0 19.7
Δ	1	8		16	-2	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 17	19 41	0 50	:	3 31	.2	19 34	4.3
55	4 35	19 22	0 41	:	3 48	.6	19 10	3.8
50	4 49	19 8	0 36	:	4 0	.9	18 53	3.5
45	5 0	18 57	0 32	:	4 11	1.1	18 39	3.3
40	5 9	18 48	0 29	:	4 19	1.3	18 27	3.1
35	5 17	18 40	0 27	:	4 27	1.5	18 17	2.9
30	5 24	18 33	0 25	:	4 34	1.6	18 9	2.8
20	5 35	18 21	0 23	:	4 45	1.8	17 54	2.6
10	5 45	18 11	0 22	:	4 55	2.0	17 41	2.4
0	5 55	18 2	0 21	:	5 5	2.2	17 29	2.3
10	6 4	17 52	0 22	:	5 15	2.3	17 18	2.1
20	6 14	17 42	0 23	:	5 25	2.5	17 5	1.9
30	6 25	17 31	0 24	:	5 38	2.8	16 51	1.7
35	6 31	17 25	0 26	:	5 45	2.9	16 42	1.6
40	6 38	17 18	0 28	:	5 53	3.0	16 33	1.4
45	6 46	17 9	0 30	:	6 2	3.2	16 22	1.3
50	6 56	16 59	0 33	:	6 14	3.5	16 9	1.0
55	7 8	16 47	0 38	:	6 28	3.8	15 52	.7
60	7 25	16 31	0 44	:	6 48	4.2	15 30	.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	196 23.7	88 11	55.9	123	246 38.3	-14 28.8	44 45.5	7 49.6
2	225 24.2	86 12	23.8	121	276 42.5	-14 28.6	74 50.6	7 49.7
4	254 24.3	84 12	51.4	119	306 46.7	-14 28.4	104 55.7	7 49.7
6	283 24.0	82 13	18.9	117	336 50.9	-14 28.2	135 .9	7 49.8
8	312 23.4	80 13	46.1	115	6 55.2	-14 28.0	165 6.0	7 49.9
10	341 22.3	78 14	13.1	113	36 59.4	-14 27.7	195 11.1	7 49.9
12	10 20.9	75 14	39.8	111	67 3.6	-14 27.5	225 16.2	7 50.0
14	39 19.1	73 15	6.2	108	97 7.8	-14 27.3	255 21.3	7 50.0
16	68 16.9	71 15	32.4	106	127 12.0	-14 27.1	285 26.4	7 50.1
18	97 14.3	69 15	58.3	104	157 16.3	-14 26.8	315 31.5	7 50.2
20	126 11.2	67 16	23.9	101	187 20.5	-14 26.6	345 36.6	7 50.2
22	155 7.7	65 16	49.1	99	217 24.7	-14 26.4	15 41.7	7 50.3
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	1 46.7	.4	15.9	T <sub>m</sub>	11 17	2.2	58.2		
12	1 51.9	T <sub>m</sub> ☉	11 h 58.1 min	Starost 57.9 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 46	.4	1	-4.4	♃	7 32	.0	34	-2.0
♂	9 57	.1	359	1.2	♄	20 57	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	180 31.8	13 29.4	214 7.3	214 40.5	2 24.0	210 57.8	- 0 18.2
2	210 32.0	13 31.0	244 12.2	244 43.7	2 23.7	240 59.2	- 0 16.6
4	240 32.2	13 32.6	274 17.2	274 46.8	2 23.3	271 .5	- 0 15.1
6	270 32.4	13 34.2	304 22.1	304 50.0	2 23.0	301 1.9	- 0 13.5
8	300 32.6	13 35.8	334 27.0	334 53.1	2 22.7	331 3.3	- 0 12.0
10	330 32.8	13 37.4	4 31.9	4 56.2	2 22.4	1 4.7	- 0 10.4
12	0 33.0	13 39.0	34 36.9	34 59.3	2 22.1	31 6.1	- 0 8.9
14	30 33.2	13 40.6	64 41.8	65 2.4	2 21.8	61 7.5	- 0 7.3
16	60 33.4	13 42.2	94 46.7	95 5.5	2 21.5	91 8.9	- 0 5.8
18	90 33.6	13 43.8	124 51.7	125 8.6	2 21.3	121 10.2	- 0 4.3
20	120 33.8	13 45.4	154 56.6	155 11.7	2 21.0	151 11.6	- 0 2.7
22	150 34.0	13 47.0	185 1.5	185 14.7	2 20.7	181 13.0	- 0 1.2
Δ	1	8		16	-1	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 14	19 43	0 51	:	3 37	.4	21 18	4.3
55	4 33	19 24	0 42	:	4 3	.9	20 42	3.8
50	4 47	19 10	0 36	:	4 23	1.2	20 17	3.5
45	4 59	18 58	0 32	:	4 38	1.4	19 57	3.3
40	5 8	18 49	0 29	:	4 51	1.6	19 41	3.1
35	5 16	18 41	0 27	:	5 2	1.7	19 28	3.0
30	5 23	18 34	0 25	:	5 12	1.8	19 16	2.9
20	5 35	18 22	0 23	:	5 29	2.0	18 57	2.7
10	5 45	18 11	0 22	:	5 43	2.2	18 40	2.6
0	5 55	18 1	0 21	:	5 57	2.4	18 24	2.4
10	6 4	17 52	0 22	:	6 11	2.5	18 8	2.3
20	6 14	17 42	0 23	:	6 26	2.7	17 51	2.2
30	6 25	17 30	0 25	:	6 44	2.9	17 31	2.0
35	6 32	17 24	0 26	:	6 54	3.0	17 20	1.9
40	6 39	17 16	0 28	:	7 6	3.1	17 7	1.8
45	6 48	17 8	0 30	:	7 20	3.3	16 52	1.6
50	6 58	16 58	0 34	:	7 37	3.5	16 34	1.4
55	7 10	16 45	0 38	:	7 59	3.8	16 10	1.1
60	7 27	16 28	0 44	:	8 30	4.4	15 37	.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	184 3.9	63 17	14.0	96	247 28.9	-14 26.2	45 46.8	7 50.4
2	212 59.5	61 17	38.6	93	277 33.1	-14 26.0	75 51.9	7 50.4
4	241 54.8	58 18	2.8	90	307 37.4	-14 25.8	105 57.0	7 50.5
6	270 49.6	56 18	26.6	88	337 41.6	-14 25.5	136 2.1	7 50.5
8	299 44.0	54 18	50.0	85	7 45.8	-14 25.3	166 7.2	7 50.6
10	328 38.0	53 19	13.0	82	37 50.1	-14 25.1	196 12.4	7 50.7
12	357 31.5	51 19	35.6	79	67 54.3	-14 24.9	226 17.5	7 50.7
14	26 24.6	49 19	57.8	75	97 58.5	-14 24.7	256 22.6	7 50.8
16	55 17.3	47 20	19.4	72	128 2.7	-14 24.4	286 27.7	7 50.8
18	84 9.5	45 20	40.7	69	158 7.0	-14 24.2	316 32.8	7 50.9
20	113 1.3	44 21	1.4	66	188 11.2	-14 24.0	346 37.9	7 51.0
22	141 52.6	42 21	21.6	62	218 15.4	-14 23.8	16 43.0	7 51.0
Δ					21	1	26	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	1 57.2	.4	15.9	T <sub>m</sub>	12 10	2.4	58.9		
12	2 2.2	T <sub>m</sub> ☉	11 h 58.0 min	Starost 58.9 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 43	.4	1	-4.4	♃	7 29	.0	34	-2.0
♂	9 56	.1	358	1.2	♄	20 53	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 34.2	13 48.6	215 6.4	215 17.8	2 20.5	211 14.4	0 .4
2	210 34.4	13 50.2	245 11.4	245 20.8	2 20.2	241 15.8	0 1.9
4	240 34.5	13 51.8	275 16.3	275 23.8	2 20.0	271 17.2	0 3.5
6	270 34.7	13 53.4	305 21.2	305 26.8	2 19.7	301 18.6	0 5.0
8	300 34.9	13 55.0	335 26.1	335 29.8	2 19.5	331 19.9	0 6.6
10	330 35.1	13 56.6	5 31.1	5 32.8	2 19.3	1 21.3	0 8.1
12	0 35.3	13 58.1	35 36.0	35 35.8	2 19.1	31 22.7	0 9.7
14	30 35.5	13 59.7	65 40.9	65 38.7	2 18.9	61 24.1	0 11.2
16	60 35.7	14 1.3	95 45.9	95 41.7	2 18.7	91 25.5	0 12.8
18	90 35.9	14 2.9	125 50.8	125 44.6	2 18.5	121 26.9	0 14.3
20	120 36.1	14 4.5	155 55.7	155 47.6	2 18.3	151 28.3	0 15.9
22	150 36.2	14 6.0	186 .6	185 50.5	2 18.1	181 29.6	0 17.4
Δ	1	8		15	-1	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 12	19 46	0 51	:::	3 47	.9	23 2	3.7
55	4 31	19 26	0 42	2 51	4 25	1.4	22 12	3.3
50	4 45	19 11	0 36	2 14	4 52	1.7	21 40	3.2
45	4 57	18 59	0 32	1 54	5 12	1.8	21 15	3.0
40	5 7	18 50	0 29	1 42	5 29	2.0	20 56	3.0
35	5 15	18 41	0 27	1 32	5 44	2.1	20 40	2.9
30	5 22	18 34	0 25	1 26	5 56	2.2	20 26	2.8
20	5 34	18 22	0 23	1 17	6 18	2.3	20 2	2.7
10	5 45	18 11	0 22	1 13	6 36	2.4	19 42	2.7
0	5 54	18 1	0 21	1 11	6 54	2.5	19 22	2.6
10	6 4	17 51	0 22	1 11	7 12	2.6	19 3	2.5
20	6 14	17 41	0 23	1 15	7 31	2.8	18 43	2.4
30	6 26	17 29	0 25	1 21	7 53	2.9	18 19	2.3
35	6 33	17 23	0 26	1 25	8 6	3.0	18 6	2.3
40	6 40	17 15	0 28	1 31	8 21	3.1	17 50	2.2
45	6 49	17 6	0 30	1 39	8 39	3.2	17 31	2.1
50	6 59	16 56	0 34	1 49	9 1	3.4	17 7	1.9
55	7 12	16 43	0 38	2 3	9 31	3.6	16 36	1.7
60	7 29	16 25	0 45	2 22	10 15	4.2	15 51	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	170 43.6	41 21	41.3	59	248 19.7	-14 23.6	46 48.1	7 51.1
2	199 34.1	39 22	.5	56	278 23.9	-14 23.4	76 53.2	7 51.1
4	228 24.2	38 22	19.2	52	308 28.1	-14 23.2	106 58.2	7 51.2
6	257 13.9	37 22	37.2	48	338 32.4	-14 22.9	137 3.3	7 51.2
8	286 3.2	35 22	54.7	45	8 36.6	-14 22.7	167 8.4	7 51.3
10	314 52.1	34 23	11.7	41	38 40.9	-14 22.5	197 13.5	7 51.4
12	343 40.6	33 23	28.0	38	68 45.1	-14 22.3	227 18.6	7 51.4
14	12 28.7	32 23	43.7	34	98 49.3	-14 22.1	257 23.7	7 51.5
16	41 16.5	32 23	58.8	30	128 53.6	-14 21.9	287 28.8	7 51.5
18	70 3.9	31 24	13.3	26	158 57.8	-14 21.7	317 33.9	7 51.6
20	98 51.0	30 24	27.1	23	189 2.1	-14 21.4	347 39.0	7 51.6
22	127 37.7	30 24	40.2	19	219 6.3	-14 21.2	17 44.1	7 51.7
Δ					21	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	2 7.3	.4	15.9	T <sub>m</sub>	13 8	2.6	59.4 16.2		
12	2 12.0	T <sub>m☉</sub>	11 h 57.8 min	Starost	.9 d	Faza ●			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 40	.4	1	-4.4	♄	7 26	.0	34	-2.1
	9 55	.1	357	1.2	♅	20 49	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 36.4	14 7.6	216 5.6	215 53.4	2 17.9	211 31.0	0 19.0
2	210 36.6	14 9.2	246 10.5	245 56.3	2 17.7	241 32.4	0 20.5
4	240 36.8	14 10.8	276 15.4	275 59.2	2 17.6	271 33.8	0 22.1
6	270 37.0	14 12.3	306 20.4	306 2.1	2 17.4	301 35.2	0 23.6
8	300 37.2	14 13.9	336 25.3	336 5.0	2 17.3	331 36.6	0 25.2
10	330 37.3	14 15.5	6 30.2	6 7.8	2 17.1	1 38.0	0 26.7
12	0 37.5	14 17.0	36 35.1	36 10.7	2 17.0	31 39.4	0 28.3
14	30 37.7	14 18.6	66 40.1	66 13.5	2 16.8	61 40.8	0 29.8
16	60 37.9	14 20.2	96 45.0	96 16.3	2 16.7	91 42.1	0 31.4
18	90 38.0	14 21.7	126 49.9	126 19.2	2 16.6	121 43.5	0 32.9
20	120 38.2	14 23.3	156 54.9	156 22.0	2 16.5	151 44.9	0 34.4
22	150 38.4	14 24.8	186 59.8	186 24.8	2 16.4	181 46.3	0 36.0
Δ	1	8		14	-1	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 9	19 48	0 52	:::	4 8	1.8	. . .	.0
55	4 29	19 28	0 42	2 54	4 58	2.1	23 33	2.5
50	4 44	19 13	0 36	2 15	5 32	2.3	22 56	2.6
45	4 55	19 1	0 32	1 55	5 57	2.4	22 29	2.6
40	5 5	18 51	0 29	1 42	6 17	2.4	22 7	2.6
35	5 14	18 42	0 27	1 33	6 34	2.5	21 49	2.6
30	5 21	18 35	0 25	1 26	6 48	2.5	21 34	2.6
20	5 33	18 22	0 23	1 17	7 13	2.6	21 8	2.6
10	5 44	18 11	0 22	1 13	7 35	2.6	20 46	2.6
0	5 54	18 1	0 21	1 11	7 55	2.6	20 25	2.6
10	6 4	17 51	0 22	1 11	8 15	2.7	20 4	2.6
20	6 15	17 40	0 23	1 15	8 37	2.7	19 41	2.6
30	6 27	17 28	0 25	1 21	9 2	2.8	19 15	2.6
35	6 33	17 22	0 26	1 25	9 17	2.8	19 0	2.6
40	6 41	17 14	0 28	1 31	9 34	2.8	18 42	2.6
45	6 50	17 5	0 30	1 39	9 55	2.8	18 21	2.6
50	7 1	16 54	0 34	1 49	10 22	2.9	17 54	2.6
55	7 14	16 40	0 38	2 3	10 58	3.0	17 17	2.5
60	7 32	16 23	0 45	2 22	11 55	3.1	16 20	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	156 24.1	29 24	52.7	15	249 10.6	-14 21.0	47 49.2	7 51.8
2	185 10.2	29 25	4.5	11	279 14.8	-14 20.8	77 54.3	7 51.8
4	213 56.1	29 25	15.6	7	309 19.1	-14 20.6	107 59.4	7 51.9
6	242 41.6	29 25	26.0	4	339 23.3	-14 20.4	138 4.5	7 51.9
8	271 26.9	29 25	35.7	0	9 27.5	-14 20.2	168 9.5	7 52.0
10	300 12.0	29 25	44.7	-4	39 31.8	-14 20.0	198 14.6	7 52.0
12	328 56.9	29 25	52.9	-8	69 36.1	-14 19.7	228 19.7	7 52.1
14	357 41.5	30 26	.4	-12	99 40.3	-14 19.5	258 24.8	7 52.1
16	26 26.0	30 26	7.2	-16	129 44.6	-14 19.3	288 29.9	7 52.2
18	55 10.3	31 26	13.2	-19	159 48.8	-14 19.1	318 35.0	7 52.2
20	83 54.4	31 26	18.5	-23	189 53.1	-14 18.9	348 40.1	7 52.3
22	112 38.5	32 26	23.0	-27	219 57.3	-14 18.7	18 45.1	7 52.3
Δ					21	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	2 16.8	.4	15.9	T <sub>m</sub>	14 10	2.6	59.7 16.3		
12	2 21.4	T <sub>m☉</sub>	11 h 57.6 min	Starost	1.9 d	Faza ●			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 38	.4							



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 38.6	14 26.4	217 4.7	216 27.5	2 16.3	211 47.7	0 37.5
2	210 38.7	14 28.0	247 9.6	246 30.3	2 16.2	241 49.1	0 39.1
4	240 38.9	14 29.5	277 14.6	276 33.1	2 16.1	271 50.5	0 40.6
6	270 39.1	14 31.1	307 19.5	306 35.8	2 16.0	301 51.9	0 42.2
8	300 39.3	14 32.6	337 24.4	336 38.6	2 16.0	331 53.3	0 43.7
10	330 39.4	14 34.2	7 29.4	6 41.3	2 15.9	1 54.7	0 45.3
12	0 39.6	14 35.7	37 34.3	36 44.1	2 15.8	31 56.0	0 46.8
14	30 39.8	14 37.2	67 39.2	66 46.8	2 15.8	61 57.4	0 48.4
16	60 39.9	14 38.8	97 44.1	96 49.5	2 15.7	91 58.8	0 49.9
18	90 40.1	14 40.3	127 49.1	126 52.2	2 15.7	122 .2	0 51.4
20	120 40.3	14 41.9	157 54.0	156 54.9	2 15.6	152 1.6	0 53.0
22	150 40.4	14 43.4	187 58.9	186 57.5	2 15.6	182 3.0	0 54.5
Δ	1	8		14	0	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 6	19 51	0 52	:::	4 50	3.1	0 31	2.4
55	4 26	19 30	0 42	2 57	5 49	3.0	...	.0
50	4 42	19 14	0 36	2 17	6 26	2.9	23 58	1.9
45	4 54	19 2	0 32	1 56	6 53	2.8	23 31	2.1
40	5 4	18 52	0 29	1 42	7 15	2.8	23 10	2.2
35	5 12	18 43	0 27	1 33	7 33	2.8	22 52	2.3
30	5 20	18 36	0 25	1 26	7 48	2.8	22 37	2.3
20	5 33	18 23	0 23	1 18	8 14	2.7	22 11	2.4
10	5 44	18 11	0 22	1 13	8 37	2.7	21 49	2.5
0	5 54	18 1	0 21	1 11	8 58	2.6	21 28	2.6
10	6 4	17 51	0 22	1 12	9 19	2.6	21 7	2.7
20	6 15	17 40	0 23	1 15	9 42	2.5	20 45	2.7
30	6 27	17 27	0 25	1 21	10 8	2.5	20 19	2.8
35	6 34	17 20	0 26	1 26	10 24	2.4	20 3	2.9
40	6 42	17 12	0 28	1 31	10 42	2.4	19 45	3.0
45	6 51	17 3	0 31	1 39	11 4	2.3	19 24	3.0
50	7 2	16 52	0 34	1 49	11 31	2.2	18 56	3.1
55	7 16	16 38	0 38	2 3	12 9	2.1	18 18	3.3
60	7 34	16 20	0 45	2 22	13 10	1.7	17 17	3.7

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	141 22.4	33 26	26.8	-31	250 1.6	-14 18.5	48 50.2	7 52.4
2	170 6.3	34 26	29.8	-34	280 5.8	-14 18.3	78 55.3	7 52.4
4	198 50.1	35 26	32.0	-38	310 10.1	-14 18.1	109 .4	7 52.5
6	227 33.9	36 26	33.5	-42	340 14.4	-14 17.9	139 5.5	7 52.5
8	256 17.6	37 26	34.2	-45	10 18.6	-14 17.7	169 10.6	7 52.6
10	285 1.4	39 26	34.1	-49	40 22.9	-14 17.4	199 15.6	7 52.6
12	313 45.2	40 26	33.3	-52	70 27.1	-14 17.2	229 20.7	7 52.7
14	342 29.0	41 26	31.6	-56	100 31.4	-14 17.0	259 25.8	7 52.7
16	11 12.9	43 26	29.3	-59	130 35.7	-14 16.8	289 30.9	7 52.8
18	39 56.9	44 26	26.1	-62	160 39.9	-14 16.6	319 36.0	7 52.8
20	68 41.0	46 26	22.3	-66	190 44.2	-14 16.4	349 41.0	7 52.9
22	97 25.3	48 26	17.6	-69	220 48.5	-14 16.2	19 46.1	7 52.9
Δ					21	1	25	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min s	s	'	h min	min	'	'
00	2 25.9	.4	15.9	T <sub>m</sub>	15 13	2.6	59.9 16.3
12	2 30.2	T <sub>m</sub> ☉	11 h 57.5 min	Starost	2.9 d	Faza ●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	'	°	h min	'	°	'	°
♀	9 36	.4	360	-4.4	♃	7 19	.0	34	-2.1
♂	9 52	.1	356	1.2	♄	20 41	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 40.6	14 44.9	218 3.9	217 .2	2 15.6	212 4.4	0 56.1
2	210 40.7	14 46.5	248 8.8	247 2.9	2 15.6	242 5.8	0 57.6
4	240 40.9	14 48.0	278 13.7	277 5.5	2 15.6	272 7.2	0 59.2
6	270 41.1	14 49.5	308 18.6	307 8.1	2 15.6	302 8.6	1 .7
8	300 41.2	14 51.1	338 23.6	337 10.8	2 15.6	332 10.0	1 2.3
10	330 41.4	14 52.6	8 28.5	7 13.4	2 15.6	2 11.4	1 3.8
12	0 41.5	14 54.1	38 33.4	37 16.0	2 15.6	32 12.8	1 5.3
14	30 41.7	14 55.6	68 38.4	67 18.6	2 15.6	62 14.1	1 6.9
16	60 41.9	14 57.2	98 43.3	97 21.2	2 15.6	92 15.5	1 8.4
18	90 42.0	14 58.7	128 48.2	127 23.8	2 15.7	122 16.9	1 10.0
20	120 42.2	15 .2	158 53.1	157 26.3	2 15.7	152 18.3	1 11.5
22	150 42.3	15 1.7	188 58.1	187 28.9	2 15.7	182 19.7	1 13.0
Δ	1	8		13	0	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 3	19 53	0 53	:::	6 5	4.1	1 29	1.2
55	4 24	19 32	0 43	3 1	7 0	3.6	0 33	1.7
50	4 40	19 16	0 36	2 18	7 35	3.3	...	.0
45	4 52	19 3	0 32	1 57	8 1	3.2	...	.0
40	5 3	18 53	0 29	1 43	8 22	3.0	...	.0
35	5 11	18 44	0 27	1 33	8 39	2.9	23 47	1.9
30	5 19	18 36	0 25	1 27	8 54	2.9	23 33	2.0
20	5 32	18 23	0 23	1 18	9 19	2.7	23 10	2.2
10	5 43	18 11	0 22	1 13	9 41	2.6	22 49	2.3
0	5 54	18 1	0 21	1 11	10 1	2.5	22 30	2.4
10	6 4	17 50	0 22	1 12	10 21	2.4	22 11	2.6
20	6 15	17 39	0 23	1 15	10 43	2.3	21 51	2.7
30	6 28	17 27	0 25	1 21	11 8	2.1	21 27	2.9
35	6 35	17 19	0 26	1 26	11 23	2.1	21 12	3.0
40	6 43	17 11	0 28	1 32	11 40	2.0	20 56	3.1
45	6 52	17 2	0 31	1 39	11 60	1.8	20 36	3.2
50	7 4	16 50	0 34	1 50	12 25	1.6	20 12	3.4
55	7 18	16 36	0 39	2 3	12 59	1.4	19 38	3.8
60	7 37	16 17	0 45	2 23	13 51	.8	18 47	4.3

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	126 9.7	50 26	12.2	-72	250 52.7	-14 16.0	49 51.2	7 53.0
2	154 54.3	51 26	6.1	-75	280 57.0	-14 15.8	79 56.3	7 53.0
4	183 39.0	53 25	59.2	-78	311 1.3	-14 15.6	110 1.3	7 53.1
6	212 24.0	55 25	51.6	-81	341 5.5	-14 15.4	140 6.4	7 53.1
8	241 9.2	57 25	43.3	-84	11 9.8	-14 15.2	170 11.5	7 53.2
10	269 54.6	59 25	34.2	-87	41 14.1	-14 15.0	200 16.6	7 53.2
12	298 40.3	61 25	24.5	-90	71 18.4	-14 14.8	230 21.6	7 53.3
14	327 26.3	63 25	14.0	-93	101 22.6	-14 14.6	260 26.7	7 53.3
16	356 12.6	65 25	2.9	-95	131 26.9	-14 14.4	290 31.8	7 53.4
18	24 59.2	67 24	51.0	-98	161 31.2	-14 14.2	320 36.8	7 53.4
20	53 46.0	69 24	38.5	-101	191 35.5	-14 14.0	350 41.9	7 53.5
22	82 33.3	71 24	25.4	-103	221 39.7	-14 13.8	20 47.0	7 53.5
Δ					21	1	25	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min s	s	'	h min	min	'	'
00	2 34.5	.3	15.9	T <sub>m</sub>	16 16	2.5	59.8 16.3
12	2 38.5	T <sub>m</sub> ☉	11 h 57.4 min	Starost	3.9 d	Faza ●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	'	°	h min	'	°	'	°
♀	9 33	.4	359	-4.4	♃	7 15	.0	34	-2.1

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	42.5	15	3.2	219	3.0	217	31.4	2	15.8	212	21.1	1	14.6
2	210	42.6	15	4.8	249	7.9	247	34.0	2	15.8	242	22.5	1	16.1
4	240	42.8	15	6.3	279	12.8	277	36.5	2	15.9	272	23.9	1	17.7
6	270	42.9	15	7.8	309	17.8	307	39.0	2	16.0	302	25.3	1	19.2
8	300	43.1	15	9.3	339	22.7	337	41.6	2	16.0	332	26.7	1	20.8
10	330	43.2	15	10.8	9	27.6	7	44.1	2	16.1	2	28.1	1	22.3
12	0	43.4	15	12.3	39	32.6	37	46.6	2	16.2	32	29.5	1	23.8
14	30	43.5	15	13.8	69	37.5	67	49.0	2	16.3	62	30.9	1	25.4
16	60	43.7	15	15.3	99	42.4	97	51.5	2	16.4	92	32.3	1	26.9
18	90	43.8	15	16.8	129	47.3	127	54.0	2	16.5	122	33.7	1	28.5
20	120	43.9	15	18.3	159	52.3	157	56.4	2	16.6	152	35.1	1	30.0
22	150	44.1	15	19.8	189	57.2	187	58.9	2	16.7	182	36.5	1	31.5
Δ	1		8				12		0		7		8	

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	4 0	19 56	0 53	:::	7 43	4.3	1 59	.6				
55	4 22	19 34	0 43	3 5	8 26	3.8	1 15	1.1				
50	4 38	19 17	0 37	2 19	8 55	3.5	0 44	1.4				
45	4 51	19 4	0 32	1 57	9 17	3.3	0 21	1.6				
40	5 1	18 54	0 29	1 43	9 35	3.1	0 2	1.8				
35	5 10	18 45	0 27	1 34	9 50	3.0	...	.0				
30	5 18	18 37	0 25	1 27	10 3	2.9	...	.0				
20	5 31	18 23	0 23	1 18	10 25	2.7	...	.0				
10	5 43	18 12	0 22	1 13	10 44	2.5	23 45	2.1				
0	5 54	18 1	0 21	1 11	11 1	2.3	23 29	2.3				
10	6 4	17 50	0 22	1 12	11 19	2.2	23 13	2.4				
20	6 16	17 39	0 23	1 15	11 38	2.0	22 56	2.6				
30	6 28	17 26	0 25	1 21	11 59	1.8	22 36	2.8				
35	6 36	17 18	0 26	1 26	12 12	1.7	22 24	2.9				
40	6 44	17 10	0 28	1 32	12 27	1.6	22 10	3.1				
45	6 54	17 0	0 31	1 40	12 44	1.4	21 54	3.3				
50	7 5	16 49	0 34	1 50	13 5	1.2	21 34	3.5				
55	7 20	16 34	0 39	2 4	13 32	.9	21 8	3.8				
60	7 39	16 15	0 45	2 23	14 11	.4	20 31	4.3				
S												

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	111	20.8	73	24	11.6	-106	251	44.0	-14	13.6	50	52.1	7	53.6
2	140	8.7	75	23	57.1	-108	281	48.3	-14	13.4	80	57.1	7	53.6
4	168	57.0	77	23	42.1	-110	311	52.6	-14	13.2	111	2.2	7	53.6
6	197	45.6	79	23	26.4	-112	341	56.9	-14	13.0	141	7.3	7	53.7
8	226	34.6	81	23	10.1	-114	12	1.1	-14	12.8	171	12.3	7	53.7
10	255	24.0	83	22	53.3	-117	42	5.4	-14	12.6	201	17.4	7	53.8
12	284	13.8	85	22	35.8	-119	72	9.7	-14	12.4	231	22.4	7	53.8
14	313	4.0	87	22	17.8	-121	102	14.0	-14	12.2	261	27.5	7	53.9
16	341	54.5	89	21	59.3	-122	132	18.3	-14	12.0	291	32.6	7	53.9
18	10	45.5	91	21	40.2	-124	162	22.6	-14	11.8	321	37.6	7	53.9
20	39	36.9	93	21	20.5	-126	192	26.9	-14	11.6	351	42.7	7	54.0
22	68	28.7	95	21	.4	-128	222	31.2	-14	11.4	21	47.8	7	54.0
Δ	1		8				21		1		25		0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'		
00	2 42.5	.3	15.9	T <sub>m</sub>	17 15	2.3	59.7	16.3	
12	2 46.3	T <sub>m☉</sub>	11 h 57.2 min	Starost 4.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	°		h min	'	°	°
♀	9 31	.4	359	-4.4	♃	7 12	.0	34	-2.1
♂	9 50	.1	354	1.2	♄	20 33	.0	193	.7

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	44.2	15	21.3	220	2.1	218	1.3	2	16.9	212	37.8	1	33.1
2	210	44.4	15	22.8	250	7.1	248	3.8	2	17.0	242	39.2	1	34.6
4	240	44.5	15	24.3	280	12.0	278	6.2	2	17.1	272	40.6	1	36.2
6	270	44.7	15	25.8	310	16.9	308	8.6	2	17.3	302	42.0	1	37.7
8	300	44.8	15	27.2	340	21.8	338	11.0	2	17.4	332	43.4	1	39.2
10	330	44.9	15	28.7	10	26.8	8	13.4	2	17.6	2	44.8	1	40.8
12	0	45.1	15	30.2	40	31.7	38	15.8	2	17.7	32	46.2	1	42.3
14	30	45.2	15	31.7	70	36.6	68	18.1	2	17.9	62	47.6	1	43.8
16	60	45.3	15	33.2	100	41.6	98	20.5	2	18.0	92	49.0	1	45.4
18	90	45.5	15	34.7	130	46.5	128	22.9	2	18.2	122	50.4	1	46.9
20	120	45.6	15	36.1	160	51.4	158	25.2	2	18.4	152	51.8	1	48.5
22	150	45.7	15	37.6	190	56.3	188	27.6	2	18.6	182	53.2	1	50.0
Δ	1		7				12		1		7		8	

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	3 58	19 58	0 54	:::	9 28	4.2	2 14	.3				
55	4 20	19 36	0 43	3 9	9 57	3.8	1 41	.8				
50	4 36	19 19	0 37	2 21	10 19	3.5	1 18	1.1				
45	4 49	19 6	0 32	1 58	10 36	3.2	0 60	1.3				
40	5 0	18 55	0 29	1 44	10 50	3.0	0 45	1.4				
35	5 9	18 46	0 27	1 34	11 1	2.9	0 32	1.6				
30	5 17	18 37	0 25	1 27	11 11	2.8	0 21	1.7				
20	5 31	18 24	0 23	1 18	11 29	2.5	0 2	1.9				
10	5 43	18 12	0 22	1 13	11 44	2.3	...	.0				
0	5 54	18 1	0 21	1 11	11 58	2.2	...	.0				
10	6 5	17 50	0 22	1 12	12 12	2.0	...	.0				
20	6 16	17 38	0 23	1 15	12 27	1.8	23 58	2.5				
30	6 29	17 25	0 25	1 21	12 44	1.6	23 43	2.7				
35	6 37	17 17	0 26	1 26	12 53	1.5	23 34	2.8				
40	6 45	17 9	0 28	1 32	13 5	1.3	23 24	3.0				
45	6 55	16 59	0 31	1 40	13 18	1.1	23 13	3.2				
50	7 7	16 47	0 34	1 50	13 33	.9	22 58	3.4				
55	7 22	16 32	0 39	2 4	13 54	.6	22 40	3.7				
60	7 41	16 12	0 46	2 23	14 20	.2	22 15	4.1				
S												

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	97	20.9	97	20	39.8	-129	252	35.4	-14	11.2	51	52.8	7	54.1
2	126	13.5	99	20	18.7	-131	282	39.7	-14	11.0	81	57.9	7	54.1
4	155	6.5	100	19	57.1	-132	312	44.0	-14	10.8	112	2.9	7	54.2
6	184	.0	102	19	35.1	-134	342	48.3	-14	10.6	142	8.0		

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	'	°	'							
0	180	45.9	15	39.1	221	1.3	218	29.9	2	18.8	212	54.6	1	51.5
2	210	46.0	15	40.5	251	6.2	248	32.2	2	19.0	242	56.0	1	53.1
4	240	46.1	15	42.0	281	11.1	278	34.5	2	19.2	272	57.4	1	54.6
6	270	46.3	15	43.5	311	16.1	308	36.8	2	19.4	302	58.8	1	56.1
8	300	46.4	15	44.9	341	21.0	338	39.1	2	19.6	333	.2	1	57.7
10	330	46.5	15	46.4	11	25.9	8	41.4	2	19.8	3	1.6	1	59.2
12	0	46.6	15	47.9	41	30.8	38	43.7	2	20.1	33	3.0	2	.7
14	30	46.8	15	49.3	71	35.8	68	46.0	2	20.3	63	4.4	2	2.3
16	60	46.9	15	50.8	101	40.7	98	48.2	2	20.5	93	5.8	2	3.8
18	90	47.0	15	52.2	131	45.6	128	50.5	2	20.8	123	7.2	2	5.3
20	120	47.1	15	53.7	161	50.6	158	52.7	2	21.0	153	8.6	2	6.9
22	150	47.2	15	55.2	191	55.5	188	55.0	2	21.3	183	10.0	2	8.4
Δ	1	7					11	1			7	8		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 55	20 1	0 54	:	11 9	4.0	2 21	.2
55	4 18	19 38	0 44	:	11 28	3.6	1 60	.6
50	4 35	19 20	0 37	:	11 42	3.3	1 43	.8
45	4 48	19 7	0 33	:	11 53	3.1	1 30	1.0
40	4 59	18 56	0 29	:	12 3	2.9	1 19	1.2
35	5 8	18 46	0 27	:	12 11	2.8	1 10	1.4
30	5 16	18 38	0 25	:	12 17	2.6	1 2	1.5
20	5 30	18 24	0 23	:	12 29	2.4	0 47	1.7
10	5 42	18 12	0 22	:	12 40	2.2	0 35	1.9
0	5 54	18 0	0 21	:	12 50	2.0	0 23	2.1
10	6 5	17 49	0 22	:	12 59	1.8	0 11	2.3
20	6 16	17 37	0 23	:	13 10	1.6	...	.0
30	6 30	17 24	0 25	:	13 22	1.4	...	.0
35	6 37	17 16	0 26	:	13 28	1.3	...	.0
40	6 46	17 8	0 28	:	13 36	1.1	...	.0
45	6 56	16 57	0 31	:	13 45	1.0	...	.0
50	7 8	16 45	0 34	:	13 55	.8	...	.0
55	7 23	16 30	0 39	:	14 9	.5	...	.0
60	7 44	16 10	0 46	:	14 26	.1	23 54	3.9

UT	MESEC				JUPITER		SATURN							
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	84	18.9	116	15	58.5	-144	253	27.0	-14	8.8	52	53.5	7	54.5
2	113	16.2	118	15	32.7	-145	283	31.3	-14	8.6	82	58.6	7	54.6
4	142	13.9	119	15	6.5	-145	313	35.6	-14	8.4	113	3.6	7	54.6
6	171	12.0	120	14	40.1	-146	343	39.9	-14	8.2	143	8.7	7	54.7
8	200	10.5	121	14	13.3	-147	13	44.2	-14	8.0	173	13.7	7	54.7
10	229	9.2	122	13	46.3	-147	43	48.5	-14	7.8	203	18.8	7	54.7
12	258	8.3	124	13	19.0	-148	73	52.8	-14	7.6	233	23.8	7	54.8
14	287	7.8	125	12	51.5	-148	103	57.2	-14	7.5	263	28.9	7	54.8
16	316	7.5	126	12	23.8	-149	134	1.5	-14	7.3	293	33.9	7	54.8
18	345	7.6	127	11	55.8	-149	164	5.8	-14	7.1	323	39.0	7	54.9
20	14	8.0	127	11	27.6	-150	194	10.1	-14	6.9	353	44.0	7	54.9
22	43	8.7	128	10	59.2	-150	224	14.4	-14	6.7	23	49.0	7	55.0
Δ							22	1			25	0		

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min	s	s	h min	min	'	'	
00	2 57.1	.3	15.9	T <sub>m</sub>	19 2	2.0	58.9	16.1
12	3	.4	T <sub>m</sub> ☉	11 h 57.0 min	Starost	6.9 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°	°
♀	9 27	.3	358	-4.4	♃	7 5	.0	33	-2.1
♂	9 48	.1	353	1.2	♄	20 25	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	'	°	'							
0	180	47.4	15	56.6	222	.4	218	57.2	2	21.5	213	11.4	2	9.9
2	210	47.5	15	58.1	252	5.3	248	59.4	2	21.8	243	12.8	2	11.5
4	240	47.6	15	59.5	282	10.3	279	1.6	2	22.1	273	14.2	2	13.0
6	270	47.7	16	.9	312	15.2	309	3.8	2	22.3	303	15.6	2	14.5
8	300	47.8	16	2.4	342	20.1	339	6.0	2	22.6	333	17.0	2	16.1
10	330	47.9	16	3.8	12	25.0	9	8.2	2	22.9	3	18.4	2	17.6
12	0	48.1	16	5.3	42	30.0	39	10.4	2	23.2	33	19.8	2	19.1
14	30	48.2	16	6.7	72	34.9	69	12.6	2	23.5	63	21.2	2	20.7
16	60	48.3	16	8.1	102	39.8	99	14.7	2	23.8	93	22.6	2	22.2
18	90	48.4	16	9.6	132	44.8	129	16.9	2	24.1	123	24.0	2	23.7
20	120	48.5	16	11.0	162	49.7	159	19.0	2	24.4	153	25.4	2	25.3
22	150	48.6	16	12.4	192	54.6	189	21.2	2	24.8	183	26.8	2	26.8
Δ	1	7					11	1			7	8		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 52	20 3	0 55	:	12 45	3.9	2 26	.1
55	4 16	19 39	0 44	:	12 55	3.5	2 13	.5
50	4 33	19 22	0 37	:	13 2	3.2	2 3	.7
45	4 46	19 8	0 33	:	13 8	3.0	1 55	.9
40	4 58	18 57	0 30	:	13 13	2.8	1 49	1.1
35	5 7	18 47	0 27	:	13 17	2.7	1 43	1.2
30	5 15	18 39	0 26	:	13 21	2.6	1 38	1.4
20	5 30	18 24	0 23	:	13 27	2.3	1 29	1.6
10	5 42	18 12	0 22	:	13 33	2.1	1 21	1.8
0	5 53	18 0	0 21	:	13 38	1.9	1 13	2.0
10	6 5	17 49	0 22	:	13 44	1.7	1 6	2.2
20	6 17	17 37	0 23	:	13 49	1.5	0 58	2.4
30	6 30	17 23	0 25	:	13 55	1.3	0 48	2.6
35	6 38	17 15	0 26	:	13 59	1.2	0 43	2.7
40	6 47	17 6	0 28	:	14 3	1.0	0 37	2.9
45	6 57	16 56	0 31	:	14 8	.9	0 29	3.1
50	7 10	16 43	0 34	:	14 14	.7	0 21	3.3
55	7 25	16 28	0 39	:	14 21	.4	0 10	3.6
60	7 46	16 7	0 46	:	14 29	.1	...	.0

UT	MESEC				JUPITER		SATURN							
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	72	9.6	129	10	30.6	-150	254	18.7	-14	6.5	53	54.1	7	55.0
2	101	10.9	130	10	1.9	-150	284	23.0	-14	6.3	83	59.1	7	55.0
4	130	12.4	131	9	33.0	-150	314	27.3	-14	6.1	114	4.2	7	55.1
6	159	14.1	131	9	3.9	-151	344	31.7	-14	5.9	144	9.2	7	55.1
8	188	16.1	132	8	34.7	-151	14	36.0	-14	5.7	174	14.3	7	55.1
10	217	18.4	133	8	5.3	-151	44	40.3	-14	5.6	204	19.3	7	55.2
12	246	20.9	133	7	35.9	-151	74	44.6	-14	5.4	234	24.4	7	55.2
14	275	23.6	134	7	6.3	-150	104	48.9	-14	5.2	264	29.4	7	55.2
16	304	26.5	134	6	36.6	-150	134	53.3	-14	5.0	294	34.4	7	55.3
18	333	29.6	134	6	6.9	-150	164	57.6	-14	4.8	324	39.5	7	55.3
20	2	32.9	135	5	37.0	-150	195	1.9	-14	4.6	354	44.5	7	55.3
22	31	36.4	135	5	7.1	-150	225	6.2	-14	4.4	24	49.6	7	55.4
Δ							22	1			25	0		

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min	s	s	h min	min	'	'	
00	3 3.6	.2	15.9	T <sub>m</sub>	19 49	1.9	58.5	15.9
12	3	6.6	T <sub>m</sub> ☉	11 h 56.9 min	Starost	7.9 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°	°
♀	9 25	.3	357	-4.4	♃	7 2	.0	33	-2.1
♂	9 47	.1	352	1.2	♄	20 21	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 48.7	16 13.9	222 59.5	219 23.3	2 25.1	213 28.2	2 28.3
2	210 48.8	16 15.3	253 4.5	249 25.4	2 25.4	243 29.6	2 29.8
4	240 48.9	16 16.7	283 9.4	279 27.5	2 25.8	273 31.0	2 31.4
6	270 49.0	16 18.1	313 14.3	309 29.6	2 26.1	303 32.4	2 32.9
8	300 49.2	16 19.6	343 19.3	339 31.7	2 26.4	333 33.8	2 34.4
10	330 49.3	16 21.0	13 24.2	9 33.8	2 26.8	3 35.2	2 36.0
12	0 49.4	16 22.4	43 29.1	39 35.9	2 27.2	33 36.6	2 37.5
14	30 49.5	16 23.8	73 34.0	69 38.0	2 27.5	63 38.0	2 39.0
16	60 49.6	16 25.2	103 39.0	99 40.1	2 27.9	93 39.4	2 40.5
18	90 49.7	16 26.6	133 43.9	129 42.1	2 28.3	123 40.8	2 42.1
20	120 49.8	16 28.0	163 48.8	159 44.2	2 28.7	153 42.2	2 43.6
22	150 49.9	16 29.5	193 53.8	189 46.2	2 29.0	183 43.6	2 45.1
Δ	1	7		10	2	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 50	20 6	0 56	:::	14 18	3.8	2 29	.1
55	4 13	19 41	0 44	3 26	14 19	3.4	2 24	.4
50	4 31	19 23	0 37	2 25	14 20	3.2	2 20	.7
45	4 45	19 9	0 33	2 0	14 21	3.0	2 17	.9
40	4 56	18 58	0 30	1 45	14 21	2.8	2 15	1.0
35	5 6	18 48	0 27	1 35	14 22	2.6	2 12	1.2
30	5 15	18 39	0 26	1 28	14 22	2.5	2 10	1.3
20	5 29	18 25	0 23	1 19	14 23	2.3	2 7	1.5
10	5 42	18 12	0 22	1 14	14 24	2.1	2 4	1.7
0	5 53	18 0	0 22	1 12	14 25	1.9	2 1	1.9
10	6 5	17 49	0 22	1 12	14 25	1.7	1 58	2.1
20	6 17	17 36	0 23	1 15	14 26	1.5	1 54	2.3
30	6 31	17 22	0 25	1 22	14 27	1.3	1 51	2.5
35	6 39	17 14	0 26	1 26	14 28	1.2	1 48	2.7
40	6 48	17 5	0 28	1 32	14 28	1.0	1 46	2.8
45	6 58	16 55	0 31	1 40	14 29	.8	1 43	3.0
50	7 11	16 42	0 34	1 51	14 30	.7	1 40	3.2
55	7 27	16 26	0 39	2 5	14 31	.4	1 36	3.5
60	7 48	16 4	0 46	2 25	14 32	.1	1 30	3.8
S								

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	60 40.1	135 4	37.1	-149	255 10.6	-14 4.2	54 54.6	7 55.4	84 59.6	7 55.4	115 4.7	7 55.4
2	89 43.9	135 4	7.1	-149	285 14.9	-14 4.1	84 59.6	7 55.4	115 4.7	7 55.4	145 9.7	7 55.5
4	118 47.9	136 3	37.1	-149	315 19.2	-14 3.9	145 9.7	7 55.5	175 14.7	7 55.5	205 19.8	7 55.5
6	147 52.0	136 3	7.0	-148	345 23.5	-14 3.7	175 14.7	7 55.5	205 19.8	7 55.5	235 24.8	7 55.6
8	176 56.3	136 2	36.9	-148	15 27.9	-14 3.5	235 24.8	7 55.6	265 29.8	7 55.6	265 29.8	7 55.6
10	206 7	136 2	6.7	-147	45 32.2	-14 3.3	265 29.8	7 55.6	295 34.9	7 55.6	295 34.9	7 55.6
12	235 5.2	136 1	36.6	-146	75 36.5	-14 3.1	295 34.9	7 55.6	325 39.9	7 55.7	325 39.9	7 55.7
14	264 9.8	136 1	6.5	-146	105 40.9	-14 2.9	325 39.9	7 55.7	355 44.9	7 55.7	355 44.9	7 55.7
16	293 14.5	136 0	36.4	-145	135 45.2	-14 2.8	355 44.9	7 55.7	25 50.0	7 55.7	25 50.0	7 55.7
18	322 19.3	136 0	6.4	-144	165 49.5	-14 2.6	25 50.0	7 55.7				
20	351 24.1	135 -0	23.7	-144	195 53.9	-14 2.4						
22	20 29.1	135 -0	53.6	-143	225 58.2	-14 2.2						
Δ					22	1	25	0				

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	3 9.6	.2	15.9	T <sub>m</sub>	20 35	1.9	58.0		
12	3 12.4	T <sub>m</sub> ☉	11 h 56.8 min	Starost	8.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♃	9 24	.3	357	-4.4	♄	6 58	.0	33	-2.1
♂	9 46	.1	351	1.2	♅	20 17	.0	193	.7

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.0	16 30.9	223 58.7	219 48.2	2 29.4	213 45.0	2 46.7
2	210 50.1	16 32.3	254 3.6	249 50.3	2 29.8	243 46.4	2 48.2
4	240 50.1	16 33.7	284 8.5	279 52.3	2 30.2	273 47.8	2 49.7
6	270 50.2	16 35.1	314 13.5	309 54.3	2 30.6	303 49.2	2 51.2
8	300 50.3	16 36.5	344 18.4	339 56.3	2 31.0	333 50.6	2 52.8
10	330 50.4	16 37.9	14 23.3	9 58.3	2 31.5	3 52.0	2 54.3
12	0 50.5	16 39.3	44 28.3	40 3	2 31.9	33 53.4	2 55.8
14	30 50.6	16 40.6	74 33.2	70 2.3	2 32.3	63 54.8	2 57.3
16	60 50.7	16 42.0	104 38.1	100 4.2	2 32.7	93 56.2	2 58.9
18	90 50.8	16 43.4	134 43.0	130 6.2	2 33.2	123 57.6	3 4
20	120 50.9	16 44.8	164 48.0	160 8.2	2 33.6	153 59.0	3 1.9
22	150 51.0	16 46.2	194 52.9	190 10.1	2 34.1	184 4	3 3.4
Δ	0	7		10	2	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 47	20 8	0 56	:::	15 48	3.8	2 32	.1
55	4 11	19 43	0 44	3 34	15 41	3.4	2 34	.4
50	4 29	19 25	0 38	2 26	15 36	3.2	2 36	.7
45	4 44	19 11	0 33	2 1	15 32	2.9	2 38	.9
40	4 55	18 59	0 30	1 46	15 28	2.8	2 39	1.0
35	5 5	18 49	0 27	1 36	15 25	2.6	2 40	1.2
30	5 14	18 40	0 26	1 28	15 22	2.5	2 41	1.3
20	5 29	18 25	0 23	1 19	15 18	2.3	2 43	1.5
10	5 41	18 12	0 22	1 14	15 14	2.1	2 45	1.7
0	5 53	18 0	0 22	1 12	15 10	1.9	2 46	1.9
10	6 5	17 48	0 22	1 12	15 6	1.7	2 48	2.1
20	6 17	17 36	0 23	1 15	15 2	1.5	2 49	2.3
30	6 32	17 22	0 25	1 22	14 58	1.3	2 51	2.5
35	6 40	17 13	0 26	1 26	14 55	1.2	2 52	2.6
40	6 49	17 4	0 28	1 32	14 53	1.0	2 54	2.8
45	6 60	16 53	0 31	1 40	14 49	.9	2 55	3.0
50	7 13	16 40	0 35	1 51	14 45	.7	2 57	3.2
55	7 29	16 24	0 39	2 5	14 41	.4	2 59	3.4
60	7 51	16 2	0 47	2 25	14 35	.1	3 2	3.8
S								

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	49 34.1	135 -1	23.5	-142	256 2.5	-14 2.0	55 55.0	7 55.7	86 .0	7 55.8	116 5.1	7 55.8
2	78 39.1	135 -1	53.4	-141	286 6.9	-14 1.8	86 .0	7 55.8	116 5.1	7 55.8	146 10.1	7 55.8
4	107 44.2	134 -2	23.2	-140	316 11.2	-14 1.7	146 10.1	7 55.8	176 15.1	7 55.9	206 20.1	7 55.9
6	136 49.3	134 -2	52.9	-139	346 15.6	-14 1.5	176 15.1	7 55.9	206 20.1	7 55.9	236 25.2	7 55.9
8	165 54.5	134 -3	22.5	-138	16 19.9	-14 1.3	236 25.2	7 55.9	266 30.2	7 55.9	266 30.2	7 55.9
10	194 59.7	133 -3	52.0	-137	46 24.3	-14 1.1	266 30.2	7 55.9	296 35.2	7 56.0	296 35.2	7 56.0
12	224 4.8	133 -4	21.4	-136	76 28.6	-14 .9	296 35.2	7 56.0	326 40.2	7 56.0	326 40.2	7 56.0
14	253 10.0	132 -4	50.7	-135	106 32.9	-14 .7	326 40.2	7 56.0	356 45.3	7 56.0	356 45.3	7 56.0
16	282 15.2	132 -5										

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 51.1	16 47.6	224 57.8	220 12.1	2 34.5	214 1.8	3 4.9
2	210 51.1	16 49.0	255 2.8	250 14.0	2 35.0	244 3.2	3 6.5
4	240 51.2	16 50.3	285 7.7	280 15.9	2 35.4	274 4.6	3 8.0
6	270 51.3	16 51.7	315 12.6	310 17.8	2 35.9	304 6.0	3 9.5
8	300 51.4	16 53.1	345 17.5	340 19.7	2 36.4	334 7.4	3 11.0
10	330 51.5	16 54.5	15 22.5	10 21.7	2 36.9	4 8.8	3 12.6
12	0 51.5	16 55.8	45 27.4	40 23.6	2 37.4	34 10.2	3 14.1
14	30 51.6	16 57.2	75 32.3	70 25.4	2 37.8	64 11.6	3 15.6
16	60 51.7	16 58.6	105 37.3	100 27.3	2 38.3	94 13.0	3 17.1
18	90 51.8	16 59.9	135 42.2	130 29.2	2 38.8	124 14.4	3 18.6
20	120 51.9	17 1.3	165 47.1	160 31.1	2 39.3	154 15.8	3 20.2
22	150 51.9	17 2.7	195 52.0	190 32.9	2 39.8	184 17.2	3 21.7
Δ	0	7		9	2	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 44	20 11	0 57	:::	17 19	3.8	2 34	.1
55	4 9	19 45	0 45	3 45	17 3	3.4	2 44	.5
50	4 28	19 26	0 38	2 28	16 52	3.1	2 52	.7
45	4 42	19 12	0 33	2 2	16 42	2.9	2 58	.9
40	4 54	18 60	0 30	1 46	16 35	2.8	3 4	1.1
35	5 4	18 50	0 27	1 36	16 28	2.6	3 8	1.2
30	5 13	18 41	0 26	1 28	16 22	2.5	3 12	1.3
20	5 28	18 25	0 23	1 19	16 12	2.3	3 19	1.6
10	5 41	18 12	0 22	1 14	16 4	2.1	3 26	1.7
0	5 53	18 0	0 22	1 12	15 55	1.9	3 32	1.9
10	6 5	17 48	0 22	1 12	15 47	1.8	3 38	2.1
20	6 18	17 35	0 23	1 16	15 39	1.6	3 44	2.3
30	6 32	17 21	0 25	1 22	15 29	1.4	3 51	2.5
35	6 40	17 12	0 27	1 26	15 24	1.3	3 55	2.6
40	6 50	17 3	0 29	1 33	15 18	1.1	4 0	2.8
45	7 1	16 52	0 31	1 41	15 10	1.0	4 6	2.9
50	7 14	16 39	0 35	1 51	15 2	.8	4 12	3.1
55	7 31	16 22	0 40	2 5	14 51	.5	4 21	3.4
60	7 53	15 59	0 47	2 26	14 38	.2	4 32	3.8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	38 35.5	129 - 7	15.0 -129		256 54.7	-13 59.9	56 55.3	7 56.1
2	67 40.5	129 - 7	43.4 -127		286 59.0	-13 59.7	87 .3	7 56.1
4	96 45.5	128 - 8	11.7 -126		317 3.4	-13 59.5	117 5.3	7 56.1
6	125 50.3	127 - 8	39.7 -124		347 7.7	-13 59.3	147 10.4	7 56.1
8	154 55.1	127 - 9	7.5 -123		17 12.1	-13 59.1	177 15.4	7 56.2
10	183 59.8	126 - 9	35.2 -121		47 16.4	-13 59.0	207 20.4	7 56.2
12	213 4.5	125 -10	2.6 -120		77 20.8	-13 58.8	237 25.4	7 56.2
14	242 9.0	124 -10	29.8 -118		107 25.2	-13 58.6	267 30.4	7 56.2
16	271 13.5	123 -10	56.8 -116		137 29.5	-13 58.4	297 35.5	7 56.2
18	300 17.8	123 -11	23.5 -115		167 33.9	-13 58.3	327 40.5	7 56.3
20	329 22.1	122 -11	50.0 -113		197 38.2	-13 58.1	357 45.5	7 56.3
22	358 26.2	121 -12	16.3 -111		227 42.6	-13 57.9	27 50.5	7 56.3
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	3 20.0	.2	15.9	T <sub>m</sub>	22 6	2.0	57.0 15.5		
12	3 22.2	T <sub>m☉</sub>	11 h 56.6 min	Starost 10.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 20	.3	356	-4.4	♄	6 51	.0	33	-2.1
♂	9 43	.1	350	1.2	♂	20 9	.0	193	.8

8. MAJ

PETAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 52.0	17 4.0	225 57.0	220 34.8	2 40.4	214 18.6	3 23.2
2	210 52.1	17 5.4	256 1.9	250 36.6	2 40.9	244 20.0	3 24.7
4	240 52.1	17 6.7	286 6.8	280 38.5	2 41.4	274 21.4	3 26.2
6	270 52.2	17 8.1	316 11.7	310 40.3	2 41.9	304 22.8	3 27.8
8	300 52.3	17 9.4	346 16.7	340 42.1	2 42.5	334 24.2	3 29.3
10	330 52.4	17 10.8	16 21.6	10 44.0	2 43.0	4 25.6	3 30.8
12	0 52.4	17 12.1	46 26.5	40 45.8	2 43.5	34 27.0	3 32.3
14	30 52.5	17 13.5	76 31.5	70 47.6	2 44.1	64 28.4	3 33.8
16	60 52.6	17 14.8	106 36.4	100 49.4	2 44.6	94 29.8	3 35.3
18	90 52.6	17 16.2	136 41.3	130 51.2	2 45.2	124 31.2	3 36.9
20	120 52.7	17 17.5	166 46.2	160 52.9	2 45.8	154 32.6	3 38.4
22	150 52.8	17 18.8	196 51.2	190 54.7	2 46.3	184 34.0	3 39.9
Δ	0	7		9	3	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 42	20 13	0 58	:::	18 50	3.8	2 38	.2
55	4 7	19 47	0 45	:::	18 25	3.4	2 56	.6
50	4 26	19 28	0 38	2 30	18 7	3.1	3 9	.8
45	4 41	19 13	0 33	2 3	17 53	2.9	3 20	1.0
40	4 53	19 1	0 30	1 47	17 41	2.7	3 30	1.2
35	5 3	18 50	0 28	1 36	17 31	2.6	3 38	1.3
30	5 12	18 41	0 26	1 29	17 22	2.5	3 45	1.4
20	5 28	18 26	0 23	1 19	17 7	2.3	3 57	1.6
10	5 41	18 12	0 22	1 14	16 54	2.2	4 7	1.8
0	5 53	18 0	0 22	1 12	16 42	2.0	4 18	2.0
10	6 5	17 48	0 22	1 12	16 30	1.9	4 28	2.1
20	6 18	17 35	0 23	1 16	16 17	1.7	4 39	2.3
30	6 33	17 20	0 25	1 22	16 3	1.5	4 51	2.5
35	6 41	17 11	0 27	1 27	15 54	1.4	4 58	2.6
40	6 51	17 2	0 29	1 33	15 45	1.3	5 7	2.8
45	7 2	16 51	0 31	1 41	15 34	1.1	5 16	2.9
50	7 16	16 37	0 35	1 51	15 20	.9	5 28	3.1
55	7 33	16 20	0 40	2 6	15 4	.7	5 43	3.4
60	7 55	15 57	0 47	2 26	14 42	.3	6 3	3.8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	27 30.2	120 -12	42.3 -109		257 47.0	-13 57.7	57 55.5	7 56.3
2	56 34.1	119 -13	8.0 -108		287 51.3	-13 57.6	88 .5	7 56.4
4	85 37.8	118 -13	33.4 -106		317 55.7	-13 57.4	118 5.5	7 56.4
6	114 41.4	118 -13	58.6 -104		348 .1	-13 57.2	148 10.6	7 56.4
8	143 44.9	117 -14	23.5 -102		18 4.4	-13 57.0	178 15.6	7 56.4
10	172 48.2	116 -14	48.0 -100		48 8.8	-13 56.9	208 20.6	7 56.4
12	201 51.3	115 -15	12.3 -98		78 13.2	-13 56.7	238 25.6	7 56.5
14	230 54.4	114 -15	36.2 -96		108 17.5	-13 56.5	268 30.6	7 56.5
16	259 57.2	113 -15	59.9 -94		138 21.9	-13 56.3	298 35.6	7 56.5
18	288 59.9	112 -16	23.1 -92		168 26.3	-13 56.2	328 40.6	7 56.5
20	318 2.5	111 -16	46.1 -89		198 30.6	-13 56.0	358 45.6	7 56.5
22	347 4.8	111 -17	8.7 -87		228 35.0	-13 55.8	28 50.6	7 56.5
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	3 24.4	.2	15.9	T <sub>m</sub>	22 53	2.0	56.5 15.4		
12	3 26.3	T <sub>m☉</sub>	11 h 56.6 min	Starost 11.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 19	.3	355	-4.4	♄	6 48	.0	33	-2.1
♂	9 42	.1	349						

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	180	52.8	17	226	56.1	220	56.5
2	210	52.9	17	257	1.0	250	58.3
4	240	52.9	17	287	6.0	281	.0
6	270	53.0	17	317	10.9	311	1.8
8	300	53.1	17	347	15.8	341	3.5
10	330	53.1	17	17	20.7	11	5.2
12	0	53.2	17	47	25.7	41	7.0
14	30	53.2	17	77	30.6	71	8.7
16	60	53.3	17	107	35.5	101	10.4
18	90	53.3	17	137	40.5	131	12.1
20	120	53.4	17	167	45.4	161	13.8
22	150	53.4	17	197	50.3	191	15.5
Δ	0	7				9	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	3 39	20 15	0 58	:: ::	20 22	3.7	2 43
55	4 5	19 49	0 45	:: ::	19 47	3.3	3 10
50	4 25	19 29	0 38	2 31	19 22	3.0	3 30
45	4 40	19 14	0 33	2 3	19 2	2.8	3 45
40	4 52	19 2	0 30	1 47	18 47	2.7	3 58
35	5 2	18 51	0 28	1 37	18 34	2.6	4 10
30	5 11	18 42	0 26	1 29	18 22	2.5	4 19
20	5 27	18 26	0 23	1 19	18 3	2.3	4 36
10	5 41	18 13	0 22	1 14	17 46	2.2	4 51
0	5 53	17 60	0 22	1 12	17 30	2.1	5 5
10	6 5	17 47	0 22	1 13	17 15	2.0	5 19
20	6 19	17 34	0 23	1 16	16 58	1.8	5 34
30	6 33	17 19	0 25	1 22	16 39	1.7	5 51
35	6 42	17 11	0 27	1 27	16 28	1.6	6 1
40	6 52	17 1	0 29	1 33	16 16	1.5	6 13
45	7 3	16 49	0 31	1 41	16 1	1.4	6 26
50	7 17	16 35	0 35	1 52	15 43	1.2	6 43
55	7 34	16 18	0 40	2 6	15 20	.9	7 5
60	7 58	15 55	0 47	2 27	14 49	.5	7 34
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	16	7.0	110	-17	31.0	-85	258	39.4
2	45	9.1	109	-17	52.9	-83	288	43.8
4	74	10.9	108	-18	14.4	-81	318	48.1
6	103	12.6	107	-18	35.5	-78	348	52.5
8	132	14.1	107	-18	56.3	-76	18	56.9
10	161	15.5	106	-19	16.7	-74	49	1.3
12	190	16.6	105	-19	36.7	-71	79	5.6
14	219	17.6	104	-19	56.2	-69	109	10.0
16	248	18.5	104	-20	15.4	-66	139	14.4
18	277	19.1	103	-20	34.1	-64	169	18.8
20	306	19.6	102	-20	52.5	-62	199	23.2
22	335	19.9	102	-21	10.4	-59	229	27.6
Δ							22	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>
h	min	s	s	h min	min	'	'
00	3 28.2	.1	15.9	T <sub>m</sub>	23 42	2.1	56.0
12	3 29.8	T <sub>m</sub> ☉	11 h 56.5 min	Starost 12.9 d Faza ☉			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	9 17	.3	355	-4.4	♄	6 44	.0
♂	9 41	.1	349	1.2	♅	20 1	.0

10. MAJ

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	180	53.5	17	227	55.2	221	17.2
2	210	53.5	17	258	.2	251	18.9
4	240	53.6	17	288	5.1	281	20.6
6	270	53.6	17	318	10.0	311	22.2
8	300	53.7	17	348	15.0	341	23.9
10	330	53.7	17	18	19.9	11	25.5
12	0	53.8	17	48	24.8	41	27.2
14	30	53.8	17	78	29.7	71	28.8
16	60	53.8	17	108	34.7	101	30.5
18	90	53.9	17	138	39.6	131	32.1
20	120	53.9	17	168	44.5	161	33.7
22	150	54.0	17	198	49.5	191	35.3
Δ	0	6				8	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	3 37	20 18	0 59	:: ::	21 52	3.3	2 51
55	4 3	19 51	0 46	:: ::	21 5	2.9	3 28
50	4 23	19 31	0 38	2 33	20 33	2.7	3 55
45	4 38	19 15	0 34	2 4	20 10	2.6	4 15
40	4 51	19 3	0 30	1 48	19 51	2.5	4 31
35	5 1	18 52	0 28	1 37	19 35	2.4	4 45
30	5 11	18 43	0 26	1 29	19 22	2.4	4 58
20	5 27	18 27	0 23	1 19	18 59	2.3	5 19
10	5 40	18 13	0 22	1 14	18 39	2.2	5 37
0	5 53	17 60	0 22	1 12	18 20	2.1	5 54
10	6 6	17 47	0 22	1 13	18 2	2.1	6 11
20	6 19	17 34	0 23	1 16	17 42	2.0	6 30
30	6 34	17 19	0 25	1 22	17 20	1.9	6 51
35	6 43	17 10	0 27	1 27	17 6	1.8	7 3
40	6 53	16 60	0 29	1 33	16 51	1.7	7 18
45	7 4	16 48	0 31	1 41	16 33	1.6	7 35
50	7 18	16 34	0 35	1 52	16 11	1.5	7 56
55	7 36	16 16	0 40	2 6	15 42	1.3	8 25
60	7 60	15 52	0 48	2 27	14 60	.9	9 5
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	4	20.0	101	-21	27.8	-57	259	32.0
2	33	19.9	101	-21	44.8	-54	289	36.3
4	62	19.7	100	-22	1.4	-51	319	40.7
6	91	19.4	100	-22	17.5	-49	349	45.1
8	120	18.8	99	-22	33.2	-46	19	49.5
10	149	18.1	99	-22	48.4	-44	49	53.9
12	178	17.3	98	-23	3.1	-41	79	58.3
14	207	16.3	98	-23	17.3	-38	110	2.7
16	236	15.2	98	-23	31.1	-36	140	7.1
18	265	13.9	98	-23	44.4	-33	170	11.5
20	294	12.5	97	-23	57.2	-31	200	15.9
22	323	11.0	97	-24	9.5	-28	230	20.3
Δ							22	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>
h	min	s	s	h min	min	'	'
00	3 31.4	.1	15.9	T <sub>m</sub>	.. ..	1.0	55.6
12	3 32.8	T <sub>m</sub> ☉	11 h 56.5 min	Starost 13.9 d Faza ☉			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	9 16	.3	354	-4.4	♄	6 41	.0
♂	9 40	.1	348	1.2	♅	19 57	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.0	17 51.6	228 54.4	221 37.0	3 2.0	215 9.1	4 17.6
2	210 54.0	17 52.9	258 59.3	251 38.6	3 2.7	245 10.5	4 19.1
4	240 54.1	17 54.2	289 4.2	281 40.2	3 3.4	275 11.9	4 20.7
6	270 54.1	17 55.5	319 9.2	311 41.8	3 4.1	305 13.3	4 22.2
8	300 54.1	17 56.7	349 14.1	341 43.3	3 4.8	335 14.7	4 23.7
10	330 54.2	17 58.0	19 19.0	11 44.9	3 5.5	5 16.1	4 25.2
12	0 54.2	17 59.3	49 23.9	41 46.5	3 6.2	35 17.5	4 26.7
14	30 54.2	18 .6	79 28.9	71 48.1	3 6.9	65 18.9	4 28.2
16	60 54.3	18 1.8	109 33.8	101 49.6	3 7.7	95 20.3	4 29.7
18	90 54.3	18 3.1	139 38.7	131 51.2	3 8.4	125 21.7	4 31.2
20	120 54.3	18 4.4	169 43.7	161 52.7	3 9.1	155 23.1	4 32.7
22	150 54.4	18 5.6	199 48.6	191 54.3	3 9.8	185 24.5	4 34.2
Δ	0	6		8	4	7	8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 34	20 20	0 60	:::	23 12	2.5	3 6	1.1
55	4 1	19 53	0 46	:::	22 15	2.4	3 54	1.5
50	4 21	19 32	0 39	2 35	21 39	2.3	4 26	1.7
45	4 37	19 17	0 34	2 5	21 12	2.3	4 51	1.8
40	4 50	19 4	0 30	1 48	20 51	2.3	5 10	1.9
35	5 1	18 53	0 28	1 37	20 34	2.3	5 26	1.9
30	5 10	18 43	0 26	1 29	20 19	2.2	5 40	2.0
20	5 26	18 27	0 23	1 20	19 54	2.2	6 5	2.0
10	5 40	18 13	0 22	1 14	19 32	2.2	6 25	2.1
0	5 53	17 60	0 22	1 12	19 12	2.2	6 45	2.2
10	6 6	17 47	0 22	1 13	18 51	2.1	7 4	2.2
20	6 19	17 33	0 23	1 16	18 30	2.1	7 25	2.3
30	6 35	17 18	0 25	1 22	18 5	2.1	7 50	2.3
35	6 44	17 9	0 27	1 27	17 50	2.0	8 4	2.4
40	6 54	16 59	0 29	1 33	17 33	2.0	8 20	2.4
45	7 6	16 47	0 31	1 41	17 13	2.0	8 40	2.5
50	7 20	16 32	0 35	1 52	16 47	1.9	9 5	2.5
55	7 38	16 14	0 40	2 7	16 13	1.8	9 39	2.7
60	8 2	15 50	0 48	2 28	15 21	1.5	10 31	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	352 9.3	97 -24	21.3	-25	260 24.7	-13 51.6	60 55.6	7 56.9
2	21 7.6	97 -24	32.6	-23	290 29.1	-13 51.5	91 .6	7 56.9
4	50 5.7	97 -24	43.4	-20	320 33.5	-13 51.3	121 5.6	7 56.9
6	79 3.7	97 -24	53.6	-17	350 37.9	-13 51.2	151 10.6	7 56.9
8	108 1.6	97 -25	3.4	-15	20 42.3	-13 51.0	181 15.6	7 57.0
10	136 59.5	97 -25	12.7	-12	50 46.7	-13 50.8	211 20.5	7 57.0
12	165 57.2	97 -25	21.4	-9	80 51.1	-13 50.7	241 25.5	7 57.0
14	194 54.9	98 -25	29.6	-7	110 55.5	-13 50.5	271 30.5	7 57.0
16	223 52.5	98 -25	37.3	-4	140 59.9	-13 50.4	301 35.5	7 57.0
18	252 50.1	98 -25	44.5	-1	171 4.3	-13 50.2	331 40.5	7 57.0
20	281 47.6	98 -25	51.1	1	201 8.7	-13 50.0	1 45.5	7 57.0
22	310 45.1	99 -25	57.2	4	231 13.1	-13 49.9	31 50.5	7 57.0
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	3 34.1	.1	15.9	T <sub>m</sub>	0 32	2.2	55.1		
12	3 35.1	T <sub>m</sub> ☉	11 h 56.4 min	Starost 14.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 14	.3	353	-4.4	♄	6 37	.0	32	-2.1
♂	9 39	.1	347	1.2	♂	19 53	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.4	18 6.9	229 53.5	221 55.8	3 10.6	215 25.9	4 35.7
2	210 54.4	18 8.1	259 58.4	251 57.3	3 11.3	245 27.3	4 37.2
4	240 54.4	18 9.4	290 3.4	281 58.9	3 12.1	275 28.7	4 38.7
6	270 54.5	18 10.7	320 8.3	312 .4	3 12.8	305 30.1	4 40.2
8	300 54.5	18 11.9	350 13.2	342 1.9	3 13.6	335 31.5	4 41.7
10	330 54.5	18 13.2	20 18.2	12 3.4	3 14.3	5 32.9	4 43.2
12	0 54.5	18 14.4	50 23.1	42 4.9	3 15.1	35 34.3	4 44.7
14	30 54.5	18 15.7	80 28.0	72 6.4	3 15.8	65 35.7	4 46.2
16	60 54.6	18 16.9	110 32.9	102 7.9	3 16.6	95 37.1	4 47.7
18	90 54.6	18 18.1	140 37.9	132 9.3	3 17.4	125 38.5	4 49.2
20	120 54.6	18 19.4	170 42.8	162 10.8	3 18.2	155 39.9	4 50.7
22	150 54.6	18 20.6	200 47.7	192 12.3	3 18.9	185 41.3	4 52.2
Δ	0	6		7	4	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 32	20 23	1 1	:::	. . .	.0	3 33	2.0
55	3 60	19 54	0 47	:::	23 12	1.8	4 31	2.1
50	4 20	19 34	0 39	2 37	22 35	1.9	5 7	2.1
45	4 36	19 18	0 34	2 6	22 8	1.9	5 34	2.1
40	4 49	19 5	0 30	1 49	21 46	2.0	5 55	2.1
35	4 60	18 54	0 28	1 38	21 28	2.0	6 13	2.1
30	5 9	18 44	0 26	1 30	21 13	2.0	6 28	2.1
20	5 26	18 27	0 24	1 20	20 47	2.1	6 54	2.1
10	5 40	18 13	0 22	1 14	20 24	2.1	7 16	2.2
0	5 53	17 60	0 22	1 12	20 3	2.1	7 37	2.2
10	6 6	17 47	0 22	1 13	19 43	2.2	7 57	2.2
20	6 20	17 33	0 23	1 16	19 20	2.2	8 20	2.1
30	6 35	17 17	0 25	1 22	18 54	2.2	8 45	2.1
35	6 44	17 8	0 27	1 27	18 39	2.2	9 1	2.1
40	6 55	16 58	0 29	1 33	18 21	2.2	9 18	2.1
45	7 7	16 46	0 32	1 42	17 60	2.3	9 39	2.1
50	7 21	16 31	0 35	1 52	17 33	2.3	10 6	2.1
55	7 40	16 12	0 40	2 7	16 56	2.4	10 43	2.1
60	8 5	15 48	0 48	2 28	15 58	2.5	11 41	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	339 42.5	99 -26	2.8	7	261 17.5	-13 49.7	61 55.4	7 57.0
2	8 39.9	100 -26	7.8	9	291 22.0	-13 49.6	92 .4	7 57.0
4	37 37.4	100 -26	12.4	12	321 26.4	-13 49.4	122 5.4	7 57.0
6	66 34.8	101 -26	16.4	14	351 30.8	-13 49.2	152 10.4	7 57.0
8	95 32.2	101 -26	19.8	17	21 35.2	-13 49.1	182 15.4	7 57.0
10	124 29.6	102 -26	22.7	19	51 39.6	-13 48.9	212 20.3	7 57.1
12	153 27.0	103 -26	25.1	22	81 44.0	-13 48.8	242 25.3	7 57.1
14	182 24.5	103 -26	27.0	24	111 48.4	-13 48.6	272 30.3	7 57.1
16	211 22.0	104 -26	28.3	27	141 52.9	-13 48.5	302 35.3	7 57.1
18	240 19.6	105 -26	29.1	29	171 57.3	-13 48.3	332 40.3	7 57.1
20	269 17.2	106 -26	29.4	32	202 1.7	-13 48.2	2 45.2	7 57.1
22	298 14.9	106 -26	29.1	34	232 6.1	-13 48.0	32 50.2	7 57.1
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	3 36.2	.1	15.9	T <sub>m</sub>	1 24	2.2	54.8		
12	3 36.9	T <sub>m</sub> ☉	11 h 56.4 min	Starost 15.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 13	.3	353	-4.4	♄	6 34			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.6	18 21.9	230 52.7	222 13.8	3 19.7	215 42.7	4 53.7
2	210 54.6	18 23.1	260 57.6	252 15.2	3 20.5	245 44.1	4 55.2
4	240 54.6	18 24.3	291 2.5	282 16.7	3 21.3	275 45.5	4 56.7
6	270 54.6	18 25.5	321 7.4	312 18.1	3 22.1	305 46.9	4 58.1
8	300 54.7	18 26.8	351 12.4	342 19.5	3 22.9	335 48.3	4 59.6
10	330 54.7	18 28.0	21 17.3	12 21.0	3 23.7	5 49.7	5 1.1
12	0 54.7	18 29.2	51 22.2	42 22.4	3 24.5	35 51.1	5 2.6
14	30 54.7	18 30.4	81 27.2	72 23.8	3 25.3	65 52.5	5 4.1
16	60 54.7	18 31.7	111 32.1	102 25.2	3 26.2	95 53.9	5 5.6
18	90 54.7	18 32.9	141 37.0	132 26.7	3 27.0	125 55.3	5 7.1
20	120 54.7	18 34.1	171 41.9	162 28.1	3 27.8	155 56.7	5 8.6
22	150 54.7	18 35.3	201 46.9	192 29.5	3 28.6	185 58.1	5 10.1
Δ	0	6		7	4	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 29	20 25	1 2	:::	0 12	1.5	4 21	2.9
55	3 58	19 56	0 47	:::	23 54	1.2	5 21	2.6
50	4 18	19 35	0 39	2 39	23 20	1.4	5 58	2.5
45	4 34	19 19	0 34	2 7	22 54	1.6	6 25	2.4
40	4 48	19 6	0 30	1 49	22 33	1.7	6 46	2.3
35	4 59	18 54	0 28	1 38	22 16	1.7	7 4	2.3
30	5 9	18 45	0 26	1 30	22 2	1.8	7 19	2.3
20	5 25	18 28	0 24	1 20	21 36	1.9	7 45	2.2
10	5 40	18 13	0 22	1 15	21 15	2.0	8 7	2.1
0	5 53	17 60	0 22	1 12	20 55	2.1	8 28	2.1
10	6 6	17 47	0 22	1 13	20 34	2.1	8 49	2.0
20	6 20	17 32	0 23	1 16	20 12	2.2	9 11	2.0
30	6 36	17 16	0 25	1 22	19 47	2.3	9 37	1.9
35	6 45	17 7	0 27	1 27	19 32	2.4	9 52	1.9
40	6 56	16 57	0 29	1 34	19 15	2.4	10 9	1.8
45	7 8	16 44	0 32	1 42	18 54	2.5	10 30	1.8
50	7 23	16 30	0 35	1 53	18 28	2.6	10 57	1.7
55	7 41	16 11	0 41	2 8	17 53	2.8	11 33	1.5
60	8 7	15 45	0 49	2 29	16 57	3.2	12 29	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	327 12.7	107 -26 28.3	37	262 10.6	-13 47.8	62 55.2	7 57.1	
2	356 10.5	108 -26 27.0	39	292 15.0	-13 47.7	93 .2	7 57.1	
4	25 8.4	109 -26 25.2	42	322 19.4	-13 47.5	123 5.1	7 57.1	
6	54 6.5	110 -26 22.9	44	352 23.8	-13 47.4	153 10.1	7 57.1	
8	83 4.6	111 -26 20.0	46	22 28.3	-13 47.2	183 15.1	7 57.1	
10	112 2.9	112 -26 16.6	49	52 32.7	-13 47.1	213 20.0	7 57.1	
12	141 1.3	113 -26 12.7	51	82 37.1	-13 46.9	243 25.0	7 57.1	
14	169 59.8	114 -26 8.3	53	112 41.6	-13 46.8	273 30.0	7 57.1	
16	198 58.5	115 -26 3.5	55	142 46.0	-13 46.6	303 35.0	7 57.1	
18	227 57.3	116 -25 58.1	58	172 50.4	-13 46.5	333 39.9	7 57.1	
20	256 56.3	117 -25 52.2	60	202 54.9	-13 46.3	3 44.9	7 57.1	
22	285 55.4	118 -25 45.8	62	232 59.3	-13 46.2	33 49.9	7 57.1	
Δ				22	1	25	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	' / "	h min	min	' / "	' / "	' / "	
00	3 37.7	.0	15.9	T <sub>m</sub>	2 16	2.1	54.4	14.8	
12	3 38.2	T <sub>m</sub> ☉	11 h 56.4 min	Starost 16.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 12	.3	352	-4.4	♄	6 30	.0	32	-2.2
♂	9 37	.1	346	1.2	♂	19 45	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.7	18 36.5	231 51.8	222 30.9	3 29.5	215 59.5	5 11.6
2	210 54.7	18 37.7	261 56.7	252 32.2	3 30.3	246 .9	5 13.1
4	240 54.7	18 38.9	292 1.7	282 33.6	3 31.1	276 2.3	5 14.6
6	270 54.7	18 40.1	322 6.6	312 35.0	3 32.0	306 3.7	5 16.0
8	300 54.7	18 41.3	352 11.5	342 36.4	3 32.8	336 5.1	5 17.5
10	330 54.7	18 42.5	22 16.4	12 37.7	3 33.7	6 6.5	5 19.0
12	0 54.7	18 43.7	52 21.4	42 39.1	3 34.6	36 7.9	5 20.5
14	30 54.7	18 44.9	82 26.3	72 40.5	3 35.4	66 9.3	5 22.0
16	60 54.7	18 46.1	112 31.2	102 41.8	3 36.3	96 10.7	5 23.5
18	90 54.7	18 47.3	142 36.2	132 43.2	3 37.1	126 12.1	5 25.0
20	120 54.7	18 48.5	172 41.1	162 44.5	3 38.0	156 13.5	5 26.5
22	150 54.7	18 49.7	202 46.0	192 45.8	3 38.9	186 14.9	5 27.9
Δ	0	6		7	4	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 27	20 27	1 3	:::	0 48	.8	5 30	3.4
55	3 56	19 58	0 47	:::	23 54	.0	6 23	3.0
50	4 17	19 37	0 39	2 41	23 54	1.1	6 57	2.7
45	4 33	19 20	0 34	2 8	23 32	1.3	7 22	2.6
40	4 47	19 7	0 31	1 50	23 14	1.4	7 43	2.5
35	4 58	18 55	0 28	1 38	22 58	1.5	7 59	2.4
30	5 8	18 45	0 26	1 30	22 45	1.6	8 14	2.3
20	5 25	18 28	0 24	1 20	22 22	1.7	8 38	2.2
10	5 39	18 14	0 22	1 15	22 2	1.9	8 59	2.1
0	5 53	17 60	0 22	1 13	21 44	2.0	9 19	2.0
10	6 6	17 46	0 22	1 13	21 25	2.1	9 38	1.9
20	6 20	17 32	0 23	1 16	21 5	2.2	9 59	1.8
30	6 37	17 16	0 25	1 23	20 42	2.3	10 23	1.7
35	6 46	17 6	0 27	1 27	20 29	2.4	10 37	1.6
40	6 57	16 56	0 29	1 34	20 13	2.5	10 53	1.5
45	7 9	16 43	0 32	1 42	19 54	2.6	11 13	1.4
50	7 24	16 28	0 36	1 53	19 31	2.8	11 37	1.3
55	7 43	16 9	0 41	2 8	18 60	3.0	12 9	1.0
60	8 9	15 43	0 49	2 30	18 13	3.5	12 56	.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	314 54.7	119 -25 38.9	64	263 3.7	-13 46.0	63 54.8	7 57.1	
2	343 54.2	120 -25 31.5	66	293 8.2	-13 45.9	93 59.8	7 57.1	
4	12 53.9	122 -25 23.7	68	323 12.6	-13 45.7	124 4.8	7 57.1	
6	41 53.7	123 -25 15.4	70	353 17.0	-13 45.6	154 9.7	7 57.1	
8	70 53.7	124 -25 6.6	72	23 21.5	-13 45.4	184 14.7	7 57.1	
10	99 53.9	125 -24 57.4	74	53 25.9	-13 45.3	214 19.7	7 57.1	
12	128 54.3	126 -24 47.6	76	83 30.4	-13 45.1	244 24.6	7 57.1	
14	157 54.9	127 -24 37.5	78	113 34.8	-13 45.0	274 29.6	7 57.1	
16	186 55.7	128 -24 26.9	80	143 39.3	-13 44.8	304 34.5	7 57.1	
18	215 56.8	129 -24 15.8	82	173 43.7	-13 44.7	334 39.5	7 57.1	
20	244 58.0	130 -24 4.3	84	203 48.2	-13 44.5	4 44.5	7 57.1	
22	273 59.4	131 -23 52.3	86	233 52.6	-13 44.4	34 49.4	7 57.1	
Δ				22	1	25	0	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	' / "	h min	min	' / "	' / "	' / "	
00	3 38.6	.0	15.9	T <sub>m</sub>	3 7	2.0	54.2	14.8	
12	3 38.8	T <sub>m</sub> ☉	11 h 56.4 min	Starost 17.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	9 11	.3	351	-4.4	♄	6 27	.0	32	-2.2
♂	9 36</								



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.6	18 50.9	232 50.9	222 47.2	3 39.8	216 16.3	5 29.4
2	210 54.6	18 52.0	262 55.9	252 48.5	3 40.7	246 17.7	5 30.9
4	240 54.6	18 53.2	293 .8	282 49.8	3 41.5	276 19.1	5 32.4
6	270 54.6	18 54.4	323 5.7	312 51.1	3 42.4	306 20.5	5 33.9
8	300 54.6	18 55.6	353 10.6	342 52.4	3 43.3	336 21.9	5 35.4
10	330 54.6	18 56.8	23 15.6	12 53.7	3 44.2	6 23.3	5 36.8
12	0 54.6	18 57.9	53 20.5	42 55.0	3 45.1	36 24.7	5 38.3
14	30 54.5	18 59.1	83 25.4	72 56.3	3 46.0	66 26.1	5 39.8
16	60 54.5	19 .3	113 30.4	102 57.6	3 47.0	96 27.5	5 41.3
18	90 54.5	19 1.4	143 35.3	132 58.9	3 47.9	126 29.0	5 42.8
20	120 54.5	19 2.6	173 40.2	163 .1	3 48.8	156 30.4	5 44.3
22	150 54.5	19 3.7	203 45.1	193 1.4	3 49.7	186 31.8	5 45.7
Δ	0	6		6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 25	20 30	1 3	:::	1 8	.5	6 52	3.6
55	3 54	19 60	0 48	:::	0 24	.9	7 34	3.1
50	4 15	19 38	0 39	2 43	. . .	.0	8 3	2.9
45	4 32	19 21	0 34	2 9	. . .	.0	8 25	2.7
40	4 46	19 8	0 31	1 50	23 47	1.2	8 42	2.5
35	4 57	18 56	0 28	1 39	23 35	1.3	8 57	2.4
30	5 7	18 46	0 26	1 31	23 23	1.4	9 9	2.3
20	5 24	18 29	0 24	1 20	23 4	1.6	9 31	2.2
10	5 39	18 14	0 22	1 15	22 47	1.7	9 50	2.0
0	5 53	17 60	0 22	1 13	22 31	1.9	10 7	1.9
10	6 6	17 46	0 22	1 13	22 15	2.0	10 24	1.8
20	6 21	17 32	0 23	1 16	21 58	2.2	10 43	1.7
30	6 37	17 15	0 25	1 23	21 38	2.3	11 4	1.5
35	6 47	17 6	0 27	1 28	21 27	2.4	11 16	1.4
40	6 57	16 55	0 29	1 34	21 13	2.5	11 30	1.3
45	7 10	16 42	0 32	1 42	20 58	2.7	11 47	1.2
50	7 25	16 27	0 36	1 53	20 38	2.9	12 7	1.0
55	7 45	16 7	0 41	2 8	20 12	3.1	12 34	.7
60	8 11	15 41	0 49	2 30	19 36	3.5	13 11	.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	303 1.1	132 -23	40.0	87	263 57.1	-13 44.3	64 54.4	7 57.1
2	332 3.0	134 -23	27.2	89	294 1.5	-13 44.1	94 59.3	7 57.1
4	1 5.1	135 -23	13.9	91	324 6.0	-13 44.0	125 4.3	7 57.1
6	30 7.4	136 -23	.3	92	354 10.4	-13 43.8	155 9.3	7 57.1
8	59 9.9	137 -22	46.3	94	24 14.9	-13 43.7	185 14.2	7 57.1
10	88 12.7	138 -22	31.8	96	54 19.3	-13 43.5	215 19.2	7 57.1
12	117 15.6	139 -22	17.0	97	84 23.8	-13 43.4	245 24.1	7 57.1
14	146 18.8	140 -22	1.8	99	114 28.2	-13 43.2	275 29.1	7 57.1
16	175 22.2	140 -21	46.1	101	144 32.7	-13 43.1	305 34.0	7 57.1
18	204 25.9	141 -21	30.1	102	174 37.2	-13 43.0	335 39.0	7 57.1
20	233 29.7	142 -21	13.8	104	204 41.6	-13 42.8	5 43.9	7 57.1
22	262 33.8	143 -20	57.0	105	234 46.1	-13 42.7	35 48.9	7 57.1
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	'	
00	3 39.0	.0	15.9	T <sub>m</sub>	3 56	1.9	54.1	14.8	
12	3 38.9	T <sub>m</sub> ☉	11 h 56.4 min	Starost 18.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 10	.3	351	-4.4	♄	6 23	.0	32	-2.2
♂	9 34	.1	344	1.2	♂	19 37	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.4	19 4.9	233 50.1	223 2.7	3 50.6	216 33.2	5 47.2
2	210 54.4	19 6.1	263 55.0	253 3.9	3 51.6	246 34.6	5 48.7
4	240 54.4	19 7.2	293 59.9	283 5.2	3 52.5	276 36.0	5 50.2
6	270 54.4	19 8.4	324 4.9	313 6.4	3 53.4	306 37.4	5 51.7
8	300 54.3	19 9.5	354 9.8	343 7.7	3 54.4	336 38.8	5 53.1
10	330 54.3	19 10.6	24 14.7	13 8.9	3 55.3	6 40.2	5 54.6
12	0 54.3	19 11.8	54 19.6	43 10.1	3 56.3	36 41.6	5 56.1
14	30 54.3	19 12.9	84 24.6	73 11.4	3 57.2	66 43.0	5 57.6
16	60 54.2	19 14.1	114 29.5	103 12.6	3 58.2	96 44.4	5 59.0
18	90 54.2	19 15.2	144 34.4	133 13.8	3 59.1	126 45.8	6 .5
20	120 54.2	19 16.3	174 39.4	163 15.0	4 .1	156 47.2	6 2.0
22	150 54.1	19 17.5	204 44.3	193 16.2	4 1.0	186 48.6	6 3.5
Δ	0	6		6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 22	20 32	1 4	:::	1 19	.3	8 17	3.5
55	3 52	20 2	0 48	:::	0 45	.6	8 49	3.2
50	4 14	19 40	0 40	2 45	0 21	.9	9 11	2.9
45	4 31	19 22	0 34	2 9	0 3	1.1	9 29	2.7
40	4 45	19 8	0 31	1 51	. . .	.0	9 43	2.5
35	4 56	18 57	0 28	1 39	. . .	.0	9 55	2.4
30	5 7	18 46	0 26	1 31	23 58	1.3	10 5	2.3
20	5 24	18 29	0 24	1 20	23 42	1.5	10 23	2.1
10	5 39	18 14	0 22	1 15	23 29	1.6	10 39	2.0
0	5 53	17 60	0 22	1 13	23 16	1.8	10 53	1.8
10	6 7	17 46	0 22	1 13	23 3	2.0	11 7	1.7
20	6 21	17 31	0 23	1 16	22 50	2.1	11 23	1.5
30	6 38	17 15	0 25	1 23	22 34	2.3	11 40	1.4
35	6 47	17 5	0 27	1 28	22 25	2.4	11 50	1.3
40	6 58	16 54	0 29	1 34	22 14	2.5	12 1	1.1
45	7 11	16 41	0 32	1 42	22 2	2.7	12 15	1.0
50	7 27	16 25	0 36	1 53	21 47	2.9	12 31	.8
55	7 47	16 6	0 41	2 9	21 28	3.1	12 52	.6
60	8 13	15 39	0 50	2 31	21 1	3.5	13 20	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	291 38.1	144 -20	39.9	107	264 50.5	-13 42.5	65 53.8	7 57.1
2	320 42.6	145 -20	22.5	108	294 55.0	-13 42.4	95 58.8	7 57.0
4	349 47.3	146 -20	4.7	109	324 59.5	-13 42.3	126 3.7	7 57.0
6	18 52.2	146 -19	46.5	111	355 3.9	-13 42.1	156 8.7	7 57.0
8	47 57.3	147 -19	28.0	112	25 8.4	-13 42.0	186 13.6	7 57.0
10	77 2.6	148 -19	9.2	113	55 12.9	-13 41.8	216 18.6	7 57.0
12	106 8.1	148 -18	50.0	115	85 17.3	-13 41.7	246 23.5	7 57.0
14	135 13.9	149 -18	30.5	116	115 21.8	-13 41.6	276 28.5	7 57.0
16	164 19.8	150 -18	10.7	117	145 26.3	-13 41.4	306 33.4	7 57.0
18	193 25.9	150 -17	50.6	118	175 30.8	-13 41.3	336 38.4	7 57.0
20	222 32.1	151 -17	30.2	120	205 35.2	-13 41.1	6 43.3	7 57.0
22	251 38.6	151 -17	9.4	121	235 39.7	-13 41.0	36 48.3	7 57.0
Δ					22	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	'	
00	3 38.7	.0	15.8	T <sub>m</sub>	4 42	1.9	54.2	14.8	
12	3 38.3	T <sub>m</sub> ☉	11 h 56.4 min	Starost 19.9 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 8								

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.1	19 18.6	234 49.2	223 17.4	4 2.0	216 50.0	6 4.9
2	210 54.1	19 19.7	264 54.1	253 18.6	4 3.0	246 51.4	6 6.4
4	240 54.0	19 20.9	294 59.1	283 19.8	4 4.0	276 52.8	6 7.9
6	270 54.0	19 22.0	325 4.0	313 21.0	4 4.9	306 54.2	6 9.3
8	300 53.9	19 23.1	355 8.9	343 22.2	4 5.9	336 55.6	6 10.8
10	330 53.9	19 24.2	25 13.9	13 23.3	4 6.9	6 57.0	6 12.3
12	0 53.9	19 25.3	55 18.8	43 24.5	4 7.9	36 58.4	6 13.8
14	30 53.8	19 26.5	85 23.7	73 25.7	4 8.9	66 59.8	6 15.2
16	60 53.8	19 27.6	115 28.6	103 26.8	4 9.9	97 1.1	6 16.7
18	90 53.7	19 28.7	145 33.6	133 28.0	4 10.9	127 2.5	6 18.2
20	120 53.7	19 29.8	175 38.5	163 29.1	4 11.9	157 3.9	6 19.6
22	150 53.6	19 30.9	205 43.4	193 30.3	4 12.9	187 5.3	6 21.1
Δ	0	6		6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 20	20 35	1 5	:::	1 25	.2	9 42	3.5
55	3 51	20 3	0 48	:::	1 1	.5	10 4	3.2
50	4 13	19 41	0 40	2 47	0 43	.7	10 21	2.9
45	4 30	19 24	0 34	2 10	0 28	.9	10 33	2.7
40	4 44	19 9	0 31	1 51	0 17	1.1	10 44	2.5
35	4 56	18 57	0 28	1 39	0 7	1.2	10 53	2.4
30	5 6	18 47	0 26	1 31	...	.0	11 1	2.3
20	5 24	18 29	0 24	1 21	...	.0	11 14	2.1
10	5 39	18 14	0 22	1 15	...	.0	11 26	1.9
0	5 53	17 60	0 22	1 13	23 59	1.8	11 37	1.8
10	6 7	17 46	0 22	1 13	23 50	1.9	11 48	1.6
20	6 22	17 31	0 23	1 17	23 41	2.1	11 59	1.4
30	6 38	17 14	0 25	1 23	23 29	2.3	12 13	1.3
35	6 48	17 4	0 27	1 28	23 23	2.4	12 20	1.1
40	6 59	16 53	0 29	1 34	23 16	2.6	12 29	1.0
45	7 12	16 40	0 32	1 42	23 7	2.7	12 39	.9
50	7 28	16 24	0 36	1 54	22 56	2.9	12 50	.7
55	7 48	16 4	0 41	2 9	22 43	3.2	13 5	.5
60	8 16	15 36	0 50	2 31	22 26	3.5	13 25	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	280 45.2	152 -16	48.4	122	265 44.2	-13 40.9	66 53.2	7 57.0
2	309 52.0	152 -16	27.1	123	295 48.7	-13 40.7	96 58.1	7 56.9
4	338 59.0	153 -16	5.5	124	325 53.1	-13 40.6	127 3.1	7 56.9
6	8 6.1	153 -15	43.6	125	355 57.6	-13 40.5	157 8.0	7 56.9
8	37 13.4	153 -15	21.5	126	26 2.1	-13 40.3	187 13.0	7 56.9
10	66 20.8	154 -14	59.0	127	56 6.6	-13 40.2	217 17.9	7 56.9
12	95 28.4	154 -14	36.4	128	86 11.1	-13 40.1	247 22.8	7 56.9
14	124 36.1	154 -14	13.4	129	116 15.5	-13 39.9	277 27.8	7 56.9
16	153 43.9	154 -13	50.2	130	146 20.0	-13 39.8	307 32.7	7 56.9
18	182 51.8	154 -13	26.8	131	176 24.5	-13 39.7	337 37.7	7 56.9
20	211 59.9	155 -13	3.1	132	206 29.0	-13 39.5	7 42.6	7 56.9
22	241 8.1	155 -12	39.1	133	236 33.5	-13 39.4	37 47.5	7 56.8
Δ					22	1	25	0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min s	s	'	h min	min	'	'	
00	3 37.9	-.1	15.8	T <sub>m</sub>	5 27	1.8	54.4	14.8
12	3 37.2	T <sub>m</sub> ☉	11 h 56.4 min	Starost	20.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h min	'	°	'	'
♀	9 7	.3	349	-4.3	♃	6 16	.0	32	-2.2
♂	9 32	.1	343	1.2	♄	19 29	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.6	19 32.0	235 48.4	223 31.4	4 13.9	217 6.7	6 22.6
2	210 53.5	19 33.1	265 53.3	253 32.6	4 14.9	247 8.1	6 24.0
4	240 53.5	19 34.2	295 58.2	283 33.7	4 15.9	277 9.5	6 25.5
6	270 53.5	19 35.3	326 3.1	313 34.8	4 16.9	307 10.9	6 27.0
8	300 53.4	19 36.4	356 8.1	343 36.0	4 18.0	337 12.3	6 28.4
10	330 53.3	19 37.5	26 13.0	13 37.1	4 19.0	7 13.7	6 29.9
12	0 53.3	19 38.6	56 17.9	43 38.2	4 20.0	37 15.1	6 31.4
14	30 53.2	19 39.6	86 22.8	73 39.3	4 21.0	67 16.5	6 32.8
16	60 53.2	19 40.7	116 27.8	103 40.4	4 22.1	97 17.9	6 34.3
18	90 53.1	19 41.8	146 32.7	133 41.5	4 23.1	127 19.3	6 35.7
20	120 53.1	19 42.9	176 37.6	163 42.6	4 24.2	157 20.7	6 37.2
22	150 53.0	19 44.0	206 42.6	193 43.7	4 25.2	187 22.1	6 38.7
Δ	0	5		6	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 18	20 37	1 6	:::	1 29	.1	11 6	3.5
55	3 49	20 5	0 49	:::	1 13	.4	11 20	3.2
50	4 11	19 42	0 40	2 49	1 0	.6	11 30	2.9
45	4 29	19 25	0 35	2 11	0 51	.8	11 38	2.7
40	4 43	19 10	0 31	1 52	0 42	1.0	11 45	2.6
35	4 55	18 58	0 28	1 40	0 35	1.1	11 51	2.4
30	5 5	18 48	0 26	1 31	0 29	1.2	11 56	2.3
20	5 23	18 30	0 24	1 21	0 18	1.4	12 5	2.1
10	5 39	18 14	0 22	1 15	0 8	1.6	12 13	1.9
0	5 53	17 60	0 22	1 13	...	.0	12 20	1.8
10	6 7	17 46	0 22	1 13	...	.0	12 27	1.6
20	6 22	17 31	0 23	1 17	...	.0	12 34	1.4
30	6 39	17 13	0 25	1 23	...	.0	12 43	1.2
35	6 49	17 4	0 27	1 28	...	.0	12 48	1.1
40	7 0	16 52	0 29	1 34	...	.0	12 53	1.0
45	7 13	16 39	0 32	1 43	...	.0	12 59	.8
50	7 30	16 23	0 36	1 54	...	.0	13 7	.6
55	7 50	16 2	0 42	2 9	23 59	3.2	13 16	.4
60	8 18	15 34	0 50	2 32	23 49	3.5	13 28	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	270 16.3	155 -12	15.0	133	266 38.0	-13 39.3	67 52.5	7 56.8
2	299 24.7	155 -11	50.6	134	296 42.5	-13 39.1	97 57.4	7 56.8
4	328 33.1	154 -11	26.0	135	326 47.0	-13 39.0	128 2.3	7 56.8
6	357 41.7	154 -11	1.2	136	356 51.5	-13 38.9	158 7.3	7 56.8
8	26 50.3	154 -10	36.1	136	26 56.0	-13 38.7	188 12.2	7 56.8
10	55 59.0	154 -10	10.9	137	57 .4	-13 38.6	218 17.1	7 56.8
12	85 7.7	154 -9	45.4	138	87 4.9	-13 38.5	248 22.1	7 56.7
14	114 16.5	153 -9	19.8	138	117 9.4	-13 38.3	278 27.0	7 56.7
16	143 25.3	153 -8	54.0	139	147 13.9	-13 38.2	308 31.9	7 56.7
18	172 34.2	153 -8	28.0	140	177 18.4	-13 38.1	338 36.8	7 56.7
20	201 43.1	152 -8	1.8	140	207 22.9	-13 38.0	8 41.8	7 56.7
22	230 52.0	152 -7	35.4	141	237 27.4	-13 37.8	38 46.7	7 56.7
Δ					22	1	25	0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r	
h	min s	s	'	h min	min	'	'	
00	3 36.5	-.1	15.8	T <sub>m</sub>	6 9	1.8	54.8	14.9
12	3 35.5	T <sub>m</sub> ☉	11 h 56.4 min	Starost	21.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°	'	h min	'	°	'	'
♀	9 6	.3	348	-4.3	♃	6 13	.0	32	-2.2
♂	9 31	.1							

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.0	19 45.0	236 47.5	223 44.8	4 26.3	217 23.5	6 40.1
2	210 52.9	19 46.1	266 52.4	253 45.8	4 27.3	247 24.9	6 41.6
4	240 52.8	19 47.2	296 57.3	283 46.9	4 28.4	277 26.3	6 43.1
6	270 52.8	19 48.3	327 2.3	313 48.0	4 29.4	307 27.7	6 44.5
8	300 52.7	19 49.3	357 7.2	343 49.1	4 30.5	337 29.1	6 46.0
10	330 52.7	19 50.4	27 12.1	13 50.1	4 31.5	7 30.5	6 47.4
12	0 52.6	19 51.4	57 17.1	43 51.2	4 32.6	37 31.9	6 48.9
14	30 52.5	19 52.5	87 22.0	73 52.2	4 33.7	67 33.3	6 50.3
16	60 52.5	19 53.6	117 26.9	103 53.3	4 34.7	97 34.7	6 51.8
18	90 52.4	19 54.6	147 31.8	133 54.3	4 35.8	127 36.1	6 53.3
20	120 52.3	19 55.7	177 36.8	163 55.4	4 36.9	157 37.5	6 54.7
22	150 52.3	19 56.7	207 41.7	193 56.4	4 38.0	187 38.9	6 56.2
Δ	0	5		5	5	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 15	20 39	1 7	:::	1 32	.1	12 30	3.6
55	3 47	20 7	0 49	:::	1 23	.4	12 36	3.2
50	4 10	19 44	0 40	2 52	1 16	.6	12 40	3.0
45	4 28	19 26	0 35	2 12	1 10	.8	12 44	2.8
40	4 42	19 11	0 31	1 53	1 6	1.0	12 47	2.6
35	4 54	18 59	0 28	1 40	1 2	1.1	12 49	2.5
30	5 5	18 48	0 26	1 32	0 58	1.2	12 52	2.4
20	5 23	18 30	0 24	1 21	0 52	1.4	12 55	2.1
10	5 38	18 15	0 22	1 15	0 47	1.6	12 59	2.0
0	5 53	17 60	0 22	1 13	0 42	1.8	13 2	1.8
10	6 7	17 46	0 22	1 14	0 36	1.9	13 5	1.6
20	6 22	17 30	0 23	1 17	0 31	2.1	13 8	1.4
30	6 40	17 13	0 26	1 23	0 25	2.3	13 12	1.2
35	6 50	17 3	0 27	1 28	0 21	2.5	13 14	1.1
40	7 1	16 51	0 29	1 34	0 17	2.6	13 16	1.0
45	7 15	16 38	0 32	1 43	0 12	2.8	13 19	.8
50	7 31	16 22	0 36	1 54	0 7	3.0	13 22	.6
55	7 52	16 1	0 42	2 10	...	...	13 26	.4
60	8 20	15 32	0 50	2 33	...	...	13 31	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	260 .9	151 - 7	8.9	141	267 31.9	-13 37.7	68 51.6	7 56.6
2	289 9.8	151 - 6	42.2	141	297 36.4	-13 37.6	98 56.5	7 56.6
4	318 18.7	150 - 6	15.3	142	327 41.0	-13 37.5	129 1.5	7 56.6
6	347 27.6	149 - 5	48.3	142	357 45.5	-13 37.3	159 6.4	7 56.6
8	16 36.5	149 - 5	21.1	143	27 50.0	-13 37.2	189 11.3	7 56.6
10	45 45.3	148 - 4	53.8	143	57 54.5	-13 37.1	219 16.2	7 56.6
12	74 54.1	147 - 4	26.4	143	87 59.0	-13 37.0	249 21.2	7 56.5
14	104 2.9	146 - 3	58.8	143	118 3.5	-13 36.8	279 26.1	7 56.5
16	133 11.5	145 - 3	31.2	144	148 8.0	-13 36.7	309 31.0	7 56.5
18	162 20.2	144 - 3	3.4	144	178 12.5	-13 36.6	339 35.9	7 56.5
20	191 28.7	143 - 2	35.4	144	208 17.0	-13 36.5	9 40.9	7 56.5
22	220 37.1	142 - 2	7.4	144	238 21.6	-13 36.3	39 45.8	7 56.5
Δ					23	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	3 34.6	-.1	15.8	T <sub>m</sub>	6 52	1.7	55.3		
12	3 33.3	T <sub>m</sub> ☉	11 h 56.4 min	Starost	22.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 6	.3	348	-4.3	♄	6 9	.0	32	-2.2
♂	9 30	.1	342	1.2	♄	19 21	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 52.2	19 57.8	237 46.6	223 57.4	4 39.1	217 40.3	6 57.6
2	210 52.1	19 58.8	267 51.6	253 58.4	4 40.2	247 41.7	6 59.1
4	240 52.0	19 59.8	297 56.5	283 59.5	4 41.2	277 43.1	7 .5
6	270 52.0	20 .9	328 1.4	314 .5	4 42.3	307 44.5	7 2.0
8	300 51.9	20 1.9	358 6.3	344 1.5	4 43.4	337 45.9	7 3.4
10	330 51.8	20 3.0	28 11.3	14 2.5	4 44.5	7 47.3	7 4.9
12	0 51.7	20 4.0	58 16.2	44 3.5	4 45.6	37 48.7	7 6.3
14	30 51.7	20 5.0	88 21.1	74 4.5	4 46.7	67 50.1	7 7.8
16	60 51.6	20 6.0	118 26.1	104 5.5	4 47.9	97 51.5	7 9.2
18	90 51.5	20 7.1	148 31.0	134 6.5	4 49.0	127 52.9	7 10.7
20	120 51.4	20 8.1	178 35.9	164 7.5	4 50.1	157 54.3	7 12.1
22	150 51.3	20 9.1	208 40.8	194 8.4	4 51.2	187 55.7	7 13.6
Δ	0	5		5	6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 13	20 41	1 8	:::	1 34	.1	13 56	3.7
55	3 46	20 9	0 50	:::	1 32	.4	13 54	3.4
50	4 9	19 45	0 40	2 54	1 31	.6	13 52	3.1
45	4 27	19 27	0 35	2 13	1 30	.8	13 51	2.9
40	4 41	19 12	0 31	1 53	1 29	1.0	13 50	2.7
35	4 54	18 60	0 28	1 40	1 28	1.1	13 49	2.6
30	5 4	18 49	0 26	1 32	1 27	1.2	13 48	2.5
20	5 23	18 31	0 24	1 21	1 26	1.4	13 47	2.2
10	5 38	18 15	0 22	1 15	1 25	1.6	13 46	2.0
0	5 53	18 0	0 22	1 13	1 24	1.8	13 44	1.9
10	6 7	17 45	0 22	1 14	1 23	2.0	13 43	1.7
20	6 23	17 30	0 23	1 17	1 22	2.2	13 42	1.5
30	6 40	17 12	0 26	1 23	1 21	2.4	13 41	1.3
35	6 50	17 2	0 27	1 28	1 20	2.5	13 40	1.1
40	7 2	16 51	0 29	1 35	1 19	2.7	13 39	1.0
45	7 16	16 37	0 32	1 43	1 19	2.8	13 38	.8
50	7 32	16 20	0 36	1 54	1 18	3.0	13 36	.6
55	7 53	15 59	0 42	2 10	1 17	3.3	13 35	.4
60	8 22	15 30	0 51	2 33	1 15	3.6	13 33	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	249 45.5	141 - 1	39.3	144	268 26.1	-13 36.2	69 50.7	7 56.4
2	278 53.7	140 - 1	11.1	144	298 30.6	-13 36.1	99 55.6	7 56.4
4	308 1.9	139 - 0	42.8	144	328 35.1	-13 36.0	130 .5	7 56.4
6	337 9.9	137 - 0	14.4	144	358 39.6	-13 35.8	160 5.4	7 56.4
8	6 17.7	136 0	14.0	144	28 44.1	-13 35.7	190 10.4	7 56.4
10	35 25.5	135 0	42.6	143	58 48.7	-13 35.6	220 15.3	7 56.3
12	64 33.0	133 1	11.1	143	88 53.2	-13 35.5	250 20.2	7 56.3
14	93 40.4	132 1	39.8	143	118 57.7	-13 35.4	280 25.1	7 56.3
16	122 47.7	130 2	8.4	142	149 2.2	-13 35.2	310 30.0	7 56.3
18	151 54.7	129 2	37.1	142	179 6.8	-13 35.1	340 34.9	7 56.2
20	181 1.6	127 3	5.9	142	209 11.3	-13 35.0	10 39.8	7 56.2
22	210 8.2	125 3	34.6	141	239 15.8	-13 34.9	40 44.8	7 56.2
Δ					23	1	25	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	3 32.0	-.1	15.8	T <sub>m</sub>	7 34	1.8	56.0		
12	3 30.5	T <sub>m</sub> ☉	11 h 56.5 min	Starost	23.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 5	.3	347	-4.3	♄	6 5			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 51.3	20 10.1	238 45.8	224 9.4	4 52.3	217 57.0	7 15.0
2	210 51.2	20 11.1	268 50.7	254 10.4	4 53.4	247 58.4	7 16.5
4	240 51.1	20 12.2	298 55.6	284 11.4	4 54.6	277 59.8	7 17.9
6	270 51.0	20 13.2	329 .6	314 12.3	4 55.7	308 1.2	7 19.4
8	300 50.9	20 14.2	359 5.5	344 13.3	4 56.8	338 2.6	7 20.8
10	330 50.8	20 15.2	29 10.4	14 14.2	4 58.0	8 4.0	7 22.2
12	0 50.8	20 16.2	59 15.3	44 15.2	4 59.1	38 5.4	7 23.7
14	30 50.7	20 17.2	89 20.3	74 16.1	5 .2	68 6.8	7 25.1
16	60 50.6	20 18.2	119 25.2	104 17.1	5 1.4	98 8.2	7 26.6
18	90 50.5	20 19.2	149 30.1	134 18.0	5 2.5	128 9.6	7 28.0
20	120 50.4	20 20.2	179 35.1	164 18.9	5 3.7	158 11.0	7 29.5
22	150 50.3	20 21.2	209 40.0	194 19.9	5 4.8	188 12.4	7 30.9
Δ	0	5		5	6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 11	20 44	1 9	:::	1 36	.1	15 24	3.9
55	3 44	20 10	0 50	:::	1 42	.5	15 14	3.5
50	4 8	19 46	0 41	2 57	1 46	.7	15 7	3.3
45	4 26	19 28	0 35	2 14	1 49	.9	15 0	3.1
40	4 41	19 13	0 31	1 54	1 52	1.1	14 55	2.9
35	4 53	19 1	0 28	1 41	1 54	1.2	14 51	2.7
30	5 4	18 50	0 26	1 32	1 57	1.3	14 47	2.6
20	5 22	18 31	0 24	1 21	2 1	1.5	14 40	2.4
10	5 38	18 15	0 23	1 16	2 4	1.7	14 34	2.2
0	5 53	18 0	0 22	1 13	2 7	1.9	14 29	2.0
10	6 8	17 45	0 22	1 14	2 11	2.1	14 23	1.8
20	6 23	17 30	0 23	1 17	2 14	2.3	14 18	1.6
30	6 41	17 12	0 26	1 23	2 18	2.5	14 11	1.4
35	6 51	17 2	0 27	1 28	2 21	2.7	14 7	1.3
40	7 3	16 50	0 29	1 35	2 24	2.8	14 3	1.1
45	7 17	16 36	0 32	1 43	2 27	3.0	13 58	.9
50	7 33	16 19	0 36	1 55	2 31	3.2	13 52	.7
55	7 55	15 58	0 42	2 10	2 36	3.5	13 45	.5
60	8 24	15 28	0 51	2 34	2 42	3.8	13 35	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	239 14.7	124 4	3.4	141	269 20.4	-13 34.8	70 49.7	7 56.2
2	268 20.9	122 4	32.2	140	299 24.9	-13 34.7	100 54.6	7 56.2
4	297 26.8	120 5	.9	139	329 29.4	-13 34.5	130 59.5	7 56.1
6	326 32.6	118 5	29.7	139	359 34.0	-13 34.4	161 4.4	7 56.1
8	355 38.0	116 5	58.4	138	29 38.5	-13 34.3	191 9.3	7 56.1
10	24 43.2	114 6	27.1	137	59 43.0	-13 34.2	221 14.2	7 56.1
12	53 48.2	112 6	55.8	136	89 47.6	-13 34.1	251 19.1	7 56.0
14	82 52.8	110 7	24.4	135	119 52.1	-13 34.0	281 24.0	7 56.0
16	111 57.2	108 7	53.0	134	149 56.6	-13 33.8	311 28.9	7 56.0
18	141 1.2	106 8	21.5	133	180 1.2	-13 33.7	341 33.8	7 56.0
20	170 5.0	104 8	49.9	132	210 5.7	-13 33.6	11 38.7	7 55.9
22	199 8.4	102 9	18.2	130	240 10.3	-13 33.5	41 43.6	7 55.9
Δ					23	1	25	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	3 28.9	-.2	15.8	T <sub>m</sub>	8 18	2.0	56.8
12	3 27.1	T <sub>m</sub> ☉	11 h 56.6 min	Starost	24.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♄	h min	'
♂	9 4	.3	346	-4.3	♃	6 2	.0
♂	9 28	.1	340	1.2	♄	19 14	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.2	20 22.2	239 44.9	224 20.8	5 6.0	218 13.8	7 32.3
2	210 50.1	20 23.1	269 49.8	254 21.7	5 7.1	248 15.2	7 33.8
4	240 50.0	20 24.1	299 54.8	284 22.6	5 8.3	278 16.6	7 35.2
6	270 49.9	20 25.1	329 59.7	314 23.5	5 9.4	308 18.0	7 36.6
8	300 49.8	20 26.1	0 4.6	344 24.4	5 10.6	338 19.4	7 38.1
10	330 49.7	20 27.1	30 9.5	14 25.4	5 11.8	8 20.8	7 39.5
12	0 49.6	20 28.0	60 14.5	44 26.3	5 12.9	38 22.2	7 41.0
14	30 49.5	20 29.0	90 19.4	74 27.1	5 14.1	68 23.5	7 42.4
16	60 49.4	20 30.0	120 24.3	104 28.0	5 15.3	98 24.9	7 43.8
18	90 49.3	20 31.0	150 29.3	134 28.9	5 16.5	128 26.3	7 45.3
20	120 49.2	20 31.9	180 34.2	164 29.8	5 17.7	158 27.7	7 46.7
22	150 49.1	20 32.9	210 39.1	194 30.7	5 18.8	188 29.1	7 48.1
Δ	0	5		4	6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 9	20 46	1 11	:::	1 40	.2	16 59	4.2
55	3 42	20 12	0 50	:::	1 53	.6	16 39	3.7
50	4 6	19 48	0 41	2 60	2 2	.8	16 25	3.4
45	4 25	19 29	0 35	2 15	2 11	1.0	16 14	3.2
40	4 40	19 14	0 31	1 54	2 17	1.2	16 4	3.0
35	4 52	19 1	0 29	1 41	2 23	1.4	15 56	2.9
30	5 3	18 50	0 27	1 32	2 28	1.5	15 49	2.7
20	5 22	18 31	0 24	1 21	2 38	1.7	15 37	2.5
10	5 38	18 15	0 23	1 16	2 46	1.9	15 26	2.3
0	5 53	18 0	0 22	1 13	2 53	2.1	15 16	2.2
10	6 8	17 45	0 22	1 14	3 1	2.3	15 7	2.0
20	6 24	17 29	0 23	1 17	3 9	2.4	14 56	1.8
30	6 42	17 11	0 26	1 24	3 19	2.7	14 44	1.6
35	6 52	17 1	0 27	1 28	3 25	2.8	14 37	1.5
40	7 4	16 49	0 29	1 35	3 31	3.0	14 30	1.3
45	7 18	16 35	0 32	1 43	3 38	3.1	14 21	1.1
50	7 35	16 18	0 36	1 55	3 47	3.4	14 10	.9
55	7 56	15 56	0 42	2 11	3 59	3.7	13 56	.6
60	8 26	15 26	0 51	2 34	4 14	4.1	13 39	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	228 11.4	99 9	46.4	129	270 14.8	-13 33.4	71 48.5	7 55.9
2	257 14.2	97 10	14.5	128	300 19.4	-13 33.3	101 53.4	7 55.8
4	286 16.5	95 10	42.5	126	330 23.9	-13 33.2	131 58.3	7 55.8
6	315 18.5	92 11	10.4	125	0 28.4	-13 33.1	162 3.2	7 55.8
8	344 20.2	90 11	38.1	123	30 33.0	-13 32.9	192 8.1	7 55.8
10	13 21.4	88 12	5.6	121	60 37.5	-13 32.8	222 13.0	7 55.7
12	42 22.3	85 12	33.0	120	90 42.1	-13 32.7	252 17.9	7 55.7
14	71 22.7	83 13	.2	118	120 46.6	-13 32.6	282 22.8	7 55.7
16	100 22.8	80 13	27.2	116	150 51.2	-13 32.5	312 27.7	7 55.7
18	129 22.4	78 13	54.0	114	180 55.8	-13 32.4	342 32.6	7 55.6
20	158 21.6	76 14	20.6	112	211 .3	-13 32.3	12 37.5	7 55.6
22	187 20.4	73 14	46.9	110	241 4.9	-13 32.2	42 42.4	7 55.6
Δ					23	1	24	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s	'	h min	min	'	'
00	3 25.3	-.2	15.8	T <sub>m</sub>	9 5	2.1	57.7
12	3 23.1	T <sub>m</sub> ☉	11 h 56.6 min	Starost	25.9 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♄	h min	'
♂	9 3	.3	345	-4.3	♃	5 58	.0
♂	9 27	.1	339	1.2	♄	19 10	

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 49.0	20 33.8	240 44.0	224 31.6	5 20.0	218 30.5	7 49.6
2	210 48.9	20 34.8	270 49.0	254 32.4	5 21.2	248 31.9	7 51.0
4	240 48.8	20 35.8	300 53.9	284 33.3	5 22.4	278 33.3	7 52.4
6	270 48.7	20 36.7	330 58.8	314 34.2	5 23.6	308 34.7	7 53.9
8	300 48.6	20 37.7	1 3.8	344 35.0	5 24.8	338 36.1	7 55.3
10	330 48.5	20 38.6	31 8.7	14 35.9	5 26.0	8 37.5	7 56.7
12	0 48.4	20 39.5	61 13.6	44 36.7	5 27.2	38 38.9	7 58.1
14	30 48.3	20 40.5	91 18.5	74 37.6	5 28.4	68 40.3	7 59.6
16	60 48.2	20 41.4	121 23.5	104 38.4	5 29.6	98 41.7	8 1.0
18	90 48.0	20 42.4	151 28.4	134 39.3	5 30.8	128 43.1	8 2.4
20	120 47.9	20 43.3	181 33.3	164 40.1	5 32.0	158 44.4	8 3.8
22	150 47.8	20 44.2	211 38.3	194 40.9	5 33.2	188 45.8	8 5.3
Δ	-1	5		4	6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 7	20 48	1 12	:::	1 45	.3	18 39	4.4
55	3 41	20 13	0 51	:::	2 6	.8	18 9	3.8
50	4 5	19 49	0 41	3 3	2 22	1.1	17 48	3.5
45	4 24	19 30	0 35	2 16	2 36	1.3	17 31	3.3
40	4 39	19 15	0 31	1 55	2 46	1.5	17 17	3.1
35	4 52	19 2	0 29	1 41	2 56	1.6	17 5	3.0
30	5 3	18 51	0 27	1 33	3 4	1.7	16 55	2.9
20	5 22	18 32	0 24	1 22	3 18	1.9	16 38	2.7
10	5 38	18 15	0 23	1 16	3 31	2.1	16 23	2.5
0	5 53	18 0	0 22	1 14	3 43	2.3	16 8	2.4
10	6 8	17 45	0 22	1 14	3 55	2.4	15 54	2.2
20	6 24	17 29	0 23	1 17	4 8	2.6	15 39	2.1
30	6 42	17 11	0 26	1 24	4 23	2.8	15 22	1.9
35	6 53	17 0	0 27	1 29	4 32	3.0	15 12	1.8
40	7 5	16 48	0 30	1 35	4 42	3.1	15 1	1.6
45	7 19	16 34	0 32	1 44	4 54	3.3	14 48	1.5
50	7 36	16 17	0 37	1 55	5 8	3.5	14 32	1.2
55	7 58	15 55	0 42	2 11	5 27	3.8	14 12	.9
60	8 28	15 25	0 52	2 35	5 52	4.4	13 45	.4

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	216 18.7	71 15 13.0	108	271 9.4	-13 32.1	72 47.3	7 55.5	
2	245 16.6	68 15 38.8	105	301 14.0	-13 32.0	102 52.2	7 55.5	
4	274 14.0	66 16 4.4	103	331 18.5	-13 31.8	132 57.1	7 55.5	
6	303 11.0	63 16 29.6	100	1 23.1	-13 31.7	163 2.0	7 55.4	
8	332 7.5	61 16 54.6	98	31 27.7	-13 31.6	193 6.9	7 55.4	
10	1 3.5	58 17 19.2	95	61 32.2	-13 31.5	223 11.8	7 55.4	
12	29 59.0	56 17 43.5	92	91 36.8	-13 31.4	253 16.7	7 55.4	
14	58 54.1	54 18 7.4	90	121 41.4	-13 31.3	283 21.6	7 55.3	
16	87 48.7	51 18 31.0	87	151 45.9	-13 31.2	313 26.5	7 55.3	
18	116 42.8	49 18 54.2	84	181 50.5	-13 31.1	343 31.3	7 55.3	
20	145 36.4	47 19 17.0	81	211 55.1	-13 31.0	373 36.2	7 55.2	
22	174 29.5	45 19 39.4	78	241 59.6	-13 30.9	403 41.1	7 55.2	
Δ				23	1	24	0	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	3 21.0	- .2	15.8	T <sub>m</sub>	9 56	2.3	58.6
12	3 18.7	T <sub>m</sub> ☉	11 h 56.7 min	Starost	26.9 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 2	.3	345	-4.3	♄	5 54	.0	31	-2.2
♂	9 26	.1	339	1.2	♄	19 6	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 47.7	20 45.2	241 43.2	224 41.7	5 34.4	218 47.2	8 6.7
2	210 47.6	20 46.1	271 48.1	254 42.6	5 35.7	248 48.6	8 8.1
4	240 47.5	20 47.0	301 53.0	284 43.4	5 36.9	278 50.0	8 9.5
6	270 47.3	20 47.9	331 58.0	314 44.2	5 38.1	308 51.4	8 11.0
8	300 47.2	20 48.9	2 2.9	344 45.0	5 39.3	338 52.8	8 12.4
10	330 47.1	20 49.8	32 7.8	14 45.8	5 40.6	8 54.2	8 13.8
12	0 47.0	20 50.7	62 12.8	44 46.6	5 41.8	38 55.6	8 15.2
14	30 46.9	20 51.6	92 17.7	74 47.4	5 43.0	68 57.0	8 16.6
16	60 46.7	20 52.5	122 22.6	104 48.2	5 44.3	98 58.4	8 18.1
18	90 46.6	20 53.4	152 27.5	134 49.0	5 45.5	128 59.7	8 19.5
20	120 46.5	20 54.3	182 32.5	164 49.8	5 46.7	159 1.1	8 20.9
22	150 46.4	20 55.2	212 37.4	194 50.6	5 48.0	189 2.5	8 22.3
Δ	-1	5		4	6	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 5	20 50	1 13	:::	1 53	.7	20 25	4.1
55	3 39	20 15	0 51	:::	2 25	1.2	19 42	3.6
50	4 4	19 50	0 41	3 6	2 48	1.5	19 12	3.4
45	4 23	19 31	0 35	2 17	3 6	1.7	18 50	3.2
40	4 38	19 16	0 31	1 55	3 22	1.8	18 32	3.1
35	4 51	19 3	0 29	1 42	3 34	1.9	18 17	3.0
30	5 2	18 51	0 27	1 33	3 45	2.0	18 4	2.9
20	5 21	18 32	0 24	1 22	4 5	2.2	17 42	2.8
10	5 38	18 16	0 23	1 16	4 22	2.4	17 23	2.7
0	5 53	18 0	0 22	1 14	4 38	2.5	17 6	2.6
10	6 8	17 45	0 22	1 14	4 54	2.6	16 48	2.5
20	6 24	17 29	0 24	1 17	5 11	2.8	16 29	2.4
30	6 43	17 11	0 26	1 24	5 31	2.9	16 7	2.2
35	6 53	16 60	0 27	1 29	5 43	3.0	15 55	2.1
40	7 5	16 48	0 30	1 35	5 56	3.2	15 40	2.0
45	7 20	16 33	0 33	1 44	6 13	3.3	15 23	1.9
50	7 37	16 16	0 37	1 55	6 33	3.5	15 2	1.7
55	7 60	15 54	0 43	2 12	6 59	3.8	14 34	1.4
60	8 30	15 23	0 52	2 35	7 36	4.4	13 55	.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	203 22.1	42 20 1.3	75	272 4.2	-13 30.8	73 46.0	7 55.2	
2	232 14.2	40 20 22.8	71	302 8.8	-13 30.7	103 50.9	7 55.1	
4	261 5.8	38 20 43.9	68	332 13.4	-13 30.6	133 55.8	7 55.1	
6	289 57.0	36 21 4.4	65	2 17.9	-13 30.5	164 .7	7 55.1	
8	318 47.6	34 21 24.5	61	32 22.5	-13 30.4	194 5.5	7 55.0	
10	347 37.8	33 21 44.1	58	62 27.1	-13 30.3	224 10.4	7 55.0	
12	16 27.4	31 22 3.1	54	92 31.7	-13 30.2	254 15.3	7 54.9	
14	45 16.6	29 22 21.6	51	122 36.2	-13 30.1	284 20.2	7 54.9	
16	74 5.4	28 22 39.5	47	152 40.8	-13 30.0	314 25.1	7 54.9	
18	102 53.6	26 22 56.9	43	182 45.4	-13 29.9	344 30.0	7 54.8	
20	131 41.4	25 23 13.6	39	212 50.0	-13 29.8	374 34.8	7 54.8	
22	160 28.7	24 23 29.8	36	242 54.6	-13 29.7	404 39.7	7 54.8	
Δ				23	1	24	0	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	3 16.3	- .2	15.8	T <sub>m</sub>	10 51	2.5	59.4
12	3 13.6	T <sub>m</sub> ☉	11 h 56.8 min	Starost	27.9 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	9 2	.2	344	-4.3	♄	5 51	.0	31	-2.2
♂	9 24	.1	338	1.2	♄	19 2	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS										
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>									
h	°	'	°	'	°	'	°	'								
0	180	46.2	20	56.1	242	42.3	224	51.4	5	49.2	219	3.9	8	23.7		
2	210	46.1	20	57.0	272	47.3	254	52.1	5	50.5	249	5.3	8	25.2		
4	240	46.0	20	57.9	302	52.2	284	52.9	5	51.7	279	6.7	8	26.6		
6	270	45.9	20	58.8	332	57.1	314	53.7	5	53.0	309	8.1	8	28.0		
8	300	45.7	20	59.7	3	2.0	344	54.5	5	54.2	339	9.5	8	29.4		
10	330	45.6	21	6	33	7.0	14	55.2	5	55.5	9	10.9	8	30.8		
12	0	45.5	21	1.5	63	11.9	44	56.0	5	56.7	39	12.3	8	32.2		
14	30	45.3	21	2.4	93	16.8	74	56.7	5	58.0	69	13.6	8	33.6		
16	60	45.2	21	3.2	123	21.7	104	57.5	5	59.2	99	15.0	8	35.0		
18	90	45.1	21	4.1	153	26.7	134	58.2	6	5	129	16.4	8	36.5		
20	120	44.9	21	5.0	183	31.6	164	59.0	6	1.8	159	17.8	8	37.9		
22	150	44.8	21	5.9	213	36.5	194	59.7	6	3.0	189	19.2	8	39.3		
Δ		-1		4				4		6				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 3	20 52	1 14	:::	2 9	1.3	22 4	3.1
55	3 38	20 17	0 51	:::	2 53	1.8	21 9	3.0
50	4 3	19 51	0 41	3 10	3 23	2.0	20 34	2.9
45	4 22	19 32	0 36	2 18	3 46	2.2	20 8	2.9
40	4 38	19 17	0 32	1 56	4 5	2.3	19 47	2.9
35	4 51	19 3	0 29	1 42	4 21	2.4	19 30	2.8
30	5 2	18 52	0 27	1 33	4 35	2.4	19 15	2.8
20	5 21	18 33	0 24	1 22	4 58	2.5	18 50	2.8
10	5 38	18 16	0 23	1 16	5 18	2.6	18 28	2.7
0	5 53	18 0	0 22	1 14	5 38	2.7	18 8	2.7
10	6 9	17 45	0 22	1 14	5 57	2.7	17 47	2.7
20	6 25	17 29	0 24	1 17	6 17	2.8	17 26	2.6
30	6 43	17 10	0 26	1 24	6 41	2.9	17 1	2.6
35	6 54	16 59	0 27	1 29	6 56	3.0	16 46	2.6
40	7 6	16 47	0 30	1 35	7 12	3.0	16 29	2.5
45	7 21	16 33	0 33	1 44	7 32	3.1	16 8	2.5
50	7 38	16 15	0 37	1 56	7 57	3.2	15 43	2.4
55	8 1	15 52	0 43	2 12	8 30	3.4	15 9	2.2
60	8 32	15 21	0 52	2 36	9 22	3.7	14 16	1.9

UT	MESEC				JUPITER		SATURN									
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>								
h	°	'	°	'	°	'	°	'								
0	189	15.6	23	23	45.3	32	272	59.2	-13	29.6	74	44.6	7	54.7		
2	218	2.1	22	24	.2	28	303	3.8	-13	29.5	104	49.5	7	54.7		
4	246	48.2	21	24	14.5	24	333	8.3	-13	29.4	134	54.3	7	54.7		
6	275	33.8	20	24	28.1	20	3	12.9	-13	29.3	164	59.2	7	54.6		
8	304	19.1	19	24	41.0	16	33	17.5	-13	29.2	195	4.1	7	54.6		
10	333	3.9	19	24	53.2	12	63	22.1	-13	29.1	225	9.0	7	54.5		
12	1	48.4	18	25	4.8	8	93	26.7	-13	29.0	255	13.8	7	54.5		
14	30	32.6	18	25	15.6	4	123	31.3	-13	28.9	285	18.7	7	54.5		
16	59	16.5	18	25	25.7	0	153	35.9	-13	28.8	315	23.6	7	54.4		
18	88	.0	18	25	35.1	-4	183	40.5	-13	28.7	345	28.5	7	54.4		
20	116	43.2	18	25	43.7	-8	213	45.1	-13	28.6	15	33.3	7	54.4		
22	145	26.2	18	25	51.5	-12	243	49.7	-13	28.5	45	38.2	7	54.3		
Δ								23		0				24		0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	3 11.0	- .2	15.8	T <sub>m</sub>	11 52	2.7	60.1	16.4
12	3 8.1	T <sub>m</sub> ☉	11 h 56.9 min	Starost	28.9 d	Faza	●	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	9 1	.2	343	-4.3	♃	5 47	.0	31	-2.2
♂	9 23	.1	337	1.2	♄	18 58	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS										
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>									
h	°	'	°	'	°	'	°	'								
0	180	44.7	21	6.7	243	41.5	225	.4	6	4.3	219	20.6	8	40.7		
2	210	44.5	21	7.6	273	46.4	255	1.2	6	5.6	249	22.0	8	42.1		
4	240	44.4	21	8.5	303	51.3	285	1.9	6	6.9	279	23.4	8	43.5		
6	270	44.3	21	9.3	333	56.2	315	2.6	6	8.1	309	24.8	8	44.9		
8	300	44.1	21	10.2	4	1.2	345	3.4	6	9.4	339	26.2	8	46.3		
10	330	44.0	21	11.1	34	6.1	15	4.1	6	10.7	9	27.5	8	47.7		
12	0	43.8	21	11.9	64	11.0	45	4.8	6	12.0	39	28.9	8	49.1		
14	30	43.7	21	12.8	94	16.0	75	5.5	6	13.3	69	30.3	8	50.5		
16	60	43.6	21	13.6	124	20.9	105	6.2	6	14.6	99	31.7	8	51.9		
18	90	43.4	21	14.5	154	25.8	135	6.9	6	15.9	129	33.1	8	53.3		
20	120	43.3	21	15.3	184	30.7	165	7.6	6	17.1	159	34.5	8	54.7		
22	150	43.1	21	16.1	214	35.7	195	8.3	6	18.4	189	35.9	8	56.1		
Δ		-1		4				4		6				7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 1	20 54	1 15	:::	2 41	2.6	23 18	1.7
55	3 37	20 18	0 52	:::	3 36	2.7	22 20	2.1
50	4 2	19 53	0 42	3 13	4 12	2.7	21 44	2.3
45	4 21	19 33	0 36	2 19	4 39	2.7	21 17	2.4
40	4 37	19 17	0 32	1 56	4 60	2.7	20 55	2.4
35	4 50	19 4	0 29	1 42	5 17	2.7	20 38	2.5
30	5 2	18 53	0 27	1 33	5 33	2.7	20 22	2.5
20	5 21	18 33	0 24	1 22	5 58	2.7	19 56	2.6
10	5 38	18 16	0 23	1 16	6 21	2.7	19 34	2.7
0	5 53	18 1	0 22	1 14	6 41	2.7	19 13	2.7
10	6 9	17 45	0 22	1 14	7 2	2.7	18 52	2.8
20	6 25	17 29	0 24	1 17	7 25	2.7	18 29	2.8
30	6 44	17 10	0 26	1 24	7 51	2.7	18 3	2.9
35	6 55	16 59	0 27	1 29	8 6	2.7	17 47	2.9
40	7 7	16 46	0 30	1 36	8 24	2.7	17 29	2.9
45	7 22	16 32	0 33	1 44	8 46	2.6	17 7	3.0
50	7 40	16 14	0 37	1 56	9 14	2.6	16 40	3.0
55	8 3	15 51	0 43	2 12	9 51	2.5	16 2	3.1
60	8 34	15 19	0 53	2 37	10 52	2.3	15 2	3.4

UT	MESEC				JUPITER		SATURN									
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>								
h	°	'	°	'	°	'	°	'								
0	174	9.0	18	25	58.6	-16	273	54.3	-13	28.4	75	43.1	7	54.3		
2	202	51.5	19	26	5.0	-20	303	58.9	-13	28.3	105	47.9	7	54.2		
4	231	33.8	19	26	10.5	-24	334	3.5	-13	28.3	135	52.8	7	54.2		
6	260	15.9	20	26	15.3	-28	4	8.1	-13	28.2	165	57.7	7	54.1		
8	288	57.9	21	26	19.2	-32	34	12.7	-13	28.1	196	2.6	7	54.1		
10	317	39.7	22	26	22.4	-36	64	17.3	-13	28.0	226	7.4	7	54.1		
12	346	21.4	23	26	24.8	-40	94	21.9	-13	27.9	256	12.3	7	54.0		
14	15	3.1	24	26	26.3	-44	124	26.5	-13	27.8	286	17.2	7	54.0		
16	43	44.6	25	26	27.1	-48	154	31.1	-13	27.7	316	22.0	7	53.9		
18	72	26.2	27	26	27.1	-51	184	35.7	-13	27.6	346	26.9	7	53.9		
20	101	7.7	28	26	26.2	-55	214	40.4	-13	27.5	16	31.7	7	53.9		
22	129	49.3	30	26	24.5	-59	244	45.0	-13	27.4	46	36.6	7	53.8		
Δ								23		0				24		0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	3 5.2	- .3	15.8	T <sub>m</sub>	12 57	2.7	60.5	16.5
12	3 2.0	T <sub>m</sub> ☉	11 h 57.0 min	Starost	.5 d	Faza	●	

PLANETE							
Pl.	T <sub>m</sub>						

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 43.0	21 17.0	244 40.6	225 9.0	6 19.7	219 37.3	8 57.5
2	210 42.8	21 17.8	274 45.5	255 9.7	6 21.0	249 38.6	8 58.9
4	240 42.7	21 18.7	304 50.5	285 10.4	6 22.3	279 40.0	9 .3
6	270 42.5	21 19.5	334 55.4	315 11.0	6 23.6	309 41.4	9 1.7
8	300 42.4	21 20.3	5 .3	345 11.7	6 24.9	339 42.8	9 3.1
10	330 42.2	21 21.1	35 5.2	15 12.4	6 26.2	9 44.2	9 4.5
12	0 42.1	21 22.0	65 10.2	45 13.1	6 27.6	39 45.6	9 5.9
14	30 41.9	21 22.8	95 15.1	75 13.7	6 28.9	69 47.0	9 7.3
16	60 41.8	21 23.6	125 20.0	105 14.4	6 30.2	99 48.4	9 8.7
18	90 41.6	21 24.4	155 25.0	135 15.1	6 31.5	129 49.7	9 10.1
20	120 41.5	21 25.2	185 29.9	165 15.7	6 32.8	159 51.1	9 11.5
22	150 41.3	21 26.1	215 34.8	195 16.4	6 34.1	189 52.5	9 12.9
Δ	-1	4		3	7	7	7

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	158 30.9	31 26 22.1	-62	274 49.6	-13 27.4	76 41.5	7 53.8	
2	187 12.6	33 26 18.8	-66	304 54.2	-13 27.3	106 46.3	7 53.7	
4	215 54.3	35 26 14.7	-69	334 58.8	-13 27.2	136 51.2	7 53.7	
6	244 36.2	36 26 9.9	-73	5 3.4	-13 27.1	166 56.1	7 53.6	
8	273 18.2	38 26 4.2	-76	35 8.1	-13 27.0	197 .9	7 53.6	
10	302 .4	40 25 57.7	-79	65 12.7	-13 26.9	227 5.8	7 53.5	
12	330 42.8	42 25 50.5	-83	95 17.3	-13 26.8	257 10.6	7 53.5	
14	359 25.3	44 25 42.5	-86	125 21.9	-13 26.7	287 15.5	7 53.5	
16	28 8.1	47 25 33.7	-89	155 26.5	-13 26.7	317 20.3	7 53.4	
18	56 51.2	49 25 24.2	-92	185 31.2	-13 26.6	347 25.2	7 53.4	
20	85 34.5	51 25 13.9	-95	215 35.8	-13 26.5	17 30.1	7 53.3	
22	114 18.1	53 25 2.9	-97	245 40.4	-13 26.4	47 34.9	7 53.3	
Δ				23	0	24	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 59	20 56	1 17	:::	3 44	3.9	23 58	.8
55	3 35	20 20	0 52	:::	4 41	3.5	23 10	1.3
50	4 1	19 54	0 42	3 17	5 18	3.3	22 38	1.6
45	4 21	19 34	0 36	2 19	5 44	3.2	22 13	1.8
40	4 36	19 18	0 32	1 57	6 6	3.1	21 54	2.0
35	4 50	19 5	0 29	1 43	6 23	3.0	21 37	2.1
30	5 1	18 53	0 27	1 34	6 38	2.9	21 23	2.2
20	5 21	18 33	0 24	1 22	7 4	2.8	20 59	2.3
10	5 38	18 16	0 23	1 16	7 26	2.7	20 38	2.5
0	5 53	18 1	0 22	1 14	7 47	2.7	20 18	2.6
10	6 9	17 45	0 22	1 14	8 8	2.6	19 58	2.7
20	6 26	17 28	0 24	1 17	8 30	2.5	19 36	2.8
30	6 44	17 9	0 26	1 24	8 56	2.4	19 11	3.0
35	6 55	16 58	0 28	1 29	9 11	2.3	18 57	3.1
40	7 8	16 46	0 30	1 36	9 28	2.2	18 40	3.2
45	7 23	16 31	0 33	1 44	9 49	2.1	18 19	3.3
50	7 41	16 13	0 37	1 56	10 16	1.9	17 53	3.5
55	8 4	15 50	0 43	2 13	10 52	1.7	17 18	3.8
60	8 36	15 18	0 53	2 37	11 48	1.1	16 22	4.3
S								

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	2 58.9	-.3	15.8	T <sub>m</sub>	14 2	2.6	60.7 16.5		
12	2 55.5	T <sub>m☉</sub>	11 h 57.1 min	Starost	1.5 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♄	h min	'	°	'
♂	8 60	.2	341	-4.3	♃	5 40	.0	31	-2.3
♂	9 21	.1	336	1.2	♂	18 50	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 41.2	21 26.9	245 39.7	225 17.0	6 35.4	219 53.9	9 14.3
2	210 41.0	21 27.7	275 44.7	255 17.7	6 36.8	249 55.3	9 15.7
4	240 40.9	21 28.5	305 49.6	285 18.3	6 38.1	279 56.7	9 17.1
6	270 40.7	21 29.3	335 54.5	315 18.9	6 39.4	309 58.1	9 18.4
8	300 40.5	21 30.1	5 59.5	345 19.6	6 40.7	339 59.4	9 19.8
10	330 40.4	21 30.9	36 4.4	15 20.2	6 42.1	10 .8	9 21.2
12	0 40.2	21 31.7	66 9.3	45 20.8	6 43.4	40 2.2	9 22.6
14	30 40.1	21 32.5	96 14.2	75 21.5	6 44.7	70 3.6	9 24.0
16	60 39.9	21 33.2	126 19.2	105 22.1	6 46.1	100 5.0	9 25.4
18	90 39.7	21 34.0	156 24.1	135 22.7	6 47.4	130 6.4	9 26.8
20	120 39.6	21 34.8	186 29.0	165 23.3	6 48.7	160 7.8	9 28.1
22	150 39.4	21 35.6	216 34.0	195 23.9	6 50.1	190 9.1	9 29.5
Δ	-1	4		3	7	7	7

UT	MESEC				JUPITER		SATURN	
	S <sub>♄</sub>	Δ	δ <sub>♄</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	143 2.0	55 24 51.1	-100	275 45.1	-13 26.3	77 39.8	7 53.2	
2	171 46.2	58 24 38.7	-103	305 49.7	-13 26.2	107 44.6	7 53.2	
4	200 30.8	60 24 25.5	-106	335 54.3	-13 26.2	137 49.5	7 53.1	
6	229 15.7	62 24 11.6	-108	5 58.9	-13 26.1	167 54.3	7 53.1	
8	258 1.0	64 23 57.1	-110	36 3.6	-13 26.0	197 59.2	7 53.0	
10	286 46.7	67 23 41.8	-113	66 8.2	-13 25.9	228 4.0	7 53.0	
12	315 32.8	69 23 26.0	-115	96 12.9	-13 25.8	258 8.9	7 52.9	
14	344 19.2	71 23 9.5	-117	126 17.5	-13 25.8	288 13.7	7 52.9	
16	13 6.1	74 22 52.3	-119	156 22.1	-13 25.7	318 18.6	7 52.8	
18	41 53.4	76 22 34.6	-122	186 26.8	-13 25.6	348 23.4	7 52.8	
20	70 41.2	78 22 16.2	-123	216 31.4	-13 25.5	18 28.3	7 52.7	
22	99 29.4	80 21 57.3	-125	246 36.1	-13 25.4	48 33.1	7 52.7	
Δ				23	0	24	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 57	20 58	1 18	:::	5 18	4.4	. . .	.0
55	3 34	20 21	0 53	:::	6 5	3.9	23 43	.9
50	3 60	19 55	0 42	3 22	6 37	3.6	23 17	1.2
45	4 20	19 35	0 36	2 20	7 1	3.4	22 57	1.4
40	4 36	19 19	0 32	1 57	7 19	3.2	22 41	1.6
35	4 49	19 6	0 29	1 43	7 35	3.1	22 27	1.7
30	5 1	18 54	0 27	1 34	7 49	3.0	22 15	1.9
20	5 21	18 34	0 24	1 22	8 12	2.8	21 55	2.1
10	5 38	18 17	0 23	1 16	8 32	2.6	21 37	2.2
0	5 54	18 1	0 22	1 14	8 51	2.5	21 20	2.4
10	6 9	17 45	0 23	1 14	9 9	2.3	21 3	2.6
20	6 26	17 28	0 24	1 18	9 29	2.2	20 44	2.7
30	6 45	17 9	0 26	1 24	9 52	2.0	20 23	2.9
35	6 56	16 58	0 28	1 29	10 6	1.9	20 10	3.1
40	7 9	16 45	0 30	1 36	10 21	1.8	19 56	3.2
45	7 24	16 30	0 33	1 45	10 39	1.6	19 38	3.4
50	7 42	16 12	0 37	1 56	11 2	1.4	19 17	3.6
55	8 5	15 49	0 43	2 13	11 32	1.1	18 48	3.9
60	8 38	15 16	0 53	2 38	12 15	.5	18 6	4.5
S								

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	2 52.1	-.3	15.8	T <sub>m</sub>	15 5	2.5	60.6 16.5		
12	2 48.5	T <sub>m☉</sub>	11 h 57.2 min	Starost	2.5 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	'	♄	h min	'	°	'
♂	8 59	.2	340	-4.3	♃	5 36	.0	31	-2.3
♂	9 20	.1	335	1.2	♂	1			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 39.3	21 36.4	246 38.9	225 24.5	6 51.4	220 10.5	9 30.9
2	210 39.1	21 37.1	276 43.8	255 25.1	6 52.8	250 11.9	9 32.3
4	240 38.9	21 37.9	306 48.7	285 25.7	6 54.1	280 13.3	9 33.7
6	270 38.8	21 38.7	336 53.7	315 26.3	6 55.5	310 14.7	9 35.1
8	300 38.6	21 39.5	6 58.6	345 26.9	6 56.8	340 16.1	9 36.4
10	330 38.4	21 40.2	37 3.5	15 27.5	6 58.2	10 17.4	9 37.8
12	0 38.3	21 41.0	67 8.4	45 28.1	6 59.5	40 18.8	9 39.2
14	30 38.1	21 41.7	97 13.4	75 28.7	7 .9	70 20.2	9 40.6
16	60 37.9	21 42.5	127 18.3	105 29.3	7 2.2	100 21.6	9 41.9
18	90 37.7	21 43.2	157 23.2	135 29.9	7 3.6	130 23.0	9 43.3
20	120 37.6	21 44.0	187 28.2	165 30.4	7 4.9	160 24.4	9 44.7
22	150 37.4	21 44.7	217 33.1	195 31.0	7 6.3	190 25.7	9 46.1
Δ	-1	4		3	7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 56	21 0	1 19	:::	7 5	4.4	0 19	.4
55	3 33	20 23	0 53	:::	7 39	3.9	...	.0
50	3 59	19 56	0 42	3 27	8 3	3.6	23 46	.9
45	4 19	19 36	0 36	2 21	8 21	3.3	23 31	1.1
40	4 35	19 20	0 32	1 57	8 36	3.2	23 19	1.3
35	4 49	19 6	0 29	1 43	8 49	3.0	23 9	1.5
30	5 0	18 54	0 27	1 34	9 0	2.9	22 60	1.6
20	5 20	18 34	0 24	1 22	9 19	2.6	22 44	1.8
10	5 38	18 17	0 23	1 16	9 35	2.5	22 30	2.0
0	5 54	18 1	0 22	1 14	9 50	2.3	22 17	2.2
10	6 10	17 45	0 23	1 14	10 6	2.1	22 4	2.4
20	6 26	17 28	0 24	1 18	10 22	1.9	21 50	2.6
30	6 46	17 9	0 26	1 24	10 40	1.7	21 33	2.8
35	6 57	16 58	0 28	1 29	10 51	1.6	21 23	2.9
40	7 10	16 45	0 30	1 36	11 3	1.4	21 12	3.1
45	7 25	16 30	0 33	1 45	11 18	1.3	20 59	3.3
50	7 43	16 11	0 37	1 57	11 35	1.0	20 43	3.5
55	8 7	15 47	0 43	2 13	11 58	.7	20 22	3.8
60	8 40	15 14	0 54	2 38	12 28	.3	19 54	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	128 18.0	83 21	37.8	-127	276 40.7	-13 25.4	78 38.0	7 52.6
2	157 7.1	85 21	17.7	-129	306 45.3	-13 25.3	108 42.8	7 52.6
4	185 56.6	87 20	57.1	-131	336 50.0	-13 25.2	138 47.7	7 52.5
6	214 46.6	89 20	36.0	-132	6 54.6	-13 25.1	168 52.5	7 52.5
8	243 37.0	91 20	14.4	-134	36 59.3	-13 25.1	198 57.3	7 52.4
10	272 27.9	93 19	52.3	-135	67 3.9	-13 25.0	229 2.2	7 52.4
12	301 19.3	95 19	29.8	-137	97 8.6	-13 24.9	259 7.0	7 52.3
14	330 11.1	97 19	6.7	-138	127 13.2	-13 24.8	289 11.9	7 52.3
16	359 3.4	99 18	43.3	-139	157 17.9	-13 24.8	319 16.7	7 52.2
18	27 56.1	101 18	19.4	-140	187 22.5	-13 24.7	349 21.6	7 52.2
20	56 49.3	103 17	55.1	-141	217 27.2	-13 24.6	19 26.4	7 52.1
22	85 42.9	105 17	30.4	-142	247 31.9	-13 24.5	49 31.2	7 52.1
Δ					23	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	2 44.9	-.3	15.8	T <sub>m</sub>	16 4	2.2	60.3 16.4		
12	2 41.0	T <sub>m</sub> ☉	11 h 57.3 min	Starost	3.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 59	.2	340	-4.3	♃	5 32	.0	31	-2.3
♂	9 19	.1	335	1.2	♄	18 42	.0	193	.8

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 37.2	21 45.5	247 38.0	225 31.6	7 7.7	220 27.1	9 47.4
2	210 37.1	21 46.2	277 42.9	255 32.1	7 9.0	250 28.5	9 48.8
4	240 36.9	21 47.0	307 47.9	285 32.7	7 10.4	280 29.9	9 50.2
6	270 36.7	21 47.7	337 52.8	315 33.3	7 11.8	310 31.3	9 51.6
8	300 36.5	21 48.5	7 57.7	345 33.8	7 13.1	340 32.7	9 52.9
10	330 36.4	21 49.2	38 2.7	15 34.4	7 14.5	10 34.0	9 54.3
12	0 36.2	21 49.9	68 7.6	45 34.9	7 15.9	40 35.4	9 55.7
14	30 36.0	21 50.6	98 12.5	75 35.5	7 17.2	70 36.8	9 57.0
16	60 35.8	21 51.4	128 17.4	105 36.0	7 18.6	100 38.2	9 58.4
18	90 35.6	21 52.1	158 22.4	135 36.5	7 20.0	130 39.6	9 59.8
20	120 35.5	21 52.8	188 27.3	165 37.1	7 21.4	160 41.0	10 1.1
22	150 35.3	21 53.5	218 32.2	195 37.6	7 22.8	190 42.3	10 2.5
Δ	-1	4		3	7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 2	1 21	:::	8 50	4.1	0 30	.2
55	3 32	20 24	0 53	:::	9 12	3.7	0 5	.6
50	3 58	19 57	0 42	3 33	9 28	3.4	...	.0
45	4 18	19 37	0 36	2 22	9 41	3.2	23 59	1.0
40	4 35	19 21	0 32	1 58	9 52	3.0	23 51	1.1
35	4 48	19 7	0 29	1 44	10 1	2.9	23 44	1.3
30	5 0	18 55	0 27	1 34	10 9	2.7	23 38	1.4
20	5 20	18 35	0 24	1 23	10 22	2.5	23 28	1.6
10	5 38	18 17	0 23	1 17	10 34	2.3	23 18	1.8
0	5 54	18 1	0 22	1 14	10 45	2.1	23 10	2.0
10	6 10	17 45	0 23	1 15	10 56	1.9	23 1	2.2
20	6 27	17 28	0 24	1 18	11 8	1.7	22 51	2.4
30	6 46	17 9	0 26	1 24	11 21	1.5	22 40	2.7
35	6 57	16 57	0 28	1 29	11 29	1.4	22 34	2.8
40	7 10	16 44	0 30	1 36	11 38	1.2	22 27	3.0
45	7 25	16 29	0 33	1 45	11 48	1.0	22 18	3.1
50	7 44	16 10	0 37	1 57	11 60	.8	22 8	3.4
55	8 8	15 46	0 44	2 14	12 15	.5	21 55	3.7
60	8 42	15 13	0 54	2 39	12 35	.2	21 37	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	114 37.0	107 17	5.3	-143	277 36.5	-13 24.5	79 36.1	7 52.0
2	143 31.5	108 16	39.8	-144	307 41.2	-13 24.4	109 40.9	7 52.0
4	172 26.5	110 16	14.0	-145	337 45.8	-13 24.3	139 45.7	7 51.9
6	201 21.9	112 15	47.9	-146	7 50.5	-13 24.2	169 50.6	7 51.9
8	230 17.7	113 15	21.5	-147	37 55.2	-13 24.2	199 55.4	7 51.8
10	259 14.0	115 14	54.7	-147	67 59.8	-13 24.1	230 .3	7 51.7
12	288 10.7	116 14	27.7	-148	98 4.5	-13 24.0	260 5.1	7 51.7
14	317 7.7	118 14	.4	-148	128 9.2	-13 24.0	290 9.9	7 51.6
16	346 5.2	119 13	32.8	-149	158 13.8	-13 23.9	320 14.8	7 51.6
18	15 3.0	120 13	5.0	-149	188 18.5	-13 23.8	350 19.6	7 51.5
20	44 1.3	122 12	36.9	-150	218 23.2	-13 23.8	20 24.4	7 51.5
22	72 59.9	123 12	8.6	-150	248 27.8	-13 23.7	50 29.3	7 51.4
Δ					23	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	2 37.2	-.3	15.8	T <sub>m</sub>	16 58	2.0	59.8 16.3		
12	2 33.1	T <sub>m</sub> ☉	11 h 57.4 min	Starost	4.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 35.1 21 54.2	248 37.2	225 38.1 7 24.1	220 43.7 10 3.9			
2	210 34.9 21 55.0	278 42.1	255 38.7 7 25.5	250 45.1 10 5.2			
4	240 34.7 21 55.7	308 47.0	285 39.2 7 26.9	280 46.5 10 6.6			
6	270 34.6 21 56.4	338 51.9	315 39.7 7 28.3	310 47.9 10 8.0			
8	300 34.4 21 57.1	8 56.9	345 40.2 7 29.7	340 49.2 10 9.3			
10	330 34.2 21 57.8	39 1.8	15 40.7 7 31.1	10 50.6 10 10.7			
12	0 34.0 21 58.5	69 6.7	45 41.2 7 32.5	40 52.0 10 12.0			
14	30 33.8 21 59.2	99 11.7	75 41.7 7 33.9	70 53.4 10 13.4			
16	60 33.6 21 59.9	129 16.6	105 42.2 7 35.3	100 54.8 10 14.8			
18	90 33.5 22 .6	159 21.5	135 42.7 7 36.7	130 56.1 10 16.1			
20	120 33.3 22 1.2	189 26.4	165 43.2 7 38.0	160 57.5 10 17.5			
22	150 33.1 22 1.9	219 31.4	195 43.7 7 39.4	190 58.9 10 18.8			
Δ	-1 3		3 7	7 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 52	21 4	1 22	:::	10 30	3.9	0 35	.2
55	3 31	20 25	0 54	:::	10 42	3.6	0 20	.5
50	3 57	19 58	0 43	3 42	10 51	3.3	0 9	.8
45	4 18	19 38	0 36	2 23	10 58	3.1	...	.0
40	4 34	19 21	0 32	1 58	11 4	2.9	...	.0
35	4 48	19 8	0 29	1 44	11 10	2.7	...	.0
30	4 60	18 56	0 27	1 34	11 14	2.6	...	.0
20	5 20	18 35	0 24	1 23	11 22	2.4	...	.0
10	5 38	18 18	0 23	1 17	11 29	2.2	...	.0
0	5 54	18 1	0 22	1 14	11 36	2.0	23 59	1.9
10	6 10	17 45	0 23	1 15	11 42	1.8	23 54	2.1
20	6 27	17 28	0 24	1 18	11 49	1.6	23 50	2.3
30	6 47	17 8	0 26	1 24	11 57	1.4	23 44	2.6
35	6 58	16 57	0 28	1 30	12 2	1.2	23 41	2.7
40	7 11	16 44	0 30	1 36	12 7	1.1	23 38	2.8
45	7 26	16 29	0 33	1 45	12 13	.9	23 34	3.0
50	7 45	16 10	0 37	1 57	12 20	.7	23 29	3.2
55	8 9	15 45	0 44	2 14	12 28	.5	23 22	3.5
60	8 43	15 11	0 54	2 40	12 39	.1	23 14	3.9

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	101 58.9 124 11 40.1 -150	278 32.5 -13 23.6	80 34.1 7 51.4					
2	130 58.2 125 11 11.5 -150	308 37.2 -13 23.6	110 38.9 7 51.3					
4	159 57.9 126 10 42.6 -151	338 41.9 -13 23.5	140 43.7 7 51.2					
6	188 57.9 127 10 13.6 -151	8 46.5 -13 23.4	170 48.6 7 51.2					
8	217 58.2 128 9 44.4 -151	38 51.2 -13 23.4	200 53.4 7 51.1					
10	246 58.9 129 9 15.1 -151	68 55.9 -13 23.3	230 58.2 7 51.1					
12	275 59.8 130 8 45.6 -151	99 .6 -13 23.2	261 3.1 7 51.0					
14	305 1.1 131 8 16.1 -151	129 5.3 -13 23.2	291 7.9 7 50.9					
16	334 2.7 132 7 46.4 -151	159 9.9 -13 23.1	321 12.7 7 50.9					
18	3 4.5 132 7 16.6 -150	189 14.6 -13 23.0	351 17.5 7 50.8					
20	32 6.6 133 6 46.7 -150	219 19.3 -13 23.0	21 22.4 7 50.8					
22	61 8.9 134 6 16.8 -150	249 24.0 -13 22.9	51 27.2 7 50.7					
Δ		23 0	24 0					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	2 29.1	-.4	15.8	T <sub>m</sub>	17 47	2.0	59.1 16.1		
12	2 24.9	T <sub>m</sub> ☉	11 h 57.6 min	Starost	5.5 d	Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	8 58	.2	338	-4.2	♃	5 25	.0	31	-2.3
♂	9 17	.1	333	1.2	♄	18 35	.0	193	.8

1. JUN

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 32.9 22 2.6	249 36.3	225 44.2 7 40.8	221 .3 10 20.2			
2	210 32.7 22 3.3	279 41.2	255 44.7 7 42.2	251 1.7 10 21.5			
4	240 32.5 22 4.0	309 46.2	285 45.2 7 43.7	281 3.0 10 22.9			
6	270 32.3 22 4.6	339 51.1	315 45.7 7 45.1	311 4.4 10 24.2			
8	300 32.1 22 5.3	9 56.0	345 46.1 7 46.5	341 5.8 10 25.6			
10	330 31.9 22 6.0	40 .9	15 46.6 7 47.9	11 7.2 10 26.9			
12	0 31.7 22 6.6	70 5.9	45 47.1 7 49.3	41 8.5 10 28.3			
14	30 31.5 22 7.3	100 10.8	75 47.5 7 50.7	71 9.9 10 29.6			
16	60 31.4 22 8.0	130 15.7	105 48.0 7 52.1	101 11.3 10 31.0			
18	90 31.2 22 8.6	160 20.6	135 48.5 7 53.5	131 12.7 10 32.3			
20	120 31.0 22 9.3	190 25.6	165 48.9 7 54.9	161 14.1 10 33.7			
22	150 30.8 22 9.9	220 30.5	195 49.4 7 56.3	191 15.4 10 35.0			
Δ	-1 3		2 7	7 7			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 51	21 6	1 23	:::	12 4	3.8	0 39	.1
55	3 30	20 27	0 54	:::	12 7	3.4	0 32	.4
50	3 57	19 59	0 43	:::	12 10	3.2	0 27	.7
45	4 17	19 39	0 36	2 24	12 12	3.0	0 22	.9
40	4 34	19 22	0 32	1 59	12 14	2.8	0 18	1.0
35	4 48	19 8	0 29	1 44	12 15	2.6	0 15	1.2
30	4 60	18 56	0 27	1 35	12 17	2.5	0 12	1.3
20	5 20	18 35	0 24	1 23	12 19	2.3	0 7	1.5
10	5 38	18 18	0 23	1 17	12 21	2.1	0 3	1.7
0	5 54	18 1	0 22	1 14	12 23	1.9	...	.0
10	6 10	17 45	0 23	1 15	12 25	1.7	...	.0
20	6 28	17 28	0 24	1 18	12 27	1.5	...	.0
30	6 47	17 8	0 26	1 25	12 30	1.3	...	.0
35	6 59	16 57	0 28	1 30	12 31	1.2	...	.0
40	7 12	16 43	0 30	1 36	12 32	1.0	...	.0
45	7 27	16 28	0 33	1 45	12 34	.9	...	.0
50	7 46	16 9	0 37	1 57	12 36	.7	...	.0
55	8 11	15 44	0 44	2 14	12 39	.4	...	.0
60	8 45	15 10	0 54	2 40	12 42	.1	...	.0

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	90 11.5 134 5 46.8 -150	279 28.7 -13 22.8	81 32.0 7 50.7					
2	119 14.3 135 5 16.7 -149	309 33.4 -13 22.8	111 36.8 7 50.6					
4	148 17.4 135 4 46.7 -149	339 38.1 -13 22.7	141 41.6 7 50.5					
6	177 20.6 136 4 16.5 -148	9 42.7 -13 22.7	171 46.5 7 50.5					
8	206 24.1 136 3 46.4 -148	39 47.4 -13 22.6	201 51.3 7 50.4					
10	235 27.8 136 3 16.2 -147	69 52.1 -13 22.5	231 56.1 7 50.3					
12	264 31.6 136 2 46.1 -147	99 56.8 -13 22.5	262 .9 7 50.3					
14	293 35.6 137 2 15.9 -146	130 1.5 -13 22.4	292 5.7 7 50.2					
16	322 39.8 137 1 45.8 -146	160 6.2 -13 22.4	322 10.6 7 50.2					
18	351 44.1 137 1 15.6 -145	190 10.9 -13 22.3	352 15.4 7 50.1					
20	20 48.6 137 0 45.6 -144	220 15.6 -13 22.2	22 20.2 7 50.0					
22	49 53.2 137 0 15.5 -143	250 20.3 -13 22.2	52 25.0 7 50.0					
Δ		23 0	24 0					

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	2 20.6	-.4	15.8	T <sub>m</sub>	18 34	1.9	58.4 15.9		
12	2 16.2	T <sub>m</sub> ☉	11 h 57.7 min	Starost	6.5 d	Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	8 57	.2	337	-4.2	♃	5 21	.0	31	-2.3
♂	9 16	.1	332	1.2	♄	18 31	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS									
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>								
h	°	'	°	°	'	°	'								
0	180	30.6	22	10.6	250	35.4	225	49.8	7	57.8	221	16.8	10	36.4	
2	210	30.4	22	11.2	280	40.4	255	50.3	7	59.2	251	18.2	10	37.7	
4	240	30.2	22	11.9	310	45.3	285	50.7	8	.6	281	19.6	10	39.1	
6	270	30.0	22	12.5	340	50.2	315	51.2	8	2.0	311	20.9	10	40.4	
8	300	29.8	22	13.2	10	55.1	345	51.6	8	3.4	341	22.3	10	41.7	
10	330	29.6	22	13.8	41	.1	15	52.0	8	4.9	11	23.7	10	43.1	
12	0	29.4	22	14.4	71	5.0	45	52.5	8	6.3	41	25.1	10	44.4	
14	30	29.2	22	15.1	101	9.9	75	52.9	8	7.7	71	26.5	10	45.8	
16	60	29.0	22	15.7	131	14.9	105	53.3	8	9.1	101	27.8	10	47.1	
18	90	28.8	22	16.3	161	19.8	135	53.7	8	10.6	131	29.2	10	48.4	
20	120	28.6	22	16.9	191	24.7	165	54.2	8	12.0	161	30.6	10	49.8	
22	150	28.4	22	17.6	221	29.6	195	54.6	8	13.4	191	32.0	10	51.1	
Δ		-1		3				2		7			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 49	21 8	1 25	:::	13 35	3.7	0 42	.1
55	3 29	20 28	0 54	:::	13 30	3.4	0 43	.4
50	3 56	20 1	0 43	:::	13 27	3.1	0 43	.7
45	4 17	19 40	0 36	2 25	13 24	2.9	0 43	.9
40	4 33	19 23	0 32	1 59	13 21	2.7	0 43	1.0
35	4 47	19 9	0 29	1 44	13 19	2.6	0 44	1.2
30	4 59	18 57	0 27	1 35	13 17	2.5	0 44	1.3
20	5 20	18 36	0 24	1 23	13 14	2.3	0 44	1.5
10	5 38	18 18	0 23	1 17	13 11	2.1	0 45	1.7
0	5 54	18 2	0 22	1 14	13 9	1.9	0 45	1.9
10	6 11	17 45	0 23	1 15	13 6	1.7	0 45	2.1
20	6 28	17 28	0 24	1 18	13 4	1.5	0 46	2.3
30	6 48	17 8	0 26	1 25	13 1	1.3	0 46	2.5
35	6 59	16 56	0 28	1 30	12 59	1.2	0 46	2.6
40	7 12	16 43	0 30	1 36	12 57	1.0	0 46	2.8
45	7 28	16 27	0 33	1 45	12 55	.9	0 47	2.9
50	7 47	16 8	0 38	1 57	12 52	.7	0 47	3.2
55	8 12	15 43	0 44	2 15	12 49	.4	0 48	3.4
60	8 47	15 9	0 55	2 41	12 45	.1	0 48	3.8

UT	MESEC				JUPITER		SATURN								
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>							
h	°	'	°	'	°	'	°	'							
0	78	57.9	137	-0	14.4	-143	280	25.0	-13	22.1	82	29.8	7	49.9	
2	108	2.7	137	-0	44.4	-142	310	29.7	-13	22.1	112	34.6	7	49.8	
4	137	7.7	137	-1	14.2	-141	340	34.4	-13	22.0	142	39.4	7	49.8	
6	166	12.7	137	-1	44.0	-140	10	39.1	-13	22.0	172	44.3	7	49.7	
8	195	17.8	137	-2	13.7	-139	40	43.8	-13	21.9	202	49.1	7	49.7	
10	224	23.0	136	-2	43.2	-138	70	48.6	-13	21.9	232	53.9	7	49.6	
12	253	28.2	136	-3	12.7	-137	100	53.3	-13	21.8	262	58.7	7	49.5	
14	282	33.5	136	-3	42.1	-136	130	58.0	-13	21.7	293	3.5	7	49.5	
16	311	38.8	136	-4	11.3	-135	161	2.7	-13	21.7	323	8.3	7	49.4	
18	340	44.2	135	-4	40.4	-134	191	7.4	-13	21.6	353	13.1	7	49.3	
20	9	49.6	135	-5	9.4	-133	221	12.1	-13	21.6	23	17.9	7	49.3	
22	38	55.0	134	-5	38.3	-131	251	16.8	-13	21.5	53	22.7	7	49.2	
Δ								24		0			24		0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	2	11.7	-4	15.8	T <sub>m</sub>	19 19	1.9	57.7	15.7
12	2	7.1	T <sub>m</sub> ☉	11 h 57.9 min	Starost	7.5 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 57	.2	336	-4.2	♃	5 18	.0	31	-2.3
♂	9 14	.1	332	1.2	♄	18 27	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS									
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>								
h	°	'	°	°	'	°	'								
0	180	28.2	22	18.2	251	34.6	225	55.0	8	14.9	221	33.3	10	52.5	
2	210	28.0	22	18.8	281	39.5	255	55.4	8	16.3	251	34.7	10	53.8	
4	240	27.8	22	19.4	311	44.4	285	55.8	8	17.7	281	36.1	10	55.1	
6	270	27.6	22	20.0	341	49.4	315	56.2	8	19.2	311	37.5	10	56.5	
8	300	27.3	22	20.6	11	54.3	345	56.6	8	20.6	341	38.8	10	57.8	
10	330	27.1	22	21.2	41	59.2	15	57.0	8	22.0	11	40.2	10	59.1	
12	0	26.9	22	21.8	72	4.1	45	57.4	8	23.5	41	41.6	11	.4	
14	30	26.7	22	22.4	102	9.1	75	57.8	8	24.9	71	43.0	11	1.8	
16	60	26.5	22	23.0	132	14.0	105	58.2	8	26.4	101	44.3	11	3.1	
18	90	26.3	22	23.6	162	18.9	135	58.6	8	27.8	131	45.7	11	4.4	
20	120	26.1	22	24.2	192	23.9	165	59.0	8	29.2	161	47.1	11	5.8	
22	150	25.9	22	24.8	222	28.8	195	59.3	8	30.7	191	48.5	11	7.1	
Δ		-1		3				2		7			7		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 48	21 9	1 26	:::	15 5	3.7	0 45	.1
55	3 28	20 29	0 55	:::	14 52	3.4	0 53	.5
50	3 55	20 1	0 43	:::	14 42	3.1	0 59	.7
45	4 16	19 40	0 37	2 25	14 34	2.9	1 4	.9
40	4 33	19 24	0 32	1 60	14 27	2.7	1 8	1.1
35	4 47	19 9	0 29	1 45	14 22	2.6	1 12	1.2
30	4 59	18 57	0 27	1 35	14 17	2.5	1 15	1.3
20	5 20	18 36	0 24	1 23	14 8	2.3	1 20	1.5
10	5 38	18 18	0 23	1 17	14 1	2.1	1 25	1.7
0	5 54	18 2	0 22	1 14	13 54	1.9	1 30	1.9
10	6 11	17 45	0 23	1 15	13 47	1.7	1 35	2.1
20	6 28	17 28	0 24	1 18	13 40	1.6	1 40	2.3
30	6 48	17 8	0 26	1 25	13 32	1.3	1 46	2.5
35	6 60	16 56	0 28	1 30	13 27	1.2	1 49	2.6
40	7 13	16 43	0 30	1 37	13 22	1.1	1 53	2.7
45	7 29	16 27	0 33	1 45	13 16	.9	1 57	2.9
50	7 48	16 8	0 38	1 58	13 8	.7	2 3	3.1
55	8 13	15 43	0 44	2 15	12 59	.5	2 10	3.4
60	8 48	15 8	0 55	2 41	12 48	.2	2 18	3.7

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	68	.4	134	-6	6.9	-130	281	21.5	-13	21.5	83	27.5	7	49.1
2	97	5.8	133	-6	35.5	-129	311	26.3	-13	21.4	113	32.4	7	49.1
4	126	11.2	133	-7	3.8	-128	341	31.0	-13	21.4	143	37.2	7	49.0
6	155	16.6	132	-7	32.0	-126	11	35.7	-13	21.3	173	42.0	7	48.9
8	184	22.0	132	-8	.0	-125	41	40.4	-13	21.3	203	46.8	7	48.9
10	213	27.3	131	-8	27.8	-123	71	45.2	-13	21.2	233	51.6	7	48.8
12														

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 25.7	22 25.4	252 33.7	225 59.7	8 32.1	221 49.8	11 8.4
2	210 25.5	22 26.0	282 38.6	256 .1	8 33.6	251 51.2	11 9.7
4	240 25.2	22 26.6	312 43.6	286 .5	8 35.0	281 52.6	11 11.1
6	270 25.0	22 27.1	342 48.5	316 .8	8 36.5	311 53.9	11 12.4
8	300 24.8	22 27.7	12 53.4	346 1.2	8 37.9	341 55.3	11 13.7
10	330 24.6	22 28.3	42 58.4	16 1.5	8 39.4	11 56.7	11 15.0
12	0 24.4	22 28.8	73 3.3	46 1.9	8 40.8	41 58.1	11 16.3
14	30 24.2	22 29.4	103 8.2	76 2.3	8 42.3	71 59.4	11 17.7
16	60 24.0	22 30.0	133 13.1	106 2.6	8 43.7	102 .8	11 19.0
18	90 23.7	22 30.5	163 18.1	136 3.0	8 45.2	132 2.2	11 20.3
20	120 23.5	22 31.1	193 23.0	166 3.3	8 46.6	162 3.5	11 21.6
22	150 23.3	22 31.6	223 27.9	196 3.6	8 48.1	192 4.9	11 22.9
Δ	-1	3		2	7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 46	21 11	1 28	:::	16 35	3.8	0 48	.2
55	3 27	20 30	0 55	:::	16 13	3.4	1 4	.5
50	3 54	20 2	0 43	:::	15 56	3.1	1 15	.8
45	4 16	19 41	0 37	2 26	15 43	2.9	1 25	1.0
40	4 32	19 24	0 32	1 60	15 33	2.7	1 33	1.1
35	4 47	19 10	0 29	1 45	15 24	2.6	1 40	1.3
30	4 59	18 58	0 27	1 35	15 16	2.5	1 46	1.4
20	5 20	18 37	0 24	1 23	15 2	2.3	1 57	1.6
10	5 38	18 19	0 23	1 17	14 50	2.1	2 7	1.8
0	5 55	18 2	0 22	1 15	14 39	2.0	2 15	1.9
10	6 11	17 45	0 23	1 15	14 29	1.8	2 24	2.1
20	6 29	17 28	0 24	1 18	14 17	1.6	2 34	2.3
30	6 49	17 7	0 26	1 25	14 4	1.5	2 45	2.5
35	7 0	16 56	0 28	1 30	13 56	1.3	2 51	2.6
40	7 14	16 42	0 30	1 37	13 48	1.2	2 59	2.7
45	7 30	16 27	0 33	1 46	13 38	1.1	3 7	2.9
50	7 49	16 7	0 38	1 58	13 26	.9	3 18	3.1
55	8 14	15 42	0 44	2 15	13 11	.6	3 31	3.4
60	8 50	15 6	0 55	2 42	12 52	.2	3 48	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	57 2.9	126 -11	36.5 -112		282 18.2	-13 20.9	84 25.2	7 48.3
2	86 7.7	125 -12	2.5 -111		312 23.0	-13 20.9	114 30.0	7 48.2
4	115 12.4	124 -12	28.3 -109		342 27.7	-13 20.8	144 34.8	7 48.2
6	144 16.9	124 -12	53.8 -107		12 32.5	-13 20.8	174 39.6	7 48.1
8	173 21.4	123 -13	19.0 -105		42 37.2	-13 20.7	204 44.4	7 48.0
10	202 25.7	122 -13	44.0 -104		72 41.9	-13 20.7	234 49.2	7 48.0
12	231 29.9	121 -14	8.7 -102		102 46.7	-13 20.6	264 54.0	7 47.9
14	260 34.0	120 -14	33.0 -100		132 51.4	-13 20.6	294 58.8	7 47.8
16	289 38.0	119 -14	57.1 -98		162 56.1	-13 20.5	325 3.6	7 47.7
18	318 41.8	118 -15	20.9 -96		193 .9	-13 20.5	355 8.3	7 47.7
20	347 45.4	118 -15	44.3 -94		223 5.6	-13 20.5	25 13.1	7 47.6
22	16 48.9	117 -16	7.5 -92		253 10.4	-13 20.4	55 17.9	7 47.5
Δ					24	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	1 52.8	-.4	15.8	T <sub>m</sub>	20 51	2.0	56.5 15.4		
12	1 47.8	T <sub>m☉</sub>	11 h 58.2 min	Starost	9.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♂	8 56	.2	334	-4.2	♄	5 10	.0	31	-2.3
♂	9 12	.1	330	1.2	♂	18 19	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 23.1	22 32.2	253 32.9	226 4.0	8 49.6	222 6.3	11 24.2
2	210 22.9	22 32.7	283 37.8	256 4.3	8 51.0	252 7.7	11 25.6
4	240 22.7	22 33.3	313 42.7	286 4.7	8 52.5	282 9.0	11 26.9
6	270 22.4	22 33.8	343 47.6	316 5.0	8 53.9	312 10.4	11 28.2
8	300 22.2	22 34.4	13 52.6	346 5.3	8 55.4	342 11.8	11 29.5
10	330 22.0	22 34.9	43 57.5	16 5.6	8 56.9	12 13.1	11 30.8
12	0 21.8	22 35.5	74 2.4	46 6.0	8 58.3	42 14.5	11 32.1
14	30 21.6	22 36.0	104 7.3	76 6.3	8 59.8	72 15.9	11 33.4
16	60 21.3	22 36.5	134 12.3	106 6.6	9 1.3	102 17.2	11 34.7
18	90 21.1	22 37.1	164 17.2	136 6.9	9 2.7	132 18.6	11 36.0
20	120 20.9	22 37.6	194 22.1	166 7.2	9 4.2	162 20.0	11 37.4
22	150 20.7	22 38.1	224 27.1	196 7.5	9 5.7	192 21.4	11 38.7
Δ	-1	3		2	7	7	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 45	21 13	1 29	:::	18 5	3.7	0 53	.3
55	3 26	20 32	0 55	:::	17 33	3.3	1 17	.7
50	3 54	20 3	0 43	:::	17 10	3.0	1 35	1.0
45	4 15	19 42	0 37	2 27	16 52	2.8	1 49	1.2
40	4 32	19 25	0 32	2 0	16 38	2.7	2 1	1.3
35	4 46	19 11	0 29	1 45	16 26	2.6	2 11	1.4
30	4 59	18 58	0 27	1 35	16 15	2.5	2 20	1.5
20	5 20	18 37	0 24	1 23	15 57	2.3	2 35	1.7
10	5 38	18 19	0 23	1 17	15 41	2.2	2 49	1.9
0	5 55	18 2	0 22	1 15	15 27	2.0	3 2	2.0
10	6 11	17 45	0 23	1 15	15 12	1.9	3 15	2.1
20	6 29	17 28	0 24	1 18	14 57	1.8	3 28	2.3
30	6 49	17 7	0 26	1 25	14 39	1.6	3 44	2.5
35	7 1	16 56	0 28	1 30	14 29	1.5	3 54	2.6
40	7 15	16 42	0 30	1 37	14 17	1.4	4 4	2.7
45	7 30	16 26	0 33	1 46	14 3	1.3	4 17	2.8
50	7 50	16 6	0 38	1 58	13 47	1.1	4 32	3.0
55	8 15	15 41	0 44	2 15	13 26	.8	4 51	3.3
60	8 51	15 5	0 56	2 42	12 58	.4	5 18	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	45 52.3	116 -16	30.3 -90		283 15.1	-13 20.4	85 22.7	7 47.5
2	74 55.5	115 -16	52.8 -88		313 19.9	-13 20.3	115 27.5	7 47.4
4	103 58.5	114 -17	14.9 -86		343 24.6	-13 20.3	145 32.3	7 47.3
6	133 1.4	113 -17	36.7 -83		13 29.4	-13 20.3	175 37.1	7 47.2
8	162 4.1	112 -17	58.2 -81		43 34.1	-13 20.2	205 41.9	7 47.2
10	191 6.7	111 -18	19.2 -79		73 38.9	-13 20.2	235 46.7	7 47.1
12	220 9.1	111 -18	40.0 -77		103 43.6	-13 20.1	265 51.5	7 47.0
14	249 11.3	110 -19	.3 -75		133 48.4	-13 20.1	295 56.2	7 46.9
16	278 13.3	109 -19	20.3 -72		163 53.1	-13 20.1	326 1.0	7 46.9
18	307 15.2	108 -19	39.8 -70		193 57.9	-13 20.0	356 5.8	7 46.8
20	336 16.9	107 -19	59.0 -68		224 2.7	-13 20.0	26 10.6	7 46.7
22	5 18.4	107 -20	17.8 -65		254 7.4	-13 19.9	56 15.4	7 46.6
Δ					24	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min s	s / ' / "	' / "	h min	min	' / "	' / "		
00	1 42.9	-.4	15.8	T <sub>m</sub>	21 38	2.0	55.9 15.2		
12	1 37.7	T <sub>m☉</sub>	11 h 58.4 min	Starost	10.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 20.4 22 38.6	254 32.0	226 7.8 9 7.1	222 22.7 11 40.0			
2	210 20.2 22 39.1	284 36.9	256 8.1 9 8.6	252 24.1 11 41.3			
4	240 20.0 22 39.6	314 41.8	286 8.4 9 10.1	282 25.5 11 42.6			
6	270 19.8 22 40.2	344 46.8	316 8.7 9 11.5	312 26.8 11 43.9			
8	300 19.5 22 40.7	14 51.7	346 9.0 9 13.0	342 28.2 11 45.2			
10	330 19.3 22 41.2	44 56.6	16 9.3 9 14.5	12 29.6 11 46.5			
12	0 19.1 22 41.7	75 1.6	46 9.6 9 16.0	42 30.9 11 47.8			
14	30 18.9 22 42.2	105 6.5	76 9.9 9 17.4	72 32.3 11 49.1			
16	60 18.6 22 42.7	135 11.4	106 10.1 9 18.9	102 33.7 11 50.4			
18	90 18.4 22 43.2	165 16.3	136 10.4 9 20.4	132 35.0 11 51.7			
20	120 18.2 22 43.7	195 21.3	166 10.7 9 21.9	162 36.4 11 53.0			
22	150 17.9 22 44.2	225 26.2	196 11.0 9 23.4	192 37.8 11 54.3			
Δ	-1 3		1 7	7 6			

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	34 19.7 106 -20 36.2 -63		284 12.2 -13 19.9		86 20.2 7 46.6			
2	63 20.9 105 -20 54.1 -61		314 17.0 -13 19.9		116 25.0 7 46.5			
4	92 21.8 105 -21 11.7 -58		344 21.7 -13 19.8		146 29.7 7 46.4			
6	121 22.7 104 -21 28.8 -56		14 26.5 -13 19.8		176 34.5 7 46.3			
8	150 23.3 103 -21 45.5 -53		44 31.2 -13 19.8		206 39.3 7 46.3			
10	179 23.7 103 -22 1.7 -51		74 36.0 -13 19.7		236 44.1 7 46.2			
12	208 24.0 102 -22 17.6 -48		104 40.8 -13 19.7		266 48.9 7 46.1			
14	237 24.2 102 -22 32.9 -46		134 45.6 -13 19.7		296 53.6 7 46.0			
16	266 24.1 101 -22 47.8 -43		164 50.3 -13 19.6		326 58.4 7 45.9			
18	295 23.9 101 -23 2.3 -41		194 55.1 -13 19.6		357 3.2 7 45.9			
20	324 23.6 100 -23 16.3 -38		224 59.9 -13 19.6		27 8.0 7 45.8			
22	353 23.0 100 -23 29.8 -35		255 4.7 -13 19.5		57 12.8 7 45.7			
Δ			24 0		24 0			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 44	21 14	1 31	:::	19 35	3.5	0 60	.5
55	3 25	20 33	0 56	:::	18 51	3.0	1 33	1.0
50	3 53	20 4	0 44	:::	18 22	2.8	1 58	1.2
45	4 15	19 43	0 37	2 28	17 60	2.7	2 17	1.4
40	4 32	19 26	0 32	2 1	17 42	2.6	2 32	1.5
35	4 46	19 11	0 29	1 45	17 27	2.5	2 45	1.6
30	4 59	18 59	0 27	1 35	17 14	2.4	2 57	1.7
20	5 20	18 37	0 24	1 23	16 52	2.3	3 16	1.8
10	5 38	18 19	0 23	1 17	16 33	2.2	3 34	2.0
0	5 55	18 2	0 22	1 15	16 15	2.1	3 50	2.1
10	6 12	17 45	0 23	1 15	15 58	2.0	4 6	2.2
20	6 29	17 28	0 24	1 18	15 39	1.9	4 23	2.3
30	6 50	17 7	0 26	1 25	15 18	1.8	4 43	2.4
35	7 2	16 55	0 28	1 30	15 5	1.7	4 55	2.5
40	7 15	16 42	0 30	1 37	14 51	1.6	5 9	2.6
45	7 31	16 26	0 33	1 46	14 34	1.5	5 25	2.7
50	7 51	16 6	0 38	1 58	14 13	1.4	5 45	2.9
55	8 16	15 40	0 45	2 16	13 46	1.2	6 11	3.2
60	8 53	15 4	0 56	2 42	13 7	.7	6 48	3.6

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	' / "	h min	min	' / "	' / "	' / "
00	1 32.6	- .4	15.8	T <sub>m</sub>	22 27	2.1	55.4	15.1
12	1 27.2	T <sub>m</sub> ☉	11 h 58.5 min	Starost 11.5 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	' / "	°	' / "	☿	h min	' / "	°	' / "
☉	8 56	.2	333	-4.2	☿	5 2	.0	31	-2.3
♂	9 10	.1	329	1.2	♂	18 12	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 17.7 22 44.6	255 31.1	226 11.2 9 24.8	222 39.1 11 55.6			
2	210 17.5 22 45.1	285 36.1	256 11.5 9 26.3	252 40.5 11 56.8			
4	240 17.2 22 45.6	315 41.0	286 11.8 9 27.8	282 41.9 11 58.1			
6	270 17.0 22 46.1	345 45.9	316 12.0 9 29.3	312 43.2 11 59.4			
8	300 16.8 22 46.6	15 50.8	346 12.3 9 30.8	342 44.6 12 .7			
10	330 16.5 22 47.0	45 55.8	16 12.5 9 32.2	12 46.0 12 2.0			
12	0 16.3 22 47.5	76 .7	46 12.8 9 33.7	42 47.3 12 3.3			
14	30 16.1 22 48.0	106 5.6	76 13.0 9 35.2	72 48.7 12 4.6			
16	60 15.8 22 48.4	136 10.6	106 13.3 9 36.7	102 50.1 12 5.9			
18	90 15.6 22 48.9	166 15.5	136 13.5 9 38.2	132 51.4 12 7.2			
20	120 15.4 22 49.4	196 20.4	166 13.7 9 39.7	162 52.8 12 8.4			
22	150 15.1 22 49.8	226 25.3	196 14.0 9 41.2	192 54.1 12 9.7			
Δ	-1 2		1 7	7 6			

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	22 22.4 100 -23 42.9 -33		285 9.4 -13 19.5		87 17.5 7 45.6			
2	51 21.6 99 -23 55.5 -30		315 14.2 -13 19.5		117 22.3 7 45.6			
4	80 20.6 99 -24 7.6 -28		345 19.0 -13 19.5		147 27.1 7 45.5			
6	109 19.5 99 -24 19.2 -25		15 23.8 -13 19.4		177 31.9 7 45.4			
8	138 18.3 99 -24 30.3 -22		45 28.5 -13 19.4		207 36.6 7 45.3			
10	167 17.0 99 -24 40.9 -20		75 33.3 -13 19.4		237 41.4 7 45.2			
12	196 15.5 99 -24 51.1 -17		105 38.1 -13 19.3		267 46.2 7 45.2			
14	225 14.0 98 -25 .7 -15		135 42.9 -13 19.3		297 50.9 7 45.1			
16	254 12.3 99 -25 9.8 -12		165 47.7 -13 19.3		327 55.7 7 45.0			
18	283 10.5 99 -25 18.5 -9		195 52.5 -13 19.3		358 .5 7 44.9			
20	312 8.7 99 -25 26.6 -7		225 57.3 -13 19.2		28 5.3 7 44.8			
22	341 6.7 99 -25 34.2 -4		256 2.1 -13 19.2		58 10.0 7 44.7			
Δ			24 0		24 0			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 43	21 16	1 32	:::	20 58	2.8	1 12	.9
55	3 24	20 34	0 56	:::	20 4	2.6	1 56	1.4
50	3 53	20 5	0 44	:::	19 29	2.5	2 27	1.6
45	4 14	19 43	0 37	2 28	19 3	2.4	2 50	1.7
40	4 32	19 26	0 32	2 1	18 43	2.3	3 8	1.8
35	4 46	19 12	0 29	1 46	18 26	2.3	3 24	1.8
30	4 59	18 59	0 27	1 36	18 12	2.3	3 38	1.9
20	5 20	18 38	0 24	1 23	17 47	2.2	4 1	2.0
10	5 38	18 19	0 23	1 17	17 26	2.2	4 21	2.1
0	5 55	18 2	0 22	1 15	17 6	2.1	4 40	2.1
10	6 12	17 46	0 23	1 15	16 46	2.1	4 58	2.2
20	6 30	17 28	0 24	1 18	16 25	2.1	5 19	2.3
30	6 50	17 7	0 26	1 25	16 1	2.0	5 42	2.4
35	7 2	16 55	0 28	1 30	15 47	2.0	5 56	2.4
40	7 16	16 42	0 30	1 37	15 30	1.9	6 12	2.5
45	7 32	16 25	0 33	1 46	15 10	1.8	6 31	2.5
50	7 52	16 6	0 38	1 58	14 46	1.8	6 55	2.6
55	8 18	15 40	0 45	2 16	14 13	1.6	7 27	2.8
60	8 54	15 3	0 56	2 43	13 24	1.3	8 15	3.2

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	' / "	h min	min	' / "	' / "	' / "
00	1 21.9	- .5	15.8	T <sub>m</sub>	23 18	2.2	55.0	15.0
12	1 16.5	T <sub>m</sub> ☉	11 h 58.7 min	Starost 12.5 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	' / "	°	' / "	☿	h min	' / "	°	' / "
☉	8 55	.2	332						

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 14.9	22 50.3	256 30.3	226 14.2	9 42.6	222 55.5	12 11.0
2	210 14.7	22 50.7	286 35.2	256 14.4	9 44.1	252 56.9	12 12.3
4	240 14.4	22 51.2	316 40.1	286 14.7	9 45.6	282 58.2	12 13.6
6	270 14.2	22 51.6	346 45.1	316 14.9	9 47.1	312 59.6	12 14.9
8	300 13.9	22 52.0	16 50.0	346 15.1	9 48.6	343 1.0	12 16.1
10	330 13.7	22 52.5	46 54.9	16 15.3	9 50.1	13 2.3	12 17.4
12	0 13.5	22 52.9	76 59.8	46 15.5	9 51.6	43 3.7	12 18.7
14	30 13.2	22 53.4	107 4.8	76 15.8	9 53.1	73 5.1	12 20.0
16	60 13.0	22 53.8	137 9.7	106 16.0	9 54.6	103 6.4	12 21.3
18	90 12.7	22 54.2	167 14.6	136 16.2	9 56.1	133 7.8	12 22.5
20	120 12.5	22 54.6	197 19.5	166 16.4	9 57.6	163 9.1	12 23.8
22	150 12.3	22 55.1	227 24.5	196 16.6	9 59.0	193 10.5	12 25.1
Δ	-1	2		1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 42	21 17	1 34	:::	22 5	1.8	1 34	1.7
55	3 24	20 35	0 56	:::	21 5	2.0	2 29	1.9
50	3 52	20 6	0 44	:::	20 28	2.0	3 4	2.0
45	4 14	19 44	0 37	2 29	20 1	2.1	3 30	2.0
40	4 31	19 27	0 33	2 1	19 39	2.1	3 51	2.0
35	4 46	19 12	0 29	1 46	19 22	2.1	4 8	2.1
30	4 58	18 60	0 27	1 36	19 6	2.1	4 23	2.1
20	5 20	18 38	0 24	1 24	18 40	2.1	4 48	2.1
10	5 38	18 20	0 23	1 17	18 18	2.1	5 10	2.1
0	5 55	18 3	0 22	1 15	17 57	2.1	5 31	2.1
10	6 12	17 46	0 23	1 15	17 37	2.1	5 51	2.2
20	6 30	17 28	0 24	1 18	17 14	2.2	6 13	2.2
30	6 51	17 7	0 26	1 25	16 49	2.2	6 38	2.2
35	7 3	16 55	0 28	1 30	16 33	2.2	6 53	2.2
40	7 16	16 41	0 30	1 37	16 16	2.2	7 11	2.2
45	7 33	16 25	0 34	1 46	15 55	2.2	7 32	2.2
50	7 53	16 5	0 38	1 59	15 28	2.2	7 58	2.2
55	8 18	15 39	0 45	2 16	14 52	2.2	8 34	2.3
60	8 55	15 2	0 56	2 43	13 55	2.2	9 30	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	10 4.7	99 -25	41.3	-1	286 6.8	-13 19.2	88 14.8	7 44.7
2	39 2.6	99 -25	47.8	1	316 11.6	-13 19.2	118 19.6	7 44.6
4	68 .5	100 -25	53.9	4	346 16.4	-13 19.1	148 24.3	7 44.5
6	96 58.3	100 -25	59.4	6	16 21.2	-13 19.1	178 29.1	7 44.4
8	125 56.1	100 -26	4.4	9	46 26.0	-13 19.1	208 33.9	7 44.3
10	154 53.8	101 -26	8.9	12	76 30.8	-13 19.1	238 38.6	7 44.2
12	183 51.5	101 -26	12.9	14	106 35.6	-13 19.0	268 43.4	7 44.2
14	212 49.2	102 -26	16.3	17	136 40.4	-13 19.0	298 48.2	7 44.1
16	241 46.9	102 -26	19.2	19	166 45.2	-13 19.0	328 52.9	7 44.0
18	270 44.6	103 -26	21.6	22	196 50.0	-13 19.0	358 57.7	7 43.9
20	299 42.3	104 -26	23.4	24	226 54.8	-13 19.0	29 2.4	7 43.8
22	328 40.1	104 -26	24.8	27	256 59.6	-13 18.9	59 7.2	7 43.7
Δ					24	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	1 11.0	- .5	15.8	T <sub>m</sub>	1.0	54.7	14.9		
12	1 5.4	T <sub>m☉</sub>	11 h 58.9 min	Starost 13.5 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	8 55	.2	331	-4.2	♄	4 55	.0	31	-2.3
♂	9 8	.1	327	1.2	♅	18 4	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 12.0	22 55.5	257 29.4	226 16.8	10 .5	223 11.9	12 26.3
2	210 11.8	22 55.9	287 34.3	256 17.0	10 2.0	253 13.2	12 27.6
4	240 11.5	22 56.3	317 39.3	286 17.2	10 3.5	283 14.6	12 28.9
6	270 11.3	22 56.7	347 44.2	316 17.4	10 5.0	313 15.9	12 30.2
8	300 11.1	22 57.1	17 49.1	346 17.5	10 6.5	343 17.3	12 31.4
10	330 10.8	22 57.5	47 54.0	16 17.7	10 8.0	13 18.7	12 32.7
12	0 10.6	22 57.9	77 59.0	46 17.9	10 9.5	43 20.0	12 34.0
14	30 10.3	22 58.3	108 3.9	76 18.1	10 11.0	73 21.4	12 35.2
16	60 10.1	22 58.7	138 8.8	106 18.3	10 12.5	103 22.7	12 36.5
18	90 9.8	22 59.1	168 13.8	136 18.4	10 14.0	133 24.1	12 37.8
20	120 9.6	22 59.5	198 18.7	166 18.6	10 15.5	163 25.5	12 39.0
22	150 9.3	22 59.9	228 23.6	196 18.8	10 17.0	193 26.8	12 40.3
Δ	-1	2		1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 18	1 35	:::	22 48	1.0	2 15	2.6
55	3 23	20 36	0 57	:::	21 52	1.4	3 14	2.4
50	3 52	20 7	0 44	:::	21 16	1.6	3 51	2.4
45	4 14	19 45	0 37	2 30	20 50	1.7	4 19	2.3
40	4 31	19 27	0 33	2 2	20 29	1.8	4 40	2.3
35	4 46	19 13	0 30	1 46	20 12	1.8	4 58	2.3
30	4 58	18 60	0 27	1 36	19 57	1.9	5 13	2.2
20	5 20	18 38	0 24	1 24	19 31	2.0	5 39	2.2
10	5 38	18 20	0 23	1 17	19 9	2.0	6 1	2.2
0	5 55	18 3	0 22	1 15	18 49	2.1	6 22	2.1
10	6 12	17 46	0 23	1 15	18 28	2.1	6 43	2.1
20	6 30	17 28	0 24	1 18	18 6	2.2	7 5	2.0
30	6 51	17 7	0 26	1 25	17 41	2.3	7 31	2.0
35	7 3	16 55	0 28	1 30	17 25	2.3	7 46	2.0
40	7 17	16 41	0 30	1 37	17 8	2.4	8 4	1.9
45	7 33	16 25	0 34	1 46	16 47	2.4	8 25	1.9
50	7 53	16 5	0 38	1 59	16 20	2.5	8 52	1.8
55	8 19	15 39	0 45	2 16	15 44	2.7	9 28	1.7
60	8 56	15 1	0 56	2 44	14 47	3.0	10 26	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	357 37.8	105 -26	25.6	29	287 4.5	-13 18.9	89 12.0	7 43.7
2	26 35.6	106 -26	25.8	32	317 9.3	-13 18.9	119 16.7	7 43.6
4	55 33.5	107 -26	25.6	34	347 14.1	-13 18.9	149 21.5	7 43.5
6	84 31.4	107 -26	24.8	37	17 18.9	-13 18.9	179 26.3	7 43.4
8	113 29.4	108 -26	23.5	39	47 23.7	-13 18.8	209 31.0	7 43.3
10	142 27.5	109 -26	21.7	41	77 28.5	-13 18.8	239 35.8	7 43.2
12	171 25.6	110 -26	19.4	44	107 33.3	-13 18.8	269 40.5	7 43.1
14	200 23.9	111 -26	16.6	46	137 38.1	-13 18.8	299 45.3	7 43.1
16	229 22.2	112 -26	13.2	48	167 43.0	-13 18.8	329 50.0	7 43.0
18	258 20.7	113 -26	9.4	51	197 47.8	-13 18.8	359 54.8	7 42.9
20	287 19.3	114 -26	5.0	53	227 52.6	-13 18.7	29 59.6	7 42.8
22	316 18.0	115 -26	.1	55	257 57.4	-13 18.7	60 4.3	7 42.7
Δ					24	0	24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	0 59.8	- .5	15.8	T <sub>m</sub>	0 10	2.1	54.4	14.8	
12	0 54.0	T <sub>m☉</sub>	11 h 59.1 min	Starost 14.5 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁									

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	9.1	23	.3	258	28.5	226	18.9	10	18.5	223	28.2	12	41.6
2	210	8.8	23	.7	288	33.5	256	19.1	10	20.0	253	29.5	12	42.8
4	240	8.6	23	1.1	318	38.4	286	19.2	10	21.5	283	30.9	12	44.1
6	270	8.3	23	1.4	348	43.3	316	19.4	10	23.0	313	32.3	12	45.3
8	300	8.1	23	1.8	18	48.3	346	19.5	10	24.5	343	33.6	12	46.6
10	330	7.8	23	2.2	48	53.2	16	19.7	10	26.0	13	35.0	12	47.8
12	0	7.6	23	2.6	78	58.1	46	19.8	10	27.5	43	36.3	12	49.1
14	30	7.3	23	2.9	109	3.0	76	20.0	10	29.0	73	37.7	12	50.4
16	60	7.1	23	3.3	139	8.0	106	20.1	10	30.5	103	39.0	12	51.6
18	90	6.8	23	3.7	169	12.9	136	20.3	10	32.0	133	40.4	12	52.9
20	120	6.6	23	4.0	199	17.8	166	20.4	10	33.6	163	41.8	12	54.1
22	150	6.3	23	4.4	229	22.8	196	20.5	10	35.1	193	43.1	12	55.4
Δ		-1		2				1		8		7		6

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	2 40	21 20	1 37	:::	23 12	.5	3 18	3.3				
55	3 22	20 37	0 57	:::	22 26	1.0	4 13	2.9				
50	3 51	20 7	0 44	:::	21 54	1.2	4 48	2.7				
45	4 13	19 45	0 37	2 30	21 31	1.4	5 14	2.5				
40	4 31	19 28	0 33	2 2	21 12	1.5	5 35	2.4				
35	4 46	19 13	0 30	1 46	20 56	1.6	5 52	2.4				
30	4 58	19 0	0 27	1 36	20 42	1.7	6 7	2.3				
20	5 20	18 39	0 24	1 24	20 18	1.8	6 32	2.2				
10	5 38	18 20	0 23	1 17	19 58	1.9	6 53	2.1				
0	5 56	18 3	0 22	1 15	19 39	2.0	7 13	2.0				
10	6 13	17 46	0 23	1 15	19 20	2.1	7 33	2.0				
20	6 31	17 28	0 24	1 18	18 59	2.2	7 54	1.9				
30	6 52	17 7	0 26	1 25	18 35	2.3	8 19	1.8				
35	7 4	16 55	0 28	1 30	18 21	2.4	8 34	1.7				
40	7 17	16 41	0 30	1 37	18 5	2.5	8 50	1.6				
45	7 34	16 25	0 34	1 46	17 45	2.6	9 10	1.5				
50	7 54	16 4	0 38	1 59	17 21	2.7	9 35	1.4				
55	8 20	15 38	0 45	2 17	16 48	3.0	10 9	1.2				
60	8 58	15 1	0 57	2 44	15 58	3.4	10 59	.8				

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	345	16.9	116	-25	54.8	57	288	2.2	-13	18.7	90	9.1	7	42.6		
2	14	15.8	117	-25	48.9	60	318	7.1	-13	18.7	120	13.8	7	42.5		
4	43	15.0	118	-25	42.6	62	348	11.9	-13	18.7	150	18.6	7	42.4		
6	72	14.3	119	-25	35.7	64	18	16.7	-13	18.7	180	23.3	7	42.3		
8	101	13.8	120	-25	28.4	66	48	21.5	-13	18.7	210	28.1	7	42.3		
10	130	13.4	121	-25	20.6	68	78	26.4	-13	18.7	240	32.8	7	42.2		
12	159	13.2	123	-25	12.3	70	108	31.2	-13	18.6	270	37.6	7	42.1		
14	188	13.2	124	-25	3.6	72	138	36.0	-13	18.6	300	42.3	7	42.0		
16	217	13.4	125	-24	54.3	74	168	40.9	-13	18.6	330	47.1	7	41.9		
18	246	13.8	126	-24	44.7	76	198	45.7	-13	18.6	0	51.8	7	41.8		
20	275	14.4	127	-24	34.5	78	228	50.5	-13	18.6	30	56.6	7	41.7		
22	304	15.1	128	-24	23.9	80	258	55.4	-13	18.6	61	1.3	7	41.6		
Δ								24		0		24		0		

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	s	h min	min	'	'
00	0 48.3	-.5	15.8	T <sub>m</sub>	1 1	2.1	54.2 14.8
12	0 42.4	T <sub>m☉</sub>	11 h 59.3 min	Starost	15.5 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	8 55	.2	329	-4.2	♃	4 47	.0	31	-2.4
♂	9 6	.1	326	1.1	♄	17 57	.0	193	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	6.1	23	4.7	259	27.7	226	20.7	10	36.6	223	44.5	12	56.6
2	210	5.8	23	5.1	289	32.6	256	20.8	10	38.1	253	45.8	12	57.9
4	240	5.6	23	5.4	319	37.5	286	20.9	10	39.6	283	47.2	12	59.1
6	270	5.3	23	5.8	349	42.5	316	21.0	10	41.1	313	48.5	13	.4
8	300	5.1	23	6.1	19	47.4	346	21.1	10	42.6	343	49.9	13	1.6
10	330	4.8	23	6.4	49	52.3	16	21.3	10	44.1	13	51.2	13	2.9
12	0	4.6	23	6.8	79	57.3	46	21.4	10	45.6	43	52.6	13	4.1
14	30	4.3	23	7.1	110	2.2	76	21.5	10	47.1	73	53.9	13	5.3
16	60	4.1	23	7.4	140	7.1	106	21.6	10	48.6	103	55.3	13	6.6
18	90	3.8	23	7.8	170	12.0	136	21.7	10	50.1	133	56.7	13	7.8
20	120	3.6	23	8.1	200	17.0	166	21.8	10	51.6	163	58.0	13	9.1
22	150	3.3	23	8.4	230	21.9	196	21.9	10	53.1	193	59.4	13	10.3
Δ		-1		2				1		8		7		6

φ	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	2 39	21 21	1 38	:::	23 25	.3	4 36	3.5				
55	3 22	20 37	0 57	:::	22 49	.7	5 21	3.1				
50	3 51	20 8	0 44	:::	22 24	1.0	5 52	2.8				
45	4 13	19 46	0 37	2 31	22 4	1.1	6 15	2.6				
40	4 31	19 28	0 33	2 2	21 48	1.3	6 33	2.5				
35	4 46	19 14	0 30	1 46	21 34	1.4	6 49	2.4				
30	4 58	19 1	0 27	1 36	21 22	1.5	7 2	2.3				
20	5 20	18 39	0 24	1 24	21 1	1.6	7 25	2.2				
10	5 39	18 20	0 23	1 17	20 43	1.8	7 44	2.1				
0	5 56	18 3	0 22	1 15	20 27	1.9	8 2	1.9				
10	6 13	17 46	0 23	1 15	20 10	2.0	8 20	1.8				
20	6 31	17 28	0 24	1 18	19 52	2.2	8 40	1.7				
30	6 52	17 7	0 26	1 25	19 31	2.3	9 2	1.6				
35	7 4	16 55	0 28	1 30	19 19	2.4	9 15	1.5				
40	7 18	16 41	0 30	1 37	19 5	2.5	9 29	1.4				
45	7 34	16 24	0 34	1 46	18 48	2.7	9 47	1.2				
50	7 55	16 4	0 38	1 59	18 27	2.8	10 9	1.1				
55	8 21	15 38	0 45	2 17	17 59	3.1	10 37	.8				
60	8 59	15 0	0 57	2 44	17 20	3.5	11 18	.4				

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	333	16.1	129	-24	12.9	82	289	.2	-13	18.6	91	6.1	7	41.5		
2	2	17.3	131	-24	1.4	83	319	5.0	-13	18.6	121	10.8	7	41.4		
4	31	18.7	132	-23	49.5	85	349	9.9	-13	18.6	151	15.5	7	41.3		
6	60	20.4	133	-23	37.2	87	19	14.7	-13	18.6						

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	3.0	23	8.7	260	26.8	226	22.0	10	54.6	224	.7	13	11.5
2	210	2.8	23	9.1	290	31.8	256	22.1	10	56.2	254	2.1	13	12.8
4	240	2.5	23	9.4	320	36.7	286	22.2	10	57.7	284	3.4	13	14.0
6	270	2.3	23	9.7	350	41.6	316	22.2	10	59.2	314	4.8	13	15.3
8	300	2.0	23	10.0	20	46.5	346	22.3	11	.7	344	6.1	13	16.5
10	330	1.8	23	10.3	50	51.5	16	22.4	11	2.2	14	7.5	13	17.7
12	0	1.5	23	10.6	80	56.4	46	22.5	11	3.7	44	8.8	13	19.0
14	30	1.2	23	10.9	111	1.3	76	22.6	11	5.2	74	10.2	13	20.2
16	60	1.0	23	11.2	141	6.2	106	22.6	11	6.7	104	11.5	13	21.4
18	90	.7	23	11.5	171	11.2	136	22.7	11	8.2	134	12.9	13	22.7
20	120	.5	23	11.8	201	16.1	166	22.8	11	9.7	164	14.2	13	23.9
22	150	.2	23	12.1	231	21.0	196	22.8	11	11.3	194	15.6	13	25.1
Δ		-1		2				0		8		7		6

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 38	21 22	1 40	:::	23 33	.2	6 1	3.5		
55	3 22	20 38	0 57	:::	23 6	.5	6 35	3.1		
50	3 51	20 9	0 44	:::	22 46	.8	6 60	2.9		
45	4 13	19 47	0 37	2 31	22 31	1.0	7 19	2.7		
40	4 31	19 29	0 33	2 2	22 18	1.1	7 34	2.5		
35	4 45	19 14	0 30	1 46	22 7	1.2	7 47	2.4		
30	4 58	19 1	0 27	1 36	21 57	1.3	7 58	2.3		
20	5 20	18 39	0 25	1 24	21 41	1.5	8 17	2.1		
10	5 39	18 21	0 23	1 18	21 26	1.7	8 34	2.0		
0	5 56	18 3	0 22	1 15	21 12	1.8	8 49	1.9		
10	6 13	17 46	0 23	1 15	20 58	2.0	9 4	1.7		
20	6 31	17 28	0 24	1 19	20 44	2.1	9 21	1.6		
30	6 52	17 7	0 26	1 25	20 27	2.3	9 39	1.4		
35	7 5	16 55	0 28	1 31	20 17	2.4	9 50	1.3		
40	7 18	16 41	0 30	1 37	20 5	2.5	10 2	1.2		
45	7 35	16 24	0 34	1 47	19 52	2.7	10 17	1.0		
50	7 55	16 4	0 38	1 59	19 35	2.9	10 35	.9		
55	8 22	15 37	0 45	2 17	19 14	3.1	10 57	.6		
60	8 60	14 59	0 57	2 45	18 45	3.5	11 28	.3		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	321	45.1	142	-21	27.8	101	289	58.4	-13	18.5	92	3.0	7	40.4		
2	350	49.0	143	-21	11.5	103	320	3.2	-13	18.5	122	7.7	7	40.3		
4	19	53.1	144	-20	54.8	104	350	8.1	-13	18.5	152	12.4	7	40.2		
6	48	57.4	145	-20	37.7	106	20	12.9	-13	18.5	182	17.2	7	40.1		
8	78	2.0	146	-20	20.3	107	50	17.8	-13	18.5	212	21.9	7	40.0		
10	107	6.8	147	-20	2.6	108	80	22.6	-13	18.5	242	26.7	7	39.9		
12	136	11.8	148	-19	44.5	110	110	27.5	-13	18.5	272	31.4	7	39.8		
14	165	17.0	149	-19	26.1	111	140	32.4	-13	18.5	302	36.1	7	39.7		
16	194	22.5	150	-19	7.4	112	170	37.2	-13	18.5	332	40.9	7	39.6		
18	223	28.2	150	-18	48.3	114	200	42.1	-13	18.5	2	45.6	7	39.6		
20	252	34.0	151	-18	28.9	115	230	47.0	-13	18.5	32	50.3	7	39.5		
22	281	40.1	152	-18	9.3	116	260	51.8	-13	18.5	62	55.1	7	39.4		
Δ								24		0		24		0		

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'
00	0 24.6	-.5	15.8	T <sub>m</sub>	2 38	1.9	54.0
12	0 18.4	T <sub>m</sub> ☉	11 h 59.7 min	Starost	17.5 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♀	8 55	.2	327	-4.2	♀	4 39	.0	31	-2.4
♂	9 4	.1	325	1.1	♂	17 49	.0	193	.9

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	59.9	23	12.3	261	26.0	226	22.9	11	12.8	224	16.9	13	26.3
2	209	59.7	23	12.6	291	30.9	256	23.0	11	14.3	254	18.3	13	27.6
4	239	59.4	23	12.9	321	35.8	286	23.0	11	15.8	284	19.6	13	28.8
6	269	59.2	23	13.2	351	40.7	316	23.1	11	17.3	314	21.0	13	30.0
8	299	58.9	23	13.4	21	45.7	346	23.1	11	18.8	344	22.3	13	31.2
10	329	58.6	23	13.7	51	50.6	16	23.2	11	20.3	14	23.7	13	32.5
12	359	58.4	23	14.0	81	55.5	46	23.2	11	21.8	44	25.0	13	33.7
14	29	58.1	23	14.3	112	.5	76	23.2	11	23.3	74	26.4	13	34.9
16	59	57.9	23	14.5	142	5.4	106	23.3	11	24.9	104	27.7	13	36.1
18	89	57.6	23	14.8	172	10.3	136	23.3	11	26.4	134	29.1	13	37.3
20	119	57.3	23	15.0	202	15.2	166	23.4	11	27.9	164	30.4	13	38.6
22	149	57.1	23	15.3	232	20.2	196	23.4	11	29.4	194	31.8	13	39.8
Δ		-1		1				0		8		7		6

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 38	21 23	1 41	:::	23 37	.1	7 26	3.5		
55	3 21	20 39	0 57	:::	23 19	.4	7 50	3.1		
50	3 51	20 9	0 44	:::	23 5	.7	8 9	2.9		
45	4 13	19 47	0 37	2 32	22 54	.8	8 23	2.7		
40	4 31	19 29	0 33	2 3	22 44	1.0	8 35	2.5		
35	4 45	19 14	0 30	1 47	22 36	1.1	8 45	2.4		
30	4 58	19 2	0 27	1 36	22 29	1.2	8 53	2.3		
20	5 20	18 40	0 25	1 24	22 17	1.4	9 8	2.1		
10	5 39	18 21	0 23	1 18	22 6	1.6	9 21	1.9		
0	5 56	18 4	0 22	1 15	21 56	1.7	9 33	1.8		
10	6 13	17 46	0 23	1 15	21 45	1.9	9 45	1.6		
20	6 32	17 28	0 24	1 19	21 34	2.1	9 58	1.5		
30	6 53	17 7	0 26	1 25	21 22	2.3	10 13	1.3		
35	7 5	16 55	0 28	1 31	21 14	2.4	10 21	1.2		
40	7 19	16 41	0 30	1 37	21 6	2.5	10 31	1.0		
45	7 36	16 24	0 34	1 47	20 56	2.7	10 42	.9		
50	7 56	16 4	0 38	1 59	20 44	2.9	10 55	.7		
55	8 23	15 37	0 45	2 17	20 29	3.1	11 12	.5		
60	9 1	14 59	0 57	2 45	20 9	3.4	11 34	.2		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	310	46.4	153	-17	49.3	117	290	56.7	-13	18.5	92	59.8	7	39.3		
2	339	52.9	153	-17	29.0	118	321	1.6	-13	18.5	123	4.5	7	39.2		
4	8	59.6	154	-17	8.4	119	351	6.4	-13	18.5	153	9.2	7	39.1		
6	38	6.5	155	-16	47.5	120	21	11.3	-13	18.5	183	14.0	7	39.0		
8	67	13.6	155	-16	26.4	121	51	16.2	-13	18.5	213	18.7	7	38.9		
10	96	20.8	156	-16	5.0	122	81	21.0	-13	18.5	243	23.4	7	38.8		
12	125	28.2	156	-15	43.3	123	111	25.9	-13	18.5	273	28.2	7	38.7		
14	154	35.9	157	-15	21.3	124	141	30.8	-13	18.5	303	32.9	7	38.6		
16	183	43.6	15													

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 56.8	23 15.5	262 25.1	226 23.4	11 30.9	224 33.1	13 41.0
2	209 56.5	23 15.8	292 30.0	256 23.4	11 32.4	254 34.5	13 42.2
4	239 56.3	23 16.0	322 35.0	286 23.5	11 33.9	284 35.8	13 43.4
6	269 56.0	23 16.3	352 39.9	316 23.5	11 35.4	314 37.2	13 44.6
8	299 55.8	23 16.5	22 44.8	346 23.5	11 36.9	344 38.5	13 45.8
10	329 55.5	23 16.7	52 49.7	16 23.5	11 38.5	14 39.9	13 47.1
12	359 55.2	23 17.0	82 54.7	46 23.5	11 40.0	44 41.2	13 48.3
14	29 55.0	23 17.2	112 59.6	76 23.5	11 41.5	74 42.6	13 49.5
16	59 54.7	23 17.4	143 4.5	106 23.5	11 43.0	104 43.9	13 50.7
18	89 54.4	23 17.7	173 9.5	136 23.5	11 44.5	134 45.2	13 51.9
20	119 54.2	23 17.9	203 14.4	166 23.5	11 46.0	164 46.6	13 53.1
22	149 53.9	23 18.1	233 19.3	196 23.5	11 47.5	194 47.9	13 54.3
Δ	-1	1		0	8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 24	1 42	:::	23 40	.1	8 49	3.4
55	3 21	20 40	0 58	:::	23 29	.4	9 5	3.1
50	3 50	20 10	0 44	:::	23 21	.6	9 17	2.9
45	4 13	19 48	0 37	2 32	23 14	.8	9 27	2.7
40	4 31	19 30	0 33	2 3	23 8	.9	9 35	2.5
35	4 45	19 15	0 30	1 47	23 3	1.1	9 42	2.4
30	4 58	19 2	0 27	1 36	22 59	1.2	9 48	2.3
20	5 20	18 40	0 25	1 24	22 51	1.4	9 59	2.1
10	5 39	18 21	0 23	1 18	22 44	1.6	10 8	1.9
0	5 56	18 4	0 23	1 15	22 38	1.7	10 16	1.7
10	6 14	17 46	0 23	1 15	22 31	1.9	10 24	1.6
20	6 32	17 28	0 24	1 19	22 24	2.1	10 33	1.4
30	6 53	17 7	0 26	1 25	22 16	2.3	10 43	1.2
35	7 5	16 55	0 28	1 31	22 12	2.4	10 49	1.1
40	7 19	16 41	0 31	1 37	22 6	2.5	10 56	1.0
45	7 36	16 24	0 34	1 47	22 0	2.7	11 3	.8
50	7 57	16 4	0 38	1 59	21 53	2.9	11 12	.6
55	8 23	15 37	0 45	2 17	21 44	3.1	11 23	.4
60	9 2	14 59	0 57	2 45	21 32	3.4	11 38	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	300 16.3	158 -13	27.8	129	291 55.2	-13 18.6	93 56.5	7 38.1
2	329 24.8	159 -13	4.4	129	322 .1	-13 18.6	124 1.2	7 38.0
4	358 33.5	159 -12	40.8	130	352 5.0	-13 18.6	154 6.0	7 37.9
6	27 42.3	159 -12	17.0	131	22 9.9	-13 18.6	184 10.7	7 37.8
8	56 51.2	159 -11	52.9	132	52 14.8	-13 18.6	214 15.4	7 37.7
10	86 .3	159 -11	28.6	132	82 19.6	-13 18.6	244 20.1	7 37.6
12	115 9.4	159 -11	4.2	133	112 24.5	-13 18.6	274 24.9	7 37.5
14	144 18.6	159 -10	39.5	134	142 29.4	-13 18.6	304 29.6	7 37.4
16	173 28.0	159 -10	14.6	134	172 34.3	-13 18.6	334 34.3	7 37.3
18	202 37.4	159 -9	49.6	135	202 39.2	-13 18.7	4 39.0	7 37.2
20	231 46.9	159 -9	24.4	135	232 44.1	-13 18.7	34 43.7	7 37.1
22	260 56.4	159 -8	59.0	136	262 49.0	-13 18.7	64 48.4	7 37.0
Δ					24	0	24	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 0	.0	- .5	15.8	T <sub>m</sub>	4 6	1.8	54.4	14.8
12	- 0	6.3	T <sub>m</sub> ☉	12 h .1 min	Starost 19.5 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°		♃	h min	'	°	
♃	8 54	.2	325	-4.1	♄	4 32	.0	30	-2.4
♅	9 1	.1	323	1.1	♆	17 41	.0	193	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 53.6	23 18.3	263 24.2	226 23.5	11 49.0	224 49.3	13 55.5
2	209 53.4	23 18.5	293 29.2	256 23.5	11 50.5	254 50.6	13 56.7
4	239 53.1	23 18.7	323 34.1	286 23.5	11 52.0	284 52.0	13 57.9
6	269 52.8	23 18.9	353 39.0	316 23.5	11 53.6	314 53.3	13 59.1
8	299 52.6	23 19.2	23 44.0	346 23.5	11 55.1	344 54.7	14 .3
10	329 52.3	23 19.4	53 48.9	16 23.5	11 56.6	14 56.0	14 1.5
12	359 52.0	23 19.6	83 53.8	46 23.4	11 58.1	44 57.3	14 2.7
14	29 51.8	23 19.7	113 58.7	76 23.4	11 59.6	74 58.7	14 3.9
16	59 51.5	23 19.9	144 3.7	106 23.4	12 1.1	105 .0	14 5.1
18	89 51.2	23 20.1	174 8.6	136 23.4	12 2.6	135 1.4	14 6.3
20	119 51.0	23 20.3	204 13.5	166 23.3	12 4.1	165 2.7	14 7.5
22	149 50.7	23 20.5	234 18.4	196 23.3	12 5.6	195 4.1	14 8.7
Δ	-1	1		0	8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 25	1 43	:::	23 43	.1	10 12	3.4
55	3 21	20 40	0 58	:::	23 39	.4	10 20	3.1
50	3 50	20 11	0 44	:::	23 35	.6	10 26	2.9
45	4 13	19 48	0 37	2 32	23 33	.8	10 31	2.7
40	4 31	19 30	0 33	2 3	23 31	.9	10 36	2.5
35	4 45	19 15	0 30	1 47	23 29	1.1	10 39	2.4
30	4 58	19 2	0 27	1 36	23 27	1.2	10 43	2.3
20	5 20	18 40	0 25	1 24	23 24	1.4	10 48	2.1
10	5 39	18 21	0 23	1 18	23 21	1.6	10 53	1.9
0	5 57	18 4	0 23	1 15	23 19	1.7	10 58	1.7
10	6 14	17 47	0 23	1 15	23 17	1.9	11 2	1.6
20	6 32	17 28	0 24	1 19	23 14	2.1	11 7	1.4
30	6 53	17 7	0 26	1 25	23 11	2.3	11 12	1.2
35	7 6	16 55	0 28	1 31	23 9	2.4	11 15	1.1
40	7 20	16 41	0 31	1 38	23 7	2.6	11 19	.9
45	7 37	16 24	0 34	1 47	23 5	2.7	11 23	.8
50	7 57	16 3	0 38	1 59	23 2	2.9	11 27	.6
55	8 24	15 37	0 45	2 17	22 58	3.2	11 33	.4
60	9 2	14 58	0 57	2 46	22 54	3.5	11 40	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	290 6.0	158 -8	33.4	136	292 53.9	-13 18.7	94 53.2	7 36.8
2	319 15.7	158 -8	7.7	137	322 58.8	-13 18.7	124 57.9	7 36.7
4	348 25.4	158 -7	41.8	137	353 3.7	-13 18.7	155 2.6	7 36.6
6	17 35.2	157 -7	15.8	138	23 8.6	-13 18.7	185 7.3	7 36.5
8	46 45.0	157 -6	49.6	138	53 13.5	-13 18.8	215 12.0	7 36.4
10	75 54.8	157 -6	23.3	138	83 18.4	-13 18.8	245 16.7	7 36.3
12	105 4.6	156 -5	56.8	139	113 23.3	-13 18.8	275 21.5	7 36.2
14	134 14.5	155 -5	30.2	139	143 28.2	-13 18.8	305 26.2	7 36.1
16	163 24.3	155 -5	3.5	139	173 33.2	-13 18.8	335 30.9	7 36.0
18	192 34.1	154 -4	36.7	139	203 38.1	-13 18.8	5 35.6	7 35.9
20	221 43.9	153 -4	9.7	140	233 43.0	-13 18.9	35 40.3	7 35.8
22	250 53.7	153 -3	42.6	140	263 47.9	-13 18.9	65 45.0	7 35.7
Δ					25	0	24	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 0	12.6	- .5	15.8	T <sub>m</sub>	4 48	1.7	54.7	14.9
12	- 0	19.0	T <sub>m</sub> ☉	12 h .3 min	Starost 20.5 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°		♃	h min	'	°	
♃	8 54	.2	324	-4.1	♄	4 28	.0	30	-2.4
♅	9 0	.1	322	1.1	♆	17 38	.0	192	.9



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 50.4	23 20.7	264 23.4	226 23.2	12 7.1	225 5.4	14 9.9
2	209 50.1	23 20.9	294 28.3	256 23.2	12 8.7	255 6.7	14 11.0
4	239 49.9	23 21.0	324 33.2	286 23.2	12 10.2	285 8.1	14 12.2
6	269 49.6	23 21.2	354 38.2	316 23.1	12 11.7	315 9.4	14 13.4
8	299 49.3	23 21.4	24 43.1	346 23.1	12 13.2	345 10.8	14 14.6
10	329 49.1	23 21.6	54 48.0	16 23.0	12 14.7	15 12.1	14 15.8
12	359 48.8	23 21.7	84 52.9	46 23.0	12 16.2	45 13.5	14 17.0
14	29 48.5	23 21.9	114 57.9	76 22.9	12 17.7	75 14.8	14 18.2
16	59 48.3	23 22.0	145 2.8	106 22.8	12 19.2	105 16.1	14 19.4
18	89 48.0	23 22.2	175 7.7	136 22.8	12 20.7	135 17.5	14 20.5
20	119 47.7	23 22.3	205 12.7	166 22.7	12 22.2	165 18.8	14 21.7
22	149 47.4	23 22.5	235 17.6	196 22.6	12 23.7	195 20.2	14 22.9
Δ	-1	1		0	8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 25	1 44	:::	23 45	.1	11 34	3.5
55	3 20	20 41	0 58	:::	23 48	.4	11 35	3.2
50	3 50	20 11	0 45	:::	23 50	.6	11 36	3.0
45	4 13	19 49	0 37	2 33	23 52	.8	11 36	2.8
40	4 31	19 31	0 33	2 3	23 53	1.0	11 37	2.6
35	4 46	19 16	0 30	1 47	23 54	1.1	11 37	2.5
30	4 59	19 3	0 27	1 36	23 55	1.2	11 37	2.3
20	5 20	18 41	0 25	1 24	23 57	1.5	11 38	2.1
10	5 39	18 22	0 23	1 18	23 59	1.6	11 39	1.9
0	5 57	18 4	0 23	1 15	.. .	.0	11 39	1.8
10	6 14	17 47	0 23	1 15	.. .	.0	11 39	1.6
20	6 33	17 28	0 24	1 19	.. .	.0	11 40	1.4
30	6 54	17 7	0 26	1 25	.. .	.0	11 40	1.2
35	7 6	16 55	0 28	1 31	.. .	.0	11 41	1.1
40	7 20	16 41	0 31	1 38	.. .	.0	11 41	.9
45	7 37	16 24	0 34	1 47	.. .	.0	11 41	.8
50	7 58	16 3	0 38	1 59	.. .	.0	11 42	.6
55	8 25	15 36	0 45	2 17	.. .	.0	11 42	.4
60	9 3	14 58	0 58	2 46	.. .	.0	11 43	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	280 3.4	152 - 3	15.5	140	293 52.8	-13 18.9	95 49.7	7 35.6
2	309 13.1	151 - 2	48.2	140	323 57.7	-13 18.9	125 54.4	7 35.5
4	338 22.7	150 - 2	20.8	140	354 2.6	-13 18.9	155 59.1	7 35.4
6	7 32.3	149 - 1	53.4	140	24 7.6	-13 19.0	186 3.8	7 35.3
8	36 41.8	148 - 1	25.9	140	54 12.5	-13 19.0	216 8.6	7 35.2
10	65 51.2	147 - 0	58.3	140	84 17.4	-13 19.0	246 13.3	7 35.1
12	95 .5	146 - 0	30.6	140	114 22.3	-13 19.0	276 18.0	7 34.9
14	124 9.7	145 - 0	2.8	140	144 27.2	-13 19.0	306 22.7	7 34.8
16	153 18.8	144	0 24.9	140	174 32.2	-13 19.1	336 27.4	7 34.7
18	182 27.7	142	0 52.8	139	204 37.1	-13 19.1	6 32.1	7 34.6
20	211 36.6	141	1 20.7	139	234 42.0	-13 19.1	36 36.8	7 34.5
22	240 45.3	140	1 48.6	139	264 46.9	-13 19.1	66 41.5	7 34.4
Δ					25	0	24	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☾</sub>	r
h	min s	s	' / "	h min	min	' / "	' / "
00	- 0 25.3	-.5	15.8	T <sub>m</sub>	5 29	1.8	55.3 15.1
12	- 0 31.7	T <sub>m</sub> ☉	12 h .5 min	Starost 21.5 d Faza ●			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☾	h min	' / "	°	' / "	☾	h min	' / "	°	' / "
♃	8 54	.2	323	-4.1	♃	4 24	.0	30	-2.4
♄	8 59	.1	322	1.1	♄	17 34	.0	192	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 47.2	23 22.6	265 22.5	226 22.6	12 25.2	225 21.5	14 24.1
2	209 46.9	23 22.8	295 27.4	256 22.5	12 26.7	255 22.8	14 25.2
4	239 46.6	23 22.9	325 32.4	286 22.4	12 28.2	285 24.2	14 26.4
6	269 46.4	23 23.1	355 37.3	316 22.3	12 29.7	315 25.5	14 27.6
8	299 46.1	23 23.2	25 42.2	346 22.3	12 31.2	345 26.8	14 28.8
10	329 45.8	23 23.3	55 47.2	16 22.2	12 32.7	15 28.2	14 29.9
12	359 45.6	23 23.5	85 52.1	46 22.1	12 34.3	45 29.5	14 31.1
14	29 45.3	23 23.6	115 57.0	76 22.0	12 35.8	75 30.9	14 32.3
16	59 45.0	23 23.7	146 1.9	106 21.9	12 37.3	105 32.2	14 33.5
18	89 44.7	23 23.8	176 6.9	136 21.8	12 38.8	135 33.5	14 34.6
20	119 44.5	23 24.0	206 11.8	166 21.7	12 40.3	165 34.9	14 35.8
22	149 44.2	23 24.1	236 16.7	196 21.6	12 41.8	195 36.2	14 37.0
Δ	-1	1		0	8	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 26	1 45	:::	23 48	.2	12 59	3.7
55	3 20	20 41	0 58	:::	23 57	.5	12 52	3.4
50	3 50	20 11	0 45	:::	.. .	.0	12 47	3.1
45	4 13	19 49	0 37	2 33	.. .	.0	12 43	2.9
40	4 31	19 31	0 33	2 3	.. .	.0	12 39	2.7
35	4 46	19 16	0 30	1 47	.. .	.0	12 36	2.6
30	4 59	19 3	0 27	1 37	.. .	.0	12 34	2.5
20	5 21	18 41	0 25	1 24	.. .	.0	12 29	2.2
10	5 40	18 22	0 23	1 18	.. .	.0	12 25	2.0
0	5 57	18 4	0 23	1 15	0 1	1.8	12 21	1.9
10	6 14	17 47	0 23	1 15	0 3	2.0	12 18	1.7
20	6 33	17 29	0 24	1 19	0 4	2.2	12 14	1.5
30	6 54	17 7	0 26	1 25	0 6	2.4	12 9	1.3
35	7 6	16 55	0 28	1 31	0 8	2.5	12 7	1.2
40	7 21	16 41	0 31	1 38	0 9	2.7	12 4	1.0
45	7 37	16 24	0 34	1 47	0 11	2.8	12 0	.9
50	7 58	16 3	0 38	1 59	0 13	3.0	11 56	.7
55	8 25	15 36	0 45	2 18	0 15	3.3	11 51	.4
60	9 4	14 58	0 58	2 46	0 19	3.6	11 45	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	269 53.8	138	2 16.6	139	294 51.9	-13 19.2	96 46.2	7 34.3
2	299 2.2	137	2 44.6	138	324 56.8	-13 19.2	126 50.9	7 34.2
4	328 10.4	135	3 12.6	138	355 1.7	-13 19.2	156 55.6	7 34.1
6	357 18.4	134	3 40.6	137	25 6.7	-13 19.2	187 .3	7 34.0
8	26 26.2	132	4 8.6	137	55 11.6	-13 19.3	217 5.0	7 33.9
10	55 33.9	130	4 36.6	136	85 16.5	-13 19.3	247 9.7	7 33.7
12	84 41.3	128	5 4.6	136	115 21.5	-13 19.3	277 14.4	7 33.6
14	113 48.5	127	5 32.6	135	145 26.4	-13 19.3	307 19.1	7 33.5
16	142 55.4	125	6 .6	134	175 31.4	-13 19.4	337 23.8	7 33.4
18	172 2.1	123	6 28.5	134	205 36.3	-13 19.4	7 28.5	7 33.3
20	201 8.6	121	6 56.4	133	235 41.3	-13 19.4	37 33.2	7 33.2
22	230 14.8	119	7 24.3	132	265 46.2	-13 19.4	67 37.9	7 33.1
Δ					25	0	23	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☾</sub>	r
h	min s	s	' / "	h min	min	' / "	' / "
00	- 0 38.1	-.5	15.8	T <sub>m</sub>	6 11	1.8	55.9 15.2
12	- 0 44.6	T <sub>m</sub> ☉	12 h .7 min	Starost 22.5 d Faza ●			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☾	h min	' / "	°	' / "	☾	h min	' / "	°	' / "
♃	8 54	.2	322	-4.1	♃	4 20	.0	30	-2.4
♄	8 58								

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	179 43.9	23 24.2	266 21.7	226 21.5	12 43.3	225 37.5	14 38.1
2	209 43.6	23 24.3	296 26.6	256 21.4	12 44.8	255 38.9	14 39.3
4	239 43.4	23 24.4	326 31.5	286 21.3	12 46.3	285 40.2	14 40.5
6	269 43.1	23 24.5	356 36.4	316 21.2	12 47.8	315 41.6	14 41.6
8	299 42.8	23 24.6	26 41.4	346 21.1	12 49.3	345 42.9	14 42.8
10	329 42.6	23 24.7	56 46.3	16 21.0	12 50.8	15 44.2	14 44.0
12	359 42.3	23 24.8	86 51.2	46 20.8	12 52.3	45 45.6	14 45.1
14	29 42.0	23 24.9	116 56.2	76 20.7	12 53.8	75 46.9	14 46.3
16	59 41.7	23 25.0	147 1.1	106 20.6	12 55.3	105 48.2	14 47.4
18	89 41.5	23 25.1	177 6.0	136 20.5	12 56.8	135 49.6	14 48.6
20	119 41.2	23 25.2	207 10.9	166 20.3	12 58.2	165 50.9	14 49.7
22	149 40.9	23 25.2	237 15.9	196 20.2	12 59.7	195 52.2	14 50.9
Δ	-1	0		-1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 46	:::	23 51	.3	14 28	4.0
55	3 20	20 42	0 58	:::	...	.0	14 13	3.6
50	3 50	20 12	0 45	:::	0 6	.7	14 2	3.3
45	4 13	19 49	0 37	2 33	0 12	.9	13 52	3.1
40	4 31	19 31	0 33	2 3	0 17	1.1	13 45	2.9
35	4 46	19 16	0 30	1 47	0 22	1.2	13 38	2.7
30	4 59	19 3	0 27	1 37	0 25	1.4	13 33	2.6
20	5 21	18 41	0 25	1 24	0 32	1.6	13 23	2.4
10	5 40	18 22	0 23	1 18	0 39	1.8	13 14	2.2
0	5 57	18 5	0 23	1 15	0 44	1.9	13 6	2.0
10	6 15	17 47	0 23	1 15	0 50	2.1	12 58	1.8
20	6 33	17 29	0 24	1 19	0 57	2.3	12 50	1.7
30	6 54	17 7	0 26	1 26	1 4	2.5	12 40	1.4
35	7 7	16 55	0 28	1 31	1 8	2.7	12 35	1.3
40	7 21	16 41	0 31	1 38	1 13	2.8	12 28	1.2
45	7 38	16 24	0 34	1 47	1 19	3.0	12 21	1.0
50	7 58	16 3	0 38	1 60	1 26	3.2	12 12	.8
55	8 26	15 36	0 46	2 18	1 34	3.5	12 2	.5
60	9 4	14 58	0 58	2 46	1 46	3.9	11 48	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	259 20.7	117 7	52.1	131	295 51.1	-13 19.5	97 42.6	7 33.0
2	288 26.3	115 8	19.8	130	325 56.1	-13 19.5	127 47.3	7 32.9
4	317 31.7	113 8	47.4	129	356 1.0	-13 19.5	157 52.0	7 32.7
6	346 36.7	111 9	15.0	128	26 6.0	-13 19.6	187 56.7	7 32.6
8	15 41.4	108 9	42.5	127	56 10.9	-13 19.6	218 1.4	7 32.5
10	44 45.8	106 10	9.8	125	86 15.9	-13 19.6	248 6.1	7 32.4
12	73 49.8	104 10	37.1	124	116 20.8	-13 19.7	278 10.7	7 32.3
14	102 53.5	101 11	4.2	123	146 25.8	-13 19.7	308 15.4	7 32.2
16	131 56.9	99 11	31.2	121	176 30.8	-13 19.7	338 20.1	7 32.1
18	160 59.8	97 11	58.1	120	206 35.7	-13 19.8	8 24.8	7 31.9
20	190 2.4	94 12	24.8	118	236 40.7	-13 19.8	38 29.5	7 31.8
22	219 4.6	92 12	51.3	116	266 45.6	-13 19.8	68 34.2	7 31.7
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 0 51.1	-.5	15.8	T <sub>m</sub>	6 55	2.0	56.8 15.5		
12	- 0 57.6	T <sub>m</sub> ☉	12 h 1.0 min	Starost 23.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 55	.2	321	-4.1	♃	4 16	.0	30	-2.4
♂	8 57	.1	320	1.1	♄	17 26	.0	192	.9

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	179 40.6	23 25.3	267 20.8	226 20.1	13 1.2	225 53.6	14 52.0
2	209 40.4	23 25.4	297 25.7	256 19.9	13 2.7	255 54.9	14 53.2
4	239 40.1	23 25.5	327 30.7	286 19.8	13 4.2	285 56.2	14 54.4
6	269 39.8	23 25.5	357 35.6	316 19.7	13 5.7	315 57.6	14 55.5
8	299 39.5	23 25.6	27 40.5	346 19.5	13 7.2	345 58.9	14 56.6
10	329 39.3	23 25.7	57 45.4	16 19.4	13 8.7	16 .2	14 57.8
12	359 39.0	23 25.7	87 50.4	46 19.2	13 10.2	46 1.6	14 58.9
14	29 38.7	23 25.8	117 55.3	76 19.1	13 11.7	76 2.9	15 .1
16	59 38.4	23 25.9	148 .2	106 18.9	13 13.2	106 4.2	15 1.2
18	89 38.2	23 25.9	178 5.1	136 18.7	13 14.7	136 5.6	15 2.4
20	119 37.9	23 26.0	208 10.1	166 18.6	13 16.2	166 6.9	15 3.5
22	149 37.6	23 26.0	238 15.0	196 18.4	13 17.6	196 8.2	15 4.7
Δ	-1	0		-1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 46	:::	23 58	.5	16 3	4.2
55	3 20	20 42	0 58	:::	0 10	.7	15 39	3.7
50	3 50	20 12	0 45	:::	0 24	.9	15 20	3.4
45	4 13	19 50	0 37	2 33	0 34	1.1	15 6	3.2
40	4 31	19 32	0 33	2 3	0 44	1.3	14 54	3.0
35	4 46	19 17	0 30	1 47	0 51	1.4	14 44	2.9
30	4 59	19 4	0 27	1 37	0 58	1.6	14 35	2.8
20	5 21	18 41	0 25	1 24	1 10	1.8	14 20	2.6
10	5 40	18 22	0 23	1 18	1 21	2.0	14 7	2.4
0	5 57	18 5	0 23	1 15	1 31	2.1	13 55	2.2
10	6 15	17 47	0 23	1 15	1 41	2.3	13 43	2.1
20	6 33	17 29	0 24	1 19	1 52	2.5	13 30	1.9
30	6 55	17 8	0 26	1 26	2 5	2.7	13 15	1.7
35	7 7	16 55	0 28	1 31	2 12	2.8	13 6	1.6
40	7 21	16 41	0 31	1 38	2 21	3.0	12 57	1.4
45	7 38	16 24	0 34	1 47	2 30	3.1	12 45	1.3
50	7 59	16 3	0 39	1 60	2 42	3.4	12 32	1.0
55	8 26	15 36	0 46	2 18	2 58	3.7	12 15	.8
60	9 5	14 58	0 58	2 46	3 18	4.1	11 52	.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	248 6.4	89 13	17.7	115	296 50.6	-13 19.9	98 38.9	7 31.6
2	277 7.8	87 13	43.9	113	326 55.6	-13 19.9	128 43.6	7 31.5
4	306 8.8	84 14	9.9	111	357 .5	-13 19.9	158 48.3	7 31.4
6	335 9.4	82 14	35.6	109	27 5.5	-13 20.0	188 52.9	7 31.3
8	4 9.5	79 15	1.2	107	57 10.4	-13 20.0	218 57.6	7 31.1
10	33 9.2	76 15	26.5	105	87 15.4	-13 20.1	249 2.3	7 31.0
12	62 8.4	74 15	51.5	103	117 20.4	-13 20.1	279 7.0	7 30.9
14	91 7.2	71 16	16.3	101	147 25.4	-13 20.1	309 11.7	7 30.8
16	120 5.4	69 16	40.9	98	177 30.3	-13 20.2	339 16.4	7 30.7
18	149 3.3	66 17	5.1	96	207 35.3	-13 20.2	9 21.1	7 30.6
20	178 .6	63 17	29.0	93	237 40.3	-13 20.3	39 25.7	7 30.4
22	206 57.5	61 17	52.6	91	267 45.3	-13 20.3	69 30.4	7 30.3
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 1 4.2	-.5	15.8	T <sub>m</sub>	7 43	2.2	57.7 15.7		
12	- 1 10.7	T <sub>m</sub> ☉	12 h 1.2 min	Starost 24.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 55	.2	320	-4.1	♃	4 12	.0	30	-2.4
♂	8 56	.1	320	1.1	♄	17 23			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 37.3	23 26.0	268 19.9	226 18.2	13 19.1	226 9.6	15 5.8
2	209 37.1	23 26.1	298 24.9	256 18.1	13 20.6	256 10.9	15 6.9
4	239 36.8	23 26.1	328 29.8	286 17.9	13 22.1	286 12.2	15 8.1
6	269 36.5	23 26.2	358 34.7	316 17.7	13 23.6	316 13.5	15 9.2
8	299 36.2	23 26.2	388 39.6	346 17.5	13 25.1	346 14.9	15 10.4
10	329 36.0	23 26.2	418 44.6	376 17.4	13 26.6	376 16.2	15 11.5
12	359 35.7	23 26.2	448 49.5	406 17.2	13 28.1	406 17.5	15 12.6
14	29 35.4	23 26.3	118 54.4	76 17.0	13 29.5	76 18.9	15 13.8
16	59 35.2	23 26.3	148 59.4	106 16.8	13 31.0	106 20.2	15 14.9
18	89 34.9	23 26.3	179 4.3	136 16.6	13 32.5	136 21.5	15 16.0
20	119 34.6	23 26.3	209 9.2	166 16.4	13 34.0	166 22.9	15 17.1
22	149 34.3	23 26.3	239 14.1	196 16.2	13 35.5	196 24.2	15 18.3
Δ	-1	0		-1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 47	:::	0 10	.9	19 28	3.7
55	3 20	20 43	0 58	:::	0 48	1.4	18 38	3.3
50	3 50	20 13	0 45	:::	1 15	1.7	18 5	3.2
45	4 13	19 50	0 37	2 33	1 36	1.9	17 41	3.1
40	4 31	19 32	0 33	2 3	1 53	2.0	17 21	3.0
35	4 46	19 17	0 30	1 47	2 8	2.1	17 5	2.9
30	4 59	19 4	0 27	1 37	2 20	2.2	16 51	2.9
20	5 21	18 42	0 25	1 24	2 42	2.4	16 27	2.8
10	5 40	18 23	0 23	1 18	3 1	2.5	16 6	2.7
0	5 58	18 5	0 23	1 15	3 18	2.6	15 47	2.7
10	6 15	17 48	0 23	1 15	3 36	2.7	15 28	2.6
20	6 34	17 29	0 24	1 19	3 55	2.8	15 8	2.5
30	6 55	17 8	0 26	1 26	4 18	2.9	14 44	2.4
35	7 7	16 55	0 28	1 31	4 31	3.0	14 30	2.3
40	7 22	16 41	0 31	1 38	4 46	3.1	14 14	2.3
45	7 38	16 24	0 34	1 47	5 4	3.2	13 55	2.2
50	7 59	16 4	0 39	1 60	5 27	3.4	13 32	2.0
55	8 26	15 36	0 46	2 18	5 57	3.6	13 0	1.8
60	9 5	14 58	0 58	2 46	6 42	4.1	12 15	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	235 53.8	58 18 15.9	88	297 50.2	-13 20.3	99 35.1	7 30.2	
2	264 49.7	56 18 38.9	85	327 55.2	-13 20.4	129 39.8	7 30.1	
4	293 45.0	53 19 1.4	82	358 .2	-13 20.4	159 44.5	7 30.0	
6	322 39.8	51 19 23.6	80	28 5.2	-13 20.5	189 49.1	7 29.8	
8	351 34.2	48 19 45.4	77	58 10.1	-13 20.5	219 53.8	7 29.7	
10	20 28.0	46 20 6.9	74	88 15.1	-13 20.5	249 58.5	7 29.6	
12	49 21.3	43 20 27.8	70	118 20.1	-13 20.6	280 3.2	7 29.5	
14	78 14.0	41 20 48.4	67	148 25.1	-13 20.6	310 7.9	7 29.4	
16	107 6.3	39 21 8.5	64	178 30.1	-13 20.7	340 12.5	7 29.3	
18	135 58.0	37 21 28.1	61	208 35.1	-13 20.7	370 17.2	7 29.1	
20	164 49.2	34 21 47.3	57	238 40.1	-13 20.8	40 21.9	7 29.0	
22	193 39.9	32 22 5.9	54	268 45.1	-13 20.8	70 26.6	7 28.9	
Δ				25	0	23	-1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s / ' / "	' / "	h min	min	' / "	' / "
00	- 1 17.3	-.5	15.8	T <sub>m</sub>	8 35	2.4	58.6
12	- 1 23.9	T <sub>m</sub> ☉	12 h 1.4 min	Starost	25.5 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	' / "	°	' / "	♃	h min	' / "
♂	8 55	.2	319	-4.1	♄	4 8	.0
♂	8 55	.1	319	1.1	♅	17 19	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 34.1	23 26.3	269 19.1	226 16.0	13 36.9	226 25.5	15 19.4
2	209 33.8	23 26.4	299 24.0	256 15.8	13 38.4	256 26.8	15 20.5
4	239 33.5	23 26.4	329 28.9	286 15.6	13 39.9	286 28.2	15 21.7
6	269 33.2	23 26.4	359 33.9	316 15.4	13 41.4	316 29.5	15 22.8
8	299 33.0	23 26.4	389 38.8	346 15.2	13 42.9	346 30.8	15 23.9
10	329 32.7	23 26.4	419 43.7	376 15.0	13 44.3	376 32.1	15 25.0
12	359 32.4	23 26.3	449 48.6	406 14.8	13 45.8	406 33.5	15 26.1
14	29 32.1	23 26.3	119 53.6	76 14.6	13 47.3	76 34.8	15 27.3
16	59 31.9	23 26.3	149 58.5	106 14.4	13 48.8	106 36.1	15 28.4
18	89 31.6	23 26.3	180 3.4	136 14.1	13 50.2	136 37.5	15 29.5
20	119 31.3	23 26.3	210 8.4	166 13.9	13 51.7	166 38.8	15 30.6
22	149 31.0	23 26.3	240 13.3	196 13.7	13 53.2	196 40.1	15 31.7
Δ	-1	0		-1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	0 10	.9	19 28	3.7
55	3 20	20 43	0 58	:::	0 48	1.4	18 38	3.3
50	3 50	20 13	0 45	:::	1 15	1.7	18 5	3.2
45	4 13	19 50	0 37	2 33	1 36	1.9	17 41	3.1
40	4 31	19 32	0 33	2 3	1 53	2.0	17 21	3.0
35	4 46	19 17	0 30	1 47	2 8	2.1	17 5	2.9
30	4 59	19 4	0 27	1 37	2 20	2.2	16 51	2.9
20	5 21	18 42	0 25	1 24	2 42	2.4	16 27	2.8
10	5 40	18 23	0 23	1 18	3 1	2.5	16 6	2.7
0	5 58	18 5	0 23	1 15	3 18	2.6	15 47	2.7
10	6 15	17 48	0 23	1 15	3 36	2.7	15 28	2.6
20	6 34	17 29	0 24	1 19	3 55	2.8	15 8	2.5
30	6 55	17 8	0 26	1 26	4 18	2.9	14 44	2.4
35	7 8	16 56	0 28	1 31	4 31	3.0	14 30	2.3
40	7 22	16 41	0 31	1 38	4 46	3.1	14 14	2.3
45	7 39	16 25	0 34	1 47	5 4	3.2	13 55	2.2
50	7 59	16 4	0 39	1 60	5 27	3.4	13 32	2.0
55	8 27	15 37	0 46	2 18	5 57	3.6	13 0	1.8
60	9 6	14 58	0 58	2 46	6 42	4.1	12 15	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	222 30.0	30 22 24.1	50	298 50.1	-13 20.9	100 31.2	7 28.8	
2	251 19.7	29 22 41.7	47	328 55.0	-13 20.9	130 35.9	7 28.6	
4	280 8.8	27 22 58.7	43	359 .0	-13 21.0	160 40.6	7 28.5	
6	308 57.5	25 23 15.2	39	29 5.0	-13 21.0	190 45.3	7 28.4	
8	337 45.6	23 23 31.1	35	59 10.0	-13 21.0	220 49.9	7 28.3	
10	6 33.2	22 23 46.4	32	89 15.0	-13 21.1	250 54.6	7 28.2	
12	35 20.4	21 24 1.1	28	119 20.0	-13 21.1	280 59.3	7 28.0	
14	64 7.1	19 24 15.2	24	149 25.0	-13 21.2	311 3.9	7 27.9	
16	92 53.3	18 24 28.6	20	179 30.0	-13 21.2	341 8.6	7 27.8	
18	121 39.0	17 24 41.4	16	209 35.0	-13 21.3	371 13.3	7 27.7	
20	150 24.4	16 24 53.6	12	239 40.0	-13 21.3	41 18.0	7 27.5	
22	179 9.3	15 25 5.0	8	269 45.1	-13 21.4	71 22.6	7 27.4	
Δ				25	0	23	-1	

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s / ' / "	' / "	h min	min	' / "	' / "
00	- 1 30.4	-.5	15.8	T <sub>m</sub>	9 33	2.6	59.5
12	- 1 37.0	T <sub>m</sub> ☉	12 h 1.6 min	Starost	26.5 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	' / "	°	' / "	♃	h min	' / "
♂	8 55	.2	318	-4.1	♄	4 4	.0
♂	8 54	.1	318	1.1	♅	17 15	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 30.8	23 26.2	270 18.2	226 13.4	13 54.6	226 41.4	15 32.8
2	209 30.5	23 26.2	300 23.1	256 13.2	13 56.1	256 42.8	15 34.0
4	239 30.2	23 26.2	330 28.1	286 13.0	13 57.6	286 44.1	15 35.1
6	269 29.9	23 26.1	0 33.0	316 12.7	13 59.1	316 45.4	15 36.2
8	299 29.7	23 26.1	30 37.9	346 12.5	14 .5	346 46.7	15 37.3
10	329 29.4	23 26.1	60 42.9	16 12.3	14 2.0	16 48.1	15 38.4
12	359 29.1	23 26.0	90 47.8	46 12.0	14 3.5	46 49.4	15 39.5
14	29 28.8	23 26.0	120 52.7	76 11.8	14 4.9	76 50.7	15 40.6
16	59 28.6	23 25.9	150 57.6	106 11.5	14 6.4	106 52.0	15 41.7
18	89 28.3	23 25.9	181 2.6	136 11.3	14 7.8	136 53.4	15 42.8
20	119 28.0	23 25.8	211 7.5	166 11.0	14 9.3	166 54.7	15 43.9
22	149 27.8	23 25.8	241 12.4	196 10.7	14 10.8	196 56.0	15 45.0
Δ	-1	0		-1	7	7	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	0 33	1.9	20 57	2.4
55	3 21	20 43	0 58	:::	1 23	2.3	19 58	2.5
50	3 51	20 13	0 45	:::	1 57	2.4	19 22	2.6
45	4 13	19 50	0 37	2 33	2 22	2.5	18 55	2.7
40	4 31	19 32	0 33	2 3	2 42	2.5	18 33	2.7
35	4 46	19 17	0 30	1 47	2 59	2.6	18 16	2.7
30	4 59	19 4	0 27	1 37	3 13	2.6	18 0	2.7
20	5 22	18 42	0 25	1 24	3 38	2.7	17 34	2.7
10	5 41	18 23	0 23	1 18	3 60	2.7	17 12	2.7
0	5 58	18 6	0 23	1 15	4 20	2.7	16 51	2.8
10	6 16	17 48	0 23	1 15	4 40	2.8	16 30	2.8
20	6 34	17 29	0 24	1 19	5 2	2.8	16 8	2.8
30	6 55	17 8	0 26	1 26	5 28	2.8	15 42	2.8
35	7 8	16 56	0 28	1 31	5 43	2.8	15 26	2.8
40	7 22	16 42	0 31	1 38	6 0	2.9	15 9	2.8
45	7 39	16 25	0 34	1 47	6 21	2.9	14 47	2.8
50	7 60	16 4	0 39	1 60	6 48	2.9	14 20	2.8
55	8 27	15 37	0 46	2 18	7 24	3.0	13 44	2.7
60	9 6	14 58	0 58	2 46	8 21	3.1	12 46	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	207 53.7	15 25	15.7	4	299 50.1	-13 21.5	101 27.3	7 27.3
2	236 37.8	14 25	25.8	0	329 55.1	-13 21.5	131 32.0	7 27.2
4	265 21.5	14 25	35.1	-5	0 .1	-13 21.6	161 36.6	7 27.1
6	294 4.9	13 25	43.6	-9	30 5.1	-13 21.6	191 41.3	7 26.9
8	322 47.9	13 25	51.5	-13	60 10.1	-13 21.7	221 46.0	7 26.8
10	351 30.6	13 25	58.5	-17	90 15.1	-13 21.7	251 50.6	7 26.7
12	20 13.0	13 26	4.8	-21	120 20.1	-13 21.8	281 55.3	7 26.6
14	48 55.1	14 26	10.4	-25	150 25.2	-13 21.8	311 59.9	7 26.4
16	77 36.9	14 26	15.1	-29	180 30.2	-13 21.9	342 4.6	7 26.3
18	106 18.6	14 26	19.0	-33	210 35.2	-13 21.9	12 9.3	7 26.2
20	135 .0	15 26	22.2	-37	240 40.2	-13 22.0	42 13.9	7 26.1
22	163 41.2	16 26	24.5	-41	270 45.2	-13 22.1	72 18.6	7 25.9
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'		
00	- 1 43.6	-.5	15.8	T <sub>m</sub>	10 35	2.8	60.3	16.4	
12	- 1 50.2	T <sub>m</sub> ☉	12 h 1.8 min	Starost 27.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 55	.2	317	-4.1	♃	3 60	.0	31	-2.4
♁	8 53	.1	317	1.1	♄	17 12	.0	192	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 27.5	23 25.7	271 17.3	226 10.5	14 12.2	226 57.3	15 46.1
2	209 27.2	23 25.7	301 22.3	256 10.2	14 13.7	256 58.7	15 47.2
4	239 26.9	23 25.6	331 27.2	286 10.0	14 15.1	286 60.0	15 48.3
6	269 26.7	23 25.5	1 32.1	316 9.7	14 16.6	317 1.3	15 49.4
8	299 26.4	23 25.4	31 37.1	346 9.4	14 18.1	347 2.6	15 50.5
10	329 26.1	23 25.4	61 42.0	16 9.1	14 19.5	17 3.9	15 51.6
12	359 25.8	23 25.3	91 46.9	46 8.9	14 21.0	47 5.3	15 52.7
14	29 25.6	23 25.2	121 51.8	76 8.6	14 22.4	77 6.6	15 53.8
16	59 25.3	23 25.1	151 56.8	106 8.3	14 23.9	107 7.9	15 54.9
18	89 25.0	23 25.1	182 1.7	136 8.0	14 25.3	137 9.2	15 56.0
20	119 24.8	23 25.0	212 6.6	166 7.7	14 26.8	167 10.6	15 57.1
22	149 24.5	23 24.9	242 11.6	196 7.4	14 28.2	197 11.9	15 58.2
Δ	-1	0		-1	7	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 46	:::	1 19	3.4	21 53	1.2
55	3 21	20 43	0 58	:::	2 17	3.2	20 59	1.7
50	3 51	20 13	0 45	:::	2 54	3.1	20 24	2.0
45	4 13	19 51	0 37	2 33	3 21	3.0	19 58	2.1
40	4 32	19 33	0 33	2 3	3 43	3.0	19 38	2.2
35	4 47	19 17	0 30	1 47	4 1	2.9	19 20	2.3
30	4 60	19 4	0 27	1 37	4 16	2.9	19 5	2.4
20	5 22	18 42	0 25	1 24	4 42	2.9	18 40	2.5
10	5 41	18 23	0 23	1 18	5 5	2.8	18 18	2.6
0	5 58	18 6	0 23	1 15	5 26	2.8	17 57	2.7
10	6 16	17 48	0 23	1 15	5 47	2.7	17 36	2.8
20	6 34	17 30	0 24	1 19	6 9	2.6	17 14	2.9
30	6 56	17 8	0 26	1 26	6 36	2.6	16 48	3.0
35	7 8	16 56	0 28	1 31	6 51	2.5	16 33	3.1
40	7 22	16 42	0 31	1 38	7 9	2.5	16 15	3.2
45	7 39	16 25	0 34	1 47	7 31	2.4	15 54	3.3
50	7 60	16 4	0 39	1 60	7 58	2.3	15 26	3.4
55	8 27	15 37	0 46	2 18	8 36	2.1	14 49	3.6
60	9 6	14 58	0 58	2 46	9 36	1.7	13 50	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	192 22.2	17 26	26.1	-46	300 50.3	-13 22.1	102 23.3	7 25.8
2	221 3.2	18 26	26.8	-49	330 55.3	-13 22.2	132 27.9	7 25.7
4	249 44.0	19 26	26.7	-53	1 .3	-13 22.2	162 32.6	7 25.5
6	278 24.7	20 26	25.8	-57	31 5.3	-13 22.3	192 37.2	7 25.4
8	307 5.4	21 26	24.0	-61	61 10.4	-13 22.3	222 41.9	7 25.3
10	335 46.0	23 26	21.4	-65	91 15.4	-13 22.4	252 46.6	7 25.2
12	4 26.7	24 26	18.0	-69	121 20.4	-13 22.5	282 51.2	7 25.0
14	33 7.3	26 26	13.8	-72	151 25.5	-13 22.5	312 55.9	7 24.9
16	61 48.0	27 26	8.7	-76	181 30.5	-13 22.6	343 .5	7 24.8
18	90 28.8	29 26	2.9	-79	211 35.5	-13 22.6	13 5.2	7 24.7
20	119 9.7	31 25	56.2	-83	241 40.6	-13 22.7	43 9.8	7 24.5
22	147 50.7	33 25	48.7	-86	271 45.6	-13 22.8	73 14.5	7 24.4
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'		
00	- 1 56.8	-.5	15.8	T <sub>m</sub>	11 41	2.8	60.9	16.6	
12	- 2 3.3	T <sub>m</sub> ☉	12 h 2.1 min	Starost 28.5 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 24.2	23 24.8	272 16.5	226 7.2	14 29.7	227 13.2	15 59.3
2	209 23.9	23 24.7	302 21.4	256 6.9	14 31.1	257 14.5	16 .3
4	239 23.7	23 24.6	332 26.3	286 6.6	14 32.6	287 15.8	16 1.4
6	269 23.4	23 24.5	2 31.3	316 6.3	14 34.0	317 17.2	16 2.5
8	299 23.1	23 24.4	32 36.2	346 6.0	14 35.5	347 18.5	16 3.6
10	329 22.9	23 24.3	62 41.1	16 5.7	14 36.9	17 19.8	16 4.7
12	359 22.6	23 24.2	92 46.1	46 5.4	14 38.3	47 21.1	16 5.8
14	29 22.3	23 24.0	122 51.0	76 5.0	14 39.8	77 22.4	16 6.8
16	59 22.1	23 23.9	152 55.9	106 4.7	14 41.2	107 23.8	16 7.9
18	89 21.8	23 23.8	183 .8	136 4.4	14 42.7	137 25.1	16 9.0
20	119 21.5	23 23.7	213 5.8	166 4.1	14 44.1	167 26.4	16 10.1
22	149 21.3	23 23.6	243 10.7	196 3.8	14 45.5	197 27.7	16 11.1
Δ	-1	-1		-2	7	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 46	:::	2 42	4.4	22 21	.6
55	3 21	20 43	0 58	:::	3 34	3.9	21 40	1.1
50	3 51	20 13	0 45	:::	4 9	3.6	21 11	1.4
45	4 14	19 51	0 37	2 33	4 34	3.4	20 49	1.6
40	4 32	19 33	0 33	2 3	4 54	3.3	20 31	1.8
35	4 47	19 18	0 30	1 47	5 11	3.1	20 16	1.9
30	4 60	19 5	0 27	1 37	5 26	3.1	20 3	2.1
20	5 22	18 43	0 25	1 24	5 51	2.9	19 41	2.2
10	5 41	18 24	0 23	1 18	6 12	2.8	19 21	2.4
0	5 59	18 6	0 23	1 15	6 32	2.6	19 2	2.6
10	6 16	17 49	0 23	1 15	6 52	2.5	18 44	2.7
20	6 35	17 30	0 24	1 19	7 13	2.4	18 24	2.9
30	6 56	17 9	0 26	1 26	7 37	2.2	18 0	3.1
35	7 8	16 56	0 28	1 31	7 52	2.1	17 47	3.2
40	7 22	16 42	0 31	1 38	8 8	2.0	17 31	3.3
45	7 39	16 25	0 34	1 47	8 28	1.9	17 12	3.5
50	8 0	16 5	0 39	1 60	8 53	1.7	16 48	3.7
55	8 27	15 37	0 46	2 18	9 26	1.4	16 16	4.0
60	9 6	14 59	0 58	2 46	10 15	.8	15 27	4.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 31.8	35 25 40.4	-90	301 50.6	-13 22.8	103 19.1	7 24.3	
2	205 13.1	37 25 31.3	-93	331 55.7	-13 22.9	133 23.8	7 24.1	
4	233 54.6	39 25 21.4	-96	2 .7	-13 23.0	163 28.5	7 24.0	
6	262 36.4	41 25 10.7	-99	32 5.8	-13 23.0	193 33.1	7 23.9	
8	291 18.3	43 24 59.2	-102	62 10.8	-13 23.1	223 37.8	7 23.7	
10	320 .6	45 24 47.0	-105	92 15.9	-13 23.2	253 42.4	7 23.6	
12	348 43.1	48 24 34.0	-108	122 20.9	-13 23.2	283 47.1	7 23.5	
14	17 25.9	50 24 20.3	-111	152 26.0	-13 23.3	313 51.7	7 23.4	
16	46 9.0	52 24 5.8	-113	182 31.0	-13 23.3	343 56.4	7 23.2	
18	74 52.5	54 23 50.7	-116	212 36.1	-13 23.4	14 1.0	7 23.1	
20	103 36.3	57 23 34.8	-118	242 41.1	-13 23.5	44 5.7	7 23.0	
22	132 20.5	59 23 18.2	-121	272 46.2	-13 23.6	74 10.3	7 22.8	
Δ				25	0	23	-1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 2 9.9	- .5	15.8	T <sub>m</sub>	12 47	2.6	61.2 16.7		
12	- 2 16.4	T <sub>m☉</sub>	12 h 2.3 min	Starost	.2 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 55	.2	315	-4.1	♃	3 52	.0	31	-2.5
♂	8 51	.1	316	1.1	♄	17 4	.0	192	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 21.0	23 23.4	273 15.6	226 3.5	14 47.0	227 29.0	16 12.2
2	209 20.7	23 23.3	303 20.6	256 3.1	14 48.4	257 30.4	16 13.3
4	239 20.4	23 23.2	333 25.5	286 2.8	14 49.8	287 31.7	16 14.4
6	269 20.2	23 23.0	3 30.4	316 2.5	14 51.3	317 33.0	16 15.4
8	299 19.9	23 22.9	33 35.3	346 2.1	14 52.7	347 34.3	16 16.5
10	329 19.6	23 22.7	63 40.3	16 1.8	14 54.1	17 35.6	16 17.6
12	359 19.4	23 22.6	93 45.2	46 1.5	14 55.6	47 37.0	16 18.6
14	29 19.1	23 22.5	123 50.1	76 1.1	14 57.0	77 38.3	16 19.7
16	59 18.8	23 22.3	153 55.1	106 .8	14 58.4	107 39.6	16 20.8
18	89 18.6	23 22.1	184 .0	136 .4	14 59.8	137 40.9	16 21.8
20	119 18.3	23 22.0	214 4.9	166 .1	15 1.3	167 42.2	16 22.9
22	149 18.0	23 21.8	244 9.8	195 59.7	15 2.7	197 43.5	16 23.9
Δ	-1	-1		-2	7	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 45	:::	4 28	4.6	22 35	.3
55	3 21	20 43	0 58	:::	5 7	4.1	22 6	.8
50	3 52	20 13	0 45	:::	5 35	3.7	21 45	1.1
45	4 14	19 51	0 37	2 33	5 56	3.5	21 29	1.3
40	4 32	19 33	0 33	2 3	6 13	3.3	21 15	1.5
35	4 47	19 18	0 30	1 47	6 27	3.2	21 3	1.6
30	5 0	19 5	0 27	1 37	6 39	3.0	20 52	1.8
20	5 22	18 43	0 25	1 24	7 0	2.8	20 35	2.0
10	5 41	18 24	0 23	1 18	7 18	2.6	20 19	2.2
0	5 59	18 6	0 23	1 15	7 35	2.5	20 4	2.4
10	6 16	17 49	0 23	1 15	7 52	2.3	19 49	2.5
20	6 35	17 30	0 24	1 19	8 10	2.1	19 33	2.7
30	6 56	17 9	0 26	1 26	8 31	1.9	19 14	3.0
35	7 8	16 57	0 28	1 31	8 43	1.8	19 3	3.1
40	7 23	16 42	0 31	1 38	8 56	1.6	18 50	3.3
45	7 39	16 26	0 34	1 47	9 13	1.4	18 35	3.5
50	8 0	16 5	0 39	1 60	9 33	1.2	18 17	3.7
55	8 27	15 38	0 46	2 18	9 58	.9	17 52	4.0
60	9 6	14 59	0 58	2 46	10 34	.4	17 18	4.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	161 5.0	61 23 .9	-123	302 51.2	-13 23.6	104 15.0	7 22.7	
2	189 50.0	64 22 43.0	-125	332 56.3	-13 23.7	134 19.6	7 22.6	
4	218 35.4	66 22 24.5	-127	3 1.3	-13 23.8	164 24.2	7 22.4	
6	247 21.1	68 22 5.3	-129	33 6.4	-13 23.8	194 28.9	7 22.3	
8	276 7.3	71 21 45.4	-131	63 11.4	-13 23.9	224 33.5	7 22.2	
10	304 54.0	73 21 25.0	-133	93 16.5	-13 24.0	254 38.2	7 22.0	
12	333 41.1	75 21 4.0	-135	123 21.6	-13 24.0	284 42.8	7 21.9	
14	2 28.6	78 20 42.5	-137	153 26.6	-13 24.1	314 47.5	7 21.8	
16	31 16.6	80 20 20.3	-138	183 31.7	-13 24.2	344 52.1	7 21.6	
18	60 5.0	82 19 57.7	-140	213 36.8	-13 24.3	14 56.8	7 21.5	
20	88 53.9	84 19 34.5	-141	243 41.8	-13 24.3	45 1.4	7 21.4	
22	117 43.3	86 19 10.8	-143	273 46.9	-13 24.4	75 6.0	7 21.2	
Δ				25	0	23	-1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 2 22.9	- .5	15.8	T <sub>m</sub>	13 50	2.4	61.2 16.7		
12	- 2 29.4	T <sub>m☉</sub>	12 h 2.5 min	Starost	1.2 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 56	.2	314	-4.1	♃	3 48	.0	31	-2.5
♂	8 50	.1	315	1.1	♄	17 0	.0		

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 17.8	23 21.7	274 14.8	225 59.4	15 4.1	227 44.9	16 25.0
2	209 17.5	23 21.5	304 19.7	255 59.0	15 5.5	257 46.2	16 26.1
4	239 17.3	23 21.3	334 24.6	285 58.7	15 7.0	287 47.5	16 27.1
6	269 17.0	23 21.2	4 29.6	315 58.3	15 8.4	317 48.8	16 28.2
8	299 16.7	23 21.0	34 34.5	345 58.0	15 9.8	347 50.1	16 29.2
10	329 16.5	23 20.8	64 39.4	15 57.6	15 11.2	17 51.4	16 30.3
12	359 16.2	23 20.6	94 44.3	45 57.2	15 12.6	47 52.8	16 31.3
14	29 15.9	23 20.5	124 49.3	75 56.9	15 14.0	77 54.1	16 32.4
16	59 15.7	23 20.3	154 54.2	105 56.5	15 15.4	107 55.4	16 33.4
18	89 15.4	23 20.1	184 59.1	135 56.1	15 16.9	137 56.7	16 34.5
20	119 15.1	23 19.9	215 4.0	165 55.7	15 18.3	167 58.0	16 35.5
22	149 14.9	23 19.7	245 9.0	195 55.3	15 19.7	197 59.3	16 36.6
Δ	-1	-1		-2	7	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 45	:::	6 18	4.4	22 43	.2
55	3 22	20 43	0 58	:::	6 45	3.9	22 25	.6
50	3 52	20 13	0 45	:::	7 4	3.6	22 11	.8
45	4 14	19 51	0 37	2 33	7 19	3.4	21 59	1.1
40	4 32	19 33	0 33	2 3	7 32	3.2	21 50	1.2
35	4 47	19 18	0 30	1 47	7 43	3.0	21 42	1.4
30	5 0	19 5	0 27	1 37	7 52	2.9	21 35	1.5
20	5 23	18 43	0 25	1 24	8 8	2.7	21 22	1.8
10	5 41	18 24	0 23	1 18	8 21	2.4	21 11	2.0
0	5 59	18 6	0 23	1 15	8 34	2.3	21 0	2.2
10	6 16	17 49	0 23	1 15	8 47	2.1	20 50	2.4
20	6 35	17 30	0 24	1 19	9 1	1.9	20 38	2.6
30	6 56	17 9	0 26	1 25	9 16	1.6	20 25	2.8
35	7 9	16 57	0 28	1 31	9 25	1.5	20 17	3.0
40	7 23	16 43	0 31	1 38	9 35	1.3	20 9	3.1
45	7 39	16 26	0 34	1 47	9 47	1.1	19 58	3.3
50	8 0	16 5	0 38	1 59	10 2	.9	19 46	3.6
55	8 27	15 38	0 46	2 18	10 20	.6	19 29	3.9
60	9 6	14 60	0 58	2 46	10 44	.2	19 8	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	146 33.1	88 18	46.7	-144	303 52.0	-13 24.5	105 10.7	7 21.1
2	175 23.4	90 18	22.1	-145	333 57.0	-13 24.5	135 15.3	7 21.0
4	204 14.1	92 17	57.0	-146	4 2.1	-13 24.6	165 20.0	7 20.8
6	233 5.4	94 17	31.5	-148	34 7.2	-13 24.7	195 24.6	7 20.7
8	261 57.1	96 17	5.6	-149	64 12.3	-13 24.8	225 29.2	7 20.6
10	290 49.2	98 16	39.4	-149	94 17.3	-13 24.8	255 33.9	7 20.4
12	319 41.8	100 16	12.7	-150	124 22.4	-13 24.9	285 38.5	7 20.3
14	348 34.9	102 15	45.7	-151	154 27.5	-13 25.0	315 43.1	7 20.1
16	17 28.4	104 15	18.3	-152	184 32.6	-13 25.1	345 47.8	7 20.0
18	46 22.3	105 14	50.6	-152	214 37.7	-13 25.2	15 52.4	7 19.9
20	75 16.7	107 14	22.6	-153	244 42.7	-13 25.2	45 57.1	7 19.7
22	104 11.5	109 13	54.3	-153	274 47.8	-13 25.3	76 1.7	7 19.6
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 2 35.9	-.5	15.8	T <sub>m</sub>	14 47	2.2	60.9		
12	- 2 42.3	T <sub>m</sub> ☉	12 h 2.7 min	Starost	2.2 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 56	.2	313	-4.1	♄	3 44	.0	31	-2.5
♂	8 49	.1	314	1.1	♅	16 57	.0	192	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	179 14.6	23 19.5	275 13.9	225 55.0	15 21.1	228 .6	16 37.6
2	209 14.4	23 19.3	305 18.8	255 54.6	15 22.5	258 2.0	16 38.7
4	239 14.1	23 19.1	335 23.8	285 54.2	15 23.9	288 3.3	16 39.7
6	269 13.8	23 18.9	5 28.7	315 53.8	15 25.3	318 4.6	16 40.8
8	299 13.6	23 18.7	35 33.6	345 53.4	15 26.7	348 5.9	16 41.8
10	329 13.3	23 18.5	65 38.5	15 53.0	15 28.1	18 7.2	16 42.8
12	359 13.1	23 18.3	95 43.5	45 52.6	15 29.5	48 8.5	16 43.9
14	29 12.8	23 18.0	125 48.4	75 52.2	15 30.9	78 9.8	16 44.9
16	59 12.5	23 17.8	155 53.3	105 51.8	15 32.3	108 11.2	16 45.9
18	89 12.3	23 17.6	185 58.3	135 51.4	15 33.7	138 12.5	16 47.0
20	119 12.0	23 17.4	216 3.2	165 51.0	15 35.1	168 13.8	16 48.0
22	149 11.8	23 17.1	246 8.1	195 50.6	15 36.5	198 15.1	16 49.0
Δ	-1	-1		-2	7	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 28	1 44	:::	8 4	4.1	22 47	.1
55	3 22	20 43	0 58	:::	8 20	3.8	22 38	.5
50	3 52	20 13	0 44	:::	8 31	3.5	22 31	.7
45	4 15	19 51	0 37	2 33	8 41	3.2	22 25	.9
40	4 33	19 33	0 33	2 3	8 49	3.0	22 20	1.1
35	4 48	19 18	0 30	1 47	8 55	2.9	22 15	1.3
30	5 1	19 5	0 27	1 36	9 1	2.7	22 11	1.4
20	5 23	18 43	0 25	1 24	9 11	2.5	22 4	1.6
10	5 42	18 24	0 23	1 18	9 20	2.3	21 58	1.8
0	5 59	18 7	0 23	1 15	9 28	2.1	21 52	2.0
10	6 17	17 49	0 23	1 15	9 37	1.9	21 46	2.2
20	6 35	17 31	0 24	1 19	9 45	1.7	21 40	2.4
30	6 56	17 10	0 26	1 25	9 55	1.4	21 33	2.7
35	7 9	16 57	0 28	1 31	10 1	1.3	21 28	2.8
40	7 23	16 43	0 31	1 38	10 7	1.2	21 24	3.0
45	7 40	16 26	0 34	1 47	10 15	1.0	21 18	3.2
50	8 0	16 6	0 38	1 59	10 24	.8	21 11	3.4
55	8 27	15 39	0 45	2 18	10 35	.5	21 2	3.7
60	9 6	15 0	0 58	2 46	10 49	.1	20 51	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	133 6.8	110 13	25.7	-154	304 52.9	-13 25.4	106 6.3	7 19.5
2	162 2.4	112 12	56.9	-154	334 58.0	-13 25.5	136 11.0	7 19.3
4	190 58.5	113 12	27.8	-154	5 3.1	-13 25.6	166 15.6	7 19.2
6	219 55.0	114 11	58.5	-155	35 8.2	-13 25.6	196 20.2	7 19.1
8	248 51.9	116 11	29.0	-155	65 13.3	-13 25.7	226 24.9	7 18.9
10	277 49.1	117 10	59.3	-155	95 18.4	-13 25.8	256 29.5	7 18.8
12	306 46.8	118 10	29.4	-155	125 23.4	-13 25.9	286 34.1	7 18.6
14	335 44.8	119 9	59.4	-155	155 28.5	-13 26.0	316 38.7	7 18.5
16	4 43.1	121 9	29.2	-155	185 33.6	-13 26.0	346 43.4	7 18.4
18	33 41.9	122 8	58.8	-155	215 38.7	-13 26.1	16 48.0	7 18.2
20	62 40.9	123 8	28.3	-155	245 43.8	-13 26.2	46 52.6	7 18.1
22	91 40.3	124 7	57.7	-154	275 48.9	-13 26.3	76 57.3	7 17.9
Δ					25	0	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 2 48.7	-.5	15.8	T <sub>m</sub>	15 40	2.1	60.3		
12	- 2 55.0	T <sub>m</sub> ☉	12 h 2.9 min	Starost	3.2 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 56	.2	312	-4.1	♄	3 40	.		

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>			
0	179	11.5	23	16.9	276	13.0	225	50.2	15	37.8	228	16.4	16	50.1	
2	209	11.3	23	16.7	306	18.0	255	49.8	15	39.2	258	17.7	16	51.1	
4	239	11.0	23	16.4	336	22.9	285	49.3	15	40.6	288	19.0	16	52.1	
6	269	10.7	23	16.2	6	27.8	315	48.9	15	42.0	318	20.3	16	53.2	
8	299	10.5	23	16.0	36	32.8	345	48.5	15	43.4	348	21.7	16	54.2	
10	329	10.2	23	15.7	66	37.7	15	48.1	15	44.8	18	23.0	16	55.2	
12	359	10.0	23	15.5	96	42.6	45	47.6	15	46.2	48	24.3	16	56.2	
14	29	9.7	23	15.2	126	47.5	75	47.2	15	47.5	78	25.6	16	57.3	
16	59	9.5	23	15.0	156	52.5	105	46.8	15	48.9	108	26.9	16	58.3	
18	89	9.2	23	14.7	186	57.4	135	46.3	15	50.3	138	28.2	16	59.3	
20	119	9.0	23	14.5	217	2.3	165	45.9	15	51.7	168	29.5	17	.3	
22	149	8.7	23	14.2	247	7.3	195	45.5	15	53.0	198	30.8	17	1.3	
Δ		-1		-1				-2		7			7		5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 39	21 27	1 43	:::	9 43	3.9	22 51	.1		
55	3 23	20 43	0 58	:::	9 50	3.6	22 49	.4		
50	3 53	20 13	0 44	:::	9 55	3.3	22 48	.7		
45	4 15	19 51	0 37	2 32	9 58	3.1	22 47	.9		
40	4 33	19 33	0 33	2 3	10 2	2.9	22 46	1.0		
35	4 48	19 18	0 30	1 47	10 4	2.8	22 45	1.2		
30	5 1	19 5	0 27	1 36	10 7	2.6	22 45	1.3		
20	5 23	18 43	0 25	1 24	10 11	2.4	22 43	1.6		
10	5 42	18 24	0 23	1 18	10 15	2.2	22 42	1.8		
0	5 59	18 7	0 23	1 15	10 18	2.0	22 41	1.9		
10	6 17	17 49	0 23	1 15	10 22	1.8	22 40	2.1		
20	6 35	17 31	0 24	1 19	10 26	1.6	22 39	2.3		
30	6 56	17 10	0 26	1 25	10 30	1.3	22 37	2.6		
35	7 9	16 58	0 28	1 31	10 32	1.2	22 36	2.7		
40	7 23	16 44	0 31	1 38	10 35	1.1	22 35	2.9		
45	7 40	16 27	0 34	1 47	10 38	.9	22 34	3.0		
50	8 0	16 6	0 38	1 59	10 42	.7	22 32	3.3		
55	8 27	15 39	0 45	2 17	10 47	.4	22 30	3.5		
60	9 6	15 1	0 57	2 46	10 53	.1	22 28	3.9		

UT	MESEC				JUPITER				SATURN						
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>
0	120	40.0	125	7	27.1	-154	305	54.0	-13	26.4	107	1.9	7	17.8	
2	149	40.0	125	6	56.3	-154	335	59.1	-13	26.5	137	6.5	7	17.7	
4	178	40.3	126	6	25.5	-154	6	4.2	-13	26.5	167	11.1	7	17.5	
6	207	40.9	127	5	54.6	-153	36	9.3	-13	26.6	197	15.8	7	17.4	
8	236	41.8	128	5	23.6	-153	66	14.4	-13	26.7	227	20.4	7	17.2	
10	265	43.0	128	4	52.6	-152	96	19.5	-13	26.8	257	25.0	7	17.1	
12	294	44.4	129	4	21.6	-152	126	24.7	-13	26.9	287	29.6	7	17.0	
14	323	46.0	130	3	50.6	-151	156	29.8	-13	27.0	317	34.3	7	16.8	
16	352	47.9	130	3	19.6	-150	186	34.9	-13	27.1	347	38.9	7	16.7	
18	21	50.1	131	2	48.6	-150	216	40.0	-13	27.2	17	43.5	7	16.5	
20	50	52.4	131	2	17.7	-149	246	45.1	-13	27.2	47	48.1	7	16.4	
22	79	54.9	131	1	46.7	-148	276	50.2	-13	27.3	77	52.8	7	16.3	
Δ								26		0			23		-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 3	1.3	- .5	15.8	T <sub>m</sub>	16 30	2.0	59.5	16.2
12	- 3	7.6	T <sub>m</sub> ☉	12 h	3.1 min	Starost	4.2 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	8 56	.2	311	-4.1	♃	3 36	.0	31	-2.5
♂	8 47	.1	313	1.1	♄	16 49	.0	192	1.0

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS					
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>			
0	179	8.5	23	13.9	277	12.2	225	45.0	15	54.4	228	32.2	17	2.4	
2	209	8.2	23	13.7	307	17.1	255	44.6	15	55.8	258	33.5	17	3.4	
4	239	8.0	23	13.4	337	22.0	285	44.1	15	57.2	288	34.8	17	4.4	
6	269	7.7	23	13.1	7	27.0	315	43.7	15	58.5	318	36.1	17	5.4	
8	299	7.4	23	12.8	37	31.9	345	43.2	15	59.9	348	37.4	17	6.4	
10	329	7.2	23	12.6	67	36.8	15	42.8	16	1.3	18	38.7	17	7.4	
12	359	6.9	23	12.3	97	41.8	45	42.3	16	2.6	48	40.0	17	8.4	
14	29	6.7	23	12.0	127	46.7	75	41.8	16	4.0	78	41.3	17	9.4	
16	59	6.4	23	11.7	157	51.6	105	41.4	16	5.3	108	42.6	17	10.5	
18	89	6.2	23	11.4	187	56.5	135	40.9	16	6.7	138	43.9	17	11.5	
20	119	6.0	23	11.1	218	1.5	165	40.4	16	8.1	168	45.3	17	12.5	
22	149	5.7	23	10.8	248	6.4	195	40.0	16	9.4	198	46.6	17	13.5	
Δ		-1		-1				-2		7			7		5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 39	21 27	1 41	:::	11 18	3.8	22 54	.1		
55	3 24	20 43	0 58	:::	11 16	3.5	22 60	.5		
50	3 53	20 13	0 44	:::	11 14	3.2	23 4	.7		
45	4 16	19 51	0 37	2 32	11 13	3.0	23 8	.9		
40	4 34	19 33	0 33	2 3	11 11	2.8	23 11	1.1		
35	4 49	19 18	0 30	1 47	11 10	2.7	23 14	1.2		
30	5 1	19 5	0 27	1 36	11 10	2.5	23 16	1.3		
20	5 23	18 43	0 25	1 24	11 8	2.3	23 21	1.5		
10	5 42	18 24	0 23	1 18	11 7	2.1	23 24	1.7		
0	5 60	18 7	0 23	1 15	11 6	1.9	23 28	1.9		
10	6 17	17 50	0 23	1 15	11 5	1.7	23 31	2.1		
20	6 35	17 31	0 24	1 19	11 3	1.5	23 35	2.3		
30	6 56	17 10	0 26	1 25	11 2	1.3	23 39	2.5		
35	7 9	16 58	0 28	1 31	11 1	1.2	23 41	2.6		
40	7 23	16 44	0 31	1 38	11 1	1.0	23 44	2.8		
45	7 40	16 27	0 34	1 47	10 60	.9	23 47	3.0		
50	8 0	16 7	0 38	1 59	10 58	.7	23 51	3.2		
55	8 27	15 40	0 45	2 17	10 57	.4	23 55	3.4		
60	9 5	15 2	0 57	2 45	10 55	.1	...	.0		

UT	MESEC				JUPITER				SATURN						
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>
0	108	57.7	132	1	15.8	-147	306	55.3	-13	27.4	107	57.4	7	16.1	
2	138	.6	132	0	45.0	-146	337	.4	-13	27.5	138	2.0	7	16.0	
4	167	3.7	132	0	14.2	-146	7	5.6	-13	27.6	168	6.6	7	15.8	
6	196	6.9	132	- 0	16.5	-145	37	10.7	-13	27.7	198	11.2	7	15.7	
8	225	10.4	132	- 0	47.1	-144	67	15.8	-13	27.8	228	15.9	7	15.5	
10	254	13.9	133	- 1	17.7	-143	97	20.9	-13	27.9	258	20.5	7	15.4	
12	283	17.6	133	- 1	48.1	-142	127	26.0	-13	28.0	288	25.1	7	15.3	
14	312	21.4	133	- 2	18.4	-141	157	31.2	-13	28.1	318	29.7	7	15.1	
16	341	25.3	133	- 2	48.6	-139	187	36.3	-13	28.2	348	34.3	7	15.0	
18	10	29.3	133	- 3	18.6	-138	217	41.4	-13	28.2	18	39.0	7	14.8	
20	39	33.4	132	- 3	48.6	-137	247	46.6	-13	28.3	48	43.6	7	14.7	
22	68	37.6	132	- 4	18.4	-136	277	51.7	-13	28.4	78	48.2	7	14.5	
Δ								26		0			23		-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 3	13.8	- .5	15.8	T <sub>m</sub>	17 17	1.9	58.7	16.0
12	- 3	19.9	T <sub>m</sub> ☉	12 h	3.3 min	Starost	5.2 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°						

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	5.5	23	10.5	278	11.3	225	39.5	16	10.8	228	47.9	17	14.5
2	209	5.2	23	10.2	308	16.3	255	39.0	16	12.1	258	49.2	17	15.5
4	239	5.0	23	9.9	338	21.2	285	38.5	16	13.5	288	50.5	17	16.5
6	269	4.7	23	9.6	8	26.1	315	38.1	16	14.8	318	51.8	17	17.5
8	299	4.5	23	9.3	38	31.0	345	37.6	16	16.2	348	53.1	17	18.5
10	329	4.2	23	9.0	68	36.0	15	37.1	16	17.5	18	54.4	17	19.5
12	359	4.0	23	8.7	98	40.9	45	36.6	16	18.9	48	55.7	17	20.5
14	29	3.7	23	8.4	128	45.8	75	36.1	16	20.2	78	57.0	17	21.5
16	59	3.5	23	8.0	158	50.7	105	35.6	16	21.6	108	58.3	17	22.4
18	89	3.2	23	7.7	188	55.7	135	35.1	16	22.9	138	59.6	17	23.4
20	119	3.0	23	7.4	219	.6	165	34.6	16	24.2	169	.9	17	24.4
22	149	2.8	23	7.1	249	5.5	195	34.1	16	25.6	199	2.3	17	25.4
Δ		-1		-2				-2		7			7	5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 26	1 40	:::	12 50	3.8	22 57	.2		
55	3 24	20 43	0 57	:::	12 39	3.4	23 11	.5		
50	3 54	20 13	0 44	:::	12 31	3.1	23 21	.8		
45	4 16	19 51	0 37	2 31	12 24	2.9	23 30	1.0		
40	4 34	19 33	0 33	2 2	12 19	2.8	23 37	1.1		
35	4 49	19 18	0 30	1 47	12 14	2.6	23 43	1.3		
30	5 2	19 5	0 27	1 36	12 10	2.5	23 48	1.4		
20	5 24	18 43	0 25	1 24	12 3	2.3	23 58	1.6		
10	5 42	18 25	0 23	1 18	11 57	2.1	...	.0		
0	5 60	18 7	0 22	1 15	11 52	1.9	...	.0		
10	6 17	17 50	0 23	1 15	11 46	1.7	...	.0		
20	6 36	17 32	0 24	1 19	11 40	1.6	...	.0		
30	6 57	17 11	0 26	1 25	11 34	1.3	...	.0		
35	7 9	16 58	0 28	1 31	11 30	1.2	...	.0		
40	7 23	16 44	0 31	1 37	11 25	1.1	...	.0		
45	7 39	16 28	0 34	1 47	11 21	.9	...	.0		
50	7 60	16 7	0 38	1 59	11 15	.7	...	.0		
55	8 27	15 41	0 45	2 17	11 7	.5	...	.0		
60	9 5	15 2	0 57	2 45	10 58	.1	0 2	3.8		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	97	41.9	132	-4	48.0	-135	307	56.8	-13	28.5	108	52.8	7	14.4		
2	126	46.2	132	-5	17.4	-133	338	1.9	-13	28.6	138	57.4	7	14.2		
4	155	50.6	132	-5	46.7	-132	8	7.1	-13	28.7	169	2.0	7	14.1		
6	184	55.1	131	-6	15.8	-131	38	12.2	-13	28.8	199	6.6	7	13.9		
8	213	59.5	131	-6	44.8	-129	68	17.3	-13	28.9	229	11.3	7	13.8		
10	243	4.0	131	-7	13.5	-128	98	22.5	-13	29.0	259	15.9	7	13.7		
12	272	8.5	130	-7	42.0	-126	128	27.6	-13	29.1	289	20.5	7	13.5		
14	301	13.1	130	-8	10.4	-125	158	32.8	-13	29.2	319	25.1	7	13.4		
16	330	17.6	129	-8	38.5	-123	188	37.9	-13	29.3	349	29.7	7	13.2		
18	359	22.1	129	-9	6.3	-122	218	43.0	-13	29.4	19	34.3	7	13.1		
20	28	26.6	128	-9	34.0	-120	248	48.2	-13	29.5	49	38.9	7	12.9		
22	57	31.1	128	-10	1.4	-119	278	53.3	-13	29.6	79	43.5	7	12.8		
Δ								26		0			23		-1	

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	-3	26.0	-.5	15.8	T <sub>m</sub>	18 3	1.9	57.8	15.7
12	-3	32.0	T <sub>m</sub> ☉	12 h 3.5 min	Starost	6.2 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 57	.2	309	-4.0	♃	3 28	.0	31	-2.5
♂	8 44	.1	312	1.1	♄	16 42	.0	192	1.0

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	2.5	23	6.7	279	10.5	225	33.6	16	26.9	229	3.6	17	26.4
2	209	2.3	23	6.4	309	15.4	255	33.1	16	28.2	259	4.9	17	27.4
4	239	2.0	23	6.1	339	20.3	285	32.6	16	29.6	289	6.2	17	28.4
6	269	1.8	23	5.7	9	25.2	315	32.1	16	30.9	319	7.5	17	29.4
8	299	1.6	23	5.4	39	30.2	345	31.6	16	32.2	349	8.8	17	30.3
10	329	1.3	23	5.0	69	35.1	15	31.0	16	33.6	19	10.1	17	31.3
12	359	1.1	23	4.7	99	40.0	45	30.5	16	34.9	49	11.4	17	32.3
14	29	.8	23	4.3	129	45.0	75	30.0	16	36.2	79	12.7	17	33.3
16	59	.6	23	4.0	159	49.9	105	29.5	16	37.5	109	14.0	17	34.3
18	89	.4	23	3.6	189	54.8	135	29.0	16	38.8	139	15.3	17	35.2
20	119	.1	23	3.3	219	59.7	165	28.4	16	40.2	169	16.6	17	36.2
22	148	59.9	23	2.9	250	4.7	195	27.9	16	41.5	199	17.9	17	37.2
Δ		-1		-2				-3		7			7	5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 26	1 39	:::	14 20	3.8	23 1	.3		
55	3 25	20 42	0 57	:::	14 1	3.4	23 23	.7		
50	3 54	20 13	0 44	:::	13 46	3.1	23 40	.9		
45	4 17	19 51	0 37	2 31	13 35	2.9	23 53	1.1		
40	4 34	19 33	0 33	2 2	13 25	2.7	...	.0		
35	4 49	19 18	0 30	1 46	13 17	2.6	...	.0		
30	5 2	19 5	0 27	1 36	13 10	2.5	...	.0		
20	5 24	18 43	0 25	1 24	12 58	2.3	...	.0		
10	5 43	18 25	0 23	1 17	12 47	2.1	0 6	1.8		
0	6 0	18 7	0 22	1 15	12 38	1.9	0 14	1.9		
10	6 17	17 50	0 23	1 15	12 28	1.8	0 21	2.1		
20	6 36	17 32	0 24	1 19	12 17	1.6	0 30	2.3		
30	6 57	17 11	0 26	1 25	12 6	1.4	0 39	2.5		
35	7 9	16 59	0 28	1 31	11 59	1.3	0 45	2.6		
40	7 23	16 45	0 30	1 37	11 51	1.2	0 51	2.7		
45	7 39	16 28	0 34	1 47	11 43	1.0	0 58	2.9		
50	7 60	16 8	0 38	1 59	11 32	.8	1 7	3.1		
55	8 26	15 41	0 45	2 17	11 19	.6	1 19	3.4		
60	9 4	15 3	0 57	2 45	11 2	.2	1 33	3.8		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	86	35.5	127	-10	28.6	-117	308	58.5	-13	29.7	109	48.1	7	12.6		
2	115	39.9	126	-10	55.5	-115	339	3.6	-13	29.8	139	52.7	7	12.5		
4	144	44.3	126	-11	22.2	-114	9	8.8	-13	29.9	169	57.4	7	12.3		
6	173	48.6	125	-11	48.6	-112	39	13.9	-13	30.0	200	2.0	7	12.2		
8	202	52.8	125	-12	14.7	-110	69	19.1	-13	30.1	230	6.6	7	12.0		
10	231	57.0	124	-12	40.5	-108	99	24.2	-13	30.2	260	11.2	7	11.9		
12	261	1.1	123	-13	6.1	-106	129	29.4	-13	30.3	290	15.8	7	11.7		
14	290	5.1	123	-13	31.3	-105	159	34.5	-13	30.4	320	20.4	7	11.6		
16	319	9.1	122	-13	56.3	-103	189	39.7	-13	30.5	350	25.0	7	11.4		
18	348	12.9	121	-14	21.0	-101	219	44.8	-13	30.6	20	29.6	7	11.3		
20	17	16.7	120	-14	45.3											



UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
0	178	59.6	23	2.5	280	9.6	225	27.4	16	42.8	229	19.2	17	38.2
2	208	59.4	23	2.2	310	14.5	255	26.8	16	44.1	259	20.5	17	39.1
4	238	59.2	23	1.8	340	19.5	285	26.3	16	45.4	289	21.8	17	40.1
6	268	58.9	23	1.4	10	24.4	315	25.7	16	46.7	319	23.1	17	41.1
8	298	58.7	23	1.0	40	29.3	345	25.2	16	48.0	349	24.4	17	42.0
10	328	58.5	23	.7	70	34.2	15	24.6	16	49.3	19	25.8	17	43.0
12	358	58.2	23	.3	100	39.2	45	24.1	16	50.6	49	27.1	17	44.0
14	28	58.0	22	59.9	130	44.1	75	23.5	16	51.9	79	28.4	17	44.9
16	58	57.8	22	59.5	160	49.0	105	23.0	16	53.2	109	29.7	17	45.9
18	88	57.5	22	59.1	190	54.0	135	22.4	16	54.5	139	31.0	17	46.9
20	118	57.3	22	58.7	220	58.9	165	21.9	16	55.8	169	32.3	17	47.8
22	148	57.1	22	58.3	251	3.8	195	21.3	16	57.1	199	33.6	17	48.8
Δ		-1		-2				-3		7		7		5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 42	21 25	1 37	:: ::	15 51	3.7	23 8	.4		
55	3 26	20 42	0 57	:: ::	15 22	3.3	23 39	.9		
50	3 55	20 12	0 44	:: ::	15 1	3.0	...	.0		
45	4 17	19 50	0 37	2 30	14 44	2.8	...	.0		
40	4 35	19 33	0 33	2 2	14 31	2.7	0 4	1.3		
35	4 50	19 18	0 30	1 46	14 19	2.6	0 13	1.4		
30	5 3	19 5	0 27	1 36	14 10	2.5	0 21	1.5		
20	5 24	18 44	0 24	1 24	13 53	2.3	0 36	1.7		
10	5 43	18 25	0 23	1 17	13 38	2.1	0 48	1.8		
0	6 0	18 8	0 22	1 15	13 24	2.0	0 60	2.0		
10	6 17	17 50	0 23	1 15	13 11	1.9	1 12	2.1		
20	6 36	17 32	0 24	1 18	12 56	1.7	1 24	2.3		
30	6 57	17 11	0 26	1 25	12 40	1.6	1 39	2.5		
35	7 9	16 59	0 28	1 30	12 30	1.5	1 47	2.6		
40	7 23	16 45	0 30	1 37	12 20	1.3	1 57	2.7		
45	7 39	16 29	0 34	1 46	12 7	1.2	2 8	2.9		
50	7 60	16 8	0 38	1 59	11 52	1.0	2 22	3.1		
55	8 26	15 42	0 45	2 17	11 33	.7	2 40	3.3		
60	9 4	15 4	0 57	2 45	11 7	.3	3 4	3.8		
S										

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>		δ <sub>♃</sub>	S <sub>♄</sub>		δ <sub>♄</sub>			
0	75	23.8	119	-15	33.1	-95	310	.3	-13	30.9	110	43.4	7	10.8
2	104	27.3	118	-15	56.4	-93	340	5.5	-13	31.0	140	48.0	7	10.7
4	133	30.6	117	-16	19.5	-91	10	10.6	-13	31.1	170	52.6	7	10.5
6	162	33.7	116	-16	42.2	-89	40	15.8	-13	31.2	200	57.2	7	10.4
8	191	36.8	116	-17	4.5	-87	70	21.0	-13	31.4	231	1.8	7	10.2
10	220	39.7	115	-17	26.5	-84	100	26.1	-13	31.5	261	6.4	7	10.1
12	249	42.5	114	-17	48.2	-82	130	31.3	-13	31.6	291	11.0	7	9.9
14	278	45.1	113	-18	9.5	-80	160	36.5	-13	31.7	321	15.6	7	9.8
16	307	47.6	113	-18	30.4	-78	190	41.6	-13	31.8	351	20.2	7	9.6
18	336	50.0	112	-18	50.9	-76	220	46.8	-13	31.9	21	24.8	7	9.5
20	5	52.2	111	-19	11.0	-73	250	52.0	-13	32.0	51	29.4	7	9.3
22	34	54.3	110	-19	30.8	-71	280	57.2	-13	32.1	81	34.0	7	9.2
Δ								26		-1		23		-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 3 49.7	-.5	15.8	T <sub>m</sub>	19 36	2.0	56.2	15.3	
12	- 3 55.5	T <sub>m</sub> ☉	12 h 3.9 min	Starost	8.2 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	8 58	.2	306	-4.0	♄	3 19	.0	31	-2.5
♂	8 42	.1	310	1.1	♅	16 35	.0	192	1.0

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
0	178	56.9	22	57.9	281	8.7	225	20.8	16	58.4	229	34.9	17	49.7
2	208	56.6	22	57.5	311	13.7	255	20.2	16	59.7	259	36.2	17	50.7
4	238	56.4	22	57.1	341	18.6	285	19.6	17	1.0	289	37.5	17	51.7
6	268	56.2	22	56.7	11	23.5	315	19.0	17	2.3	319	38.8	17	52.6
8	298	55.9	22	56.3	41	28.5	345	18.5	17	3.6	349	40.1	17	53.6
10	328	55.7	22	55.9	71	33.4	15	17.9	17	4.9	19	41.4	17	54.5
12	358	55.5	22	55.5	101	38.3	45	17.3	17	6.1	49	42.7	17	55.5
14	28	55.3	22	55.0	131	43.2	75	16.7	17	7.4	79	44.0	17	56.4
16	58	55.0	22	54.6	161	48.2	105	16.1	17	8.7	109	45.3	17	57.4
18	88	54.8	22	54.2	191	53.1	135	15.6	17	10.0	139	46.6	17	58.3
20	118	54.6	22	53.8	221	58.0	165	15.0	17	11.3	169	47.9	17	59.3
22	148	54.4	22	53.3	252	2.9	195	14.4	17	12.5	199	49.2	18	.2
Δ		-1		-2				-3		6		7		5

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	2 43	21 24	1 36	:: ::	17 21	3.6	23 18	.8		
55	3 26	20 41	0 57	:: ::	16 41	3.1	23 60	1.2		
50	3 56	20 12	0 44	:: ::	16 13	2.9	0 2	1.1		
45	4 18	19 50	0 37	2 30	15 52	2.7	0 19	1.3		
40	4 35	19 33	0 33	2 2	15 35	2.6	0 34	1.4		
35	4 50	19 18	0 30	1 46	15 21	2.5	0 46	1.5		
30	5 3	19 5	0 27	1 36	15 9	2.4	0 57	1.6		
20	5 25	18 44	0 24	1 24	14 48	2.3	1 16	1.8		
10	5 43	18 25	0 23	1 17	14 29	2.2	1 32	1.9		
0	6 0	18 8	0 22	1 15	14 13	2.1	1 47	2.0		
10	6 18	17 51	0 23	1 15	13 56	2.0	2 3	2.2		
20	6 36	17 33	0 24	1 18	13 38	1.9	2 19	2.3		
30	6 57	17 12	0 26	1 25	13 17	1.7	2 38	2.4		
35	7 9	16 60	0 28	1 30	13 5	1.7	2 49	2.5		
40	7 23	16 46	0 30	1 37	12 52	1.6	3 2	2.6		
45	7 39	16 29	0 34	1 46	12 36	1.4	3 17	2.8		
50	7 59	16 9	0 38	1 59	12 16	1.3	3 36	2.9		
55	8 26	15 43	0 45	2 17	11 51	1.0	4 0	3.2		
60	9 3	15 5	0 57	2 44	11 15	.6	4 34	3.7		
S										

UT	MESEC				JUPITER				SATURN					
	S <sub>♃</sub>		Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>		δ <sub>♃</sub>	S <sub>♄</sub>		δ <sub>♄</sub>			
0	63	56.2	110	-19	50.1	-69	311	2.3	-13	32.2	111	38.6	7	9.0
2	92	57.9	109	-20	9.1	-66	341	7.5	-13	32.3	141	43.2	7	8.9
4	121	59.5	108	-20	27.6	-64	11	12.7	-13	32.4	171	47.8	7	8.7
6	151	1.0	108	-20	45.8	-62	41	17.9	-13	32.6	201	52.4	7	8.6
8	180	2.3	107	-21	3.5	-59	71	23.0	-13	32.7	231	57.0	7	8.4
10	209	3.4	106	-21	20.8	-57	101	28.2	-13	32.8	262	1.6	7	8.3
12	238	4.4	106	-21	37.6	-54	131	33.4	-13	32.9	292	6.2	7	8.1
14	267	5.2	105	-21	54.1	-52	161	38.6	-13	33.0	322	10.8	7	8.0
16	296	5.9	105	-22	10.1	-50	191	43.8	-13	33.1	352	15.3	7	7.8
18	325	6.4	104	-22	25.6	-47	221	49.0	-13	33.2	22	19.9	7	7.6
20	354	6.8	104	-22	40.7	-45	251	54.1	-13	33.3	52	24.5	7	7.5
22	23	7.0	103	-22	55.4	-42	281	59.3	-13	33.5	82	29.1	7	7.3
Δ								26		-1		23		-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 4 1.2	-.5	15.8	T <sub>m</sub>	20 24	2.1	55.6	15.1	
12	- 4 6.8	T <sub>m</sub> ☉	12 h 4.1 min	Starost	9.2 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'		

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 54.1	22 52.9	282 7.9	225 13.8	17 13.8	229 50.5	18 1.2
2	208 53.9	22 52.5	312 12.8	255 13.2	17 15.1	259 51.8	18 2.1
4	238 53.7	22 52.0	342 17.7	285 12.6	17 16.3	289 53.1	18 3.0
6	268 53.5	22 51.6	12 22.7	315 12.0	17 17.6	319 54.4	18 4.0
8	298 53.2	22 51.2	42 27.6	345 11.4	17 18.9	349 55.7	18 4.9
10	328 53.0	22 50.7	72 32.5	15 10.8	17 20.1	19 57.0	18 5.8
12	358 52.8	22 50.3	102 37.4	45 10.2	17 21.4	49 58.3	18 6.8
14	28 52.6	22 49.8	132 42.4	75 9.6	17 22.6	79 59.6	18 7.7
16	58 52.4	22 49.4	162 47.3	105 8.9	17 23.9	110 .9	18 8.7
18	88 52.1	22 48.9	192 52.2	135 8.3	17 25.1	140 2.2	18 9.6
20	118 51.9	22 48.4	222 57.2	165 7.7	17 26.4	170 3.5	18 10.5
22	148 51.7	22 48.0	253 2.1	195 7.1	17 27.6	200 4.8	18 11.4
Δ	-1	-2		-3	6	7	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 45	21 23	1 35	:: ::	18 46	3.0	23 37	1.4
55	3 27	20 41	0 56	:: ::	17 55	2.7	.. .	.0
50	3 56	20 12	0 44	:: ::	17 22	2.6	0 29	1.4
45	4 18	19 50	0 37	2 29	16 57	2.5	0 51	1.6
40	4 36	19 32	0 33	2 1	16 37	2.4	1 9	1.7
35	4 51	19 18	0 30	1 46	16 21	2.4	1 24	1.8
30	5 3	19 5	0 27	1 36	16 6	2.3	1 37	1.8
20	5 25	18 44	0 24	1 24	15 42	2.2	1 59	1.9
10	5 43	18 25	0 23	1 17	15 22	2.2	2 18	2.0
0	6 1	18 8	0 22	1 15	15 2	2.1	2 36	2.1
10	6 18	17 51	0 23	1 15	14 43	2.1	2 54	2.2
20	6 36	17 33	0 24	1 18	14 23	2.0	3 14	2.3
30	6 57	17 12	0 26	1 25	13 59	1.9	3 37	2.4
35	7 9	17 0	0 28	1 30	13 45	1.9	3 50	2.4
40	7 22	16 46	0 30	1 37	13 29	1.8	4 5	2.5
45	7 39	16 30	0 34	1 46	13 10	1.7	4 24	2.6
50	7 59	16 10	0 38	1 59	12 47	1.6	4 46	2.7
55	8 25	15 44	0 45	2 16	12 15	1.5	5 17	2.9
60	9 2	15 6	0 57	2 44	11 29	1.1	6 2	3.3

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	52 7.1	103 -23	9.6	-40	312 4.5	-13 33.6	112 33.7	7 7.2
2	81 7.0	102 -23	23.3	-37	342 9.7	-13 33.7	142 38.3	7 7.0
4	110 6.8	102 -23	36.6	-34	12 14.9	-13 33.8	172 42.9	7 6.9
6	139 6.5	102 -23	49.4	-32	42 20.1	-13 33.9	202 47.5	7 6.7
8	168 6.0	101 -24	1.7	-29	72 25.3	-13 34.0	232 52.1	7 6.6
10	197 5.4	101 -24	13.6	-27	102 30.5	-13 34.2	262 56.7	7 6.4
12	226 4.6	101 -24	25.0	-24	132 35.7	-13 34.3	293 1.2	7 6.3
14	255 3.8	101 -24	35.8	-22	162 40.9	-13 34.4	323 5.8	7 6.1
16	284 2.8	100 -24	46.2	-19	192 46.1	-13 34.5	353 10.4	7 5.9
18	313 1.7	100 -24	56.1	-16	222 51.3	-13 34.6	23 15.0	7 5.8
20	342 .5	100 -25	5.5	-14	252 56.5	-13 34.7	53 19.6	7 5.6
22	10 59.2	100 -25	14.4	-11	283 1.7	-13 34.9	83 24.2	7 5.5
Δ					26	-1	23	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s / ' / "	' / "	h min	min	' / "	' / "
00	- 4 12.4	-.5	15.8	T <sub>m</sub>	21 15	2.1	55.1 15.0
12	- 4 17.9	T <sub>m☉</sub>	12 h 4.3 min	Starost 10.2 d Faza ☉			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min / ' / "	' / "	' / "	' / "	' / "	h min / ' / "	' / "	' / "	' / "	' / "
♃ 8 59 .2 304 -4.0 ♃ 3 11 .0 31 -2.5					♄ 16 27 .0 191 1.0				
♅ 8 40 .1 309 1.1 ♅ 16 27 .0 191 1.0									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 51.5	22 47.5	283 7.0	225 6.5	17 28.9	230 6.1	18 12.4
2	208 51.3	22 47.0	313 11.9	255 5.8	17 30.1	260 7.4	18 13.3
4	238 51.1	22 46.6	343 16.9	285 5.2	17 31.4	290 8.7	18 14.2
6	268 50.9	22 46.1	13 21.8	315 4.6	17 32.6	320 10.0	18 15.2
8	298 50.6	22 45.6	43 26.7	345 3.9	17 33.9	350 11.3	18 16.1
10	328 50.4	22 45.1	73 31.7	15 3.3	17 35.1	20 12.6	18 17.0
12	358 50.2	22 44.7	103 36.6	45 2.7	17 36.3	50 13.9	18 17.9
14	28 50.0	22 44.2	133 41.5	75 2.0	17 37.6	80 15.2	18 18.8
16	58 49.8	22 43.7	163 46.4	105 1.4	17 38.8	110 16.5	18 19.8
18	88 49.6	22 43.2	193 51.4	135 .7	17 40.0	140 17.8	18 20.7
20	118 49.4	22 42.7	223 56.3	165 .1	17 41.2	170 19.1	18 21.6
22	148 49.2	22 42.2	254 1.2	194 59.4	17 42.5	200 20.4	18 22.5
Δ	-1	-2		-3	6	6	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 46	21 22	1 33	:: ::	19 59	2.1	.. .	.0
55	3 28	20 40	0 56	:: ::	18 60	2.1	0 29	1.7
50	3 57	20 11	0 44	:: ::	18 23	2.1	1 3	1.8
45	4 19	19 50	0 37	2 29	17 56	2.1	1 29	1.9
40	4 36	19 32	0 33	2 1	17 35	2.2	1 49	2.0
35	4 51	19 18	0 29	1 46	17 17	2.1	2 6	2.0
30	5 4	19 5	0 27	1 36	17 2	2.1	2 20	2.0
20	5 25	18 44	0 24	1 23	16 36	2.1	2 45	2.1
10	5 44	18 25	0 23	1 17	16 14	2.1	3 7	2.1
0	6 1	18 8	0 22	1 15	15 53	2.1	3 27	2.1
10	6 18	17 51	0 23	1 15	15 33	2.1	3 47	2.2
20	6 36	17 33	0 24	1 18	15 11	2.1	4 8	2.2
30	6 56	17 13	0 26	1 25	14 45	2.1	4 33	2.2
35	7 8	17 1	0 28	1 30	14 30	2.1	4 48	2.3
40	7 22	16 47	0 30	1 37	14 13	2.1	5 5	2.3
45	7 39	16 31	0 34	1 46	13 52	2.1	5 26	2.3
50	7 59	16 11	0 38	1 59	13 26	2.0	5 52	2.4
55	8 25	15 45	0 45	2 16	12 50	2.0	6 27	2.4
60	9 2	15 8	0 56	2 44	11 55	1.9	7 22	2.6

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	39 57.9	100 -25	22.9	-9	313 6.9	-13 35.0	113 28.8	7 5.3
2	68 56.4	100 -25	30.8	-6	343 12.1	-13 35.1	143 33.3	7 5.2
4	97 54.8	101 -25	38.1	-3	13 17.3	-13 35.2	173 37.9	7 5.0
6	126 53.2	101 -25	45.0	-1	43 22.5	-13 35.3	203 42.5	7 4.8
8	155 51.5	101 -25	51.4	2	73 27.7	-13 35.5	233 47.1	7 4.7
10	184 49.8	101 -25	57.3	4	103 32.9	-13 35.6	263 51.7	7 4.5
12	213 48.0	101 -26	2.6	7	133 38.1	-13 35.7	293 56.3	7 4.4
14	242 46.1	102 -26	7.5	9	163 43.3	-13 35.8	324 .8	7 4.2
16	271 44.3	102 -26	11.8	12	193 48.6	-13 36.0	354 5.4	7 4.0
18	300 42.4	103 -26	15.6	15	223 53.8	-13 36.1	24 10.0	7 3.9
20	329 40.4	103 -26	18.8	17	253 59.0	-13 36.2	54 14.6	7 3.7
22	358 38.5	104 -26	21.6	20	284 4.2	-13 36.3	84 19.2	7 3.6
Δ					26	-1	23	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min s	s / ' / "	' / "	h min	min	' / "	' / "
00	- 4 23.3	-.4	15.8	T <sub>m</sub>	22 6	2.1	54.7 14.9
12	- 4 28.6	T <sub>m☉</sub>	12 h 4.5 min	Starost 11.2 d Faza ☉			

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min / ' / "	' / "	' / "	' / "	' / "	h min / ' / "	' / "	' / "	' / "	' / "
♃ 8 59 .2 303 -4.0 ♃ 3 7 .0 31 -2.5									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 48.9	22 41.7	284 6.2	224 58.8	17 43.7	230 21.7	18 23.4
2	208 48.7	22 41.2	314 11.1	254 58.1	17 44.9	260 23.0	18 24.3
4	238 48.5	22 40.7	344 16.0	284 57.5	17 46.1	290 24.3	18 25.2
6	268 48.3	22 40.2	14 20.9	314 56.8	17 47.3	320 25.6	18 26.2
8	298 48.1	22 39.7	44 25.9	344 56.1	17 48.6	350 26.9	18 27.1
10	328 47.9	22 39.2	74 30.8	14 55.5	17 49.8	20 28.2	18 28.0
12	358 47.7	22 38.7	104 35.7	44 54.8	17 51.0	50 29.5	18 28.9
14	28 47.5	22 38.1	134 40.7	74 54.1	17 52.2	80 30.8	18 29.8
16	58 47.3	22 37.6	164 45.6	104 53.5	17 53.4	110 32.1	18 30.7
18	88 47.1	22 37.1	194 50.5	134 52.8	17 54.6	140 33.4	18 31.6
20	118 46.9	22 36.6	224 55.4	164 52.1	17 55.8	170 34.7	18 32.5
22	148 46.7	22 36.0	255 .4	194 51.4	17 57.0	200 36.0	18 33.4
Δ	-1	-3		-3	6	6	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 47	21 21	1 32	:: ::	20 49	1.2	0 11	2.3
55	3 29	20 39	0 56	:: ::	19 51	1.6	1 10	2.3
50	3 58	20 11	0 44	:: ::	19 14	1.7	1 47	2.2
45	4 20	19 49	0 37	2 28	18 48	1.8	2 14	2.2
40	4 37	19 32	0 32	2 1	18 26	1.9	2 36	2.2
35	4 52	19 18	0 29	1 46	18 9	1.9	2 54	2.2
30	5 4	19 5	0 27	1 35	17 53	1.9	3 9	2.2
20	5 26	18 44	0 24	1 23	17 28	2.0	3 35	2.2
10	5 44	18 25	0 23	1 17	17 5	2.1	3 57	2.1
0	6 1	18 8	0 22	1 15	16 44	2.1	4 18	2.1
10	6 18	17 51	0 23	1 15	16 24	2.1	4 39	2.1
20	6 36	17 34	0 24	1 18	16 1	2.2	5 1	2.1
30	6 56	17 13	0 26	1 25	15 36	2.2	5 27	2.1
35	7 8	17 1	0 28	1 30	15 20	2.3	5 42	2.0
40	7 22	16 47	0 30	1 37	15 3	2.3	6 0	2.0
45	7 38	16 31	0 34	1 46	14 41	2.4	6 21	2.0
50	7 58	16 11	0 38	1 58	14 15	2.4	6 48	1.9
55	8 24	15 45	0 45	2 16	13 38	2.5	7 25	1.8
60	9 1	15 9	0 56	2 43	12 40	2.7	8 23	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	27 36.6	104 -26	23.8	22	314 9.4	-13 36.4	114 23.7	7 3.4
2	56 34.6	105 -26	25.6	25	344 14.6	-13 36.6	144 28.3	7 3.2
4	85 32.7	105 -26	26.8	27	14 19.9	-13 36.7	174 32.9	7 3.1
6	114 30.8	106 -26	27.4	30	44 25.1	-13 36.8	204 37.5	7 2.9
8	143 29.0	107 -26	27.6	32	74 30.3	-13 37.0	234 42.0	7 2.8
10	172 27.2	107 -26	27.3	35	104 35.5	-13 37.1	264 46.6	7 2.6
12	201 25.4	108 -26	26.4	37	134 40.8	-13 37.2	294 51.2	7 2.4
14	230 23.7	109 -26	25.0	39	164 46.0	-13 37.3	324 55.8	7 2.3
16	259 22.1	110 -26	23.1	42	194 51.2	-13 37.5	355 .3	7 2.1
18	288 20.5	111 -26	20.7	44	224 56.4	-13 37.6	25 4.9	7 2.0
20	317 19.0	111 -26	17.8	46	255 1.7	-13 37.7	55 9.5	7 1.8
22	346 17.6	112 -26	14.3	49	285 6.9	-13 37.8	85 14.1	7 1.6
Δ					26	-1	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>♃</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 4 33.8	-.4	15.8	T <sub>m</sub>	22 57	2.1	54.3 14.8		
12	- 4 38.9	T <sub>m</sub> ☉	12 h 4.7 min	Starost 12.2 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	8 60	.2	302	-4.0	♃	3 3	.0	31	-2.5
♂	8 38	.1	307	1.1	♄	16 20	.0	191	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 46.5	22 35.5	285 5.3	224 50.7	17 58.2	230 37.3	18 34.3
2	208 46.3	22 35.0	315 10.2	254 50.1	17 59.4	260 38.6	18 35.2
4	238 46.1	22 34.4	345 15.2	284 49.4	18 .6	290 39.8	18 36.1
6	268 45.9	22 33.9	15 20.1	314 48.7	18 1.8	320 41.1	18 37.0
8	298 45.7	22 33.4	45 25.0	344 48.0	18 2.9	350 42.4	18 37.9
10	328 45.5	22 32.8	75 29.9	14 47.3	18 4.1	20 43.7	18 38.8
12	358 45.3	22 32.3	105 34.9	44 46.6	18 5.3	50 45.0	18 39.7
14	28 45.1	22 31.7	135 39.8	74 45.9	18 6.5	80 46.3	18 40.5
16	58 44.9	22 31.2	165 44.7	104 45.2	18 7.7	110 47.6	18 41.4
18	88 44.7	22 30.6	195 49.6	134 44.5	18 8.8	140 48.9	18 42.3
20	118 44.5	22 30.1	225 54.6	164 43.8	18 10.0	170 50.2	18 43.2
22	148 44.3	22 29.5	255 59.5	194 43.1	18 11.2	200 51.5	18 44.1
Δ	-1	-3		-3	6	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 49	21 20	1 30	:: ::	21 18	.7	1 7	3.1
55	3 30	20 39	0 56	:: ::	20 28	1.1	2 5	2.7
50	3 59	20 10	0 43	:: ::	19 55	1.3	2 41	2.6
45	4 20	19 49	0 37	2 27	19 31	1.5	3 8	2.5
40	4 38	19 32	0 32	2 0	19 11	1.6	3 29	2.4
35	4 52	19 17	0 29	1 45	18 54	1.7	3 46	2.3
30	5 5	19 5	0 27	1 35	18 40	1.7	4 1	2.3
20	5 26	18 44	0 24	1 23	18 16	1.8	4 27	2.2
10	5 44	18 25	0 23	1 17	17 55	1.9	4 49	2.1
0	6 1	18 8	0 22	1 15	17 35	2.0	5 9	2.1
10	6 18	17 52	0 23	1 15	17 15	2.1	5 29	2.0
20	6 36	17 34	0 24	1 18	16 54	2.2	5 51	1.9
30	6 56	17 13	0 26	1 25	16 29	2.3	6 16	1.8
35	7 8	17 2	0 28	1 30	16 15	2.4	6 31	1.8
40	7 22	16 48	0 30	1 37	15 58	2.5	6 48	1.7
45	7 38	16 32	0 33	1 46	15 38	2.6	7 9	1.6
50	7 58	16 12	0 38	1 58	15 13	2.7	7 35	1.5
55	8 23	15 46	0 45	2 16	14 38	2.9	8 9	1.3
60	8 60	15 10	0 56	2 43	13 45	3.3	9 3	.9
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	15 16.3	113 -26	10.4	51	315 12.1	-13 38.0	115 18.6	7 1.5
2	44 15.2	114 -26	6.0	53	345 17.4	-13 38.1	145 23.2	7 1.3
4	73 14.1	115 -26	1.0	55	15 22.6	-13 38.2	175 27.8	7 1.2
6	102 13.2	116 -25	55.6	58	45 27.8	-13 38.4	205 32.4	7 1.0
8	131 12.3	117 -25	49.7	60	75 33.1	-13 38.5	235 36.9	7 .8
10	160 11.7	118 -25	43.2	62	105 38.3	-13 38.6	265 41.5	7 .7
12	189 11.1	119 -25	36.3	64	135 43.5	-13 38.8	295 46.1	7 .5
14	218 10.8	120 -25	28.9	66	165 48.8	-13 38.9	325 50.6	7 .3
16	247 10.5	121 -25	21.1	68	195 54.0	-13 39.0	355 55.2	7 .2
18	276 10.5	123 -25	12.7	70	225 59.3	-13 39.2	25 59.8	7 .0
20	305 10.6	124 -25	3.9	72	256 4.5	-13 39.3	56 4.3	6 59.8
22	334 10.9	125 -24	54.6	74	286 9.8	-13 39.4	86 8.9	6 59.7
Δ					26	-1	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>♃</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 4 44.0	-.4	15.8	T <sub>m</sub>	23 47	2.0	54.1 14.8		
12	- 4 49.0	T <sub>m</sub> ☉	12 h 4.8 min	Starost 13.2 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	178 44.1	22 28.9	286 4.4	224 42.4	18 12.4	230 52.8	18 45.0
2	208 43.9	22 28.4	316 9.4	254 41.6	18 13.5	260 54.1	18 45.9
4	238 43.7	22 27.8	346 14.3	284 40.9	18 14.7	290 55.4	18 46.7
6	268 43.5	22 27.2	16 19.2	314 40.2	18 15.9	320 56.7	18 47.6
8	298 43.4	22 26.7	46 24.1	344 39.5	18 17.0	350 58.0	18 48.5
10	328 43.2	22 26.1	76 29.1	14 38.8	18 18.2	20 59.3	18 49.4
12	358 43.0	22 25.5	106 34.0	44 38.0	18 19.3	51 .6	18 50.2
14	28 42.8	22 24.9	136 38.9	74 37.3	18 20.5	81 1.9	18 51.1
16	58 42.6	22 24.3	166 43.9	104 36.6	18 21.6	111 3.2	18 52.0
18	88 42.4	22 23.7	196 48.8	134 35.8	18 22.8	141 4.4	18 52.9
20	118 42.2	22 23.2	226 53.7	164 35.1	18 23.9	171 5.7	18 53.7
22	148 42.0	22 22.6	256 58.6	194 34.4	18 25.1	201 7.0	18 54.6
Δ	-1	-3		-4	6	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 50	21 19	1 29	:: ::	21 34	.4	2 22	3.5
55	3 31	20 38	0 55	:: ::	20 55	.8	3 11	3.0
50	3 60	20 10	0 43	:: ::	20 27	1.0	3 43	2.8
45	4 21	19 49	0 37	2 26	20 6	1.2	4 7	2.6
40	4 38	19 31	0 32	2 0	19 49	1.3	4 26	2.5
35	4 53	19 17	0 29	1 45	19 34	1.4	4 42	2.4
30	5 5	19 5	0 27	1 35	19 22	1.5	4 56	2.3
20	5 26	18 44	0 24	1 23	18 60	1.7	5 20	2.2
10	5 44	18 25	0 23	1 17	18 41	1.8	5 40	2.1
0	6 1	18 9	0 22	1 15	18 23	1.9	5 59	2.0
10	6 18	17 52	0 23	1 15	18 6	2.1	6 17	1.9
20	6 36	17 34	0 24	1 18	17 47	2.2	6 37	1.8
30	6 56	17 14	0 26	1 25	17 25	2.3	7 1	1.6
35	7 8	17 2	0 28	1 30	17 12	2.4	7 14	1.5
40	7 22	16 49	0 30	1 37	16 57	2.5	7 30	1.5
45	7 38	16 33	0 33	1 46	16 39	2.7	7 48	1.3
50	7 57	16 13	0 38	1 58	16 17	2.8	8 11	1.2
55	8 23	15 47	0 45	2 16	15 48	3.1	8 41	.9
60	8 59	15 11	0 56	2 42	15 5	3.5	9 25	.5

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	°	'	'
0	3 11.4	126 -24	44.9	76	316 15.0	-13 39.6	116 13.5	6 59.5
2	32 12.0	127 -24	34.7	78	346 20.3	-13 39.7	146 18.0	6 59.4
4	61 12.9	128 -24	24.1	80	16 25.5	-13 39.8	176 22.6	6 59.2
6	90 13.9	129 -24	13.0	82	46 30.8	-13 40.0	206 27.2	6 59.0
8	119 15.2	130 -24	1.4	84	76 36.0	-13 40.1	236 31.7	6 58.9
10	148 16.6	131 -23	49.5	86	106 41.3	-13 40.2	266 36.3	6 58.7
12	177 18.3	133 -23	37.1	87	136 46.5	-13 40.4	296 40.9	6 58.5
14	206 20.1	134 -23	24.2	89	166 51.8	-13 40.5	326 45.4	6 58.4
16	235 22.2	135 -23	11.0	91	196 57.0	-13 40.6	356 50.0	6 58.2
18	264 24.5	136 -22	57.3	92	227 2.3	-13 40.8	26 54.6	6 58.0
20	293 27.0	137 -22	43.3	94	257 7.5	-13 40.9	56 59.1	6 57.9
22	322 29.8	138 -22	28.8	96	287 12.8	-13 41.1	87 3.7	6 57.7
Δ					26	-1	23	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'	
00	- 4 53.9	-.4	15.8	T <sub>m</sub>	1.0	54.0	14.7	
12	- 4 58.6	T <sub>m☉</sub>	12 h 5.0 min	Starost 14.2 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°		☿	h min	'	°	
♃	9 1	.2	300	-4.0	♄	2 54	.0	31	-2.6
♅	8 36	.1	306	1.1	♁	16 13	.0	191	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	178 41.9	22 22.0	287 3.6	224 33.6	18 26.2	231 8.3	18 55.5
2	208 41.7	22 21.4	317 8.5	254 32.9	18 27.4	261 9.6	18 56.3
4	238 41.5	22 20.8	347 13.4	284 32.1	18 28.5	291 10.9	18 57.2
6	268 41.3	22 20.2	17 18.4	314 31.4	18 29.6	321 12.2	18 58.1
8	298 41.1	22 19.6	47 23.3	344 30.6	18 30.8	351 13.5	18 58.9
10	328 40.9	22 18.9	77 28.2	14 29.9	18 31.9	21 14.8	18 59.8
12	358 40.8	22 18.3	107 33.1	44 29.1	18 33.0	51 16.1	19 .6
14	28 40.6	22 17.7	137 38.1	74 28.4	18 34.1	81 17.4	19 1.5
16	58 40.4	22 17.1	167 43.0	104 27.6	18 35.3	111 18.7	19 2.4
18	88 40.2	22 16.5	197 47.9	134 26.8	18 36.4	141 20.0	19 3.2
20	118 40.0	22 15.9	227 52.9	164 26.1	18 37.5	171 21.2	19 4.1
22	148 39.9	22 15.2	257 57.8	194 25.3	18 38.6	201 22.5	19 4.9
Δ	-1	-3		-4	6	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 51	21 18	1 27	:: ::	21 43	.2	3 45	3.6
55	3 32	20 37	0 55	:: ::	21 13	.6	4 23	3.1
50	4 1	20 9	0 43	:: ::	20 52	.8	4 50	2.9
45	4 22	19 48	0 37	2 26	20 35	1.0	5 10	2.7
40	4 39	19 31	0 32	1 60	20 21	1.1	5 26	2.5
35	4 53	19 17	0 29	1 45	20 9	1.3	5 40	2.4
30	5 6	19 5	0 27	1 35	19 58	1.4	5 52	2.3
20	5 27	18 44	0 24	1 23	19 40	1.5	6 12	2.2
10	5 45	18 26	0 23	1 17	19 25	1.7	6 30	2.0
0	6 1	18 9	0 22	1 15	19 10	1.8	6 46	1.9
10	6 18	17 52	0 23	1 15	18 55	2.0	7 2	1.8
20	6 36	17 35	0 24	1 18	18 39	2.1	7 20	1.6
30	6 56	17 14	0 26	1 25	18 21	2.3	7 40	1.4
35	7 8	17 3	0 28	1 30	18 10	2.4	7 51	1.4
40	7 21	16 49	0 30	1 37	17 58	2.5	8 4	1.2
45	7 37	16 33	0 33	1 46	17 43	2.7	8 20	1.1
50	7 57	16 14	0 38	1 58	17 25	2.9	8 39	.9
55	8 22	15 49	0 44	2 15	17 2	3.1	9 3	.7
60	8 58	15 13	0 55	2 42	16 30	3.5	9 37	.3

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	°	'	'
0	351 32.7	139 -22	13.9	97	317 18.0	-13 41.2	117 8.2	6 57.5
2	20 35.9	140 -21	58.7	99	347 23.3	-13 41.3	147 12.8	6 57.4
4	49 39.3	141 -21	43.0	100	17 28.6	-13 41.5	177 17.4	6 57.2
6	78 42.9	142 -21	27.0	102	47 33.8	-13 41.6	207 21.9	6 57.0
8	107 46.8	143 -21	10.6	103	77 39.1	-13 41.8	237 26.5	6 56.9
10	136 50.8	144 -20	53.9	105	107 44.4	-13 41.9	267 31.0	6 56.7
12	165 55.1	145 -20	36.8	106	137 49.6	-13 42.0	297 35.6	6 56.5
14	194 59.6	146 -20	19.3	107	167 54.9	-13 42.2	327 40.2	6 56.4
16	224 4.4	147 -20	1.5	109	198 .2	-13 42.3	357 44.7	6 56.2
18	253 9.3	148 -19	43.3	110	228 5.4	-13 42.5	27 49.3	6 56.0
20	282 14.5	149 -19	24.8	111	258 10.7	-13 42.6	57 53.8	6 55.9
22	311 19.9	150 -19	6.0	113	288 16.0	-13 42.7	87 58.4	6 55.7
Δ					26	-1	23	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'	
00	- 5 3.3	-.4	15.8	T <sub>m</sub>	0 35	1.9	54.0	14.7
12	- 5 7.9	T <sub>m☉</sub>	12 h 5.1 min	Starost 15.2 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°		☿	h min	'	°	
♃	9 1	.2	299	-4.0	♄	2 50	.0	31	-2.6
♅									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 39.7	22 14.6	288 2.7	224 24.5	18 39.7	231 23.8	19 5.8
2	208 39.5	22 14.0	318 7.6	254 23.8	18 40.8	261 25.1	19 6.6
4	238 39.3	22 13.3	348 12.6	284 23.0	18 41.9	291 26.4	19 7.5
6	268 39.2	22 12.7	18 17.5	314 22.2	18 43.0	321 27.7	19 8.3
8	298 39.0	22 12.1	48 22.4	344 21.4	18 44.1	351 29.0	19 9.2
10	328 38.8	22 11.4	78 27.4	14 20.6	18 45.2	21 30.3	19 10.0
12	358 38.6	22 10.8	108 32.3	44 19.9	18 46.3	51 31.6	19 10.9
14	28 38.5	22 10.1	138 37.2	74 19.1	18 47.4	81 32.9	19 11.7
16	58 38.3	22 9.5	168 42.1	104 18.3	18 48.5	111 34.2	19 12.6
18	88 38.1	22 8.8	198 47.1	134 17.5	18 49.6	141 35.5	19 13.4
20	118 38.0	22 8.2	228 52.0	164 16.7	18 50.7	171 36.7	19 14.2
22	148 37.8	22 7.5	258 56.9	194 15.9	18 51.8	201 38.0	19 15.1
Δ	-1	-3		-4	5	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 53	21 16	1 26	:::	21 48	.1	5 11	3.5
55	3 34	20 36	0 55	:::	21 27	.5	5 38	3.1
50	4 1	20 9	0 43	:::	21 11	.7	5 59	2.9
45	4 23	19 48	0 36	2 25	20 59	.9	6 14	2.7
40	4 40	19 31	0 32	1 59	20 48	1.0	6 27	2.5
35	4 54	19 17	0 29	1 45	20 39	1.1	6 38	2.4
30	5 6	19 4	0 27	1 35	20 31	1.3	6 48	2.3
20	5 27	18 43	0 24	1 23	20 17	1.4	7 4	2.1
10	5 45	18 26	0 23	1 17	20 5	1.6	7 18	1.9
0	6 2	18 9	0 22	1 14	19 54	1.8	7 31	1.8
10	6 18	17 52	0 23	1 15	19 43	1.9	7 45	1.6
20	6 36	17 35	0 24	1 18	19 30	2.1	7 59	1.5
30	6 56	17 15	0 26	1 25	19 16	2.3	8 14	1.3
35	7 8	17 3	0 28	1 30	19 8	2.4	8 24	1.2
40	7 21	16 50	0 30	1 37	18 59	2.5	8 34	1.1
45	7 37	16 34	0 33	1 46	18 48	2.7	8 46	.9
50	7 56	16 15	0 38	1 58	18 34	2.9	9 1	.7
55	8 21	15 50	0 44	2 15	18 17	3.1	9 19	.5
60	8 57	15 14	0 55	2 41	17 54	3.5	9 44	.2
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	340 25.5	151 -18	46.9	114	318 21.3	-13 42.9	118 2.9	6 55.5
2	9 31.4	151 -18	27.4	115	348 26.5	-13 43.0	148 7.5	6 55.4
4	38 37.4	152 -18	7.7	116	18 31.8	-13 43.2	178 12.1	6 55.2
6	67 43.7	153 -17	47.6	117	48 37.1	-13 43.3	208 16.6	6 55.0
8	96 50.1	154 -17	27.2	118	78 42.4	-13 43.5	238 21.2	6 54.8
10	125 56.8	154 -17	6.6	119	108 47.6	-13 43.6	268 25.7	6 54.7
12	155 3.6	155 -16	45.6	120	138 52.9	-13 43.8	298 30.3	6 54.5
14	184 10.7	156 -16	24.4	121	168 58.2	-13 43.9	328 34.8	6 54.3
16	213 17.9	156 -16	2.9	122	199 3.5	-13 44.0	358 39.4	6 54.2
18	242 25.3	157 -15	41.2	123	229 8.8	-13 44.2	28 43.9	6 54.0
20	271 32.9	157 -15	19.2	124	259 14.1	-13 44.3	58 48.5	6 53.8
22	300 40.7	158 -14	56.9	125	289 19.3	-13 44.5	88 53.0	6 53.7
Δ					26	-1	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 5 12.4	-.4	15.8	T <sub>m</sub>	1 21	1.8	54.0	14.7	
12	- 5 16.7	T <sub>m</sub> ☉	12 h 5.3 min	Starost 16.2 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	9 2	.2	297	-4.0	♄	2 46	.0	31	-2.6
♂	8 34	.1	304	1.1	♅	16 5	.0	191	1.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 37.6	22 6.9	289 1.8	224 15.1	18 52.9	231 39.3	19 15.9
2	208 37.5	22 6.2	319 6.8	254 14.3	18 54.0	261 40.6	19 16.7
4	238 37.3	22 5.5	349 11.7	284 13.5	18 55.0	291 41.9	19 17.6
6	268 37.1	22 4.9	19 16.6	314 12.7	18 56.1	321 43.2	19 18.4
8	298 37.0	22 4.2	49 21.6	344 11.9	18 57.2	351 44.5	19 19.2
10	328 36.8	22 3.5	79 26.5	14 11.1	18 58.3	21 45.8	19 20.1
12	358 36.6	22 2.9	109 31.4	44 10.3	18 59.3	51 47.1	19 20.9
14	28 36.5	22 2.2	139 36.3	74 9.5	19 .4	81 48.4	19 21.7
16	58 36.3	22 1.5	169 41.3	104 8.6	19 1.4	111 49.6	19 22.6
18	88 36.2	22 .8	199 46.2	134 7.8	19 2.5	141 50.9	19 23.4
20	118 36.0	22 .1	229 51.1	164 7.0	19 3.6	171 52.2	19 24.2
22	148 35.8	21 59.4	259 56.1	194 6.2	19 4.6	201 53.5	19 25.0
Δ	-1	-3		-4	5	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	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 15	1 24	:::	21 51	.1	6 35	3.4
55	3 35	20 35	0 54	:::	21 38	.4	6 53	3.1
50	4 2	20 8	0 43	:::	21 28	.6	7 8	2.9
45	4 23	19 47	0 36	2 24	21 20	.8	7 19	2.7
40	4 40	19 30	0 32	1 59	21 13	.9	7 28	2.5
35	4 54	19 16	0 29	1 44	21 7	1.1	7 36	2.4
30	5 7	19 4	0 27	1 35	21 1	1.2	7 43	2.3
20	5 27	18 43	0 24	1 23	20 52	1.4	7 55	2.1
10	5 45	18 26	0 23	1 17	20 44	1.6	8 5	1.9
0	6 2	18 9	0 22	1 14	20 36	1.7	8 15	1.7
10	6 18	17 53	0 23	1 15	20 29	1.9	8 24	1.6
20	6 36	17 35	0 24	1 18	20 20	2.1	8 34	1.4
30	6 56	17 15	0 26	1 25	20 11	2.3	8 46	1.2
35	7 7	17 4	0 28	1 30	20 5	2.4	8 52	1.1
40	7 21	16 51	0 30	1 37	19 59	2.5	8 60	1.0
45	7 36	16 35	0 33	1 45	19 52	2.7	9 9	.8
50	7 55	16 16	0 38	1 58	19 43	2.9	9 19	.6
55	8 20	15 51	0 44	2 15	19 32	3.1	9 32	.4
60	8 55	15 16	0 55	2 41	19 17	3.4	9 49	.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	329 48.7	158 -14	34.4	126	319 24.6	-13 44.6	118 57.6	6 53.5
2	358 56.8	159 -14	11.7	127	349 29.9	-13 44.8	149 2.1	6 53.3
4	28 5.1	159 -13	48.7	127	19 35.2	-13 44.9	179 6.7	6 53.1
6	57 13.5	160 -13	25.5	128	49 40.5	-13 45.1	209 11.2	6 53.0
8	86 22.1	160 -13	2.0	129	79 45.8	-13 45.2	239 15.8	6 52.8
10	115 30.8	160 -12	38.4	130	109 51.1	-13 45.4	269 20.3	6 52.6
12	144 39.7	161 -12	14.5	130	139 56.4	-13 45.5	299 24.9	6 52.5
14	173 48.7	161 -11	50.5	131	170 1.7	-13 45.7	329 29.4	6 52.3
16	202 57.9	161 -11	26.2	132	200 7.0	-13 45.8	359 34.0	6 52.1
18	232 7.1	161 -11	1.7	132	230 12.3	-13 46.0	29 38.5	6 51.9
20	261 16.5	161 -10	37.1	133	260 17.6	-13 46.1	59 43.1	6 51.8
22	290 26.0	161 -10	12.3	133	290 22.9	-13 46.3	89 47.6	6 51.6
Δ					26	-1	23	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r		
h	min s	s	'	h min	min	'	'		
00	- 5 21.1	-.3	15.8	T <sub>m</sub>	2 4	1.8	54.2	14.8	
12	- 5 25.2	T <sub>m</sub> ☉	12 h 5.4 min	Starost 17.2 d Faza ☉					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁									

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 35.7	21 58.8	290 1.0	224 5.3	19 5.7	231 54.8	19 25.8
2	208 35.5	21 58.1	320 5.9	254 4.5	19 6.7	261 56.1	19 26.7
4	238 35.4	21 57.4	350 10.8	284 3.7	19 7.8	291 57.4	19 27.5
6	268 35.2	21 56.7	20 15.8	314 2.8	19 8.8	321 58.7	19 28.3
8	298 35.1	21 56.0	50 20.7	344 2.0	19 9.8	351 60.0	19 29.1
10	328 34.9	21 55.3	80 25.6	14 1.2	19 10.9	22 1.3	19 29.9
12	358 34.7	21 54.5	110 30.6	44 .3	19 11.9	52 2.5	19 30.7
14	28 34.6	21 53.8	140 35.5	73 59.5	19 13.0	82 3.8	19 31.6
16	58 34.4	21 53.1	170 40.4	103 58.6	19 14.0	112 5.1	19 32.4
18	88 34.3	21 52.4	200 45.3	133 57.8	19 15.0	142 6.4	19 33.2
20	118 34.1	21 51.7	230 50.3	163 56.9	19 16.0	172 7.7	19 34.0
22	148 34.0	21 51.0	260 55.2	193 56.1	19 17.1	202 9.0	19 34.8
Δ	-1	-4		-4	5	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 56	21 13	1 23	:: ::	21 54	.1	7 57	3.4
55	3 36	20 34	0 54	:: ::	21 48	.4	8 8	3.1
50	4 3	20 7	0 43	:: ::	21 43	.6	8 16	2.9
45	4 24	19 47	0 36	2 23	21 39	.8	8 23	2.7
40	4 41	19 30	0 32	1 59	21 35	.9	8 28	2.5
35	4 55	19 16	0 29	1 44	21 32	1.0	8 33	2.4
30	5 7	19 4	0 27	1 34	21 30	1.2	8 37	2.3
20	5 28	18 43	0 24	1 23	21 25	1.4	8 44	2.1
10	5 45	18 26	0 23	1 17	21 21	1.5	8 50	1.9
0	6 2	18 9	0 22	1 14	21 17	1.7	8 56	1.7
10	6 18	17 53	0 23	1 15	21 14	1.9	9 2	1.5
20	6 36	17 36	0 24	1 18	21 10	2.1	9 8	1.4
30	6 55	17 16	0 26	1 25	21 5	2.3	9 15	1.2
35	7 7	17 4	0 28	1 30	21 2	2.4	9 19	1.1
40	7 20	16 51	0 30	1 36	20 59	2.5	9 23	.9
45	7 36	16 36	0 33	1 45	20 56	2.7	9 28	.8
50	7 55	16 17	0 38	1 57	20 51	2.9	9 34	.6
55	8 19	15 52	0 44	2 14	20 46	3.1	9 42	.4
60	8 54	15 17	0 55	2 40	20 39	3.4	9 52	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	319 35.6	161 - 9	47.3	134	320 28.2	-13 46.4	119 52.1	6 51.4
2	348 45.3	161 - 9	22.1	134	350 33.5	-13 46.6	149 56.7	6 51.2
4	17 55.1	161 - 8	56.8	135	20 38.8	-13 46.7	180 1.2	6 51.1
6	47 4.9	161 - 8	31.3	135	50 44.1	-13 46.9	210 5.8	6 50.9
8	76 14.9	161 - 8	5.7	135	80 49.4	-13 47.0	240 10.3	6 50.7
10	105 24.9	161 - 7	39.9	136	110 54.7	-13 47.2	270 14.9	6 50.6
12	134 34.9	161 - 7	14.0	136	140 60.0	-13 47.3	300 19.4	6 50.4
14	163 45.1	160 - 6	47.9	136	171 5.3	-13 47.5	330 23.9	6 50.2
16	192 55.2	160 - 6	21.7	137	201 10.6	-13 47.7	0 28.5	6 50.0
18	222 5.4	160 - 5	55.4	137	231 15.9	-13 47.8	30 33.0	6 49.9
20	251 15.7	159 - 5	29.0	137	261 21.2	-13 48.0	60 37.6	6 49.7
22	280 25.9	159 - 5	2.4	137	291 26.5	-13 48.1	90 42.1	6 49.5
Δ					27	-1	23	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min s	s	'	h min	min	'	'	
00	- 5 29.3	-.3	15.8	T <sub>m</sub>	2 46	1.7	54.4	14.8
12	- 5 33.2	T <sub>m</sub> ☉	12 h 5.6 min	Starost	18.2 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°	'	☿	h min	'	°	'
♃	9 3	.1	295	-4.0	♃	2 38	.0	31	-2.6
♄	8 32	.1	303	1.1	♄	15 58	.0	191	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 33.8	21 50.3	291 .1	223 55.2	19 18.1	232 10.3	19 35.6
2	208 33.7	21 49.5	321 5.1	253 54.4	19 19.1	262 11.6	19 36.4
4	238 33.5	21 48.8	351 10.0	283 53.5	19 20.1	292 12.8	19 37.2
6	268 33.4	21 48.1	21 14.9	313 52.7	19 21.1	322 14.1	19 38.0
8	298 33.2	21 47.3	51 19.8	343 51.8	19 22.1	352 15.4	19 38.8
10	328 33.1	21 46.6	81 24.8	13 50.9	19 23.1	22 16.7	19 39.6
12	358 33.0	21 45.9	111 29.7	43 50.1	19 24.1	52 18.0	19 40.4
14	28 32.8	21 45.1	141 34.6	73 49.2	19 25.1	82 19.3	19 41.2
16	58 32.7	21 44.4	171 39.6	103 48.3	19 26.1	112 20.6	19 42.0
18	88 32.5	21 43.6	201 44.5	133 47.4	19 27.1	142 21.9	19 42.8
20	118 32.4	21 42.9	231 49.4	163 46.6	19 28.1	172 23.1	19 43.6
22	148 32.3	21 42.1	261 54.3	193 45.7	19 29.1	202 24.4	19 44.4
Δ	-1	-4		-4	5	6	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 58	21 12	1 21	:: ::	21 56	.1	9 19	3.4
55	3 37	20 33	0 54	:: ::	21 56	.4	9 22	3.1
50	4 4	20 6	0 42	3 38	21 57	.6	9 25	2.9
45	4 25	19 46	0 36	2 22	21 57	.8	9 27	2.7
40	4 42	19 29	0 32	1 58	21 57	.9	9 29	2.5
35	4 55	19 16	0 29	1 44	21 57	1.1	9 30	2.4
30	5 8	19 4	0 27	1 34	21 58	1.2	9 31	2.3
20	5 28	18 43	0 24	1 23	21 58	1.4	9 33	2.1
10	5 46	18 26	0 23	1 17	21 58	1.6	9 35	1.9
0	6 2	18 9	0 22	1 14	21 59	1.7	9 37	1.7
10	6 18	17 53	0 23	1 15	21 59	1.9	9 39	1.6
20	6 36	17 36	0 24	1 18	21 59	2.1	9 41	1.4
30	6 55	17 16	0 26	1 25	21 59	2.3	9 43	1.2
35	7 7	17 5	0 28	1 30	21 60	2.4	9 44	1.1
40	7 20	16 52	0 30	1 36	21 60	2.6	9 45	.9
45	7 35	16 37	0 33	1 45	22 0	2.7	9 47	.8
50	7 54	16 18	0 37	1 57	22 0	2.9	9 49	.6
55	8 18	15 53	0 44	2 14	22 1	3.2	9 51	.4
60	8 53	15 19	0 54	2 40	22 1	3.5	9 54	.1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	309 36.2	158 - 4	35.8	137	321 31.8	-13 48.3	120 46.6	6 49.3
2	338 46.4	158 - 4	9.1	138	351 37.2	-13 48.4	150 51.2	6 49.2
4	7 56.7	157 - 3	42.2	138	21 42.5	-13 48.6	180 55.7	6 49.0
6	37 7.0	157 - 3	15.3	138	51 47.8	-13 48.7	211 .3	6 48.8
8	66 17.2	156 - 2	48.3	138	81 53.1	-13 48.9	241 4.8	6 48.6
10	95 27.4	155 - 2	21.2	138	111 58.4	-13 49.1	271 9.3	6 48.4
12	124 37.6	155 - 1	54.0	138	142 3.7	-13 49.2	301 13.9	6 48.3
14	153 47.7	154 - 1	26.8	138	172 9.1	-13 49.4	331 18.4	6 48.1
16	182 57.8	153 - 0	59.5	137	202 14.4	-13 49.5	1 22.9	6 47.9
18	212 7.8	152 - 0	32.2	137	232 19.7	-13 49.7	31 27.5	6 47.7
20	241 17.8	151 - 0	4.8	137	262 25.0	-13 49.9	61 32.0	6 47.6
22	270 27.6	150 0	22.6	137	292 30.4	-13 50.0	91 36.6	6 47.4
Δ					27	-1	23	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min s	s	'	h min	min	'	'	
00	- 5 37.1	-.3	15.8	T <sub>m</sub>	3 27	1.7	54.8	14.9
12	- 5 40.8	T <sub>m</sub> ☉	12 h 5.7 min	Starost	19.2 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°	'	☿	h min	'	°	'



Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for hours 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22.

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for hours 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: UT, MESEC (S\_moon, delta\_moon, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for hours 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Delta.

Table with columns: SUNCE (e=TP-UT, Delta/24, r), MESEC (Prolaz, Delta/24, pi\_c, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows for hours 00, 12 and Planete section.

17. JUL

PETAK

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for hours 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Delta.

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for hours 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: UT, MESEC (S\_moon, delta\_moon, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for hours 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Delta.

Table with columns: SUNCE (e=TP-UT, Delta/24, r), MESEC (Prolaz, Delta/24, pi\_c, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows for hours 00, 12 and Planete section.



UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	26.4	21	2.2	295	55.8	222	59.9	20	14.1	233	27.5	20	21.5
2	208	26.3	21	1.3	326	.7	252	58.9	20	14.9	263	28.7	20	22.2
4	238	26.2	21	.5	356	5.7	282	57.9	20	15.8	293	30.0	20	22.9
6	268	26.1	20	59.6	26	10.6	312	56.9	20	16.6	323	31.3	20	23.6
8	298	26.0	20	58.7	56	15.5	342	55.9	20	17.4	353	32.6	20	24.4
10	328	25.9	20	57.8	86	20.5	12	54.9	20	18.3	23	33.9	20	25.1
12	358	25.8	20	56.9	116	25.4	42	53.9	20	19.1	53	35.2	20	25.8
14	28	25.8	20	56.0	146	30.3	72	52.9	20	19.9	83	36.5	20	26.5
16	58	25.7	20	55.1	176	35.2	102	51.9	20	20.7	113	37.7	20	27.2
18	88	25.6	20	54.2	206	40.2	132	50.9	20	21.6	143	39.0	20	27.9
20	118	25.5	20	53.3	236	45.1	162	49.9	20	22.4	173	40.3	20	28.6
22	148	25.4	20	52.4	266	50.0	192	48.9	20	23.2	203	41.6	20	29.4
Δ	0		-4				-5		4			6		4

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	3 8	21 3	1 15	:: ::	22 30	1.3	16 53	4.0		
55	3 44	20 27	0 52	:: ::	23 15	1.8	16 9	3.5		
50	4 10	20 2	0 42	3 12	23 46	2.0	15 39	3.3		
45	4 29	19 42	0 36	2 18	. . . .	.0	15 17	3.1		
40	4 45	19 27	0 32	1 56	. . . .	.0	14 59	3.0		
35	4 59	19 13	0 29	1 42	. . . .	.0	14 44	2.9		
30	5 10	19 2	0 27	1 33	0 11	2.0	14 31	2.8		
20	5 30	18 42	0 24	1 22	0 31	2.1	14 8	2.7		
10	5 47	18 25	0 23	1 16	0 48	2.3	13 49	2.6		
0	6 3	18 10	0 22	1 14	1 4	2.4	13 31	2.5		
10	6 18	17 54	0 22	1 14	1 21	2.5	13 13	2.4		
20	6 35	17 38	0 24	1 17	1 38	2.7	12 54	2.3		
30	6 54	17 19	0 26	1 24	1 59	2.8	12 32	2.2		
35	7 5	17 8	0 28	1 29	2 11	2.9	12 19	2.1		
40	7 17	16 56	0 30	1 36	2 25	3.0	12 5	2.0		
45	7 32	16 41	0 33	1 44	2 41	3.2	11 47	1.8		
50	7 50	16 23	0 37	1 56	3 2	3.3	11 26	1.7		
55	8 13	15 60	0 43	2 13	3 28	3.6	10 58	1.4		
60	8 45	15 28	0 53	2 37	4 7	4.2	10 18	.9		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	254	37.6	51	21	3.4	64	326	52.6	-13	58.3	125	18.2	6	38.5		
2	283	31.7	49	21	22.7	61	356	58.0	-13	58.4	155	22.7	6	38.3		
4	312	25.3	47	21	41.4	58	27	3.3	-13	58.6	185	27.2	6	38.1		
6	341	18.5	44	21	59.7	55	57	8.7	-13	58.8	215	31.8	6	37.9		
8	10	11.1	42	22	17.5	52	87	14.1	-13	59.0	245	36.3	6	37.7		
10	39	3.2	40	22	34.9	48	117	19.5	-13	59.2	275	40.8	6	37.6		
12	67	54.8	38	22	51.7	45	147	24.9	-13	59.3	305	45.3	6	37.4		
14	96	45.9	36	23	8.0	41	177	30.2	-13	59.5	335	49.8	6	37.2		
16	125	36.5	34	23	23.8	38	207	35.6	-13	59.7	5	54.3	6	37.0		
18	154	26.7	33	23	39.0	34	237	41.0	-13	59.9	35	58.8	6	36.8		
20	183	16.3	31	23	53.7	31	267	46.4	-14	.0	66	3.3	6	36.6		
22	212	5.5	29	24	7.8	27	297	51.8	-14	.2	96	7.8	6	36.4		
Δ							27		-1		23		-1			

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 6	9.2	- .2	15.8	T <sub>m</sub>	7 18	2.4	58.4	15.9
12	- 6	11.7	T <sub>m</sub> ☉	12 h	6.2 min	Starost	24.2 d	Faza ☉	
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	9 8	.1	288	-4.0	♄	2 12	.0	32	-2.6
♂	8 26	.1	299	1.1	♅	15 36	.0	190	1.1

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	25.3	20	51.5	296	55.0	222	47.9	20	24.0	233	42.9	20	30.1
2	208	25.2	20	50.6	326	59.9	252	46.9	20	24.8	263	44.2	20	30.8
4	238	25.1	20	49.7	357	4.8	282	45.9	20	25.6	293	45.5	20	31.5
6	268	25.1	20	48.8	27	9.7	312	44.9	20	26.4	323	46.7	20	32.2
8	298	25.0	20	47.9	57	14.7	342	43.8	20	27.2	353	48.0	20	32.9
10	328	24.9	20	47.0	87	19.6	12	42.8	20	28.0	23	49.3	20	33.6
12	358	24.8	20	46.0	117	24.5	42	41.8	20	28.8	53	50.6	20	34.3
14	28	24.7	20	45.1	147	29.5	72	40.8	20	29.6	83	51.9	20	35.0
16	58	24.6	20	44.2	177	34.4	102	39.7	20	30.3	113	53.2	20	35.7
18	88	24.6	20	43.3	207	39.3	132	38.7	20	31.1	143	54.4	20	36.4
20	118	24.5	20	42.3	237	44.2	162	37.7	20	31.9	173	55.7	20	37.1
22	148	24.4	20	41.4	267	49.2	192	36.6	20	32.7	203	57.0	20	37.8
Δ	0		-5				-5		4			6		3

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	3 10	21 1	1 13	:: ::	23 2	2.6	18 29	3.0		
55	3 46	20 26	0 51	:: ::	23 59	2.7	17 33	2.9		
50	4 11	20 1	0 41	3 8	. . . .	.0	16 58	2.9		
45	4 30	19 42	0 35	2 17	0 10	2.1	16 31	2.8		
40	4 46	19 26	0 32	1 55	0 29	2.2	16 11	2.8		
35	4 59	19 13	0 29	1 42	0 45	2.3	15 53	2.8		
30	5 11	19 1	0 27	1 33	0 59	2.4	15 38	2.8		
20	5 30	18 42	0 24	1 22	1 22	2.4	15 13	2.7		
10	5 47	18 25	0 23	1 16	1 43	2.5	14 51	2.7		
0	6 3	18 10	0 22	1 14	2 2	2.6	14 31	2.7		
10	6 18	17 54	0 22	1 14	2 21	2.7	14 11	2.6		
20	6 35	17 38	0 24	1 17	2 42	2.7	13 49	2.6		
30	6 53	17 20	0 26	1 24	3 6	2.8	13 24	2.5		
35	7 4	17 9	0 27	1 29	3 20	2.9	13 9	2.5		
40	7 16	16 56	0 30	1 35	3 37	2.9	12 52	2.5		
45	7 31	16 42	0 33	1 44	3 57	3.0	12 32	2.4		
50	7 49	16 24	0 37	1 56	4 22	3.1	12 6	2.3		
55	8 12	16 1	0 43	2 12	4 56	3.3	11 32	2.2		
60	8 43	15 30	0 53	2 37	5 48	3.6	10 39	1.9		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	240	54.2	28	24	21.2	23	327	57.2	-14	.4	126	12.3	6	36.2		
2	269	42.4	26	24	34.1	19	358	2.6	-14	.6	156	16.8	6	36.1		
4	298	30.2	25	24	46.4	16	28	7.9	-14	.8	186	21.4	6	35.9		
6	327	17.5	24	24	58.1	12	58	13.3	-14	.9	216	25.9	6	35.7		
8	356	4.4	23	25	9.1	8	88	18.7	-14	1.1	246	30.4	6	35.5		
10	24	50.8	22	25	19.4	4	118	24.1	-14	1.3	276	34.9	6	35.3		
12	53	36.9	21	25	29.1	0	148	29.5	-14	1.5	306	39.4	6	35.1		
14	82	22.5	20	25	38.0	-4	178	34.9	-14	1.7	336	43.9	6	34.9		
16	111	7.8	20	25	46.3	-8	208	40.3	-14	1.8	6	48.4	6	34.7		
18	139	52.7	19	25	53.9	-12	238	45.7	-14	2.0	36	52.9	6	34.6		

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 24.3	20 40.5	297 54.1	222 35.6	20 33.4	233 58.3	20 38.5
2	208 24.3	20 39.5	327 59.0	252 34.6	20 34.2	263 59.6	20 39.2
4	238 24.2	20 38.6	358 4.0	282 33.5	20 35.0	294 .9	20 39.8
6	268 24.1	20 37.7	28 8.9	312 32.5	20 35.7	324 2.2	20 40.5
8	298 24.0	20 36.7	58 13.8	342 31.5	20 36.5	354 3.5	20 41.2
10	328 24.0	20 35.8	88 18.7	12 30.4	20 37.3	24 4.7	20 41.9
12	358 23.9	20 34.8	118 23.7	42 29.4	20 38.0	54 6.0	20 42.6
14	28 23.8	20 33.9	148 28.6	72 28.3	20 38.7	84 7.3	20 43.3
16	58 23.8	20 32.9	178 33.5	102 27.3	20 39.5	114 8.6	20 44.0
18	88 23.7	20 32.0	208 38.5	132 26.2	20 40.2	144 9.9	20 44.6
20	118 23.6	20 31.0	238 43.4	162 25.2	20 41.0	174 11.2	20 45.3
22	148 23.6	20 30.0	268 48.3	192 24.1	20 41.7	204 12.5	20 46.0
Δ	0	-5		-5	4	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 12	20 59	1 12	:::	. . .	.0	19 41	1.7
55	3 47	20 24	0 51	:::	. . .	.0	18 43	2.1
50	4 12	19 60	0 41	3 5	0 35	2.7	18 6	2.3
45	4 31	19 41	0 35	2 16	1 1	2.7	17 39	2.4
40	4 47	19 25	0 31	1 55	1 22	2.7	17 18	2.4
35	5 0	19 12	0 29	1 42	1 40	2.7	17 0	2.5
30	5 11	19 1	0 27	1 33	1 55	2.7	16 45	2.5
20	5 31	18 42	0 24	1 22	2 21	2.7	16 19	2.6
10	5 47	18 25	0 23	1 16	2 43	2.7	15 56	2.7
0	6 3	18 10	0 22	1 14	3 4	2.7	15 35	2.7
10	6 18	17 55	0 22	1 14	3 25	2.7	15 14	2.8
20	6 34	17 39	0 24	1 17	3 48	2.7	14 51	2.8
30	6 53	17 20	0 26	1 24	4 14	2.7	14 25	2.9
35	7 4	17 9	0 27	1 29	4 29	2.7	14 9	2.9
40	7 16	16 57	0 30	1 35	4 47	2.6	13 51	2.9
45	7 30	16 43	0 33	1 44	5 9	2.6	13 30	3.0
50	7 48	16 25	0 37	1 56	5 36	2.6	13 2	3.1
55	8 10	16 3	0 43	2 12	6 14	2.5	12 24	3.2
60	8 42	15 32	0 52	2 36	7 15	2.3	11 24	3.4

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	226 5.3	18 26	12.3	-24	329 1.9	-14 2.6	127 6.4	6 34.0	127 6.4	6 34.0	127 6.4	6 34.0
2	254 48.9	18 26	17.0	-28	359 7.3	-14 2.8	157 10.9	6 33.8	157 10.9	6 33.8	157 10.9	6 33.8
4	283 32.2	18 26	20.8	-32	29 12.7	-14 2.9	187 15.4	6 33.6	187 15.4	6 33.6	187 15.4	6 33.6
6	312 15.2	19 26	24.0	-36	59 18.1	-14 3.1	217 19.9	6 33.4	217 19.9	6 33.4	217 19.9	6 33.4
8	340 58.0	19 26	26.3	-40	89 23.5	-14 3.3	247 24.4	6 33.2	247 24.4	6 33.2	247 24.4	6 33.2
10	9 40.6	19 26	27.9	-44	119 28.9	-14 3.5	277 28.9	6 33.0	277 28.9	6 33.0	277 28.9	6 33.0
12	38 23.0	20 26	28.7	-48	149 34.3	-14 3.7	307 33.4	6 32.8	307 33.4	6 32.8	307 33.4	6 32.8
14	67 5.2	20 26	28.7	-52	179 39.7	-14 3.9	337 37.9	6 32.6	337 37.9	6 32.6	337 37.9	6 32.6
16	95 47.2	21 26	27.9	-56	209 45.1	-14 4.1	7 42.4	6 32.5	7 42.4	6 32.5	7 42.4	6 32.5
18	124 29.2	22 26	26.2	-60	239 50.5	-14 4.2	37 46.9	6 32.3	37 46.9	6 32.3	37 46.9	6 32.3
20	153 11.0	23 26	23.8	-64	269 55.9	-14 4.4	67 51.4	6 32.1	67 51.4	6 32.1	67 51.4	6 32.1
22	181 52.7	24 26	20.6	-67	300 1.3	-14 4.6	97 55.9	6 31.9	97 55.9	6 31.9	97 55.9	6 31.9
Δ					27	-1	23	-1	23	-1	23	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r
h	min s	s	'	h min	min	'	'
00	- 6 18.6	-.2	15.8	T <sub>m</sub>	9 20	2.7	60.1
12	- 6 20.5	T <sub>m</sub> ☉	12 h 6.3 min	Starost	26.2 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♂	9 9	.1	286	-3.9	♄	2 4	.0
♂	8 24	.1	297	1.1	♅	15 29	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.5	20 29.1	298 53.2	222 23.0	20 42.4	234 13.7	20 46.7
2	208 23.4	20 28.1	328 58.2	252 22.0	20 43.2	264 15.0	20 47.3
4	238 23.4	20 27.1	359 3.1	282 20.9	20 43.9	294 16.3	20 48.0
6	268 23.3	20 26.2	29 8.0	312 19.9	20 44.6	324 17.6	20 48.7
8	298 23.2	20 25.2	59 13.0	342 18.8	20 45.3	354 18.9	20 49.4
10	328 23.2	20 24.2	89 17.9	12 17.7	20 46.0	24 20.2	20 50.0
12	358 23.1	20 23.2	119 22.8	42 16.7	20 46.8	54 21.5	20 50.7
14	28 23.1	20 22.3	149 27.7	72 15.6	20 47.5	84 22.7	20 51.4
16	58 23.0	20 21.3	179 32.7	102 14.5	20 48.2	114 24.0	20 52.0
18	88 23.0	20 20.3	209 37.6	132 13.4	20 48.9	144 25.3	20 52.7
20	118 22.9	20 19.3	239 42.5	162 12.4	20 49.6	174 26.6	20 53.4
22	148 22.8	20 18.3	269 47.4	192 11.3	20 50.3	204 27.9	20 54.0
Δ	0	-5		-5	4	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 14	20 57	1 11	:::	0 6	4.0	20 21	.8
55	3 49	20 23	0 50	:::	1 3	3.6	19 33	1.4
50	4 13	19 59	0 41	3 2	1 40	3.4	19 1	1.7
45	4 32	19 40	0 35	2 15	2 7	3.2	18 36	1.9
40	4 48	19 25	0 31	1 54	2 28	3.1	18 17	2.0
35	5 1	19 12	0 29	1 41	2 45	3.1	18 0	2.1
30	5 12	19 1	0 27	1 32	3 1	3.0	17 46	2.2
20	5 31	18 42	0 24	1 22	3 26	2.9	17 21	2.4
10	5 48	18 25	0 23	1 16	3 49	2.8	17 0	2.5
0	6 3	18 10	0 22	1 14	4 9	2.7	16 40	2.7
10	6 18	17 55	0 22	1 14	4 30	2.6	16 20	2.8
20	6 34	17 39	0 24	1 17	4 52	2.5	15 59	2.9
30	6 52	17 21	0 26	1 24	5 18	2.4	15 34	3.1
35	7 3	17 10	0 27	1 29	5 33	2.3	15 19	3.2
40	7 15	16 58	0 30	1 35	5 51	2.2	15 2	3.3
45	7 29	16 44	0 33	1 44	6 12	2.1	14 42	3.4
50	7 47	16 26	0 37	1 55	6 38	2.0	14 16	3.6
55	8 9	16 4	0 43	2 11	7 14	1.7	13 40	3.9
60	8 40	15 34	0 52	2 35	8 10	1.1	12 45	4.5

UT	MESEC				JUPITER				SATURN			
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	210 34.4	25 26	16.6	-71	330 6.8	-14 4.8	128 .4	6 31.7	128 .4	6 31.7	128 .4	6 31.7
2	239 16.1	27 26	11.8	-75	0 12.2	-14 5.0	158 4.9	6 31.5	158 4.9	6 31.5	158 4.9	6 31.5
4	267 57.7	28 26	6.1	-79	30 17.6	-14 5.2	188 9.4	6 31.3	188 9.4	6 31.3	188 9.4	6 31.3
6	296 39.4	29 25	59.7	-82	60 23.0	-14 5.4	218 13.9	6 31.1	218 13.9	6 31.1	218 13.9	6 31.1
8	325 21.1	31 25	52.4	-86	90 28.4	-14 5.5	248 18.4	6 30.9	248 18.4	6 30.9	248 18.4	6 30.9
10	354 2.9	32 25	44.4	-89	120 33.8	-14 5.7	278 22.9	6 30.7	278 22.9	6 30.7	278 22.9	6 30.7
12	22 44.7	34 25	35.5	-92	150 39.2	-14 5.9	308 27.4	6 30.5	308 27.4	6 30.5	308 27.4	6 30.5
14	51 26.7	36 25	25.9	-96	180 44.6	-14 6.1	338 31.9	6 30.3	338 31.9	6 30.3	338 31.9	6 30.3
16	80 8.8											

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 22.8	20 17.3	299 52.4	222 10.2	20 51.0	234 29.2	20 54.7
2	208 22.7	20 16.3	329 57.3	252 9.1	20 51.6	264 30.5	20 55.3
4	238 22.7	20 15.3	0 2.2	282 8.0	20 52.3	294 31.8	20 56.0
6	268 22.6	20 14.3	30 7.2	312 7.0	20 53.0	324 33.0	20 56.6
8	298 22.6	20 13.3	60 12.1	342 5.9	20 53.7	354 34.3	20 57.3
10	328 22.5	20 12.3	90 17.0	12 4.8	20 54.4	24 35.6	20 57.9
12	358 22.5	20 11.3	120 21.9	42 3.7	20 55.0	54 36.9	20 58.6
14	28 22.5	20 10.3	150 26.9	72 2.6	20 55.7	84 38.2	20 59.3
16	58 22.4	20 9.3	180 31.8	102 1.5	20 56.4	114 39.5	20 59.9
18	88 22.4	20 8.3	210 36.7	132 .4	20 57.0	144 40.8	21 .5
20	118 22.3	20 7.3	240 41.7	161 59.3	20 57.7	174 42.0	21 1.2
22	148 22.3	20 6.3	270 46.6	191 58.2	20 58.3	204 43.3	21 1.8
Δ	0	-5		-5	3	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 16	20 55	1 10	:::	1 42	4.6	20 41	.4
55	3 50	20 22	0 50	:::	2 29	4.1	20 6	.9
50	4 15	19 57	0 41	2 59	3 1	3.7	19 41	1.2
45	4 33	19 39	0 35	2 14	3 24	3.5	19 21	1.5
40	4 49	19 24	0 31	1 54	3 43	3.3	19 5	1.6
35	5 1	19 11	0 29	1 41	3 59	3.2	18 51	1.8
30	5 13	19 0	0 27	1 32	4 12	3.1	18 40	1.9
20	5 31	18 41	0 24	1 21	4 36	2.9	18 19	2.1
10	5 48	18 25	0 23	1 16	4 56	2.7	18 1	2.3
0	6 3	18 10	0 22	1 13	5 14	2.6	17 44	2.5
10	6 18	17 55	0 22	1 14	5 33	2.4	17 27	2.7
20	6 34	17 39	0 23	1 17	5 53	2.3	17 9	2.9
30	6 52	17 21	0 26	1 24	6 16	2.1	16 47	3.1
35	7 2	17 11	0 27	1 29	6 29	2.0	16 35	3.2
40	7 14	16 59	0 30	1 35	6 44	1.8	16 20	3.4
45	7 29	16 45	0 32	1 44	7 3	1.7	16 3	3.5
50	7 46	16 28	0 37	1 55	7 25	1.4	15 42	3.8
55	8 8	16 6	0 42	2 11	7 55	1.1	15 13	4.1
60	8 38	15 36	0 52	2 35	8 38	.6	14 32	4.7
S								

UT	MESEC				JUPITER			SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	194 58.9	45 24 26.0	-111		331 11.7	-14 7.1			128 54.4	6 29.4
2	223 42.0	47 24 11.8	-114		1 17.2	-14 7.2			158 58.9	6 29.2
4	252 25.3	49 23 56.8	-117		31 22.6	-14 7.4			189 3.4	6 29.0
6	281 8.9	51 23 41.1	-120		61 28.0	-14 7.6			219 7.9	6 28.8
8	309 52.8	53 23 24.6	-122		91 33.4	-14 7.8			249 12.3	6 28.6
10	338 37.0	55 23 7.5	-125		121 38.9	-14 8.0			279 16.8	6 28.4
12	7 21.5	57 22 49.7	-127		151 44.3	-14 8.2			309 21.3	6 28.2
14	36 6.3	59 22 31.2	-129		181 49.7	-14 8.4			339 25.8	6 28.0
16	64 51.4	62 22 12.0	-132		211 55.1	-14 8.6			9 30.3	6 27.8
18	93 37.0	64 21 52.2	-134		242 .6	-14 8.8			39 34.8	6 27.6
20	122 22.8	66 21 31.8	-136		272 6.0	-14 9.0			69 39.3	6 27.4
22	151 9.1	68 21 10.7	-138		302 11.4	-14 9.2			99 43.8	6 27.2
Δ					27	-1			22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	'	
00	- 6 25.8	-.1	15.8	T <sub>m</sub>	11 29	2.5	61.2	16.7	
12	- 6 27.2	T <sub>m</sub> ☉	12 h 6.5 min	Starost 28.2 d Faza ●					
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°	°		h min	'	°	°
♀	9 11	.1	283	-3.9	♃	1 55	.0	32	-2.6
♂	8 22	.1	296	1.1	♄	15 22	.0	190	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 22.2	20 5.3	300 51.5	221 57.1	20 59.0	234 44.6	21 2.5
2	208 22.2	20 4.2	330 56.4	251 56.0	20 59.6	264 45.9	21 3.1
4	238 22.2	20 3.2	1 1.4	281 54.9	21 .3	294 47.2	21 3.8
6	268 22.1	20 2.2	31 6.3	311 53.8	21 .9	324 48.5	21 4.4
8	298 22.1	20 1.2	61 11.2	341 52.7	21 1.6	354 49.8	21 5.0
10	328 22.1	20 .1	91 16.2	11 51.6	21 2.2	24 51.1	21 5.7
12	358 22.0	19 59.1	121 21.1	41 50.5	21 2.8	54 52.4	21 6.3
14	28 22.0	19 58.1	151 26.0	71 49.3	21 3.5	84 53.6	21 6.9
16	58 22.0	19 57.0	181 30.9	101 48.2	21 4.1	114 54.9	21 7.6
18	88 21.9	19 56.0	211 35.9	131 47.1	21 4.7	144 56.2	21 8.2
20	118 21.9	19 54.9	241 40.8	161 46.0	21 5.3	174 57.5	21 8.8
22	148 21.9	19 53.9	271 45.7	191 44.9	21 5.9	204 58.8	21 9.5
Δ	0	-5		-6	3	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 18	20 53	1 9	:::	3 34	4.6	20 51	.3
55	3 52	20 20	0 50	:::	4 6	4.1	20 28	.7
50	4 16	19 56	0 41	2 56	4 30	3.8	20 10	1.0
45	4 34	19 38	0 35	2 14	4 48	3.5	19 56	1.2
40	4 49	19 23	0 31	1 53	5 3	3.3	19 45	1.4
35	5 2	19 10	0 28	1 41	5 16	3.2	19 35	1.5
30	5 13	18 60	0 26	1 32	5 26	3.0	19 26	1.7
20	5 32	18 41	0 24	1 21	5 45	2.8	19 10	1.9
10	5 48	18 25	0 22	1 16	6 1	2.6	18 57	2.1
0	6 3	18 10	0 22	1 13	6 16	2.4	18 44	2.3
10	6 18	17 55	0 22	1 14	6 31	2.2	18 31	2.5
20	6 34	17 40	0 23	1 17	6 47	2.0	18 17	2.7
30	6 51	17 22	0 26	1 24	7 5	1.8	18 1	3.0
35	7 2	17 11	0 27	1 28	7 16	1.6	17 52	3.1
40	7 14	16 60	0 29	1 35	7 28	1.5	17 41	3.3
45	7 28	16 46	0 32	1 43	7 42	1.3	17 28	3.5
50	7 45	16 29	0 36	1 55	7 59	1.1	17 13	3.7
55	8 6	16 7	0 42	2 11	8 21	.8	16 52	4.1
60	8 36	15 38	0 51	2 34	8 51	.3	16 25	4.5
S								

UT	MESEC				JUPITER			SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 55.7	70 20 49.0	-140		332 16.9	-14 9.4			129 48.3	6 27.0
2	208 42.7	72 20 26.8	-142		2 22.3	-14 9.5			159 52.8	6 26.8
4	237 30.2	74 20 3.9	-143		32 27.7	-14 9.7			189 57.2	6 26.7
6	266 18.0	76 19 40.6	-145		62 33.2	-14 9.9			220 1.7	6 26.5
8	295 6.2	78 19 16.7	-146		92 38.6	-14 10.1			250 6.2	6 26.3
10	323 54.9	80 18 52.2	-148		122 44.0	-14 10.3			280 10.7	6 26.1
12	352 43.9	82 18 27.3	-149		152 49.5	-14 10.5			310 15.2	6 25.9
14	21 33.4	84 18 1.9	-151		182 54.9	-14 10.7			340 19.7	6 25.7
16	50 23.3	86 17 36.0	-152		213 .4	-14 10.9			10 24.2	6 25.5
18	79 13.6	87 17 9.7	-153		243 5.8	-14 11.1			40 28.7	6 25.3
20	108 4.3	89 16 42.9	-154		273 11.2	-14 11.3			70 33.1	6 25.1
22	136 55.4	91 16 15.7	-155		303 16.7	-14 11.5			100 37.6	6 24.9
Δ					27	-1			22	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'	'
00	- 6							

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 21.8	19 52.8	301 50.7	221 43.8	21 6.5	235 .1	21 10.1
2	208 21.8	19 51.8	331 55.6	251 42.6	21 7.2	265 1.4	21 10.7
4	238 21.8	19 50.7	2 5	281 41.5	21 7.8	295 2.7	21 11.3
6	268 21.8	19 49.7	32 5.4	311 40.4	21 8.4	325 4.0	21 12.0
8	298 21.7	19 48.6	62 10.4	341 39.2	21 8.9	355 5.2	21 12.6
10	328 21.7	19 47.6	92 15.3	11 38.1	21 9.5	25 6.5	21 13.2
12	358 21.7	19 46.5	122 20.2	41 37.0	21 10.1	55 7.8	21 13.8
14	28 21.7	19 45.4	152 25.2	71 35.8	21 10.7	85 9.1	21 14.4
16	58 21.6	19 44.4	182 30.1	101 34.7	21 11.3	115 10.4	21 15.1
18	88 21.6	19 43.3	212 35.0	131 33.6	21 11.9	145 11.7	21 15.7
20	118 21.6	19 42.2	242 39.9	161 32.4	21 12.5	175 13.0	21 16.3
22	148 21.6	19 41.2	272 44.9	191 31.3	21 13.0	205 14.3	21 16.9
Δ	0	-5		-6	3	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 20	20 51	1 8	:::	5 24	4.4	20 57	.2
55	3 54	20 18	0 49	:::	5 45	4.0	20 44	.5
50	4 17	19 55	0 40	2 53	6 1	3.7	20 33	.8
45	4 35	19 37	0 35	2 13	6 13	3.4	20 25	1.0
40	4 50	19 22	0 31	1 53	6 23	3.2	20 18	1.2
35	5 3	19 10	0 28	1 40	6 31	3.0	20 11	1.4
30	5 14	18 59	0 26	1 32	6 39	2.9	20 6	1.5
20	5 32	18 41	0 24	1 21	6 52	2.6	19 56	1.7
10	5 48	18 25	0 22	1 15	7 3	2.4	19 48	2.0
0	6 3	18 10	0 22	1 13	7 14	2.2	19 40	2.2
10	6 18	17 55	0 22	1 14	7 24	2.0	19 31	2.4
20	6 33	17 40	0 23	1 17	7 36	1.8	19 23	2.6
30	6 51	17 22	0 26	1 23	7 48	1.6	19 12	2.8
35	7 1	17 12	0 27	1 28	7 56	1.4	19 6	3.0
40	7 13	17 0	0 29	1 35	8 4	1.3	18 60	3.1
45	7 27	16 47	0 32	1 43	8 14	1.1	18 52	3.3
50	7 43	16 30	0 36	1 55	8 25	.9	18 42	3.6
55	8 5	16 9	0 42	2 10	8 40	.6	18 30	3.9
60	8 34	15 40	0 51	2 34	8 58	.2	18 14	4.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	165 47.0	93	15 48.1	-156	333 22.1	-14 11.7	130 42.1	6 24.7
2	194 39.0	94	15 20.2	-156	3 27.6	-14 11.9	160 46.6	6 24.5
4	223 31.4	96	14 51.9	-157	33 33.0	-14 12.1	190 51.1	6 24.3
6	252 24.2	98	14 23.2	-158	63 38.4	-14 12.3	220 55.6	6 24.1
8	281 17.4	99	13 54.2	-158	93 43.9	-14 12.5	251 .0	6 23.9
10	310 11.0	101	13 24.9	-159	123 49.3	-14 12.7	281 4.5	6 23.7
12	339 4.9	102	12 55.4	-159	153 54.8	-14 12.9	311 9.0	6 23.5
14	7 59.3	104	12 25.5	-160	184 .2	-14 13.1	341 13.5	6 23.3
16	36 54.1	105	11 55.4	-160	214 5.7	-14 13.3	11 18.0	6 23.1
18	65 49.2	106	11 25.1	-160	244 11.1	-14 13.5	41 22.5	6 22.9
20	94 44.7	108	10 54.5	-160	274 16.6	-14 13.7	71 26.9	6 22.7
22	123 40.6	109	10 23.7	-160	304 22.0	-14 13.9	101 31.4	6 22.5
Δ					27	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 6 30.9	-.1	15.8	T <sub>m</sub>	13 27	2.2	61.1	16.7	
12	- 6 31.7	T <sub>m</sub> ☉	12 h 6.5 min	Starost	.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	9 13	.1	281	-3.9	♄	1 46	.0	33	-2.6
♂	8 20	.1	294	1.1	♅	15 15	.0	190	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 21.6	19 40.1	302 49.8	221 30.1	21 13.6	235 15.6	21 17.5
2	208 21.6	19 39.0	332 54.7	251 29.0	21 14.2	265 16.9	21 18.1
4	238 21.5	19 37.9	2 59.6	281 27.9	21 14.7	295 18.1	21 18.7
6	268 21.5	19 36.9	33 4.6	311 26.7	21 15.3	325 19.4	21 19.3
8	298 21.5	19 35.8	63 9.5	341 25.6	21 15.8	355 20.7	21 19.9
10	328 21.5	19 34.7	93 14.4	11 24.4	21 16.4	25 22.0	21 20.5
12	358 21.5	19 33.6	123 19.4	41 23.3	21 16.9	55 23.3	21 21.1
14	28 21.5	19 32.5	153 24.3	71 22.1	21 17.5	85 24.6	21 21.7
16	58 21.5	19 31.4	183 29.2	101 20.9	21 18.0	115 25.9	21 22.3
18	88 21.5	19 30.3	213 34.1	131 19.8	21 18.5	145 27.2	21 22.9
20	118 21.5	19 29.2	243 39.1	161 18.6	21 19.1	175 28.5	21 23.5
22	148 21.5	19 28.1	273 44.0	191 17.5	21 19.6	205 29.8	21 24.1
Δ	0	-5		-6	3	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 23	20 49	1 7	:::	7 10	4.2	21 1	.1
55	3 55	20 17	0 49	:::	7 20	3.8	20 56	.5
50	4 19	19 54	0 40	2 51	7 28	3.5	20 52	.7
45	4 37	19 36	0 35	2 12	7 35	3.3	20 49	.9
40	4 51	19 21	0 31	1 52	7 40	3.1	20 46	1.1
35	5 4	19 9	0 28	1 40	7 44	2.9	20 44	1.3
30	5 14	18 59	0 26	1 31	7 49	2.8	20 42	1.4
20	5 33	18 40	0 24	1 21	7 55	2.5	20 38	1.6
10	5 48	18 25	0 22	1 15	8 2	2.3	20 35	1.8
0	6 3	18 10	0 22	1 13	8 7	2.1	20 31	2.0
10	6 18	17 56	0 22	1 14	8 13	1.9	20 28	2.2
20	6 33	17 40	0 23	1 17	8 19	1.7	20 24	2.5
30	6 50	17 23	0 26	1 23	8 26	1.4	20 20	2.7
35	7 1	17 13	0 27	1 28	8 30	1.3	20 18	2.8
40	7 12	17 1	0 29	1 35	8 34	1.1	20 15	3.0
45	7 26	16 48	0 32	1 43	8 39	1.0	20 12	3.2
50	7 42	16 31	0 36	1 54	8 46	.7	20 8	3.4
55	8 3	16 10	0 42	2 10	8 53	.5	20 3	3.7
60	8 32	15 42	0 51	2 33	9 3	.1	19 57	4.1
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	152 36.8	110	9 52.8	-160	334 27.5	-14 14.1	131 35.9	6 22.3
2	181 33.3	111	9 21.6	-160	4 32.9	-14 14.3	161 40.4	6 22.1
4	210 30.2	112	8 50.4	-160	34 38.4	-14 14.5	191 44.9	6 21.9
6	239 27.4	113	8 18.9	-160	64 43.8	-14 14.7	221 49.3	6 21.7
8	268 25.0	114	7 47.4	-159	94 49.3	-14 14.9	251 53.8	6 21.5
10	297 22.8	115	7 15.7	-159	124 54.8	-14 15.1	281 58.3	6 21.3
12	326 21.0	116	6 44.0	-159	155 .2	-14 15.3	312 2.8	6 21.1
14	355 19.5	117	6 12.1	-158	185 5.7	-14 15.5	342 7.2	6 20.9
16	24 18.2	118	5 40.2	-158	215 11.1	-14 15.7	12 11.7	6 20.7
18	53 17.2	118	5 8.3	-157	245 16.6	-14 15.9	42 16.2	6 20.5
20	82 16.5	119	4 36.3	-157	275 22.0	-14 16.1	72 20.7	6 20.3
22	111 16.0	120	4 4.3	-156	305 27.5	-14 16.3	102 25.2	6 20.1
Δ					27	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 6 32.5	.0	15.8	T <sub>m</sub>	14 19	2.1	60.6	16.5	
12	- 6 33.0	T <sub>m</sub> ☉	12 h 6.6 min	Starost	1.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	9 13	.1	280	-3.9	♄	1			

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	°	'	°	'						
0	178	21.5	19	27.0	303	48.9	221	16.3	21	20.1	235	31.1	21	24.7
2	208	21.5	19	25.9	333	53.9	251	15.1	21	20.7	265	32.4	21	25.3
4	238	21.5	19	24.8	3	58.8	281	14.0	21	21.2	295	33.6	21	25.9
6	268	21.5	19	23.7	34	3.7	311	12.8	21	21.7	325	34.9	21	26.5
8	298	21.5	19	22.6	64	8.6	341	11.6	21	22.2	355	36.2	21	27.1
10	328	21.5	19	21.5	94	13.6	11	10.5	21	22.7	25	37.5	21	27.7
12	358	21.5	19	20.4	124	18.5	41	9.3	21	23.2	55	38.8	21	28.3
14	28	21.5	19	19.3	154	23.4	71	8.1	21	23.7	85	40.1	21	28.8
16	58	21.5	19	18.1	184	28.4	101	7.0	21	24.2	115	41.4	21	29.4
18	88	21.5	19	17.0	214	33.3	131	5.8	21	24.7	145	42.7	21	30.0
20	118	21.5	19	15.9	244	38.2	161	4.6	21	25.2	175	44.0	21	30.6
22	148	21.5	19	14.8	274	43.1	191	3.4	21	25.7	205	45.3	21	31.2
Δ	0	-6						-6	3			6		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 25	20 47	1 6	:::	8 50	4.0	21 4	.1
55	3 57	20 15	0 49	:::	8 51	3.6	21 7	.5
50	4 20	19 52	0 40	2 48	8 52	3.4	21 9	.7
45	4 38	19 35	0 35	2 11	8 53	3.1	21 11	.9
40	4 52	19 21	0 31	1 52	8 54	3.0	21 13	1.1
35	5 4	19 8	0 28	1 40	8 54	2.8	21 14	1.2
30	5 15	18 58	0 26	1 31	8 55	2.7	21 15	1.4
20	5 33	18 40	0 24	1 21	8 56	2.4	21 17	1.6
10	5 49	18 24	0 22	1 15	8 57	2.2	21 19	1.8
0	6 3	18 10	0 22	1 13	8 57	2.0	21 20	2.0
10	6 17	17 56	0 22	1 13	8 58	1.8	21 22	2.2
20	6 33	17 41	0 23	1 17	8 59	1.6	21 23	2.4
30	6 50	17 24	0 26	1 23	9 0	1.4	21 25	2.6
35	6 60	17 14	0 27	1 28	9 1	1.2	21 26	2.8
40	7 11	17 2	0 29	1 34	9 2	1.1	21 27	2.9
45	7 25	16 49	0 32	1 43	9 2	.9	21 29	3.1
50	7 41	16 33	0 36	1 54	9 3	.7	21 30	3.3
55	8 2	16 12	0 42	2 10	9 5	.4	21 32	3.6
60	8 30	15 44	0 50	2 32	9 6	.1	21 35	3.9

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	140	15.8	120	3	32.3	-155	335	33.0	-14	16.5	132	29.6	6	19.9
2	169	15.8	121	3	.2	-154	5	38.4	-14	16.7	162	34.1	6	19.7
4	198	16.0	121	2	28.2	-154	35	43.9	-14	16.9	192	38.6	6	19.5
6	227	16.5	122	1	56.3	-153	65	49.4	-14	17.1	222	43.1	6	19.3
8	256	17.1	122	1	24.3	-152	95	54.8	-14	17.3	252	47.5	6	19.1
10	285	18.0	123	0	52.4	-151	126	.3	-14	17.5	282	52.0	6	18.9
12	314	19.0	123	0	20.6	-150	156	5.7	-14	17.7	312	56.5	6	18.7
14	343	20.2	123	-0	11.1	-149	186	11.2	-14	17.9	343	.9	6	18.5
16	12	21.6	124	-0	42.7	-148	216	16.7	-14	18.1	13	5.4	6	18.3
18	41	23.2	124	-1	14.3	-147	246	22.1	-14	18.3	43	9.9	6	18.1
20	70	24.9	124	-1	45.7	-145	276	27.6	-14	18.5	73	14.4	6	17.9
22	99	26.7	124	-2	17.0	-144	306	33.1	-14	18.7	103	18.8	6	17.7
Δ							27	-1			22		-1	

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	- 6 33.5	.0	15.8	T <sub>m</sub>	15 9	2.0	59.8	16.3
12	- 6 33.7	T <sub>m</sub> ☉	12 h 6.6 min	Starost	2.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	9 14	.1	279	-3.9	♃	1 38	.0	33	-2.7
♂	8 18	.1	293	1.1	♄	15 8	.0	190	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	°	'	°	'						
0	178	21.5	19	13.6	304	48.1	221	2.2	21	26.2	235	46.6	21	31.7
2	208	21.5	19	12.5	334	53.0	251	1.1	21	26.6	265	47.9	21	32.3
4	238	21.5	19	11.4	4	57.9	280	59.9	21	27.1	295	49.2	21	32.9
6	268	21.6	19	10.2	35	2.9	310	58.7	21	27.6	325	50.5	21	33.5
8	298	21.6	19	9.1	65	7.8	340	57.5	21	28.0	355	51.8	21	34.0
10	328	21.6	19	8.0	95	12.7	10	56.3	21	28.5	25	53.1	21	34.6
12	358	21.6	19	6.8	125	17.6	40	55.1	21	29.0	55	54.3	21	35.2
14	28	21.6	19	5.7	155	22.6	70	53.9	21	29.4	85	55.6	21	35.7
16	58	21.6	19	4.5	185	27.5	100	52.7	21	29.9	115	56.9	21	36.3
18	88	21.7	19	3.4	215	32.4	130	51.5	21	30.3	145	58.2	21	36.9
20	118	21.7	19	2.2	245	37.4	160	50.3	21	30.8	175	59.5	21	37.4
22	148	21.7	19	1.1	275	42.3	190	49.2	21	31.2	206	.8	21	38.0
Δ	0	-6						-6	2			6		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 27	20 45	1 5	:::	10 26	3.9	21 8	.2
55	3 59	20 14	0 48	:::	10 18	3.5	21 18	.5
50	4 21	19 51	0 40	2 46	10 13	3.3	21 26	.8
45	4 39	19 34	0 34	2 10	10 8	3.0	21 33	1.0
40	4 53	19 20	0 31	1 51	10 4	2.9	21 39	1.1
35	5 5	19 8	0 28	1 39	10 1	2.7	21 44	1.3
30	5 15	18 57	0 26	1 31	9 58	2.6	21 48	1.4
20	5 33	18 40	0 24	1 21	9 54	2.4	21 55	1.6
10	5 49	18 24	0 22	1 15	9 49	2.2	22 2	1.8
0	6 3	18 10	0 22	1 13	9 45	2.0	22 8	2.0
10	6 17	17 56	0 22	1 13	9 42	1.8	22 14	2.2
20	6 32	17 41	0 23	1 17	9 38	1.6	22 21	2.3
30	6 49	17 24	0 25	1 23	9 33	1.4	22 28	2.6
35	6 59	17 14	0 27	1 28	9 30	1.2	22 32	2.7
40	7 10	17 3	0 29	1 34	9 27	1.1	22 37	2.8
45	7 24	16 50	0 32	1 43	9 24	.9	22 43	3.0
50	7 40	16 34	0 36	1 54	9 20	.7	22 50	3.2
55	8 0	16 14	0 42	2 9	9 15	.5	22 58	3.5
60	8 28	15 46	0 50	2 32	9 9	.1	23 9	3.9

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	128	28.7	124	-2	48.2	-143	336	38.6	-14	18.9	133	23.3	6	17.5
2	157	30.7	124	-3	19.3	-142	6	44.0	-14	19.1	163	27.8	6	17.3
4	186	32.9	124	-3	50.1	-140	36	49.5	-14	19.3	193	32.2	6	17.1
6	215	35.2	124	-4	20.9	-139	66	55.0	-14	19.5	223	36.7	6	16.9
8	244	37.6	124	-4	51.4	-138	97	.4	-14	19.7	253	41.2	6	16.7
10	273	40.0	124	-5	21.8	-136	127	5.9	-14	19.9	283	45.7	6	16.5
12	302	42.6	124	-5	52.0	-135	157	11.4	-14	20.1	313	50.1	6	16.3
14	331	45.2	123	-6	21.9	-133	187	16.9	-14	20.3	343	54.6	6	16.1
16	0	47.8	123	-6	51.7	-132	217	22.3	-14	20.5	13	59.1	6	15.9
18	29	50.5	123	-7	21.2	-130	247	27.8	-14	20.7	44	3.5	6	15.7
20	58	53.3	123	-7	50.6	-128	277	33.3	-14	20.9	74	8.0	6	15.5
22	87	56.0	122	-8	19.7	-127	307	38.8	-14	21.2	104	12.5	6	15.3
Δ							27	-1			22		-1	

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	- 6 33.9	.0	15.8	T <sub>m</sub>	15 57	2.0	59.0	16.1
12	- 6 33.8	T <sub>m</sub> ☉	12 h 6.6 min	Starost	3.9 d	Faza	☉	

PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 21.7	18 59.9	305 47.2	220 48.0	21 31.6	236 2.1	21 38.6
2	208 21.7	18 58.8	335 52.1	250 46.8	21 32.1	266 3.4	21 39.1
4	238 21.8	18 57.6	5 57.1	280 45.5	21 32.5	296 4.7	21 39.7
6	268 21.8	18 56.5	36 2.0	310 44.3	21 32.9	326 6.0	21 40.2
8	298 21.8	18 55.3	66 6.9	340 43.1	21 33.4	356 7.3	21 40.8
10	328 21.9	18 54.1	96 11.9	10 41.9	21 33.8	26 8.6	21 41.3
12	358 21.9	18 53.0	126 16.8	40 40.7	21 34.2	56 9.9	21 41.9
14	28 21.9	18 51.8	156 21.7	70 39.5	21 34.6	86 11.2	21 42.4
16	58 21.9	18 50.6	186 26.6	100 38.3	21 35.0	116 12.5	21 43.0
18	88 22.0	18 49.4	216 31.6	130 37.1	21 35.4	146 13.8	21 43.5
20	118 22.0	18 48.3	246 36.5	160 35.9	21 35.8	176 15.1	21 44.1
22	148 22.0	18 47.1	276 41.4	190 34.7	21 36.2	206 16.4	21 44.6
Δ	0	-6		-6	2	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 29	20 42	1 4	:: ::	11 59	3.9	21 12	.2
55	4 0	20 12	0 48	:: ::	11 43	3.5	21 30	.6
50	4 22	19 50	0 39	2 44	11 31	3.2	21 45	.9
45	4 40	19 33	0 34	2 9	11 21	3.0	21 56	1.1
40	4 54	19 19	0 31	1 51	11 13	2.8	22 6	1.2
35	5 6	19 7	0 28	1 39	11 6	2.7	22 14	1.4
30	5 16	18 57	0 26	1 31	11 0	2.5	22 21	1.5
20	5 34	18 39	0 24	1 20	10 50	2.3	22 34	1.7
10	5 49	18 24	0 22	1 15	10 41	2.1	22 45	1.8
0	6 3	18 10	0 22	1 13	10 33	2.0	22 55	2.0
10	6 17	17 56	0 22	1 13	10 24	1.8	23 6	2.2
20	6 32	17 41	0 23	1 16	10 16	1.6	23 17	2.3
30	6 49	17 25	0 25	1 23	10 6	1.4	23 30	2.5
35	6 58	17 15	0 27	1 28	10 0	1.3	23 37	2.6
40	7 10	17 4	0 29	1 34	9 54	1.2	23 45	2.8
45	7 23	16 51	0 32	1 42	9 46	1.0	23 55	2.9
50	7 38	16 35	0 36	1 54	9 37	.8	...	.0
55	7 58	16 15	0 41	2 9	9 27	.5	...	.0
60	8 26	15 48	0 50	2 31	9 13	.2	...	.0

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	116 58.8	122 - 8	48.5	-125	337 44.3	-14 21.4	134 16.9	6 15.1
2	146 1.6	122 - 9	17.1	-123	7 49.7	-14 21.6	164 21.4	6 14.8
4	175 4.4	121 - 9	45.4	-122	37 55.2	-14 21.8	194 25.9	6 14.6
6	204 7.3	121 -10	13.5	-120	68 7	-14 22.0	224 30.3	6 14.4
8	233 10.1	121 -10	41.3	-118	98 6.2	-14 22.2	254 34.8	6 14.2
10	262 12.8	120 -11	8.8	-116	128 11.7	-14 22.4	284 39.3	6 14.0
12	291 15.6	120 -11	36.0	-114	158 17.1	-14 22.6	314 43.7	6 13.8
14	320 18.3	119 -12	3.0	-112	188 22.6	-14 22.8	344 48.2	6 13.6
16	349 21.0	119 -12	29.6	-110	218 28.1	-14 23.0	14 52.7	6 13.4
18	18 23.7	118 -12	55.9	-109	248 33.6	-14 23.2	44 57.1	6 13.2
20	47 26.3	118 -13	21.9	-107	278 39.1	-14 23.4	75 1.6	6 13.0
22	76 28.9	117 -13	47.6	-105	308 44.6	-14 23.6	105 6.0	6 12.8
Δ					27	-1	22	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	- 6 33.7	.0	15.8	T <sub>m</sub>	16 44	2.0	58.0	15.8
12	- 6 33.3	T <sub>m</sub> ☉	12 h 6.6 min	Starost	4.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	9 16	.1	276	-3.9	♃	1 29	.0	33	-2.7
♂	8 16	.1	291	1.1	♄	15 1	.0	189	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	178 22.1	18 45.9	306 46.3	220 33.5	21 36.6	236 17.7	21 45.2
2	208 22.1	18 44.7	336 51.3	250 32.2	21 37.0	266 19.0	21 45.7
4	238 22.2	18 43.5	6 56.2	280 31.0	21 37.4	296 20.3	21 46.3
6	268 22.2	18 42.4	37 1.1	310 29.8	21 37.8	326 21.6	21 46.8
8	298 22.2	18 41.2	67 6.1	340 28.6	21 38.2	356 22.9	21 47.3
10	328 22.3	18 40.0	97 11.0	10 27.4	21 38.5	26 24.2	21 47.9
12	358 22.3	18 38.8	127 15.9	40 26.1	21 38.9	56 25.5	21 48.4
14	28 22.4	18 37.6	157 20.8	70 24.9	21 39.3	86 26.8	21 48.9
16	58 22.4	18 36.4	187 25.8	100 23.7	21 39.6	116 28.1	21 49.5
18	88 22.5	18 35.2	217 30.7	130 22.4	21 40.0	146 29.4	21 50.0
20	118 22.5	18 34.0	247 35.6	160 21.2	21 40.3	176 30.7	21 50.5
22	148 22.5	18 32.8	277 40.6	190 20.0	21 40.7	206 32.0	21 51.1
Δ	0	-6		-6	2	6	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 32	20 40	1 3	:: ::	13 32	3.8	21 17	.4
55	4 2	20 10	0 47	:: ::	13 7	3.4	21 45	.8
50	4 24	19 48	0 39	2 42	12 48	3.1	22 6	1.1
45	4 41	19 32	0 34	2 8	12 33	2.9	22 22	1.2
40	4 55	19 18	0 31	1 50	12 21	2.7	22 35	1.4
35	5 6	19 6	0 28	1 39	12 10	2.6	22 47	1.5
30	5 17	18 56	0 26	1 30	12 1	2.5	22 57	1.6
20	5 34	18 39	0 24	1 20	11 46	2.3	23 14	1.8
10	5 49	18 24	0 22	1 15	11 33	2.2	23 29	1.9
0	6 3	18 10	0 22	1 13	11 20	2.0	23 43	2.0
10	6 17	17 56	0 22	1 13	11 8	1.9	23 58	2.2
20	6 31	17 42	0 23	1 16	10 55	1.7	...	.0
30	6 48	17 25	0 25	1 23	10 40	1.5	...	.0
35	6 58	17 16	0 27	1 28	10 31	1.4	...	.0
40	7 9	17 5	0 29	1 34	10 22	1.3	...	.0
45	7 21	16 52	0 32	1 42	10 10	1.1	...	.0
50	7 37	16 37	0 36	1 53	9 57	1.0	0 8	3.2
55	7 57	16 17	0 41	2 9	9 40	.7	0 23	3.4
60	8 24	15 50	0 49	2 31	9 17	.3	0 44	3.8

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	105 31.3	116 -14	12.9	-102	338 50.1	-14 23.8	135 10.5	6 12.6
2	134 33.8	116 -14	37.9	-100	8 55.5	-14 24.1	165 15.0	6 12.4
4	163 36.1	115 -15	2.6	-98	39 1.0	-14 24.3	195 19.4	6 12.2
6	192 38.4	115 -15	26.9	-96	69 6.5	-14 24.5	225 23.9	6 12.0
8	221 40.6	114 -15	50.9	-94	99 12.0	-14 24.7	255 28.4	6 11.8
10	250 42.7	113 -16	14.5	-92	129 17.5	-14 24.9	285 32.8	6 11.6
12	279 44.7	113 -16	37.7	-90	159 23.0	-14 25.1	315 37.3	6 11.4
14	308 46.6	112 -17	.5	-88	189 28.5	-14 25.3	345 41.7	6 11.1
16	337 48.5	112 -17	23.0	-85	219 34.0	-14 25.5	15 46.2	6 10.9
18	6 50.2	111 -17	45.1	-83	249 39.5	-14 25.7	45 50.7	6 10.7
20	35 51.8	110 -18	6.8	-81	279 45.0	-14 25.9	75 55.1	6 10.5
22	64 53.3	110 -18	28.1	-78	309 50.5	-14 26.2	105 59.6	6 10.3
Δ					27	-1	22	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	'	h min	min	'	'	
00	- 6 32.9	.1	15.8	T <sub>m</sub>	17 32	2.0	57.1	15.6
12	- 6 32.2	T <sub>m</sub> ☉	12 h 6.5 min	Starost	5.9 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	9 17	.1	275	-3.9	♃	1 24	.0	33	-2.7
♂	8 14								

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	°	'	°	'						
0	178	22.6	18	31.6	307	45.5	220	18.8	21	41.0	236	33.3	21	51.6
2	208	22.6	18	30.4	337	50.4	250	17.5	21	41.4	266	34.6	21	52.1
4	238	22.7	18	29.2	7	55.3	280	16.3	21	41.7	296	35.9	21	52.6
6	268	22.8	18	28.0	38	.3	310	15.1	21	42.1	326	37.2	21	53.2
8	298	22.8	18	26.7	68	5.2	340	13.8	21	42.4	356	38.5	21	53.7
10	328	22.9	18	25.5	98	10.1	10	12.6	21	42.7	26	39.8	21	54.2
12	358	22.9	18	24.3	128	15.1	40	11.3	21	43.1	56	41.1	21	54.7
14	28	23.0	18	23.1	158	20.0	70	10.1	21	43.4	86	42.4	21	55.2
16	58	23.0	18	21.9	188	24.9	100	8.8	21	43.7	116	43.7	21	55.8
18	88	23.1	18	20.6	218	29.8	130	7.6	21	44.0	146	45.0	21	56.3
20	118	23.1	18	19.4	248	34.8	160	6.4	21	44.3	176	46.3	21	56.8
22	148	23.2	18	18.2	278	39.7	190	5.1	21	44.6	206	47.6	21	57.3
Δ	0	-6					-6	2			7	3		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 34	20 38	1 2	:::	15 4	3.7	21 26	.7
55	4 4	20 8	0 47	:::	14 28	3.2	22 4	1.1
50	4 25	19 47	0 39	2 40	14 2	2.9	22 31	1.3
45	4 42	19 30	0 34	2 7	13 42	2.8	22 52	1.5
40	4 56	19 17	0 30	1 50	13 27	2.6	23 9	1.6
35	5 7	19 5	0 28	1 38	13 13	2.5	23 23	1.7
30	5 17	18 55	0 26	1 30	13 2	2.5	23 35	1.8
20	5 34	18 38	0 24	1 20	12 42	2.3	23 57	1.9
10	5 49	18 24	0 22	1 15	12 25	2.2	...	.0
0	6 3	18 10	0 22	1 13	12 9	2.1	...	.0
10	6 17	17 56	0 22	1 13	11 53	2.0	...	.0
20	6 31	17 42	0 23	1 16	11 36	1.8	0 13	2.3
30	6 47	17 26	0 25	1 23	11 17	1.7	0 30	2.5
35	6 57	17 16	0 27	1 28	11 6	1.6	0 41	2.6
40	7 8	17 6	0 29	1 34	10 53	1.5	0 53	2.7
45	7 20	16 53	0 32	1 42	10 38	1.4	1 7	2.8
50	7 36	16 38	0 36	1 53	10 20	1.2	1 24	3.0
55	7 55	16 19	0 41	2 8	9 56	.9	1 46	3.3
60	8 21	15 52	0 49	2 30	9 24	.5	2 16	3.8
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	93	54.7	109	-18	49.0	-76	339	56.0	-14	26.4	136	4.0	6	10.1
2	122	56.0	109	-19	9.5	-74	10	1.5	-14	26.6	166	8.5	6	9.9
4	151	57.1	108	-19	29.6	-71	40	6.9	-14	26.8	196	13.0	6	9.7
6	180	58.2	107	-19	49.3	-69	70	12.4	-14	27.0	226	17.4	6	9.5
8	209	59.1	107	-20	8.5	-67	100	17.9	-14	27.2	256	21.9	6	9.3
10	238	59.9	106	-20	27.3	-64	130	23.4	-14	27.4	286	26.3	6	9.1
12	268	.6	106	-20	45.7	-62	160	28.9	-14	27.6	316	30.8	6	8.9
14	297	1.1	105	-21	3.6	-59	190	34.4	-14	27.8	346	35.2	6	8.7
16	326	1.6	105	-21	21.2	-57	220	39.9	-14	28.1	16	39.7	6	8.4
18	355	1.9	104	-21	38.2	-55	250	45.4	-14	28.3	46	44.2	6	8.2
20	24	2.1	104	-21	54.8	-52	280	50.9	-14	28.5	76	48.6	6	8.0
22	53	2.1	103	-22	11.0	-50	310	56.4	-14	28.7	106	53.1	6	7.8
Δ							27	-1			22	-1		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>♃</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 6 31.5	.1	15.8	T <sub>m</sub>	18 21	2.1	56.2	15.3	
12	- 6 30.5	T <sub>m</sub> ☉	12 h 6.5 min	Starost	6.9 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 18	.1	274	-3.9	♄	1 20	.0	33	-2.7
♂	8 13	.1	290	1.1	♄	14 54	.0	189	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS								
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>							
h	°	'	°	'	°	'	°	'						
0	178	23.3	18	17.0	308	44.6	220	3.9	21	44.9	236	48.9	21	57.8
2	208	23.3	18	15.7	338	49.6	250	2.6	21	45.2	266	50.2	21	58.3
4	238	23.4	18	14.5	8	54.5	280	1.4	21	45.5	296	51.5	21	58.8
6	268	23.5	18	13.2	38	59.4	310	.1	21	45.8	326	52.8	21	59.3
8	298	23.5	18	12.0	69	4.3	339	58.9	21	46.1	356	54.1	21	59.8
10	328	23.6	18	10.8	99	9.3	9	57.6	21	46.4	26	55.4	22	.3
12	358	23.7	18	9.5	129	14.2	39	56.4	21	46.7	56	56.7	22	.8
14	28	23.7	18	8.3	159	19.1	69	55.1	21	46.9	86	58.0	22	1.3
16	58	23.8	18	7.0	189	24.1	99	53.8	21	47.2	116	59.3	22	1.8
18	88	23.9	18	5.8	219	29.0	129	52.6	21	47.5	147	.6	22	2.3
20	118	23.9	18	4.5	249	33.9	159	51.3	21	47.7	177	1.9	22	2.8
22	148	24.0	18	3.3	279	38.8	189	50.1	21	48.0	207	3.3	22	3.3
Δ	0	-6					-6	1			7	3		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 36	20 35	1 1	:::	16 33	3.2	21 42	1.2
55	4 5	20 6	0 47	:::	15 45	2.8	22 31	1.5
50	4 27	19 45	0 39	2 38	15 13	2.7	23 3	1.7
45	4 43	19 29	0 34	2 7	14 49	2.6	23 28	1.8
40	4 57	19 16	0 30	1 49	14 30	2.5	23 47	1.9
35	5 8	19 5	0 28	1 38	14 14	2.4	...	.0
30	5 18	18 55	0 26	1 30	14 0	2.4	...	.0
20	5 35	18 38	0 24	1 20	13 37	2.3	...	.0
10	5 49	18 23	0 22	1 15	13 17	2.2	0 15	2.0
0	6 3	18 10	0 22	1 12	12 58	2.1	0 32	2.1
10	6 16	17 57	0 22	1 13	12 40	2.0	0 50	2.2
20	6 31	17 42	0 23	1 16	12 20	2.0	1 9	2.3
30	6 47	17 26	0 25	1 23	11 57	1.9	1 30	2.4
35	6 56	17 17	0 27	1 27	11 44	1.8	1 43	2.5
40	7 7	17 7	0 29	1 34	11 29	1.7	1 57	2.6
45	7 19	16 54	0 32	1 42	11 11	1.6	2 15	2.7
50	7 34	16 39	0 35	1 53	10 48	1.5	2 36	2.8
55	7 53	16 20	0 41	2 8	10 19	1.3	3 5	3.0
60	8 19	15 55	0 49	2 30	9 36	.9	3 47	3.5
S								

UT	MESEC				JUPITER		SATURN							
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>						
h	°	'	°	'	°	'	°	'						
0	82	2.1	103	-22	26.7	-47	341	1.9	-14	28.9	136	57.5	6	7.6
2	111	1.9	103	-22	41.9	-44	11	7.4	-14	29.1	167	2.0	6	7.4
4	140	1.6	102	-22	56.7	-42	41	13.0	-14	29.3	197	6.4	6	7.2
6	169	1.2	102	-23	11.0	-39	71	18.5	-14	29.5	227	10.9	6	7.0
8	198	.7	102	-23	24.8	-37	101	24.0	-14	29.8	257	15.3	6	6.8
10	227	.1	101	-23	38.1	-34	131	29.5	-14	30.0	287	19.8	6	6.6
12	255	59.3	101	-23	51.0	-32	161	35.0	-14	30.2	317	24.2	6	6.4
14	284	58.5	101	-24	3.4	-29	191	40.5	-14	30.4	347	28.7	6	6.1
16	313	57.5	101	-24	15.2	-27	221	46.0	-14	30.6	17	33.1	6	5.9
18	342	56.5	101	-24	26.6	-24	251	51.5	-14	30.8	47	37.6	6	5.7
20	11	55.4	101	-24	37.5	-21	281	57.0	-14	31.0	77	42.0	6	5.5
22	40	54.1	101	-24	47.9	-19	312	2.5	-14	31.2	107	46.5	6	5.3
Δ							28	-1			22	-1		

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>♃</sub>	r	
h	min	s	s	h min	min	'	'	
00	- 6 29.4	.1	15.8	T <sub>m</sub>	19 11	2.1	55.5	15.1
12	- 6 28.1	T <sub>m</sub> ☉	12 h 6.5 min	Starost	7.9 d	Faza	☉	
PLANETE								
Pl.	T <sub>m</sub>	π	360-α					

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	$S_{\odot}$	$\delta_{\odot}$	$S_{\Upsilon}$	$S_{\zeta}$	$\delta_{\zeta}$	$S_{\M}$	$\delta_{\M}$			
h	°	'	°	'	°	'	°	'	°	'
0	178 24.1	18 2.0	309 43.8	219 48.8	21 48.3	237 4.6	22 3.8			
2	208 24.2	18 .8	339 48.7	249 47.5	21 48.5	267 5.9	22 4.3			
4	238 24.2	17 59.5	9 53.6	279 46.3	21 48.8	297 7.2	22 4.8			
6	268 24.3	17 58.2	39 58.5	309 45.0	21 49.0	327 8.5	22 5.3			
8	298 24.4	17 57.0	70 3.5	339 43.7	21 49.3	357 9.8	22 5.8			
10	328 24.5	17 55.7	100 8.4	9 42.5	21 49.5	27 11.1	22 6.3			
12	358 24.6	17 54.5	130 13.3	39 41.2	21 49.7	57 12.4	22 6.8			
14	28 24.6	17 53.2	160 18.3	69 39.9	21 50.0	87 13.7	22 7.2			
16	58 24.7	17 51.9	190 23.2	99 38.7	21 50.2	117 15.0	22 7.7			
18	88 24.8	17 50.6	220 28.1	129 37.4	21 50.4	147 16.3	22 8.2			
20	118 24.9	17 49.4	250 33.0	159 36.1	21 50.6	177 17.6	22 8.7			
22	148 25.0	17 48.1	280 38.0	189 34.8	21 50.8	207 18.9	22 9.2			
$\Delta$	0	-6		-6	1	7	2			

$\varphi$	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 39	20 33	1 0	:::	17 50	2.4	22 10	2.0
55	4 7	20 5	0 46	:::	16 53	2.3	23 8	2.1
50	4 28	19 44	0 39	2 36	16 17	2.3	23 44	2.1
45	4 44	19 28	0 34	2 6	15 50	2.3	...	.0
40	4 57	19 15	0 30	1 49	15 29	2.2	...	.0
35	5 9	19 4	0 28	1 38	15 12	2.2	0 4	1.9
30	5 18	18 54	0 26	1 30	14 57	2.2	0 18	2.0
20	5 35	18 37	0 23	1 20	14 32	2.2	0 42	2.0
10	5 50	18 23	0 22	1 14	14 10	2.2	1 3	2.1
0	6 3	18 10	0 22	1 12	13 49	2.1	1 23	2.1
10	6 16	17 57	0 22	1 13	13 29	2.1	1 42	2.2
20	6 30	17 43	0 23	1 16	13 7	2.1	2 4	2.2
30	6 46	17 27	0 25	1 22	12 42	2.0	2 28	2.3
35	6 55	17 18	0 27	1 27	12 27	2.0	2 42	2.3
40	7 6	17 7	0 29	1 34	12 10	2.0	2 59	2.4
45	7 18	16 55	0 32	1 42	11 50	2.0	3 19	2.4
50	7 33	16 41	0 35	1 53	11 24	1.9	3 44	2.5
55	7 52	16 22	0 41	2 8	10 50	1.8	4 18	2.6
60	8 17	15 57	0 49	2 29	9 57	1.6	5 10	2.9
S								

UT	MESEC				JUPITER		SATURN	
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\J}$	$\delta_{\J}$	$S_{\S}$	$\delta_{\S}$
h	°	'	°	'	°	'	°	'
0	69 52.8	101 -24	57.8	-16	342 8.0	-14 31.5	137 50.9	6 5.1
2	98 51.4	101 -25	7.2	-14	12 13.5	-14 31.7	167 55.4	6 4.9
4	127 50.0	101 -25	16.1	-11	42 19.0	-14 31.9	197 59.8	6 4.7
6	156 48.4	101 -25	24.5	-8	72 24.6	-14 32.1	228 4.3	6 4.5
8	185 46.8	101 -25	32.4	-6	102 30.1	-14 32.3	258 8.7	6 4.3
10	214 45.2	101 -25	39.8	-3	132 35.6	-14 32.5	288 13.2	6 4.0
12	243 43.5	101 -25	46.6	-1	162 41.1	-14 32.7	318 17.6	6 3.8
14	272 41.7	102 -25	53.0	2	192 46.6	-14 33.0	348 22.1	6 3.6
16	301 39.9	102 -25	58.8	4	222 52.1	-14 33.2	18 26.5	6 3.4
18	330 38.1	102 -26	4.1	7	252 57.6	-14 33.4	48 31.0	6 3.2
20	359 36.3	103 -26	8.9	10	283 3.2	-14 33.6	78 35.4	6 3.0
22	28 34.4	103 -26	13.2	12	313 8.7	-14 33.8	108 39.9	6 2.8
$\Delta$					28	-1	22	-1

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	$\pi_{\zeta}$	r		
h	min	s	s	h min	min	'	'		
00	- 6 26.7	.1	15.8	$T_m$ 20 2	2.1	55.0	15.0		
12	- 6 25.1	$T_{m\odot}$ 12 h	6.4 min	Starost 8.9 d	Faza ☉				
PLANETE									
Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.	Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
$\zeta$	9 20	.1	271	-3.9	$\J$	1 11	.0	33	-2.7
$\S$	8 11	.1	288	1.1	$\h$	14 46	.0	189	1.1

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	$S_{\odot}$	$\delta_{\odot}$	$S_{\Upsilon}$	$S_{\zeta}$	$\delta_{\zeta}$	$S_{\M}$	$\delta_{\M}$			
h	°	'	°	'	°	'	°	'	°	'
0	178 25.1	17 46.8	310 42.9	219 33.6	21 51.0	237 20.2	22 9.6			
2	208 25.2	17 45.5	340 47.8	249 32.3	21 51.2	267 21.6	22 10.1			
4	238 25.3	17 44.2	10 52.8	279 31.0	21 51.5	297 22.9	22 10.6			
6	268 25.3	17 43.0	40 57.7	309 29.7	21 51.6	327 24.2	22 11.1			
8	298 25.4	17 41.7	71 2.6	339 28.4	21 51.8	357 25.5	22 11.5			
10	328 25.5	17 40.4	101 7.5	9 27.2	21 52.0	27 26.8	22 12.0			
12	358 25.6	17 39.1	131 12.5	39 25.9	21 52.2	57 28.1	22 12.5			
14	28 25.7	17 37.8	161 17.4	69 24.6	21 52.4	87 29.4	22 13.0			
16	58 25.8	17 36.5	191 22.3	99 23.3	21 52.6	117 30.7	22 13.4			
18	88 25.9	17 35.2	221 27.3	129 22.0	21 52.8	147 32.0	22 13.9			
20	118 26.0	17 33.9	251 32.2	159 20.7	21 52.9	177 33.3	22 14.3			
22	148 26.1	17 32.6	281 37.1	189 19.4	21 53.1	207 34.7	22 14.8			
$\Delta$	0	-6		-6	1	7	2			

$\varphi$	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 41	20 30	0 60	:::	18 48	1.5	22 59	2.9
55	4 9	20 3	0 46	:::	17 49	1.7	23 58	2.6
50	4 29	19 42	0 38	2 34	17 12	1.8	...	.0
45	4 45	19 27	0 34	2 5	16 44	1.9	0 11	2.1
40	4 58	19 14	0 30	1 48	16 23	1.9	0 32	2.1
35	5 9	19 3	0 28	1 37	16 5	2.0	0 50	2.1
30	5 19	18 53	0 26	1 29	15 50	2.0	1 5	2.1
20	5 35	18 37	0 23	1 20	15 24	2.0	1 31	2.1
10	5 50	18 23	0 22	1 14	15 1	2.1	1 53	2.1
0	6 3	18 10	0 22	1 12	14 40	2.1	2 14	2.1
10	6 16	17 57	0 22	1 13	14 20	2.1	2 35	2.1
20	6 30	17 43	0 23	1 16	13 57	2.2	2 57	2.1
30	6 45	17 28	0 25	1 22	13 31	2.2	3 23	2.1
35	6 54	17 19	0 27	1 27	13 16	2.2	3 38	2.1
40	7 5	17 8	0 29	1 33	12 58	2.2	3 56	2.1
45	7 17	16 56	0 32	1 42	12 37	2.3	4 17	2.1
50	7 31	16 42	0 35	1 52	12 10	2.3	4 44	2.1
55	7 50	16 24	0 40	2 7	11 33	2.4	5 20	2.0
60	8 14	15 59	0 48	2 28	10 35	2.5	6 19	1.9
S								

UT	MESEC				JUPITER		SATURN	
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\J}$	$\delta_{\J}$	$S_{\S}$	$\delta_{\S}$
h	°	'	°	'	°	'	°	'
0	57 32.5	103 -26	16.9	15	343 14.2	-14 34.0	138 44.3	6 2.6
2	86 30.6	104 -26	20.2	17	13 19.7	-14 34.3	168 48.8	6 2.3
4	115 28.8	104 -26	22.9	20	43 25.2	-14 34.5	198 53.2	6 2.1
6	144 26.9	105 -26	25.1	22	73 30.7	-14 34.7	228 57.7	6 1.9
8	173 25.1	105 -26	26.8	25	103 36.3	-14 34.9	259 2.1	6 1.7
10	202 23.2	106 -26	27.9	27	133 41.8	-14 35.1	289 6.6	6 1.5
12	231 21.5	107 -26	28.6	30	163 47.3	-14 35.3	319 11.0	6 1.3
14	260 19.7	107 -26	28.7	32	193 52.8	-14 35.6	349 15.5	6 1.1
16	289 18.0	108 -26	28.3	34	223 58.3	-14 35.8	19 19.9	6 .9
18	318 16.4	109 -26	27.4	37	254 3.9	-14 36.0	49 24.3	6 .6
20	347 14.8	110 -26	26.0	39	284 9.4	-14 36.2	79 28.8	6 .4
22	16 13.3	110 -26	24.1	42	314 14.9	-14 36.4	109 33.2	6 .2
$\Delta$					28	-1	22	-1

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	$\pi_{\zeta}$	r		
h	min	s	s	h min	min	'	'		
00	- 6 23.4	.2	15.8	$T_m$ 20 53	2.1	54.5	14.9		
12	- 6 21.5	$T_{m\odot}$ 12 h	6.4 min	Starost 9.9 d	Faza ☉				
PLANETE									
Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.	Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
$\zeta$	9 21	.1	270	-3.9	$\J$	1 7	.0	33	-2.7
$\S$	8 10	.1	288	1.1	$\h$	14 43	.0	189	1.2

















Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows 0-22 and delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows phi, N, 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: MESEC (S\_alpha, Delta, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows UT, h, 0-22, delta.

Table with columns: SUNCE, MESEC, PLANETE. Includes orbital elements and planetary data for Sun, Moon, and planets.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows UT, h, 0-22, delta.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows phi, N, 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: MESEC (S\_alpha, Delta, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows UT, h, 0-22, delta.

Table with columns: SUNCE, MESEC, PLANETE. Includes orbital elements and planetary data for Sun, Moon, and planets.



UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	4.0	12	47.9	327	28.3	214	59.1	21	9.3	241	54.4	23	18.5
2	209	4.3	12	46.2	357	33.2	244	57.7	21	8.6	271	55.8	23	18.7
4	239	4.6	12	44.6	27	38.1	274	56.3	21	8.0	301	57.2	23	18.9
6	269	4.9	12	43.0	57	43.0	304	55.0	21	7.4	331	58.6	23	19.1
8	299	5.2	12	41.3	87	48.0	334	53.6	21	6.7	1	60.0	23	19.3
10	329	5.4	12	39.7	117	52.9	4	52.2	21	6.1	32	1.4	23	19.5
12	359	5.7	12	38.0	147	57.8	34	50.9	21	5.4	62	2.8	23	19.7
14	29	6.0	12	36.4	178	2.8	64	49.5	21	4.8	92	4.2	23	19.9
16	59	6.3	12	34.8	208	7.7	94	48.1	21	4.1	122	5.6	23	20.1
18	89	6.6	12	33.1	238	12.6	124	46.8	21	3.5	152	6.9	23	20.2
20	119	6.9	12	31.5	268	17.5	154	45.4	21	2.8	182	8.3	23	20.4
22	149	7.2	12	29.8	298	22.5	184	44.0	21	2.1	212	9.7	23	20.6
Δ	1 -8						-7 -3				7 1			

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	4 22	19 44	0 50	: : :	0 49	4.6	18 58	.3		
55	4 40	19 26	0 41	2 43	1 29	4.1	18 29	.8		
50	4 54	19 12	0 35	2 11	1 56	3.7	18 8	1.1		
45	5 5	19 2	0 32	1 52	2 17	3.5	17 51	1.3		
40	5 14	18 53	0 29	1 40	2 34	3.3	17 37	1.5		
35	5 22	18 45	0 27	1 31	2 49	3.2	17 25	1.6		
30	5 29	18 38	0 25	1 25	3 1	3.0	17 15	1.8		
20	5 41	18 27	0 23	1 17	3 22	2.8	16 57	2.0		
10	5 51	18 17	0 22	1 12	3 40	2.6	16 41	2.2		
0	6 0	18 7	0 21	1 10	3 57	2.5	16 26	2.4		
10	6 10	17 58	0 21	1 11	4 14	2.3	16 11	2.6		
20	6 20	17 48	0 23	1 14	4 32	2.1	15 54	2.8		
30	6 31	17 37	0 24	1 21	4 53	1.9	15 35	3.0		
35	6 37	17 31	0 26	1 25	5 5	1.8	15 24	3.1		
40	6 44	17 24	0 28	1 31	5 19	1.6	15 12	3.3		
45	6 52	17 16	0 30	1 39	5 35	1.4	14 56	3.5		
50	7 2	17 6	0 34	1 49	5 55	1.2	14 38	3.7		
55	7 15	16 54	0 38	2 2	6 21	.9	14 14	4.1		
60	7 31	16 38	0 44	2 21	6 57	.4	13 39	4.6		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	213	17.7	62	22	32.5	-127	2	6.8	-15	19.1	153	45.6	5	17.0		
2	242	4.4	64	22	13.8	-130	32	12.3	-15	19.3	183	50.0	5	16.8		
4	270	51.3	66	21	54.5	-132	62	17.9	-15	19.5	213	54.4	5	16.6		
6	299	38.5	67	21	34.6	-134	92	23.5	-15	19.8	243	58.8	5	16.3		
8	328	26.1	69	21	14.1	-136	122	29.0	-15	20.0	274	3.2	5	16.1		
10	357	13.9	71	20	53.0	-138	152	34.6	-15	20.2	304	7.6	5	15.9		
12	26	2.0	72	20	31.2	-140	182	40.2	-15	20.4	334	12.0	5	15.6		
14	54	50.4	74	20	8.9	-142	212	45.7	-15	20.6	4	16.4	5	15.4		
16	83	39.2	76	19	46.1	-144	242	51.3	-15	20.9	34	20.8	5	15.2		
18	112	28.3	77	19	22.7	-145	272	56.9	-15	21.1	64	25.1	5	14.9		
20	141	17.7	79	18	58.8	-147	303	2.4	-15	21.3	94	29.5	5	14.7		
22	170	7.5	81	18	34.3	-149	333	8.0	-15	21.5	124	33.9	5	14.5		
Δ							28 -1				22 -1					

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r
h	min	s	s	'	h min	min	'	'
00	- 3 57.2	.6	15.8	T <sub>m</sub>	10 12	2.4	60.8	16.6
12	- 3 50.5	T <sub>m</sub> ☉	12 h 3.8 min	Starost 26.9 d Faza ●				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	9 39	.1	249	-3.9	♃	23 47	.0	36	-2.7
♂	7 52	.1	275	1.0	♄	13 43	.0	187	1.2

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	179	7.5	12	28.2	328	27.4	214	42.7	21	1.5	242	11.1	23	20.8
2	209	7.8	12	26.5	358	32.3	244	41.3	21	.8	272	12.5	23	21.0
4	239	8.1	12	24.9	28	37.3	274	39.9	21	.1	302	13.9	23	21.2
6	269	8.4	12	23.2	58	42.2	304	38.6	20	59.4	332	15.3	23	21.4
8	299	8.7	12	21.6	88	47.1	334	37.2	20	58.7	2	16.7	23	21.5
10	329	9.0	12	19.9	118	52.0	4	35.9	20	58.0	32	18.1	23	21.7
12	359	9.3	12	18.3	148	57.0	34	34.5	20	57.3	62	19.5	23	21.9
14	29	9.6	12	16.6	179	1.9	64	33.1	20	56.6	92	20.9	23	22.1
16	59	9.9	12	15.0	209	6.8	94	31.8	20	55.9	122	22.3	23	22.2
18	89	10.2	12	13.3	239	11.8	124	30.4	20	55.2	152	23.8	23	22.4
20	119	10.5	12	11.6	269	16.7	154	29.1	20	54.5	182	25.2	23	22.6
22	149	10.8	12	10.0	299	21.6	184	27.7	20	53.8	212	26.6	23	22.8
Δ	1 -8						-7 -3				7 1			

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	h min	h min	h min	h min	min	h min	min		
60	4 24	19 42	0 49	: : :	2 39	4.5	19 6	.2		
55	4 42	19 24	0 41	2 41	3 6	4.0	18 48	.6		
50	4 56	19 11	0 35	2 10	3 26	3.7	18 34	.9		
45	5 6	18 60	0 31	1 52	3 41	3.5	18 22	1.1		
40	5 15	18 51	0 29	1 40	3 54	3.3	18 13	1.3		
35	5 23	18 44	0 26	1 31	4 4	3.1	18 5	1.4		
30	5 30	18 37	0 25	1 25	4 14	3.0	17 57	1.6		
20	5 41	18 26	0 23	1 17	4 29	2.7	17 45	1.8		
10	5 51	18 16	0 22	1 12	4 43	2.5	17 34	2.0		
0	6 0	18 7	0 21	1 10	4 56	2.3	17 23	2.2		
10	6 9	17 58	0 21	1 11	5 9	2.1	17 12	2.4		
20	6 19	17 49	0 23	1 14	5 23	1.9	17 1	2.7		
30	6 30	17 38	0 24	1 20	5 39	1.7	16 48	2.9		
35	6 36	17 32	0 26	1 25	5 48	1.5	16 40	3.1		
40	6 43	17 25	0 28	1 31	5 58	1.4	16 31	3.2		
45	6 51	17 17	0 30	1 39	6 10	1.2	16 20	3.4		
50	7 0	17 7	0 33	1 49	6 24	1.0	16 8	3.7		
55	7 12	16 56	0 38	2 2	6 43	.7	15 51	4.0		
60	7 28	16 40	0 44	2 21	7 7	.2	15 30	4.4		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	198	57.5	82	18	9.4	-150	3	13.6	-15	21.7	154	38.3	5	14.2		
2	227	48.0	84	17	43.9	-151	33	19.1	-15	21.9	184	42.7	5	14.0		
4	256	38.7	85	17	18.0	-153	63	24.7	-15	22.2	214	47.1	5	13.8		
6	285	29.9	87	16	51.6	-154	93	30.2	-15	22.4	244	51.5	5	13.5		
8	314	21.3	88	16	24.8	-155	123	35.8	-15	22.6	274	55.9	5	13.3		
10	343	13.1	90	15	57.6	-156	153	41.4	-15	22.8	305	.3	5	13.1		
12	12	5.3	91	15	30.0	-157	183	46.9	-15	23.0	335	4.7	5	12.8		
14	40	57.7	93	15	2.0	-158	213	52.5	-15	23.2	5	9.0	5	12.6		
16	69	50.5	94	14	33.6	-159	243	58.1	-15	23.5	35	13.4	5	12.4		
18	98	43.7	95	14	4.8	-159	274	3.6	-15	23.7	65	17.8				

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	11.1	12	8.3	329	26.5	214	26.3	20	53.1	242	28.0	23	22.9
2	209	11.4	12	6.7	359	31.5	244	25.0	20	52.3	272	29.4	23	23.1
4	239	11.7	12	5.0	29	36.4	274	23.6	20	51.6	302	30.8	23	23.3
6	269	12.0	12	3.3	59	41.3	304	22.3	20	50.9	332	32.2	23	23.4
8	299	12.3	12	1.6	89	46.3	334	20.9	20	50.1	2	33.6	23	23.6
10	329	12.6	12	.0	119	51.2	4	19.6	20	49.4	32	35.0	23	23.8
12	359	12.9	11	58.3	149	56.1	34	18.2	20	48.7	62	36.4	23	23.9
14	29	13.2	11	56.6	180	1.0	64	16.8	20	47.9	92	37.8	23	24.1
16	59	13.5	11	55.0	210	6.0	94	15.5	20	47.2	122	39.2	23	24.2
18	89	13.9	11	53.3	240	10.9	124	14.1	20	46.4	152	40.7	23	24.4
20	119	14.2	11	51.6	270	15.8	154	12.8	20	45.6	182	42.1	23	24.6
22	149	14.5	11	49.9	300	20.8	184	11.4	20	44.9	212	43.5	23	24.7
Δ	2		-8				-7		-4		7		1	

φ	SUNCE				TRAJANJE SUMRAKA				MESEC				
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24					
h	min	h	min	h	min	h	min	h	min	h	min	h	min
N	4 26	19 39	0 49	:	4 28	4.3	19 11	.2					
60	4 44	19 22	0 40	2 39	4 43	3.9	19 2	.5					
55	4 57	19 9	0 35	2 9	4 55	3.6	18 55	.8					
50	5 8	18 58	0 31	1 51	5 4	3.4	18 49	1.0					
45	5 16	18 50	0 29	1 39	5 12	3.2	18 44	1.2					
40	5 24	18 42	0 26	1 31	5 19	3.0	18 39	1.3					
35	5 30	18 36	0 25	1 25	5 25	2.9	18 36	1.5					
30	5 41	18 25	0 23	1 16	5 35	2.6	18 29	1.7					
20	5 51	18 16	0 22	1 12	5 44	2.4	18 23	1.9					
10	6 0	18 7	0 21	1 10	5 52	2.2	18 17	2.1					
0	6 9	17 58	0 21	1 11	6 0	2.0	18 11	2.3					
10	6 18	17 49	0 22	1 14	6 9	1.8	18 5	2.6					
20	6 29	17 39	0 24	1 20	6 19	1.5	17 57	2.8					
30	6 35	17 33	0 26	1 25	6 24	1.4	17 53	3.0					
35	6 41	17 26	0 28	1 31	6 31	1.2	17 48	3.1					
40	6 49	17 18	0 30	1 39	6 38	1.0	17 43	3.3					
45	6 59	17 9	0 33	1 49	6 47	.8	17 36	3.6					
50	7 10	16 57	0 38	2 2	6 58	.5	17 27	3.9					
55	7 25	16 42	0 44	2 21	7 13	.2	17 16	4.2					
S													

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	185	25.1	99	12	36.6	-161	4	20.3	-15	24.3	155	31.0	5	11.4		
2	214	19.5	100	12	6.6	-161	34	25.9	-15	24.5	185	35.4	5	11.2		
4	243	14.3	101	11	36.4	-162	64	31.4	-15	24.8	215	39.8	5	11.0		
6	272	9.4	102	11	5.8	-162	94	37.0	-15	25.0	245	44.2	5	10.7		
8	301	4.7	103	10	35.0	-162	124	42.6	-15	25.2	275	48.5	5	10.5		
10	330	.4	104	10	4.0	-162	154	48.1	-15	25.4	305	52.9	5	10.3		
12	358	56.4	105	9	32.8	-162	184	53.7	-15	25.6	335	57.3	5	10.0		
14	27	52.6	106	9	1.4	-162	214	59.2	-15	25.8	6	1.7	5	9.8		
16	56	49.1	107	8	29.9	-162	245	4.8	-15	26.0	36	6.1	5	9.6		
18	85	45.9	108	7	58.1	-162	275	10.4	-15	26.3	66	10.5	5	9.3		
20	114	42.9	109	7	26.2	-162	305	15.9	-15	26.5	96	14.9	5	9.1		
22	143	40.2	109	6	54.2	-162	335	21.5	-15	26.7	126	19.2	5	8.8		
Δ							28		-1		22			-1		

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☾</sub>	r		
h	min	s	'	h	min	min	'		
00	- 3 29.9	.6	15.8	T <sub>m</sub>	12 4	2.2	60.9	16.6	
12	- 3 22.7	T <sub>m☉</sub>	12 h 3.4 min	Starost	28.9 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	9 42	.1	246	-3.9	♃	23 38	.0	36	-2.7
♂	7 50	.1	274	1.0	♄	13 36	.0	187	1.2

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	14.8	11	48.3	330	25.7	214	10.1	20	44.1	242	44.9	23	24.9
2	209	15.1	11	46.6	0	30.6	244	8.7	20	43.3	272	46.3	23	25.0
4	239	15.4	11	44.9	30	35.5	274	7.4	20	42.5	302	47.7	23	25.2
6	269	15.7	11	43.2	60	40.5	304	6.0	20	41.8	332	49.1	23	25.3
8	299	16.1	11	41.5	90	45.4	334	4.7	20	41.0	2	50.6	23	25.5
10	329	16.4	11	39.8	120	50.3	4	3.3	20	40.2	32	52.0	23	25.6
12	359	16.7	11	38.2	150	55.2	34	2.0	20	39.4	62	53.4	23	25.8
14	29	17.0	11	36.5	181	.2	64	.6	20	38.6	92	54.8	23	25.9
16	59	17.3	11	34.8	211	5.1	93	59.3	20	37.8	122	56.2	23	26.1
18	89	17.7	11	33.1	241	10.0	123	57.9	20	37.0	152	57.6	23	26.2
20	119	18.0	11	31.4	271	15.0	153	56.6	20	36.2	182	59.1	23	26.3
22	149	18.3	11	29.7	301	19.9	183	55.2	20	35.4	213	.5	23	26.5
Δ	2		-8				-7		-4		7		1	

φ	SUNCE				TRAJANJE SUMRAKA				MESEC				
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24					
h	min	h	min	h	min	h	min	h	min	h	min	h	min
N	4 29	19 36	0 48	4 1	6 11	4.2	19 15	.1					
60	4 46	19 19	0 40	2 37	6 17	3.8	19 14	.5					
55	4 59	19 7	0 35	2 8	6 22	3.5	19 13	.7					
50	5 9	18 57	0 31	1 51	6 25	3.3	19 12	.9					
45	5 17	18 48	0 28	1 39	6 28	3.1	19 12	1.1					
40	5 25	18 41	0 26	1 31	6 31	2.9	19 11	1.3					
35	5 31	18 35	0 25	1 24	6 33	2.8	19 11	1.4					
30	5 42	18 24	0 23	1 16	6 37	2.5	19 10	1.6					
20	5 51	18 15	0 22	1 12	6 41	2.3	19 9	1.9					
10	6 0	18 6	0 21	1 10	6 44	2.1	19 8	2.1					
0	6 8	17 58	0 21	1 11	6 47	1.9	19 7	2.3					
10	6 17	17 49	0 22	1 14	6 51	1.7	19 6	2.5					
20	6 28	17 39	0 24	1 20	6 55	1.4	19 5	2.7					
30	6 33	17 33	0 26	1 25	6 57	1.3	19 4	2.9					
35	6 40	17 27	0 28	1 31	6 60	1.1	19 3	3.0					
40	6 48	17 19	0 30	1 38	7 3	.9	19 2	3.2					
45	6 57	17 10	0 33	1 48	7 7	.7	19 1	3.4					
50	7 8	16 59	0 38	2 2	7 11	.5	18 60	3.7					
55	7 23	16 45	0 44	2 20	7 17	.1	18 58	4.1					
S													

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	172	37.8	110	6	22.1	-161	5	27.1	-15	26.9	156	23.6	5	8.6		
2	201	35.5	111	5	49.9	-161	35	32.6	-15	27.1	186	28.0	5	8.4		
4	230	33.6	111	5	17.6	-160	65	38.2	-15	27.3	216	32.4	5	8.1		
6	259	31.8	112	4	45.2	-160	95	43.7	-15	27.6	246	36.8	5	7.9		
8	288	30.2	112	4	12.8	-159	125	49.3	-15	27.8	276	41.2	5	7.7		
10	317	28.9	1													

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include UT 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include UT 0, 10, 20, 30, 40, 50, 60 and a delta row.

Table with columns: MESEC (S\_moon, delta\_moon, A), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include UT 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and a delta row.

Table with columns: SUNCE (UT, e = T\_p - UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Includes a delta row and a star/planet symbol.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include UT 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include UT 0, 10, 20, 30, 40, 50, 60 and a delta row.

Table with columns: MESEC (S\_moon, delta\_moon, A), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include UT 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and a delta row.

Table with columns: SUNCE (UT, e = T\_p - UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Includes a delta row and a star/planet symbol.

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	179 26.6	10 47.0	333 23.1	213 21.7	20 13.7	243 36.3	23 29.6
2	209 27.0	10 45.3	3 28.0	243 20.4	20 12.8	273 37.7	23 29.7
4	239 27.3	10 43.5	33 33.0	273 19.1	20 11.9	303 39.1	23 29.8
6	269 27.7	10 41.8	63 37.9	303 17.7	20 10.9	333 40.6	23 29.9
8	299 28.0	10 40.1	93 42.8	333 16.4	20 10.0	3 42.0	23 30.0
10	329 28.3	10 38.4	123 47.7	3 15.1	20 9.1	33 43.5	23 30.1
12	359 28.7	10 36.6	153 52.7	33 13.7	20 8.1	63 44.9	23 30.2
14	29 29.0	10 34.9	183 57.6	63 12.4	20 7.2	93 46.4	23 30.3
16	59 29.4	10 33.2	214 2.5	93 11.1	20 6.2	123 47.8	23 30.4
18	89 29.7	10 31.4	244 7.5	123 9.8	20 5.3	153 49.2	23 30.5
20	119 30.1	10 29.7	274 12.4	153 8.4	20 4.3	183 50.7	23 30.6
22	149 30.4	10 28.0	304 17.3	183 7.1	20 3.4	213 52.1	23 30.7
Δ	2	-9		-7	-5	7	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	4 36	19 27	0 47	3 30	11 4	4.0	19 27
55	4 51	19 12	0 40	2 31	10 43	3.5	19 51
50	5 3	19 1	0 35	2 5	10 27	3.2	20 9
45	5 12	18 51	0 31	1 49	10 14	3.0	20 23
40	5 20	18 44	0 28	1 38	10 4	2.9	20 35
35	5 27	18 37	0 26	1 30	9 55	2.7	20 45
30	5 33	18 32	0 25	1 24	9 47	2.6	20 54
20	5 43	18 22	0 23	1 16	9 34	2.4	21 9
10	5 51	18 13	0 21	1 12	9 23	2.2	21 23
0	5 59	18 6	0 21	1 10	9 12	2.1	21 35
10	6 7	17 58	0 21	1 11	9 1	1.9	21 48
20	6 15	17 50	0 22	1 14	8 50	1.7	22 1
30	6 24	17 41	0 24	1 20	8 37	1.5	22 17
35	6 30	17 36	0 26	1 25	8 30	1.4	22 26
40	6 36	17 30	0 28	1 30	8 22	1.3	22 36
45	6 42	17 23	0 30	1 38	8 12	1.1	22 49
50	6 51	17 15	0 33	1 48	8 1	.9	23 4
55	7 1	17 5	0 37	2 1	7 46	.6	23 23
60	7 14	16 52	0 43	2 20	7 28	.3	23 48
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	°	'	'
0	136 43.2	110 -12	13.9	-113	8 47.1	-15 34.5	159 1.4	5 .1
2	165 44.1	110 -12	41.1	-111	38 52.6	-15 34.7	189 5.8	4 59.9
4	194 44.9	109 -13	7.9	-109	68 58.2	-15 34.9	219 10.2	4 59.6
6	223 45.7	109 -13	34.3	-107	99 3.7	-15 35.1	249 14.5	4 59.4
8	252 46.5	108 -14	.5	-105	129 9.3	-15 35.4	279 18.9	4 59.1
10	281 47.2	108 -14	26.2	-103	159 14.8	-15 35.6	309 23.3	4 58.9
12	310 47.8	107 -14	51.6	-100	189 20.4	-15 35.8	339 27.7	4 58.7
14	339 48.3	107 -15	16.7	-98	219 25.9	-15 36.0	9 32.0	4 58.4
16	8 48.8	106 -15	41.3	-96	249 31.5	-15 36.2	39 36.4	4 58.2
18	37 49.2	106 -16	5.6	-94	279 37.0	-15 36.4	69 40.8	4 58.0
20	66 49.5	105 -16	29.5	-91	309 42.5	-15 36.6	99 45.2	4 57.7
22	95 49.7	105 -16	53.0	-89	339 48.1	-15 36.8	129 49.6	4 57.5
Δ					28	-1	22	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	- 2 29.5	.7	15.8	T <sub>m</sub>	15 24	2.0	58.1
12	- 2 21.4	T <sub>m</sub> ☉	12 h 2.4 min	Starost 3.6 d Faza ●			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♃	h min	'
♂	9 46	.1	241	-3.9	♄	23 21	.0
	7 45	.1	271	1.0	♅	13 22	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	°	'
0	179 30.8	10 26.2	334 22.2	213 5.8	20 2.4	243 53.6	23 30.8
2	209 31.1	10 24.5	4 27.2	243 4.5	20 1.4	273 55.0	23 30.9
4	239 31.5	10 22.7	34 32.1	273 3.2	20 .5	303 56.5	23 31.0
6	269 31.8	10 21.0	64 37.0	303 1.8	19 59.5	333 57.9	23 31.1
8	299 32.2	10 19.3	94 41.9	333 .5	19 58.5	3 59.4	23 31.2
10	329 32.5	10 17.5	124 46.9	2 59.2	19 57.5	34 .8	23 31.2
12	359 32.9	10 15.8	154 51.8	32 57.9	19 56.6	64 2.3	23 31.3
14	29 33.3	10 14.0	184 56.7	62 56.6	19 55.6	94 3.7	23 31.4
16	59 33.6	10 12.3	215 1.7	92 55.2	19 54.6	124 5.2	23 31.5
18	89 34.0	10 10.5	245 6.6	122 53.9	19 53.6	154 6.7	23 31.6
20	119 34.3	10 8.8	275 11.5	152 52.6	19 52.6	184 8.1	23 31.7
22	149 34.7	10 7.0	305 16.4	182 51.3	19 51.6	214 9.6	23 31.7
Δ	2	-9		-7	-5	7	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	4 38	19 24	0 47	3 24	12 39	3.8	19 35
55	4 53	19 10	0 39	2 29	12 7	3.4	20 9
50	5 5	18 59	0 34	2 4	11 44	3.1	20 33
45	5 14	18 50	0 31	1 48	11 27	2.9	20 52
40	5 21	18 42	0 28	1 37	11 12	2.8	21 8
35	5 28	18 36	0 26	1 29	11 0	2.6	21 21
30	5 33	18 31	0 25	1 24	10 49	2.5	21 32
20	5 43	18 21	0 23	1 16	10 31	2.4	21 52
10	5 51	18 13	0 21	1 11	10 16	2.2	22 9
0	5 59	18 5	0 21	1 10	10 1	2.1	22 25
10	6 6	17 58	0 21	1 11	9 47	2.0	22 41
20	6 14	17 50	0 22	1 14	9 32	1.8	22 59
30	6 23	17 41	0 24	1 20	9 14	1.7	23 19
35	6 28	17 36	0 26	1 25	9 4	1.6	23 31
40	6 34	17 31	0 28	1 30	8 52	1.4	23 44
45	6 41	17 24	0 30	1 38	8 39	1.3	...
50	6 49	17 16	0 33	1 48	8 23	1.1	...
55	6 59	17 7	0 37	2 1	8 2	.9	...
60	7 11	16 54	0 43	2 20	7 34	.4	...
S							

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	°	'	'
0	124 49.9	104 -17	16.0	-87	9 53.6	-15 37.0	159 53.9	4 57.2
2	153 49.9	104 -17	38.7	-84	39 59.2	-15 37.2	189 58.3	4 57.0
4	182 49.9	103 -18	1.0	-82	70 4.7	-15 37.4	220 2.7	4 56.8
6	211 49.8	103 -18	22.8	-79	100 10.3	-15 37.6	250 7.1	4 56.5
8	240 49.5	103 -18	44.2	-77	130 15.8	-15 37.8	280 11.4	4 56.3
10	269 49.2	102 -19	5.2	-74	160 21.4	-15 38.0	310 15.8	4 56.1
12	298 48.8	102 -19	25.7	-72	190 26.9	-15 38.2	340 20.2	4 55.8
14	327 48.3	101 -19	45.8	-69	220 32.5	-15 38.4	10 24.6	4 55.6
16	356 47.7	101 -20	5.4	-67	250 38.0	-15 38.7	40 28.9	4 55.3
18	25 46.9	100 -20	24.6	-64	280 43.5	-15 38.9	70 33.3	4 55.1
20	54 46.1	100 -20	43.3	-62	310 49.1	-15 39.1	100 37.7	4 54.9
22	83 45.2	100 -21	1.6	-59	340 54.6	-15 39.3	130 42.1	4 54.6
Δ					28	-1	22	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	- 2 13.3	.7	15.8	T <sub>m</sub>	16 13	2.1	57.2
12	- 2 5.0	T <sub>m</sub> ☉	12 h 2.1 min	Starost 4.6 d Faza ●			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♃	h min	'
♂	9 47	.1	240	-3.9	♄	23 16	.0
	7 44	.1	270	1.0	♅	13 18	.0



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 43.9	9 23.0	337 19.7	212 18.7	19 25.2	244 46.3	23 33.3
2	209 44.2	9 21.2	7 24.6	242 17.4	19 24.1	274 47.7	23 33.4
4	239 44.6	9 19.4	37 29.5	272 16.1	19 23.0	304 49.2	23 33.4
6	269 45.0	9 17.6	67 34.4	302 14.8	19 21.9	334 50.7	23 33.5
8	299 45.4	9 15.8	97 39.4	332 13.5	19 20.7	4 52.2	23 33.5
10	329 45.7	9 14.1	127 44.3	2 12.2	19 19.6	34 53.6	23 33.6
12	359 46.1	9 12.3	157 49.2	32 11.0	19 18.5	64 55.1	23 33.6
14	29 46.5	9 10.5	187 54.2	62 9.7	19 17.4	94 56.6	23 33.7
16	59 46.9	9 8.7	217 59.1	92 8.4	19 16.2	124 58.1	23 33.7
18	89 47.3	9 6.9	248 4.0	122 7.1	19 15.1	154 59.6	23 33.7
20	119 47.6	9 5.1	278 8.9	152 5.8	19 14.0	185 1.1	23 33.8
22	149 48.0	9 3.4	308 13.9	182 4.5	19 12.8	215 2.5	23 33.8
Δ	2	-9		-6	-6	7	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 46	19 15	0 46	3 10	16 42	1.8	20 53	2.6
55	4 59	19 2	0 39	2 25	15 42	1.9	21 52	2.4
50	5 9	18 52	0 34	2 2	15 5	2.0	22 29	2.4
45	5 17	18 44	0 31	1 47	14 38	2.0	22 56	2.3
40	5 24	18 38	0 28	1 36	14 17	2.1	23 18	2.3
35	5 30	18 32	0 26	1 29	13 59	2.1	23 35	2.2
30	5 35	18 27	0 24	1 23	13 44	2.1	23 51	2.2
20	5 44	18 19	0 22	1 15	13 18	2.1	...	0
10	5 51	18 11	0 21	1 11	12 56	2.1	...	0
0	5 58	18 5	0 21	1 10	12 35	2.1	0 8	2.2
10	6 5	17 58	0 21	1 10	12 14	2.1	0 28	2.2
20	6 12	17 51	0 22	1 14	11 52	2.2	0 50	2.2
30	6 20	17 43	0 24	1 20	11 26	2.2	1 16	2.2
35	6 24	17 38	0 26	1 24	11 11	2.2	1 31	2.2
40	6 30	17 33	0 27	1 30	10 54	2.2	1 48	2.2
45	6 36	17 28	0 30	1 38	10 32	2.2	2 9	2.2
50	6 43	17 21	0 33	1 48	10 6	2.2	2 35	2.2
55	6 51	17 12	0 37	2 1	9 30	2.2	3 11	2.3
60	7 3	17 1	0 43	2 19	8 33	2.2	4 8	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	87 56.7	101 -25	56.6	6	13 13.0	-15 44.3	162 31.4	4 48.6
2	116 54.2	101 -26	1.7	9	43 18.6	-15 44.5	192 35.8	4 48.4
4	145 51.8	102 -26	6.2	11	73 24.1	-15 44.7	222 40.2	4 48.1
6	174 49.3	102 -26	10.3	14	103 29.6	-15 44.9	252 44.5	4 47.9
8	203 46.9	103 -26	13.7	16	133 35.1	-15 45.1	282 48.9	4 47.7
10	232 44.5	103 -26	16.7	19	163 40.7	-15 45.3	312 53.3	4 47.4
12	261 42.2	104 -26	19.1	21	193 46.2	-15 45.5	342 57.6	4 47.2
14	290 39.9	105 -26	21.0	24	223 51.7	-15 45.7	13 2.0	4 46.9
16	319 37.7	105 -26	22.4	26	253 57.3	-15 45.9	43 6.4	4 46.7
18	348 35.5	106 -26	23.3	29	284 2.8	-15 46.1	73 10.8	4 46.5
20	17 33.4	107 -26	23.6	31	314 8.3	-15 46.3	103 15.1	4 46.2
22	46 31.3	108 -26	23.4	34	344 13.8	-15 46.5	133 19.5	4 46.0
Δ					28	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 1 22.2	.7	15.9	T <sub>m</sub>	18 47	2.1	55.0	15.0	
12	- 1 13.3	T <sub>m</sub> ☉	12 h 1.2 min	Starost	7.6 d	Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°	°	☉	h min	'	°	°
☉	9 50	.1	236	-3.9	♃	23 3	.0	37	-2.7
♃	7 41	.1	268	1.0	♄	13 8	.0	186	1.3

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 48.4	9 1.6	338 18.8	212 3.2	19 11.7	245 4.0	23 33.8
2	209 48.8	8 59.8	8 23.7	242 2.0	19 10.5	275 5.5	23 33.9
4	239 49.2	8 58.0	38 28.6	272 .7	19 9.4	305 7.0	23 33.9
6	269 49.6	8 56.2	68 33.6	301 59.4	19 8.2	335 8.5	23 33.9
8	299 49.9	8 54.4	98 38.5	331 58.1	19 7.0	5 10.0	23 34.0
10	329 50.3	8 52.6	128 43.4	1 56.8	19 5.9	35 11.5	23 34.0
12	359 50.7	8 50.8	158 48.4	31 55.6	19 4.7	65 13.0	23 34.0
14	29 51.1	8 49.0	188 53.3	61 54.3	19 3.5	95 14.5	23 34.1
16	59 51.5	8 47.2	218 58.2	91 53.0	19 2.3	125 16.0	23 34.1
18	89 51.9	8 45.4	249 3.1	121 51.7	19 1.2	155 17.5	23 34.1
20	119 52.3	8 43.6	279 8.1	151 50.5	18 60.0	185 18.9	23 34.1
22	149 52.6	8 41.8	309 13.0	181 49.2	18 58.8	215 20.4	23 34.2
Δ	2	-9		-6	-6	7	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 48	19 12	0 46	3 6	17 25	1.0	21 55	3.2
55	5 1	18 60	0 39	2 24	16 29	1.4	22 50	2.8
50	5 11	18 50	0 34	2 1	15 53	1.6	23 26	2.6
45	5 18	18 43	0 30	1 46	15 27	1.7	23 52	2.5
40	5 25	18 36	0 28	1 36	15 6	1.8	...	0
35	5 31	18 31	0 26	1 28	14 49	1.8	...	0
30	5 35	18 26	0 24	1 23	14 34	1.9	...	0
20	5 44	18 18	0 22	1 15	14 9	2.0	0 17	2.2
10	5 51	18 11	0 21	1 11	13 47	2.0	0 39	2.1
0	5 58	18 4	0 21	1 10	13 26	2.1	0 60	2.1
10	6 4	17 58	0 21	1 10	13 6	2.1	1 20	2.1
20	6 11	17 51	0 22	1 14	12 44	2.2	1 43	2.0
30	6 19	17 43	0 24	1 20	12 18	2.3	2 8	2.0
35	6 23	17 39	0 26	1 24	12 3	2.3	2 24	2.0
40	6 28	17 34	0 27	1 30	11 46	2.4	2 41	1.9
45	6 34	17 29	0 30	1 38	11 25	2.4	3 2	1.9
50	6 41	17 22	0 33	1 48	10 58	2.5	3 29	1.8
55	6 49	17 14	0 37	2 1	10 22	2.7	4 5	1.7
60	6 60	17 3	0 42	2 19	9 25	3.0	5 3	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	75 29.4	108 -26	22.7	36	14 19.4	-15 46.7	163 23.9	4 45.7
2	104 27.5	109 -26	21.5	38	44 24.9	-15 46.9	193 28.2	4 45.5
4	133 25.7	110 -26	19.8	41	74 30.4	-15 47.1	223 32.6	4 45.3
6	162 24.1	111 -26	17.5	43	104 35.9	-15 47.2	253 37.0	4 45.0
8	191 22.5	112 -26	14.8	45	134 41.5	-15 47.4	283 41.3	4 44.8
10	220 21.1	113 -26	11.5	48	164 47.0	-15 47.6	313 45.7	4 44.5
12	249 19.7	114 -26	7.8	50	194 52.5	-15 47.8	343 50.1	4 44.3
14	278 18.5	115 -26	3.5	52	224 58.0	-15 48.0	13 54.5	4 44.1
16	307 17.5	116 -25	58.8	54	255 3.5	-15 48.2	43 58.8	4 43.8
18	336 16.5	116 -25	53.5	57	285 9.1	-15 48.4	74 3.2	4 43.6
20	5 15.7	117 -25	47.8	59	315 14.6	-15 48.6	104 7.6	4 43.3
22	34 15.1	118 -25	41.5	61	345 20.1	-15 48.8	134 11.9	4 43.1
Δ					28	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	s	h min	min	'	'		
00	- 1 4.4	.8	15.9	T <sub>m</sub>	19 38	2.1	54.5	14.9	
12	- 0 55.3	T <sub>m</sub> ☉	12 h .9 min	Starost	8.6 d	Faza ☉			
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
☉	h min	'	°	°	☉	h min	'	°	°
☉	9 51	.1	235	-3.9	♃	22 58	.0	37	-2.7
♃	7 39	.1	268	1.0	♄	13 5	.0	186	1.3

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for days 0-22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for days 0-60 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for days 0-22 and a delta row.

Table with columns: SUNCE (e=Tp-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows for days 0-60 and a delta row.

1. SEPTEMBAR

UTORAK

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for days 0-22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for days 0-60 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for days 0-22 and a delta row.

Table with columns: SUNCE (e=Tp-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows for days 0-60 and a delta row.





4. SEPTEMBAR

2009.

PETAK

Table with columns: UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows include time from 0 to 22h and daily averages.

Table with columns: SUNCE, TRAJANJE SUMRAKA, MESEC. Rows include time from 0 to 6h and daily averages.

Table with columns: MESEC, JUPITER, SATURN. Rows include time from 0 to 22h and daily averages.

Table with columns: SUNCE, MESEC, PLANETE. Rows include time from 00 to 12 and planetary data.

5. SEPTEMBAR

SUBOTA

Table with columns: UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows include time from 0 to 22h and daily averages.

Table with columns: SUNCE, TRAJANJE SUMRAKA, MESEC. Rows include time from 0 to 6h and daily averages.

Table with columns: MESEC, JUPITER, SATURN. Rows include time from 0 to 22h and daily averages.

Table with columns: SUNCE, MESEC, PLANETE. Rows include time from 00 to 12 and planetary data.





Table with columns UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns MESEC (S\_alpha, Delta, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns SUNCE, MESEC, PLANETE. Includes sub-tables for orbital parameters (UT, e, T\_p-UT, Delta/24, r) and planetary data (Pl., T\_m, pi, 360-alpha, Vel.).

Table with columns UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns MESEC (S\_alpha, Delta, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Includes rows for hours 0 to 22 and summary values for the day.

Table with columns SUNCE, MESEC, PLANETE. Includes sub-tables for orbital parameters and planetary data.

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	180 53.6	4 12.4	351 7.6	208 56.4	15 28.8	249 7.1	23 25.4
2	210 54.1	4 10.5	21 12.5	238 55.3	15 27.1	279 8.7	23 25.2
4	240 54.5	4 8.6	51 17.5	268 54.2	15 25.4	309 10.4	23 25.1
6	270 54.9	4 6.7	81 22.4	298 53.1	15 23.7	339 12.0	23 24.9
8	300 55.4	4 4.8	111 27.3	328 52.0	15 22.0	9 13.6	23 24.8
10	330 55.8	4 2.9	141 32.2	358 50.9	15 20.3	39 15.3	23 24.6
12	0 56.3	4 .9	171 37.2	28 49.8	15 18.6	69 16.9	23 24.5
14	30 56.7	3 59.0	201 42.1	58 48.7	15 16.9	99 18.6	23 24.4
16	60 57.2	3 57.1	231 47.0	88 47.6	15 15.2	129 20.2	23 24.2
18	90 57.6	3 55.2	261 52.0	118 46.5	15 13.4	159 21.9	23 24.1
20	120 58.0	3 53.3	291 56.9	148 45.4	15 11.7	189 23.5	23 23.9
22	150 58.5	3 51.4	322 1.8	178 44.3	15 10.0	219 25.2	23 23.8
Δ	2	-10		-5	-9	8	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 19	18 33	0 43	2 37	19 41	2.7	15 10	2.6
55	5 25	18 27	0 37	2 11	20 37	2.7	14 14	2.6
50	5 30	18 22	0 33	1 53	21 13	2.7	13 39	2.6
45	5 34	18 18	0 30	1 41	21 40	2.6	13 12	2.6
40	5 37	18 15	0 27	1 33	22 1	2.6	12 51	2.6
35	5 40	18 13	0 25	1 26	22 19	2.6	12 34	2.6
30	5 42	18 10	0 24	1 21	22 34	2.6	12 19	2.6
20	5 47	18 6	0 22	1 14	22 60	2.6	11 54	2.5
10	5 50	18 3	0 21	1 10	23 22	2.6	11 32	2.5
0	5 53	17 60	0 21	1 9	23 43	2.5	11 11	2.5
10	5 56	17 57	0 21	1 10	...	.0	10 51	2.5
20	5 60	17 54	0 22	1 13	...	.0	10 29	2.5
30	6 3	17 50	0 24	1 19	...	.0	10 4	2.5
35	6 5	17 49	0 25	1 24	0 3	2.7	9 49	2.4
40	6 7	17 46	0 27	1 30	0 20	2.7	9 32	2.4
45	6 10	17 44	0 29	1 38	0 40	2.7	9 11	2.4
50	6 13	17 41	0 32	1 48	1 6	2.8	8 45	2.3
55	6 17	17 38	0 36	2 2	1 41	2.9	8 10	2.3
60	6 21	17 33	0 41	2 21	2 34	3.1	7 16	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	288 35.1	47 25	8.1	6	28 33.0	-16 13.9	174 44.3	4 7.8
2	317 25.3	46 25	17.2	3	58 38.4	-16 14.0	204 48.7	4 7.6
4	346 15.2	46 25	25.7	-1	88 43.8	-16 14.1	234 53.0	4 7.3
6	15 4.7	45 25	33.7	-4	118 49.2	-16 14.3	264 57.4	4 7.1
8	43 54.0	45 25	40.9	-8	148 54.7	-16 14.4	295 1.7	4 6.8
10	72 43.1	44 25	47.6	-11	179 .1	-16 14.6	325 6.1	4 6.6
12	101 31.9	44 25	53.6	-15	209 5.5	-16 14.7	355 10.5	4 6.3
14	130 20.4	44 25	58.9	-18	239 10.9	-16 14.9	25 14.8	4 6.1
16	159 8.8	44 26	3.6	-22	269 16.3	-16 15.0	55 19.2	4 5.9
18	187 56.9	44 26	7.6	-25	299 21.7	-16 15.2	85 23.5	4 5.6
20	216 44.8	44 26	10.9	-29	329 27.1	-16 15.3	115 27.9	4 5.4
22	245 32.5	44 26	13.6	-32	359 32.5	-16 15.5	145 32.2	4 5.1
Δ					27	-1	22	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	3 13.5	.9	15.9	T <sub>m</sub>	4 57	2.5	58.2
12	3 24.1	T <sub>m</sub> ☉	11 h 56.6 min	Starost	21.6 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	10 4	.1	219	-3.8	♄	22 2	.0
♂	7 23	.1	259	.9	♅	12 19	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	180 58.9	3 49.5	352 6.7	208 43.2	15 8.3	249 26.8	23 23.6
2	210 59.4	3 47.6	22 11.7	238 42.2	15 6.6	279 28.5	23 23.5
4	240 59.8	3 45.6	52 16.6	268 41.1	15 4.8	309 30.1	23 23.3
6	271 .2	3 43.7	82 21.5	298 40.0	15 3.1	339 31.8	23 23.2
8	301 .7	3 41.8	112 26.4	328 38.9	15 1.4	9 33.4	23 23.0
10	331 1.1	3 39.9	142 31.4	358 37.8	14 59.6	39 35.1	23 22.8
12	1 1.6	3 38.0	172 36.3	28 36.7	14 57.9	69 36.7	23 22.7
14	31 2.0	3 36.1	202 41.2	58 35.6	14 56.1	99 38.4	23 22.5
16	61 2.5	3 34.2	232 46.2	88 34.6	14 54.4	129 40.0	23 22.4
18	91 2.9	3 32.2	262 51.1	118 33.5	14 52.6	159 41.7	23 22.2
20	121 3.3	3 30.3	292 56.0	148 32.4	14 50.9	189 43.3	23 22.1
22	151 3.8	3 28.4	323 .9	178 31.3	14 49.1	219 45.0	23 21.9
Δ	2	-10		-5	-9	8	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 21	18 30	0 43	2 36	20 46	3.8	16 12	1.4
55	5 27	18 24	0 37	2 10	21 42	3.4	15 16	1.9
50	5 31	18 20	0 33	1 53	22 17	3.2	14 40	2.0
45	5 35	18 17	0 30	1 41	22 43	3.1	14 14	2.2
40	5 38	18 14	0 27	1 32	23 4	3.0	13 53	2.2
35	5 41	18 11	0 25	1 26	23 21	2.9	13 35	2.3
30	5 43	18 9	0 24	1 21	23 36	2.8	13 20	2.3
20	5 47	18 5	0 22	1 14	...	.0	12 55	2.4
10	5 50	18 2	0 21	1 10	...	.0	12 32	2.5
0	5 53	17 60	0 21	1 9	...	.0	12 12	2.5
10	5 56	17 57	0 21	1 10	0 3	2.5	11 51	2.6
20	5 59	17 54	0 22	1 13	0 26	2.5	11 29	2.7
30	6 2	17 51	0 24	1 19	0 52	2.5	11 3	2.7
35	6 4	17 49	0 25	1 24	1 7	2.4	10 47	2.8
40	6 6	17 47	0 27	1 30	1 25	2.4	10 29	2.8
45	6 8	17 45	0 29	1 38	1 46	2.4	10 8	2.9
50	6 11	17 43	0 32	1 48	2 14	2.3	9 41	2.9
55	6 14	17 40	0 36	2 2	2 51	2.2	9 4	3.1
60	6 18	17 36	0 41	2 21	3 50	2.0	8 5	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	274 20.1	44 26	15.5	-36	29 37.9	-16 15.6	175 36.6	4 4.9
2	303 7.5	44 26	16.8	-39	59 43.3	-16 15.8	205 40.9	4 4.6
4	331 54.7	44 26	17.4	-43	89 48.7	-16 15.9	235 45.3	4 4.4
6	0 41.9	45 26	17.2	-46	119 54.1	-16 16.1	265 49.6	4 4.1
8	29 28.9	45 26	16.4	-50	149 59.5	-16 16.2	295 54.0	4 3.9
10	58 15.8	46 26	14.9	-53	180 4.8	-16 16.3	325 58.4	4 3.7
12	87 2.7	46 26	12.7	-57	210 10.2	-16 16.5	356 2.7	4 3.4
14	115 49.5	47 26	9.7	-60	240 15.6	-16 16.6	26 7.1	4 3.2
16	144 36.2	48 26	6.1	-63	270 21.0	-16 16.8	56 11.4	4 2.9
18	173 22.9	49 26	1.7	-67	300 26.4	-16 16.9	86 15.8	4 2.7
20	202 9.6	50 25	56.7	-70	330 31.8	-16 17.1	116 20.1	4 2.4
22	230 56.3	50 25	50.9	-73	0 37.2	-16 17.2	146 24.5	4 2.2
Δ					27	-1	22	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	'	h min	min	'	'
00	3 34.7	.9	15.9	T <sub>m</sub>	5 57	2.5	58.7
12	3 45.3	T <sub>m</sub> ☉	11 h 56.2 min	Starost	22.6 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	10 5	.1	218	-3.8	♄	21 58	.0
♂	7 22	.1	258	.9	♅	12 16	.0

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	°	'	°	'
0	181	4.2	3	26.5	353	5.9	208	30.3
2	211	4.7	3	24.6	23	10.8	238	29.2
4	241	5.1	3	22.6	53	15.7	268	28.1
6	271	5.6	3	20.7	83	20.7	298	27.0
8	301	6.0	3	18.8	113	25.6	328	26.0
10	331	6.5	3	16.9	143	30.5	358	24.9
12	1	6.9	3	15.0	173	35.4	28	23.8
14	31	7.3	3	13.0	203	40.4	58	22.7
16	61	7.8	3	11.1	233	45.3	88	21.7
18	91	8.2	3	9.2	263	50.2	118	20.6
20	121	8.7	3	7.3	293	55.2	148	19.6
22	151	9.1	3	5.4	324	.1	178	18.5
Δ	2	-10					-5	-9

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 23	18 27	0 42	2 34	22 18	4.3	16 46	.8
55	5 29	18 22	0 37	2 9	23 3	3.8	16 1	1.3
50	5 33	18 18	0 33	1 53	23 34	3.5	15 29	1.5
45	5 36	18 15	0 30	1 41	23 57	3.3	15 5	1.7
40	5 39	18 12	0 27	1 32	...	.0	14 46	1.9
35	5 41	18 10	0 25	1 26	...	.0	14 30	2.0
30	5 43	18 8	0 24	1 20	...	.0	14 16	2.1
20	5 47	18 5	0 22	1 14	0 1	2.7	13 53	2.2
10	5 50	18 2	0 21	1 10	0 23	2.6	13 32	2.4
0	5 53	17 59	0 21	1 9	0 44	2.5	13 13	2.5
10	5 55	17 57	0 21	1 10	1 4	2.4	12 53	2.6
20	5 58	17 54	0 22	1 13	1 26	2.3	12 32	2.7
30	6 1	17 51	0 24	1 19	1 51	2.2	12 8	2.9
35	6 2	17 50	0 25	1 24	2 6	2.1	11 54	3.0
40	6 4	17 48	0 27	1 30	2 23	2.1	11 37	3.1
45	6 6	17 46	0 29	1 38	2 43	1.9	11 17	3.2
50	6 9	17 44	0 32	1 48	3 9	1.8	10 52	3.4
55	6 11	17 41	0 36	2 2	3 44	1.5	10 18	3.7
60	6 15	17 38	0 41	2 21	4 37	1.0	9 25	4.2

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	259	43.1	51	25	44.4	-77	30	42.6
2	288	29.8	53	25	37.3	-80	60	48.0
4	317	16.6	54	25	29.4	-83	90	53.3
6	346	3.5	55	25	20.8	-86	120	58.7
8	14	50.5	56	25	11.5	-89	151	4.1
10	43	37.5	57	25	1.5	-92	181	9.5
12	72	24.7	58	24	50.9	-95	211	14.9
14	101	12.0	60	24	39.5	-98	241	20.3
16	129	59.4	61	24	27.5	-101	271	25.6
18	158	47.0	62	24	14.8	-104	301	31.0
20	187	34.7	64	24	1.4	-106	331	36.4
22	216	22.7	65	23	47.4	-109	1	41.8
Δ							27	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	3 55.9	.9	15.9	T <sub>m</sub>	6 58	2.5	59.2
12	4 6.5	T <sub>m</sub> ☉	11 h 55.9 min	Starost	23.6 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♃	h min	'
♁	10 5	.1	217	-3.8	♄	21 53	.0
♂	7 20	.1	258	.9	♅	12 12	.0

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	°	'	°	'
0	181	9.6	3	3.4	354	5.0	208	17.4
2	211	10.0	3	1.5	24	9.9	238	16.4
4	241	10.5	2	59.6	54	14.9	268	15.3
6	271	10.9	2	57.7	84	19.8	298	14.3
8	301	11.3	2	55.7	114	24.7	328	13.2
10	331	11.8	2	53.8	144	29.7	358	12.1
12	1	12.2	2	51.9	174	34.6	28	11.1
14	31	12.7	2	50.0	204	39.5	58	10.0
16	61	13.1	2	48.0	234	44.4	88	9.0
18	91	13.6	2	46.1	264	49.4	118	7.9
20	121	14.0	2	44.2	294	54.3	148	6.9
22	151	14.5	2	42.2	324	59.2	178	5.8
Δ	2	-10					-5	-9

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 26	18 24	0 42	2 33	...	.0	17 5	.4
55	5 31	18 19	0 37	2 9	...	.0	16 31	.9
50	5 34	18 16	0 33	1 52	...	.0	16 6	1.2
45	5 37	18 13	0 29	1 41	...	.0	15 47	1.4
40	5 40	18 10	0 27	1 32	0 15	3.1	15 31	1.6
35	5 42	18 8	0 25	1 25	0 31	3.0	15 18	1.7
30	5 44	18 7	0 24	1 20	0 44	2.9	15 6	1.8
20	5 47	18 4	0 22	1 14	1 6	2.7	14 46	2.0
10	5 50	18 1	0 21	1 10	1 26	2.6	14 29	2.2
0	5 52	17 59	0 21	1 9	1 44	2.4	14 12	2.4
10	5 55	17 57	0 21	1 10	2 2	2.3	13 56	2.5
20	5 57	17 54	0 22	1 13	2 22	2.1	13 38	2.7
30	5 60	17 52	0 24	1 19	2 44	2.0	13 17	2.9
35	6 1	17 51	0 25	1 24	2 57	1.8	13 5	3.0
40	6 3	17 49	0 27	1 30	3 12	1.7	12 51	3.2
45	6 4	17 48	0 29	1 38	3 30	1.5	12 34	3.4
50	6 6	17 46	0 32	1 48	3 52	1.3	12 13	3.6
55	6 9	17 43	0 36	2 2	4 20	1.0	11 46	3.9
60	6 12	17 40	0 41	2 22	5 2	.5	11 6	4.4

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	245	10.8	66	23	32.7	-112	31	47.1
2	273	59.1	68	23	17.4	-114	61	52.5
4	302	47.6	69	23	1.4	-117	91	57.9
6	331	36.3	71	22	44.8	-119	122	3.3
8	0	25.2	72	22	27.6	-121	152	8.6
10	29	14.4	73	22	9.8	-124	182	14.0
12	58	3.8	75	21	51.4	-126	212	19.4
14	86	53.5	76	21	32.4	-128	242	24.7
16	115	43.4	78	21	12.8	-130	272	30.1
18	144	33.6	79	20	52.6	-132	302	35.5
20	173	24.0	80	20	31.9	-134	332	40.8
22	202	14.7	82	20	10.6	-136	2	46.2
Δ							27	-1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	4 17.1	.9	15.9	T <sub>m</sub>	7 58	2.4	59.7
12	4 27.8	T <sub>m</sub> ☉	11 h 55.5 min	Starost	24.6 d	Faza	☉
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°		♃	h min	'
♁	10 6	.1	215	-3.8	♄	21 49	.0
♂	7 19	.1	257	.9	♅	12 9	.0



Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include hourly data from 0 to 22 and daily averages (delta).

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include hourly data from 0 to 60 and daily averages (S).

Table with columns: UT, MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include hourly data from 0 to 22 and daily averages (delta).

Summary table with columns: SUNCE (UT, e=Tp-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.).

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include hourly data from 0 to 22 and daily averages (delta).

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include hourly data from 0 to 60 and daily averages (S).

Table with columns: UT, MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include hourly data from 0 to 22 and daily averages (delta).

Summary table with columns: SUNCE (UT, e=Tp-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.).



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	181 36.2	1 7.4	359 .7	207 16.0	12 33.2	251 49.5	23 7.6
2	211 36.7	1 5.4	29 5.6	237 15.0	12 31.3	281 51.2	23 7.3
4	241 37.1	1 3.5	59 10.6	267 14.0	12 29.3	311 53.0	23 7.1
6	271 37.6	1 1.6	89 15.5	297 13.1	12 27.3	341 54.7	23 6.9
8	301 38.0	0 59.6	119 20.4	327 12.1	12 25.4	11 56.5	23 6.7
10	331 38.4	0 57.7	149 25.3	357 11.1	12 23.4	41 58.2	23 6.4
12	1 38.9	0 55.7	179 30.3	27 10.1	12 21.4	71 60.0	23 6.2
14	31 39.3	0 53.8	209 35.2	57 9.1	12 19.4	102 1.7	23 6.0
16	61 39.8	0 51.8	239 40.1	87 8.1	12 17.5	132 3.5	23 5.7
18	91 40.2	0 49.9	269 45.1	117 7.2	12 15.5	162 5.3	23 5.5
20	121 40.7	0 48.0	299 50.0	147 6.2	12 13.5	192 7.0	23 5.2
22	151 41.1	0 46.0	329 54.9	177 5.2	12 11.5	222 8.8	23 5.0
Δ	2	-10		-5	-10	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 37	18 9	0 42	2 28	6 51	4.1	17 33	.2
55	5 40	18 6	0 36	2 6	6 44	3.7	17 44	.6
50	5 42	18 5	0 32	1 50	6 38	3.4	17 52	.8
45	5 43	18 3	0 29	1 39	6 33	3.2	17 59	1.0
40	5 45	18 2	0 27	1 31	6 30	3.0	18 4	1.2
35	5 46	18 1	0 25	1 25	6 26	2.8	18 9	1.3
30	5 47	18 0	0 24	1 20	6 24	2.7	18 14	1.5
20	5 48	17 59	0 22	1 13	6 19	2.5	18 21	1.7
10	5 49	17 58	0 21	1 10	6 14	2.2	18 28	1.9
0	5 51	17 57	0 21	1 9	6 11	2.1	18 34	2.1
10	5 51	17 56	0 21	1 10	6 7	1.9	18 40	2.3
20	5 52	17 55	0 22	1 13	6 3	1.7	18 47	2.5
30	5 53	17 55	0 24	1 20	5 58	1.4	18 54	2.7
35	5 54	17 54	0 25	1 24	5 55	1.3	18 59	2.8
40	5 54	17 54	0 27	1 31	5 53	1.2	19 4	3.0
45	5 55	17 53	0 29	1 39	5 49	1.0	19 10	3.1
50	5 55	17 53	0 32	1 49	5 45	.8	19 17	3.4
55	5 56	17 52	0 36	2 4	5 40	.5	19 25	3.7
60	5 57	17 52	0 42	2 24	5 34	.2	19 37	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	'	'	'	'	'	'
0	180 34.8	111 - 3	43.2	-144	37 7.7	-16 26.6	181 42.3	3 44.3
2	209 35.1	111 - 4	14.6	-143	67 13.0	-16 26.7	211 46.7	3 44.1
4	238 35.5	110 - 4	45.8	-141	97 18.3	-16 26.8	241 51.0	3 43.8
6	267 35.9	110 - 5	16.8	-140	127 23.6	-16 26.9	271 55.4	3 43.6
8	296 36.3	110 - 5	47.7	-138	157 28.9	-16 27.0	301 59.7	3 43.4
10	325 36.8	109 - 6	18.4	-137	187 34.2	-16 27.1	332 4.1	3 43.1
12	354 37.2	109 - 6	48.9	-135	217 39.5	-16 27.3	2 8.4	3 42.9
14	23 37.6	108 - 7	19.2	-134	247 44.8	-16 27.4	32 12.8	3 42.6
16	52 37.9	108 - 7	49.3	-132	277 50.1	-16 27.5	62 17.1	3 42.4
18	81 38.3	108 - 8	19.2	-130	307 55.4	-16 27.6	92 21.5	3 42.1
20	110 38.6	107 - 8	48.8	-128	338 .7	-16 27.7	122 25.8	3 41.9
22	139 38.9	107 - 9	18.2	-126	8 6.0	-16 27.8	152 30.2	3 41.6
Δ					27	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	6 3.8	.9	15.9	T <sub>m</sub>	12 22	2.1	59.4 16.2		
12	6 14.5	T <sub>m</sub> ☉	11 h 53.8 min	Starost	.2 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 10	.1	209	-3.8	♄	21 28	.0	39	-2.6
♂	7 12	.1	254	.9	♂	11 51	.0	184	1.3

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	181 41.5	0 44.1	0 -2	207 4.2	12 9.5	252 10.6	23 4.8
2	211 42.0	0 42.1	30 4.8	237 3.3	12 7.5	282 12.3	23 4.5
4	241 42.4	0 40.2	60 9.7	267 2.3	12 5.5	312 14.1	23 4.3
6	271 42.9	0 38.2	90 14.6	297 1.3	12 3.6	342 15.9	23 4.0
8	301 43.3	0 36.3	120 19.6	327 .4	12 1.6	12 17.6	23 3.8
10	331 43.7	0 34.3	150 24.5	356 59.4	11 59.6	42 19.4	23 3.6
12	1 44.2	0 32.4	180 29.4	26 58.4	11 57.6	72 21.2	23 3.3
14	31 44.6	0 30.5	210 34.3	56 57.5	11 55.6	102 23.0	23 3.1
16	61 45.1	0 28.5	240 39.3	86 56.5	11 53.5	132 24.7	23 2.8
18	91 45.5	0 26.6	270 44.2	116 55.5	11 51.5	162 26.5	23 2.6
20	121 45.9	0 24.6	300 49.1	146 54.6	11 49.5	192 28.3	23 2.3
22	151 46.4	0 22.7	330 54.1	176 53.6	11 47.5	222 30.1	23 2.1
Δ	2	-10		-5	-10	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 40	18 6	0 42	2 27	8 29	4.0	17 38	.3
55	5 42	18 4	0 36	2 5	8 12	3.6	17 57	.7
50	5 43	18 2	0 32	1 50	7 59	3.3	18 12	1.0
45	5 45	18 1	0 29	1 39	7 50	3.1	18 23	1.2
40	5 46	18 0	0 27	1 31	7 41	2.9	18 33	1.3
35	5 47	17 60	0 25	1 25	7 34	2.8	18 42	1.5
30	5 47	17 59	0 24	1 20	7 28	2.7	18 49	1.6
20	5 48	17 58	0 22	1 13	7 18	2.4	19 2	1.8
10	5 49	17 57	0 21	1 10	7 8	2.3	19 13	1.9
0	5 50	17 57	0 21	1 9	6 60	2.1	19 24	2.1
10	5 51	17 56	0 21	1 10	6 52	1.9	19 34	2.3
20	5 51	17 56	0 22	1 13	6 43	1.7	19 46	2.4
30	5 52	17 55	0 24	1 20	6 33	1.5	19 59	2.7
35	5 52	17 55	0 25	1 24	6 27	1.4	20 6	2.8
40	5 53	17 55	0 27	1 31	6 20	1.2	20 15	2.9
45	5 53	17 55	0 29	1 39	6 13	1.1	20 25	3.1
50	5 53	17 55	0 32	1 49	6 4	.9	20 37	3.3
55	5 54	17 54	0 36	2 4	5 53	.6	20 53	3.6
60	5 54	17 54	0 42	2 25	5 39	.2	21 14	4.0
S								

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	'	'	'	'	'	'
0	168 39.1	106 - 9	47.3	-124	38 11.3	-16 27.9	182 34.5	3 41.4
2	197 39.3	106 -10	16.2	-123	68 16.6	-16 28.0	212 38.9	3 41.2
4	226 39.4	105 -10	44.7	-121	98 21.9	-16 28.1	242 43.3	3 40.9
6	255 39.5	105 -11	13.0	-119	128 27.2	-16 28.2	272 47.6	3 40.7
8	284 39.5	104 -11	41.0	-116	158 32.5	-16 28.4	302 52.0	3 40.4
10	313 39.4	103 -12	8.7	-114	188 37.8	-16 28.5	332 56.3	3 40.2
12	342 39.3	103 -12	36.1	-112	218 43.1	-16 28.6	3 7	3 39.9
14	11 39.1	102 -13	3.1	-110	248 48.3	-16 28.7	33 5.0	3 39.7
16	40 38.8	102 -13	29.8	-108	278 53.6	-16 28.8	63 9.4	3 39.4
18	69 38.4	101 -13	56.2	-106	308 58.9	-16 28.9	93 13.7	3 39.2
20	98 37.9	101 -14	22.2	-103	339 4.2	-16 29.0	123 18.1	3 39.0
22	127 37.3	100 -14	47.9	-101	9 9.5	-16 29.1	153 22.4	3 38.7
Δ					26	-1	22	-1

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	6 25.1	.9	16.0	T <sub>m</sub>	13 12	2.1	58.8 16.0		
12	6 35.7	T <sub>m</sub> ☉	11 h 53.4 min	Starost	1.2 d	Faza	●		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 11	.1	208	-3.8	♄	21 23	.0	39	-2.6
♂	7 11	.1	253	.9	♂	11 48	.0	184	1.3

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows from 0 to 22 hours.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (IZLAZ, delta/24, ZALAZ, delta/24), MESEC. Rows from 0 to 60 minutes.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows from 0 to 22 hours.

Summary table for SUNCE, MESEC, and PLANETE. Includes orbital parameters like e, T\_p, T\_m, and astronomical data like Prolaz, Starost, Faza.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows from 0 to 22 hours.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (IZLAZ, delta/24, ZALAZ, delta/24), MESEC. Rows from 0 to 60 minutes.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows from 0 to 22 hours.

Summary table for SUNCE, MESEC, and PLANETE. Includes orbital parameters like e, T\_p, T\_m, and astronomical data like Prolaz, Starost, Faza.

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	181	57.3	-	0	26.0	2	57.3
2	211	57.8	-	0	27.9	33	2.2
4	241	58.2	-	0	29.9	63	7.1
6	271	58.6	-	0	31.8	93	12.0
8	301	59.1	-	0	33.8	123	17.0
10	331	59.5	-	0	35.7	153	21.9
12	1	59.9	-	0	37.7	183	26.8
14	32	.4	-	0	39.6	213	31.8
16	62	.8	-	0	41.6	243	36.7
18	92	1.2	-	0	43.5	273	41.6
20	122	1.7	-	0	45.5	303	46.5
22	152	2.1	-	0	47.4	333	51.5
Δ	2	-10			-5	-10	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 47	17 57	0 41	2 25	13 11	3.1	18 15	1.4
55	5 47	17 56	0 36	2 4	12 22	2.8	19 5	1.7
50	5 48	17 56	0 32	1 49	11 49	2.7	19 38	1.9
45	5 48	17 56	0 29	1 39	11 25	2.6	20 3	1.9
40	5 49	17 55	0 27	1 31	11 6	2.5	20 23	2.0
35	5 49	17 55	0 25	1 24	10 50	2.4	20 39	2.0
30	5 49	17 55	0 24	1 20	10 36	2.4	20 53	2.1
20	5 49	17 55	0 22	1 13	10 13	2.3	21 18	2.1
10	5 49	17 55	0 21	1 10	9 52	2.3	21 39	2.2
0	5 49	17 56	0 21	1 9	9 33	2.2	21 59	2.2
10	5 49	17 56	0 21	1 10	9 15	2.1	22 18	2.2
20	5 49	17 56	0 22	1 13	8 55	2.1	22 40	2.3
30	5 48	17 57	0 24	1 20	8 32	2.0	23 4	2.3
35	5 48	17 57	0 25	1 25	8 18	1.9	23 19	2.3
40	5 48	17 58	0 27	1 31	8 3	1.9	23 35	2.4
45	5 47	17 58	0 29	1 39	7 44	1.8	23 55	2.4
50	5 47	17 59	0 32	1 50	7 21	1.7	...	.0
55	5 46	17 60	0 36	2 5	6 51	1.5	...	.0
60	5 45	18 1	0 42	2 27	6 8	1.1	0 24	3.5

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	131	48.9	92	-23	9.0	-37	41	21.2
2	160	45.7	92	-23	22.7	-34	71	26.4
4	189	42.5	92	-23	35.9	-31	101	31.7
6	218	39.2	92	-23	48.6	-28	131	36.9
8	247	35.8	93	-24	.8	-26	161	42.2
10	276	32.4	93	-24	12.4	-23	191	47.4
12	305	28.9	93	-24	23.5	-20	221	52.7
14	334	25.4	93	-24	34.0	-17	251	57.9
16	3	21.9	94	-24	44.0	-15	282	3.1
18	32	18.4	94	-24	53.5	-12	312	8.4
20	61	14.8	94	-25	2.4	-9	342	13.6
22	90	11.2	95	-25	10.8	-7	12	18.9
Δ							26	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	7 28.5	.9	16.0	T <sub>m</sub>	15 46	2.2	56.4
12	7 39.0	T <sub>m</sub> ☉	11 h 52.4 min	Starost	4.2 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	10 14	.1	205	-3.8	♃	21 11	.0	39	-2.6
♁	7 7	.1	251	.8	♄	11 38	.0	183	1.2

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	'	'	'	'
0	182	2.5	-	0	49.4	3	56.4
2	212	3.0	-	0	51.3	34	1.3
4	242	3.4	-	0	53.3	64	6.3
6	272	3.8	-	0	55.2	94	11.2
8	302	4.3	-	0	57.2	124	16.1
10	332	4.7	-	0	59.1	154	21.0
12	2	5.1	-	1	1.0	184	26.0
14	32	5.5	-	1	3.0	214	30.9
16	62	6.0	-	1	4.9	244	35.8
18	92	6.4	-	1	6.9	274	40.8
20	122	6.8	-	1	8.8	304	45.7
22	152	7.3	-	1	10.8	334	50.6
Δ	2	-10			-5	-11	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 49	17 54	0 41	2 24	14 26	2.2	18 49	2.3
55	5 49	17 54	0 36	2 4	13 29	2.2	19 46	2.3
50	5 49	17 54	0 32	1 49	12 53	2.2	20 23	2.2
45	5 49	17 54	0 29	1 38	12 27	2.2	20 49	2.2
40	5 50	17 54	0 27	1 30	12 6	2.2	21 10	2.2
35	5 50	17 54	0 25	1 24	11 49	2.2	21 28	2.2
30	5 49	17 54	0 24	1 20	11 34	2.2	21 43	2.2
20	5 49	17 54	0 22	1 13	11 8	2.2	22 9	2.2
10	5 49	17 55	0 21	1 10	10 46	2.2	22 31	2.2
0	5 49	17 55	0 21	1 9	10 26	2.2	22 51	2.2
10	5 48	17 56	0 21	1 10	10 6	2.2	23 12	2.1
20	5 48	17 57	0 22	1 13	9 44	2.2	23 34	2.1
30	5 47	17 57	0 24	1 20	9 19	2.1	23 60	2.1
35	5 47	17 58	0 25	1 25	9 4	2.1	...	.0
40	5 46	17 59	0 27	1 31	8 47	2.1	...	.0
45	5 45	17 60	0 29	1 39	8 27	2.1	...	.0
50	5 44	18 1	0 32	1 50	8 1	2.0	0 21	2.5
55	5 43	18 2	0 36	2 6	7 27	2.0	0 55	2.5
60	5 42	18 4	0 42	2 28	6 34	1.8	1 47	2.7

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	'	'	'	'
0	119	7.6	95	-25	18.7	-4	42	24.1
2	148	4.1	96	-25	26.0	-1	72	29.3
4	177	.5	96	-25	32.7	1	102	34.6
6	205	56.9	97	-25	38.9	4	132	39.8
8	234	53.4	97	-25	44.6	7	162	45.0
10	263	49.9	98	-25	49.7	9	192	50.3
12	292	46.4	99	-25	54.3	12	222	55.5
14	321	43.0	99	-25	58.3	14	253	.7
16	350	39.7	100	-26	1.8	17	283	6.0
18	19	36.4	101	-26	4.8	19	313	11.2
20	48	33.2	102	-26	7.2	22	343	16.4
22	77	30.0	103	-26	9.0	24	13	21.6
Δ							26	0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	7 49.5	.9	16.0	T <sub>m</sub>	16 39	2.2	55.6
12	7 59.9	T <sub>m</sub> ☉	11 h 52.0 min	Starost	5.2 d	Faza	☉

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	10 14	.1	204	-3.8	♃	21 7	.0	39	-2.6
♁	7 5	.1	251	.8	♄	11 34	.0	183	1.2



















Table with columns for UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), and MARS (S\_mars, delta\_mars). Rows show daily data from 0 to 22 hours.

Table with columns for SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, and MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show sunrise/sunset times and moon phases.

Table with columns for UT, MESEC (S\_moon, delta\_moon, delta), JUPITER (S\_jup, delta\_jup), and SATURN (S\_sat, delta\_sat). Rows show planetary positions for Jupiter and Saturn.

Summary table for SUNCE (e = T\_p - UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), and PLANETE (Pl., T\_m, pi, 360-alpha, Vel.).

Table with columns for UT, SUNCE (S\_sun, delta\_sun), PROLEC. TACKA (S\_gamma), VENERA (S\_venus, delta\_venus), and MARS (S\_mars, delta\_mars). Rows show daily data from 0 to 22 hours.

Table with columns for SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, and MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show sunrise/sunset times and moon phases.

Table with columns for UT, MESEC (S\_moon, delta\_moon, delta), JUPITER (S\_jup, delta\_jup), and SATURN (S\_sat, delta\_sat). Rows show planetary positions for Jupiter and Saturn.

Summary table for SUNCE (e = T\_p - UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), and PLANETE (Pl., T\_m, pi, 360-alpha, Vel.).



Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_ven, delta\_ven), MARS (S\_mar, delta\_mar)

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24)

Table with columns: UT, MESEC (S\_mec, delta, delta\_mec, delta\_mec), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat)

Table with columns: SUNCE (UT, e=Tp-UT, delta/24, r), MESEC (UT, h min s, s, r, T\_m, h min min, delta/24, pi, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.)

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Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_ven, delta\_ven), MARS (S\_mar, delta\_mar)

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA (GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24)

Table with columns: UT, MESEC (S\_mec, delta, delta\_mec, delta\_mec), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat)

Table with columns: SUNCE (UT, e=Tp-UT, delta/24, r), MESEC (UT, h min s, s, r, T\_m, h min min, delta/24, pi, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.)

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows show astronomical data for various times of day.

Table with columns for SUNCE, TRAJANJE SUMRAKA, MESEC. Rows show sunrise, sunset, and moon data.

Table with columns for MESEC, JUPITER, SATURN. Rows show planetary data for Jupiter and Saturn.

Table with columns for SUNCE, MESEC, PLANETE. Rows show detailed moon phases and planetary positions.

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows show astronomical data for various times of day.

Table with columns for SUNCE, TRAJANJE SUMRAKA, MESEC. Rows show sunrise, sunset, and moon data.

Table with columns for MESEC, JUPITER, SATURN. Rows show planetary data for Jupiter and Saturn.

Table with columns for SUNCE, MESEC, PLANETE. Rows show detailed moon phases and planetary positions.





Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows 0-22 and Delta.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows phi, N, 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows UT, h, 0-22, Delta.

Table with columns: SUNCE (e=TP-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows UT, h, 00, 12, Pl., phi, sigma.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows UT, h, 0-22, Delta.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows phi, N, 60, 55, 50, 45, 40, 35, 30, 20, 10, 0, 10, 20, 30, 35, 40, 45, 50, 55, 60, S.

Table with columns: MESEC (S\_alpha, delta\_alpha, Delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows UT, h, 0-22, Delta.

Table with columns: SUNCE (e=TP-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows UT, h, 00, 12, Pl., phi, sigma.



UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	183	59.2	-12 24.8	34	29.7	201	15.5 - 3 60.0
2	213	59.3	-12 26.5	64	34.6	231	14.6 - 4 2.4
4	243	59.5	-12 28.2	94	39.6	261	13.8 - 4 4.8
6	273	59.6	-12 29.9	124	44.5	291	13.0 - 4 7.3
8	303	59.7	-12 31.6	154	49.4	321	12.2 - 4 9.7
10	333	59.8	-12 33.3	184	54.3	351	11.3 - 4 12.1
12	4	.0	-12 35.0	214	59.3	21	10.5 - 4 14.5
14	34	.1	-12 36.7	245	4.2	51	9.7 - 4 17.0
16	64	.2	-12 38.4	275	9.1	81	8.9 - 4 19.4
18	94	.3	-12 40.1	305	14.1	111	8.0 - 4 21.8
20	124	.5	-12 41.8	335	19.0	141	7.2 - 4 24.2
22	154	.6	-12 43.5	5	23.9	171	6.4 - 4 26.6
Δ	1	-9				-4	-12

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	7 5	16 23	0 44	2 20	14 24	.3	21 24
55	6 50	16 38	0 38	2 2	13 51	.7	21 55
50	6 38	16 49	0 33	1 48	13 27	.9	22 18
45	6 29	16 59	0 30	1 38	13 9	1.1	22 35
40	6 21	17 6	0 28	1 31	12 54	1.2	22 49
35	6 15	17 13	0 26	1 25	12 41	1.4	23 2
30	6 9	17 19	0 24	1 20	12 30	1.4	23 12
20	5 58	17 29	0 22	1 14	12 10	1.6	23 30
10	5 49	17 39	0 21	1 11	11 53	1.7	23 45
0	5 41	17 47	0 21	1 10	11 38	1.9	23 60
10	5 32	17 56	0 22	1 12	11 22	2.0	.. .
20	5 23	18 6	0 23	1 17	11 5	2.1	.. .
30	5 12	18 17	0 25	1 25	10 45	2.3	0 10
35	5 5	18 24	0 27	1 31	10 34	2.4	0 22
40	4 58	18 31	0 29	1 40	10 20	2.5	0 36
45	4 50	18 40	0 31	1 52	10 5	2.7	0 52
50	4 39	18 50	0 35	2 0	9 45	2.8	1 13
55	4 26	19 3	0 41	2 40	9 20	3.1	1 39
60	4 9	19 21	0 49	:::	8 45	3.5	2 16

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	101	10.8	138 -22	14.6	92	73 20.4 -16 36.6	213 11.2	2 4.1
2	130	13.6	139 -22	.3	94	103 25.2 -16 36.6	243 15.6	2 3.9
4	159	16.5	140 -21	45.6	95	133 29.9 -16 36.5	273 20.0	2 3.7
6	188	19.7	141 -21	30.5	97	163 34.6 -16 36.4	303 24.4	2 3.5
8	217	23.2	142 -21	15.1	98	193 39.4 -16 36.3	333 28.8	2 3.3
10	246	26.9	143 -20	59.3	100	223 44.1 -16 36.3	3 33.2	2 3.1
12	275	30.8	144 -20	43.2	101	253 48.8 -16 36.2	33 37.6	2 2.8
14	304	35.0	145 -20	26.7	103	283 53.6 -16 36.1	63 42.1	2 2.6
16	333	39.4	146 -20	9.9	104	313 58.3 -16 36.1	93 46.5	2 2.4
18	2	44.0	146 -19	52.7	105	344 3.0 -16 36.0	123 50.9	2 2.2
20	31	48.9	147 -19	35.2	107	14 7.7 -16 35.9	153 55.3	2 2.0
22	60	53.9	148 -19	17.3	108	44 12.5 -16 35.8	183 59.7	2 1.8
Δ						24	0	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'	'
00	15 50.2	.3	16.1	T <sub>m</sub>	17 49	1.8	54.3	14.8
12	15 53.6	T <sub>m</sub> ☉	11 h 44.1 min	Starost 6.8 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	'	°	h min	'	°	'	°
♀	10 35	.1	168	-3.8	♃	19 4	.0	40	-2.3
♂	6 12	.1	233	.5	♄	9 46	.0	180	1.1

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	184	.7	-12 45.2	35	28.8	201	5.5 - 4 29.1
2	214	.8	-12 46.9	65	33.8	231	4.7 - 4 31.5
4	244	.9	-12 48.5	95	38.7	261	3.9 - 4 33.9
6	274	1.0	-12 50.2	125	43.6	291	3.0 - 4 36.3
8	304	1.2	-12 51.9	155	48.6	321	2.2 - 4 38.8
10	334	1.3	-12 53.6	185	53.5	351	1.4 - 4 41.2
12	4	1.4	-12 55.3	215	58.4	21	.5 - 4 43.6
14	34	1.5	-12 57.0	246	3.3	50	59.7 - 4 46.0
16	64	1.6	-12 58.7	276	8.3	80	58.9 - 4 48.4
18	94	1.7	-13 .3	306	13.2	110	58.0 - 4 50.8
20	124	1.8	-13 2.0	336	18.1	140	57.2 - 4 53.3
22	154	1.9	-13 3.7	6	23.1	170	56.4 - 4 55.7
Δ	1	-8				-4	-12

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	7 7	16 20	0 44	2 21	14 32	.2	22 47
55	6 52	16 35	0 38	2 2	14 8	.5	23 10
50	6 40	16 47	0 33	1 48	13 50	.8	23 26
45	6 30	16 57	0 30	1 38	13 35	.9	23 39
40	6 22	17 5	0 28	1 31	13 23	1.1	23 50
35	6 16	17 12	0 26	1 25	13 13	1.2	23 59
30	6 9	17 18	0 24	1 20	13 4	1.3	.. .
20	5 59	17 29	0 22	1 14	12 49	1.5	.. .
10	5 50	17 38	0 21	1 11	12 35	1.6	.. .
0	5 41	17 47	0 21	1 10	12 23	1.8	.. .
10	5 32	17 57	0 22	1 12	12 10	1.9	0 14
20	5 22	18 6	0 23	1 17	11 56	2.1	0 29
30	5 11	18 18	0 25	1 25	11 41	2.3	0 47
35	5 4	18 24	0 27	1 31	11 31	2.4	0 57
40	4 57	18 32	0 29	1 40	11 21	2.5	1 8
45	4 48	18 41	0 32	1 52	11 9	2.7	1 22
50	4 37	18 52	0 35	2 11	10 53	2.8	1 38
55	4 24	19 5	0 41	2 43	10 34	3.1	1 59
60	4 6	19 23	0 50	:::	10 8	3.4	2 27

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	89	59.2	149 -18	59.1	109	74 17.2 -16 35.8	214 4.1	2 1.6
2	119	4.8	150 -18	40.7	110	104 21.9 -16 35.7	244 8.5	2 1.4
4	148	10.5	150 -18	21.9	112	134 26.6 -16 35.6	274 12.9	2 1.2
6	177	16.4	151 -18	2.8	113	164 31.3 -16 35.5	304 17.4	2 1.0
8	206	22.6	152 -17	43.4	114	194 36.0 -16 35.5	334 21.8	2 .7
10	235	28.9	152 -17	23.7	115	224 40.8 -16 35.4	4	26.2
12	264	35.5	153 -17	3.7	116	254 45.5 -16 35.3	34	30.6
14	293	42.2	154 -16	43.4	117	284 50.2 -16 35.2	64	35.0
16	322	49.1	154 -16	22.9	118	314 54.9 -16 35.2	94	39.4
18	351	56.2	155 -16	2.0	119	344 59.6 -16 35.1	124	43.8
20	21	3.5	155 -15	40.9	120	15 4.3 -16 35.0	154	48.3
22	50	11.0	155 -15	19.6	121	45 9.0 -16 34.9	184	52.7
Δ						24	0	-1

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☾</sub>	r
h	min	s	'	h min	min	'	'	'
00	15 57.0	.3	16.1	T <sub>m</sub>	18 33	1.8	54.2	14.8
12	15 60.0	T <sub>m</sub> ☉	11 h 44.0 min	Starost 7.8 d Faza ☉				

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h min	'	°	'	°	h min	'	°	'	°
♀	10 35	.1	167	-3.8	♃	18 60	.0	40	-2.3
♂	6 10	.1	233	.5	♄	9 42	.0	180	1.1

Table for 28 October showing astronomical data for Sun (SUNCE), Venus (VENERA), and Mars (MARS) including coordinates and distances.

Table for 28 October showing astronomical data for Sun (SUNCE) and Moon (MESEC) including rise/set times and phase details.

Table for 28 October showing astronomical data for Moon (MESEC), Jupiter (JUPITER), and Saturn (SATURN) including coordinates and distances.

Summary table for 28 October containing orbital elements for Sun and Moon, and planetary data for Jupiter and Saturn.

Table for 29 October showing astronomical data for Sun (SUNCE), Venus (VENERA), and Mars (MARS) including coordinates and distances.

Table for 29 October showing astronomical data for Sun (SUNCE) and Moon (MESEC) including rise/set times and phase details.

Table for 29 October showing astronomical data for Moon (MESEC), Jupiter (JUPITER), and Saturn (SATURN) including coordinates and distances.

Summary table for 29 October containing orbital elements for Sun and Moon, and planetary data for Jupiter and Saturn.

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, and MARS. It lists celestial coordinates and data for the first 24 hours of the month.

Table with columns for SUNCE, TRAJANJE SUMRAKA, and MESEC. It lists sunrise/sunset times, twilight durations, and moon phases for the first 24 hours.

Table with columns for MESEC, JUPITER, and SATURN. It lists moon phases and planetary positions for Jupiter and Saturn over a 24-hour period.

Summary tables for SUNCE, MESEC, and PLANETE. Includes moon phase data for 00 and 12 hours, and planetary data for Pluto and other planets.

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, and MARS. It lists celestial coordinates and data for the first 24 hours of the month.

Table with columns for SUNCE, TRAJANJE SUMRAKA, and MESEC. It lists sunrise/sunset times, twilight durations, and moon phases for the first 24 hours.

Table with columns for MESEC, JUPITER, and SATURN. It lists moon phases and planetary positions for Jupiter and Saturn over a 24-hour period.

Summary tables for SUNCE, MESEC, and PLANETE. Includes moon phase data for 00 and 12 hours, and planetary data for Pluto and other planets.





UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	184	5.7	-15 39.1	44	21.1	199	30.3
2	214	5.6	-15 40.6	74	26.0	229	29.3
4	244	5.6	-15 42.1	104	31.0	259	28.4
6	274	5.6	-15 43.6	134	35.9	289	27.4
8	304	5.5	-15 45.1	164	40.8	319	26.5
10	334	5.5	-15 46.6	194	45.7	349	25.5
12	4	5.5	-15 48.2	224	50.7	19	24.6
14	34	5.4	-15 49.7	254	55.6	49	23.6
16	64	5.4	-15 51.2	285	.5	79	22.7
18	94	5.3	-15 52.7	315	5.4	109	21.7
20	124	5.3	-15 54.2	345	10.4	139	20.8
22	154	5.3	-15 55.7	15	15.3	169	19.8
Δ	0	-8				-5	-12

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	7 30	15 56	0 46	2 24	15 45	2.0	10 35
55	7 10	16 16	0 39	2 4	16 35	2.2	9 46
50	6 55	16 32	0 34	1 50	17 8	2.3	9 14
45	6 43	16 44	0 31	1 40	17 33	2.4	8 50
40	6 33	16 54	0 28	1 32	17 52	2.4	8 31
35	6 24	17 3	0 26	1 26	18 9	2.5	8 15
30	6 16	17 11	0 25	1 21	18 23	2.5	8 1
20	6 3	17 24	0 23	1 15	18 48	2.5	7 37
10	5 51	17 36	0 22	1 12	19 9	2.5	7 17
0	5 40	17 47	0 21	1 11	19 29	2.6	6 58
10	5 29	17 58	0 22	1 13	19 49	2.6	6 39
20	5 17	18 11	0 23	1 18	20 10	2.6	6 18
30	5 3	18 25	0 25	1 27	20 35	2.6	5 55
35	4 55	18 33	0 27	1 34	20 50	2.6	5 41
40	4 45	18 42	0 30	1 44	21 7	2.7	5 25
45	4 35	18 54	0 33	1 59	21 27	2.7	5 6
50	4 21	19 7	0 37	2 22	21 53	2.7	4 43
55	4 4	19 24	0 44	3 14	22 28	2.7	4 12
60	3 42	19 47	0 54	:::	23 22	2.8	3 27

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	349	33.3	43	23	36.9	26	82	39.2
2	18	23.1	42	23	49.8	22	112	43.8
4	47	12.5	42	24	2.1	19	142	48.4
6	76	1.6	41	24	13.8	15	172	52.9
8	104	50.4	41	24	24.8	12	202	57.5
10	133	39.0	40	24	35.3	8	233	2.1
12	162	27.2	40	24	45.1	5	263	6.7
14	191	15.1	39	24	54.2	1	293	11.2
16	220	2.8	39	25	2.7	-3	323	15.8
18	248	50.3	39	25	10.5	-6	353	20.4
20	277	37.5	39	25	17.7	-10	23	24.9
22	306	24.5	39	25	24.2	-13	53	29.5
Δ							23	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>
h	min	s	'	h min	min	'	'
00	16 23.8	.0	16.2	T <sub>m</sub>	0 43	2.5	58.7
12	16 23.4	T <sub>m</sub> ☉	11 h 43.6 min	Starost 16.8 d Faza ☉			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	10 42	.1	156	-3.8	♂	18 27	.0
♂	5 51	.1	229	.4	♄	9 10	.0

UT	SUNCE		PROLEĆ. TAČKA S <sub>γ</sub>	VENERA		MARS	
	S <sub>☉</sub>	δ <sub>☉</sub>		S <sub>♀</sub>	δ <sub>♀</sub>	S <sub>♂</sub>	δ <sub>♂</sub>
h	°	'	°	°	'	°	'
0	184	5.2	-15 57.2	45	20.2	199	18.9
2	214	5.2	-15 58.7	75	25.2	229	17.9
4	244	5.1	-16 .2	105	30.1	259	16.9
6	274	5.1	-16 1.7	135	35.0	289	16.0
8	304	5.0	-16 3.2	165	39.9	319	15.0
10	334	5.0	-16 4.7	195	44.9	349	14.0
12	4	4.9	-16 6.1	225	49.8	19	13.1
14	34	4.8	-16 7.6	255	54.7	49	12.1
16	64	4.8	-16 9.1	285	59.7	79	11.1
18	94	4.7	-16 10.6	316	4.6	109	10.2
20	124	4.7	-16 12.1	346	9.5	139	9.2
22	154	4.6	-16 13.6	16	14.4	169	8.2
Δ	0	-7				-5	-11

φ	SUNCE		TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ
N	h min	h min	h min	h min	h min	min	h min
60	7 33	15 54	0 46	2 24	16 34	3.2	11 54
55	7 12	16 14	0 39	2 5	17 29	3.0	10 60
50	6 56	16 30	0 34	1 50	18 4	2.9	10 24
45	6 44	16 43	0 31	1 40	18 30	2.8	9 58
40	6 34	16 53	0 28	1 32	18 51	2.8	9 38
35	6 25	17 2	0 26	1 26	19 8	2.8	9 20
30	6 17	17 10	0 25	1 21	19 23	2.7	9 6
20	6 3	17 24	0 23	1 15	19 48	2.7	8 40
10	5 51	17 36	0 22	1 12	20 10	2.6	8 18
0	5 40	17 47	0 21	1 12	20 30	2.6	7 58
10	5 29	17 59	0 22	1 13	20 51	2.5	7 38
20	5 16	18 11	0 23	1 18	21 13	2.5	7 16
30	5 2	18 26	0 26	1 28	21 38	2.4	6 51
35	4 54	18 34	0 27	1 35	21 53	2.3	6 36
40	4 44	18 44	0 30	1 45	22 10	2.3	6 18
45	4 33	18 55	0 33	1 60	22 31	2.2	5 58
50	4 20	19 9	0 37	2 23	22 58	2.1	5 31
55	4 2	19 26	0 44	3 19	23 33	1.9	4 56
60	3 39	19 50	0 55	:::	.. .	.0	4 1

UT	MESEC				JUPITER		SATURN	
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>
h	°	'	°	'	°	'	°	'
0	335	11.3	40	25	30.0	-17	83	34.1
2	3	58.0	40	25	35.1	-20	113	38.6
4	32	44.5	40	25	39.6	-24	143	43.2
6	61	30.8	41	25	43.3	-28	173	47.8
8	90	17.0	41	25	46.3	-31	203	52.3
10	119	3.1	42	25	48.6	-35	233	56.9
12	147	49.1	43	25	50.2	-38	264	1.4
14	176	35.1	43	25	51.1	-41	294	6.0
16	205	21.0	44	25	51.3	-45	324	10.5
18	234	6.8	45	25	50.8	-48	354	15.1
20	262	52.7	46	25	49.5	-52	24	19.6
22	291	38.5	47	25	47.6	-55	54	24.2
Δ							23	1

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>
h	min	s	'	h min	min	'	'
00	16 22.9	-.1	16.2	T <sub>m</sub>	1 43	2.6	59.1
12	16 21.9	T <sub>m</sub> ☉	11 h 43.6 min	Starost 17.8 d Faza ☉			
PLANETE							
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π
♀	h min	'	°	°	♃	h min	'
♁	10 42	.1	155	-3.8	♂	18 23	.0
♂	5 49	.1	228	.4	♄	9 7	.0















Table with columns for UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), and MARS (S\_mars, delta\_mars). Rows show celestial coordinates for the day.

Table with columns for SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, and MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show sunrise, sunset, twilight, and moon data.

Table with columns for MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), and SATURN (S\_sat, delta\_sat). Rows show planet positions and magnitudes.

Table with columns for SUNCE, MESEC (UT, e=T\_p-UT, delta/24, r, Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.). Rows show moon phases and planet data.

Table with columns for UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), and MARS (S\_mars, delta\_mars). Rows show celestial coordinates for the day.

Table with columns for SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, and MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show sunrise, sunset, twilight, and moon data.

Table with columns for MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), and SATURN (S\_sat, delta\_sat). Rows show planet positions and magnitudes.

Table with columns for SUNCE, MESEC (UT, e=T\_p-UT, delta/24, r, Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.). Rows show moon phases and planet data.

Table with columns: UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows: 0 to 22, Δ.

Table with columns: SUNCE, TRAJANJE SUMRAKA, MESEC. Rows: φ, UT, h min, 00, 12, S.

Table with columns: UT, MESEC, JUPITER, SATURN. Rows: h, 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Δ.

Table with columns: SUNCE, MESEC, PLANETE. Rows: UT, h, 12, Pl., φ, σ.

Table with columns: UT, SUNCE, PROLEĆ. TAČKA, VENERA, MARS. Rows: h, 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Δ.

Table with columns: SUNCE, TRAJANJE SUMRAKA, MESEC. Rows: φ, UT, h min, 00, 12, S.

Table with columns: UT, MESEC, JUPITER, SATURN. Rows: h, 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, Δ.

Table with columns: SUNCE, MESEC, PLANETE. Rows: UT, h, 12, Pl., φ, σ.



Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows show hourly data for Sun, Venus, and Mars.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show hourly data for Sun, twilight, and Moon.

Table with columns: UT, MESEC (S\_alpha, delta, delta\_alpha, delta\_delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows show hourly data for Moon, Jupiter, and Saturn.

Summary tables for SUNCE, MESEC, and PLANETE. Includes orbital parameters like e, T\_p, T\_m, pi\_alpha, r and planetary data like Pl., T\_m, pi, 360-alpha, Vel.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows show hourly data for Sun, Venus, and Mars.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows show hourly data for Sun, twilight, and Moon.

Table with columns: UT, MESEC (S\_alpha, delta, delta\_alpha, delta\_delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows show hourly data for Moon, Jupiter, and Saturn.

Summary tables for SUNCE, MESEC, and PLANETE. Includes orbital parameters like e, T\_p, T\_m, pi\_alpha, r and planetary data like Pl., T\_m, pi, 360-alpha, Vel.

















Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include hours 0-22 and summary values.

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include hours N-60 and summary values S.

Table with columns: UT, MESEC (S\_moon, delta\_moon, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include hours 0-22 and summary values.

Table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.). Rows include UT 00, 12 and summary values.

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ČETVRTAK

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include hours 0-22 and summary values.

Table with columns: phi, SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include hours N-60 and summary values S.

Table with columns: UT, MESEC (S\_moon, delta\_moon, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include hours 0-22 and summary values.

Table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_moon, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel., Pl., T\_m, pi, 360-alpha, Vel.). Rows include UT 00, 12 and summary values.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for hours 0 to 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for hours 0 to 60 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for hours 0 to 22 and a delta row.

Summary table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Includes data for the Sun, Moon, and planets.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows for hours 0 to 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows for hours 0 to 60 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows for hours 0 to 22 and a delta row.

Summary table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Includes data for the Sun, Moon, and planets.

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	29.4	-23	8.4	81	48.4	189	11.8	-22	9.5	298	13.3	17	49.4
2	211	28.8	-23	8.8	111	53.3	219	10.0	-22	10.4	328	17.6	17	49.5
4	241	28.2	-23	9.1	141	58.2	249	8.2	-22	11.3	358	22.0	17	49.5
6	271	27.6	-23	9.4	172	3.2	279	6.4	-22	12.3	28	26.3	17	49.5
8	301	27.0	-23	9.8	202	8.1	309	4.6	-22	13.2	58	30.7	17	49.5
10	331	26.4	-23	10.1	232	13.0	339	2.8	-22	14.1	88	35.0	17	49.6
12	1	25.8	-23	10.4	262	17.9	9	1.0	-22	15.0	118	39.4	17	49.6
14	31	25.2	-23	10.7	292	22.9	38	59.2	-22	16.0	148	43.7	17	49.7
16	61	24.7	-23	11.0	322	27.8	68	57.4	-22	16.9	178	48.1	17	49.7
18	91	24.1	-23	11.4	352	32.7	98	55.6	-22	17.8	208	52.5	17	49.7
20	121	23.5	-23	11.7	22	37.7	128	53.8	-22	18.7	238	56.8	17	49.8
22	151	22.9	-23	12.0	52	42.6	158	52.0	-22	19.6	269	1.2	17	49.8
Δ	-3	-2					-9	-5			22	0		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	237	11.9	106	-15	25.2	-93	115	31.4	-14	52.5	256	33.6	0	32.6		
2	266	13.1	105	-15	48.4	-91	145	35.5	-14	52.2	286	38.2	0	32.5		
4	295	14.2	105	-16	11.4	-89	175	39.6	-14	51.9	316	42.9	0	32.4		
6	324	15.2	104	-16	33.9	-87	205	43.7	-14	51.6	346	47.6	0	32.4		
8	353	16.0	103	-16	56.2	-85	235	47.8	-14	51.3	16	52.2	0	32.3		
10	22	16.6	102	-17	18.0	-82	265	51.9	-14	51.0	46	56.9	0	32.2		
12	51	17.0	101	-17	39.5	-80	295	56.0	-14	50.8	77	1.5	0	32.1		
14	80	17.3	101	-18	.6	-78	326	.1	-14	50.5	107	6.2	0	32.0		
16	109	17.5	100	-18	21.3	-75	356	4.2	-14	50.2	137	10.9	0	31.9		
18	138	17.4	99	-18	41.6	-73	26	8.3	-14	49.9	167	15.5	0	31.8		
20	167	17.2	98	-19	1.5	-71	56	12.4	-14	49.6	197	20.2	0	31.7		
22	196	16.8	98	-19	21.1	-68	86	16.5	-14	49.3	227	24.9	0	31.6		
Δ							21	1			23	0				

φ	SUNCE				TRAJANJE SUMRAKA				MESEC						
	IZLAZ		ZALAZ		GRAD.		ASTR.		IZLAZ		Δ/24		ZALAZ		Δ/24
N	h	min	h	min	h	min	h	min	h	min	min	h	min	min	min
60	8	54	14	54	0	57	2	45	4	23	3	8	12	20	.5
55	8	16	15	31	0	45	2	17	3	58	3	4	12	46	.9
50	7	49	15	58	0	38	1	59	3	40	3	1	13	6	1.1
45	7	29	16	18	0	34	1	47	3	26	2	9	13	21	1.3
40	7	13	16	35	0	30	1	37	3	14	2	8	13	34	1.4
35	6	59	16	49	0	28	1	31	3	4	2	7	13	45	1.6
30	6	46	17	1	0	26	1	25	2	56	2	5	13	55	1.7
20	6	26	17	22	0	24	1	19	2	41	2	4	14	11	1.8
10	6	7	17	40	0	23	1	15	2	28	2	2	14	26	2.0
0	5	50	17	58	0	22	1	15	2	16	2	1	14	40	2.1
10	5	33	18	15	0	23	1	18	2	4	1	9	14	53	2.1
20	5	14	18	34	0	25	1	24	1	52	1	8	15	8	2.2
30	4	52	18	55	0	27	1	36	1	38	1	6	15	25	2.5
35	4	40	19	8	0	30	1	47	1	29	1	5	15	35	2.6
40	4	25	19	23	0	33	2	2	1	20	1	3	15	46	2.8
45	4	7	19	41	0	37	2	31	1	9	1	2	15	59	2.9
50	3	45	20	3	0	44	:::	0	56	1	0	16	16	31	3.1
55	3	16	20	32	0	57	:::	0	40	.8	16	37	31	3.3	
60	2	32	21	16	1	39	:::	0	19	.4	17	6	3	3.8	
S															

SUNCE				MESEC							
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz		Δ/24	π <sub>☉</sub>	r			
h	min	s	s	h	min	min	'	'			
00	6	25.9	-1.2	16.3	T <sub>m</sub>	8	28	2.1	57.0	15.5	
12	6	11.8	T <sub>m</sub> ☉	11 h 53.8 min	Starost	25.2 d	Faza	☉			
PLANETE											
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.		
♀	h min	'	°	o	♄	h min	'	°	o		
11	22	.1	109	-3.8	♃	16	16	.0	35	-2.0	
♅	4	7	.2	217	-3	♃	6	53	.0	176	.9

## 14. DECEMBAR

## PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S <sub>γ</sub>	VENERA				MARS				
	S <sub>☉</sub>		δ <sub>☉</sub>			S <sub>♀</sub>		δ <sub>♀</sub>		S <sub>♂</sub>		δ <sub>♂</sub>		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	22.3	-23	12.3	82	47.5	188	50.2	-22	20.5	299	5.6	17	49.9
2	211	21.7	-23	12.6	112	52.4	218	48.4	-22	21.3	329	10.0	17	49.9
4	241	21.1	-23	12.9	142	57.4	248	46.6	-22	22.2	359	14.4	17	50.0
6	271	20.5	-23	13.2	173	2.3	278	44.7	-22	23.1	29	18.8	17	50.0
8	301	19.9	-23	13.5	203	7.2	308	42.9	-22	24.0	59	23.2	17	50.1
10	331	19.3	-23	13.7	233	12.1	338	41.1	-22	24.8	89	27.6	17	50.1
12	1	18.7	-23	14.0	263	17.1	8	39.3	-22	25.7	119	32.0	17	50.2
14	31	18.1	-23	14.3	293	22.0	38	37.5	-22	26.6	149	36.4	17	50.2
16	61	17.5	-23	14.6	323	26.9	68	35.6	-22	27.4	179	40.9	17	50.3
18	91	16.9	-23	14.9	353	31.9	98	33.8	-22	28.3	209	45.3	17	50.3
20	121	16.3	-23	15.1	23	36.8	128	32.0	-22	29.1	239	49.7	17	50.4
22	151	15.7	-23	15.4	53	41.7	158	30.2	-22	30.0	269	54.2	17	50.5
Δ	-3	-1					-9	-4			22	0		

UT	MESEC				JUPITER				SATURN							
	S <sub>♃</sub>		Δ		δ <sub>♃</sub>		Δ		S <sub>♃</sub>		δ <sub>♃</sub>		S <sub>♄</sub>		δ <sub>♄</sub>	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	225	16.2	97	-19	40.2	-66	116	20.6	-14	49.1	257	29.5	0	31.5		
2	254	15.5	96	-19	58.8	-63	146	24.7	-14	48.8	287	34.2	0	31.4		
4	283	14.6	96	-20	17.1	-61	176	28.8	-14	48.5	317	38.9	0	31.4		
6	312	13.5	95	-20	34.9	-58	206	32.9	-14	48.2	347	43.5	0	31.3		
8	341	12.3	94	-20	52.2	-56	236	37.0	-14	47.9	17	48.2	0	31.2		
10	10	10.8	94	-21	9.2	-53	266	41.1	-14	47.6	47	52.9	0	31.1		
12	39	9.3	93	-21	25.6	-50	296	45.2	-14	47.3	77	57.5	0	31.0		
14	68	7.5	93	-21	41.6	-48	326	49.3	-14	47.0	108	2.2	0	30.9		
16	97	5.6	92	-21	57.2	-45	356	53.4	-14	46.8	138	6.9	0	30.8		
18	126	3.6	92	-22	12.2	-43	26	57.5	-14	46.5	168	11.5	0	30.7		
20	155	1.4	92	-22	26.8	-40	57	1.6	-14	46.2	198	16.2	0	30.7		
22	183	59.0	91	-22	40.9	-37	87	5.6	-14	45.9	228	20.9	0	30.6		
Δ							20	1			23	0				

φ	SUNCE				TRAJANJE SUMRAKA				MESEC						
	IZLAZ		ZALAZ		GRAD.		ASTR.		IZLAZ		Δ/24		ZALAZ		Δ/24
N	h	min	h	min	h	min	h	min	h	min	min	h	min	min	min
60	8	55	14	53	0	57	2	45	5	55	3	7	12	31	.8
55	8	17	15	31	0	45	2	17	5	20	3	2	13	7	1.2
50	7	50	15	58	0	38	1	59	4	55	3	0	13	33	1.4
45	7	30	16	19	0	34	1	47	4	36	2	8	13	53	1.6
40	7	13	16	35	0	30	1	37	4	21	2	7	14	9	1.7
35	6	59	16	49	0	28	1	31	4	8	2	6	14	23	1.8
30	6	47	17	1	0	26	1	25	3	57	2	5	14	35	1.9
20	6	26	17	22	0	24	1	19	3	38	2	4	14	55	2.0
10	6	8	17	41	0	23	1	15	3	21	2	2	15	13	2.1
0	5	51	17	58	0	22	1	15	3	6	2	1	15		

15. DECEMBAR

2009.

UTORAK

UT	SUNCE			PROLEĆ. TAČKA $S_{\Upsilon}$	VENERA			MARS					
	$S_{\odot}$	$\delta_{\odot}$			$S_{\venus}$	$\delta_{\venus}$		$S_{\mars}$	$\delta_{\mars}$				
h	°	'	°	°	'	°	'	°	'	°	'		
0	181	15.1	-23	83	46.6	188	28.3	-22	30.8	299	58.6	17	50.5
2	211	14.5	-23	113	51.6	218	26.5	-22	31.6	330	3.0	17	50.6
4	241	13.9	-23	143	56.5	248	24.7	-22	32.5	0	7.5	17	50.7
6	271	13.3	-23	174	1.4	278	22.9	-22	33.3	30	12.0	17	50.7
8	301	12.7	-23	204	6.4	308	21.0	-22	34.1	60	16.4	17	50.8
10	331	12.1	-23	234	11.3	338	19.2	-22	34.9	90	20.9	17	50.9
12	1	11.5	-23	264	16.2	8	17.4	-22	35.7	120	25.4	17	50.9
14	31	10.8	-23	294	21.1	38	15.5	-22	36.5	150	29.8	17	51.0
16	61	10.2	-23	324	26.1	68	13.7	-22	37.3	180	34.3	17	51.1
18	91	9.6	-23	354	31.0	98	11.8	-22	38.1	210	38.8	17	51.2
20	121	9.0	-23	24	35.9	128	10.0	-22	38.9	240	43.3	17	51.3
22	151	8.4	-23	54	40.9	158	8.2	-22	39.7	270	47.8	17	51.3
$\Delta$		-3	-1				-9		-4		22		0

UT	MESEC				JUPITER			SATURN				
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\jup}$	$\delta_{\jup}$		$S_{\sat}$	$\delta_{\sat}$			
h	°	'	°	'	°	'	°	'	°	'		
0	212	56.5	91	-22	117	9.7	-14	45.6	258	25.6	0	30.5
2	241	53.9	91	-23	147	13.8	-14	45.3	288	30.2	0	30.4
4	270	51.1	91	-23	177	17.9	-14	45.0	318	34.9	0	30.3
6	299	48.3	91	-23	207	22.0	-14	44.7	348	39.6	0	30.2
8	328	45.3	91	-23	237	26.1	-14	44.4	18	44.3	0	30.1
10	357	42.1	91	-23	267	30.2	-14	44.2	48	48.9	0	30.1
12	26	38.9	91	-24	297	34.3	-14	43.9	78	53.6	0	30.0
14	55	35.6	91	-24	327	38.3	-14	43.6	108	58.3	0	29.9
16	84	32.2	91	-24	357	42.4	-14	43.3	139	3.0	0	29.8
18	113	28.7	91	-24	27	46.5	-14	43.0	169	7.7	0	29.7
20	142	25.1	91	-24	57	50.6	-14	42.7	199	12.3	0	29.6
22	171	21.4	92	-24	87	54.7	-14	42.4	229	17.0	0	29.6
$\Delta$						20		1		23		0

$\varphi$	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$	ZALAZ	$\Delta/24$
h	min	min	min	min	min	min	min	min	min	min
N	8 56	14 53	0 57	2 45	7 23	3.2	12 50	1.3		
60	8 18	15 31	0 45	2 17	6 38	2.9	13 36	1.7		
55	8 18	15 31	0 45	2 17	6 38	2.9	13 36	1.7		
50	7 51	15 58	0 38	1 59	6 7	2.7	14 7	1.8		
45	7 31	16 19	0 34	1 47	5 44	2.6	14 31	1.9		
40	7 14	16 35	0 31	1 38	5 26	2.5	14 49	2.0		
35	6 60	16 49	0 28	1 31	5 10	2.5	15 5	2.0		
30	6 48	17 2	0 26	1 25	4 57	2.4	15 19	2.0		
20	6 27	17 23	0 24	1 19	4 35	2.3	15 43	2.1		
10	6 8	17 41	0 23	1 15	4 15	2.3	16 3	2.2		
0	5 51	17 59	0 23	1 15	3 57	2.2	16 22	2.2		
10	5 34	18 16	0 23	1 18	3 39	2.1	16 41	2.2		
20	5 15	18 35	0 25	1 24	3 20	2.0	17 2	2.3		
30	4 53	18 57	0 27	1 36	2 58	1.9	17 25	2.4		
35	4 40	19 10	0 30	1 47	2 45	1.9	17 39	2.4		
40	4 25	19 25	0 33	2 3	2 30	1.8	17 55	2.4		
45	4 7	19 42	0 37	2 32	2 12	1.7	18 15	2.5		
50	3 45	20 5	0 44	:::	1 51	1.6	18 39	2.5		
55	3 15	20 34	0 58	:::	1 23	1.4	19 11	2.6		
60	2 32	21 19	1 42	:::	0 42	1.0	20 0	2.9		
S										

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	$r$	Prolaz	$\Delta/24$	$\pi_{\zeta}$	$r$
h	min	s	s	h min	min	'	'
00	5 29.3	-1.2	16.3	$T_m$ 10 10	2.2	56.0	15.3
12	5 14.8	$T_{m0}$ 11 h 54.8 min	Starost 27.2 d	Faza ●			

PLANETE									
Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.	Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.
$\varphi$	h min	'	°	°	h min	'	°	°	°
♀	11 25	.1	106	-3.8	♃	16 9	.0	34	-2.0
♄	3 59	.2	217	-3	♂	6 45	.0	176	.9

16. DECEMBAR

SREDA

UT	SUNCE			PROLEĆ. TAČKA $S_{\Upsilon}$	VENERA			MARS					
	$S_{\odot}$	$\delta_{\odot}$			$S_{\venus}$	$\delta_{\venus}$		$S_{\mars}$	$\delta_{\mars}$				
h	°	'	°	°	'	°	'	°	'	°	'		
0	181	7.8	-23	84	45.8	188	6.3	-22	40.5	300	52.3	17	51.4
2	211	7.2	-23	114	50.7	218	4.5	-22	41.2	330	56.8	17	51.5
4	241	6.6	-23	144	55.6	248	2.6	-22	42.0	1	1.3	17	51.6
6	271	6.0	-23	175	.6	278	.8	-22	42.8	31	5.9	17	51.7
8	301	5.4	-23	205	5.5	307	58.9	-22	43.5	61	10.4	17	51.8
10	331	4.8	-23	235	10.4	337	57.1	-22	44.3	91	14.9	17	51.9
12	1	4.2	-23	265	15.4	7	55.2	-22	45.0	121	19.5	17	52.0
14	31	3.5	-23	295	20.3	37	53.4	-22	45.8	151	24.0	17	52.1
16	61	2.9	-23	325	25.2	67	51.5	-22	46.5	181	28.5	17	52.2
18	91	2.3	-23	355	30.1	97	49.7	-22	47.3	211	33.1	17	52.3
20	121	1.7	-23	25	35.1	127	47.8	-22	48.0	241	37.6	17	52.4
22	151	1.1	-23	55	40.0	157	46.0	-22	48.7	271	42.2	17	52.5
$\Delta$		-3	-1				-9		-4		23		0

UT	MESEC				JUPITER			SATURN				
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\jup}$	$\delta_{\jup}$		$S_{\sat}$	$\delta_{\sat}$			
h	°	'	°	'	°	'	°	'	°	'		
0	200	17.7	92	-24	117	58.8	-14	42.1	259	21.7	0	29.5
2	229	13.9	92	-25	148	2.8	-14	41.8	289	26.4	0	29.4
4	258	10.1	93	-25	178	6.9	-14	41.5	319	31.1	0	29.3
6	287	6.3	93	-25	208	11.0	-14	41.2	349	35.7	0	29.2
8	316	2.5	94	-25	238	15.1	-14	40.9	19	40.4	0	29.1
10	344	58.6	94	-25	268	19.1	-14	40.6	49	45.1	0	29.1
12	13	54.7	95	-25	298	23.2	-14	40.4	79	49.8	0	29.0
14	42	50.8	96	-25	328	27.3	-14	40.1	109	54.5	0	28.9
16	71	47.0	96	-25	358	31.4	-14	39.8	139	59.2	0	28.8
18	100	43.2	97	-25	28	35.4	-14	39.5	170	3.8	0	28.7
20	129	39.4	98	-25	58	39.5	-14	39.2	200	8.5	0	28.7
22	158	35.6	99	-25	88	43.6	-14	38.9	230	13.2	0	28.6
$\Delta$						20		1		23		0

$\varphi$	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$	ZALAZ	$\Delta/24$
h	min	min	min	min	min	min	min	min	min	min
60	8 57	14 53	0 57	2 46	8 40	2.4	13 22	2.2		
55	8 19	15 31	0 45	2 17	7 47	2.3	14 15	2.2		
50	7 52	15 58	0 38	1 59	7 13	2.3	14 50	2.2		
45	7 31	16 19	0 34	1 47	6 47	2.3	15 16	2.2		
40	7 15	16 36	0 31	1 38	6 27	2.3	15 36	2.2		
35	7 1	16 50	0 28	1 31	6 10	2.3	15 53	2.2		
30	6 48	17 2	0 26	1 25	5 55	2.3	16 8	2.2		
20	6 27	17 23	0 24	1 19	5 31	2.2	16 33	2.2		
10	6 9	17 42	0 23	1 15	5 9	2.2	16 55	2.2		
0	5 51	17 59	0 23	1 15	4 50	2.2	17 15	2.2		
10	5 34	18 16	0 23	1 18	4 30	2.2	17 35	2.2		
20	5 15	18 35	0 25	1 24	4 9	2.2	17 57	2.2		
30	4 53	18 57	0 27	1 36	3 44	2.1	18 22	2.2		
35	4 40	19 10	0 30	1 47	3 30	2.1	18 37	2.2		
40	4 25	19 25	0 33	2 3	3 14	2.1	18 54	2.1		
45	4 7	19 43	0 37	2 32	2 54	2.1	19 14	2.1		
50	3 45	20 6	0 44	:::	2 29	2.0	19 40	2.1		
55	3 15	20 35	0 58	:::	1 56	1.9	20 15	2.1		
60	2 31	21 20	1 43	:::	1 7	1.7	21 8	1.9		
S										

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	$r$	Prolaz	$\Delta/24$	$\pi_{\zeta}$	$r$
h	min	s	s	h min	min	'	'
00	5	.5	-1.2	16.3	$T_m$ 11 2	2.2	

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows show astronomical data from 0 to 22 hours and a daily summary row Delta.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, Delta/24, ZALAZ, Delta/24). Rows show moon phase data from 0 to 30 hours and a summary row S.

Table with columns: MESEC (S\_moon, Delta\_moon, delta\_moon, Delta\_moon), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows show data from 0 to 22 hours and a summary row Delta.

Table with columns: SUNCE, MESEC (UT, e, T\_p-UT, Delta/24, r, Prolaz, Delta/24, pi\_sun, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows show lunar parameters and planetary positions.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows show astronomical data from 0 to 22 hours and a daily summary row Delta.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), MESEC (IZLAZ, Delta/24, ZALAZ, Delta/24). Rows show moon phase data from 0 to 30 hours and a summary row S.

Table with columns: MESEC (S\_moon, Delta\_moon, delta\_moon, Delta\_moon), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows show data from 0 to 22 hours and a summary row Delta.

Table with columns: SUNCE, MESEC (UT, e, T\_p-UT, Delta/24, r, Prolaz, Delta/24, pi\_sun, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows show lunar parameters and planetary positions.

UT	SUNCE				PROLEĆ. TAČKA $S_{\gamma}$	VENERA				MARS					
	$S_{\odot}$		$\delta_{\odot}$			$S_{\zeta}$		$\delta_{\zeta}$		$S_{\sigma}$		$\delta_{\sigma}$			
0	180	45.7	-23	24.6	87	43.2	186	59.2	-23	5.3	303	37.9	17	55.6	
2	210	45.1	-23	24.7	117	48.1	216	57.3	-23	5.9	333	42.6	17	55.8	
4	240	44.5	-23	24.8	147	53.1	246	55.4	-23	6.5	3	47.3	17	55.9	
6	270	43.9	-23	24.9	177	58.0	276	53.5	-23	7.1	33	52.0	17	56.1	
8	300	43.2	-23	25.0	208	2.9	306	51.6	-23	7.7	63	56.7	17	56.2	
10	330	42.6	-23	25.1	238	7.8	336	49.7	-23	8.3	94	1.4	17	56.4	
12	0	42.0	-23	25.1	268	12.8	6	47.9	-23	8.8	124	6.1	17	56.5	
14	30	41.4	-23	25.2	298	17.7	36	46.0	-23	9.4	154	10.9	17	56.7	
16	60	40.8	-23	25.3	328	22.6	66	44.1	-23	10.0	184	15.6	17	56.9	
18	90	40.1	-23	25.4	358	27.6	96	42.2	-23	10.5	214	20.3	17	57.0	
20	120	39.5	-23	25.5	28	32.5	126	40.3	-23	11.1	244	25.1	17	57.2	
22	150	38.9	-23	25.5	58	37.4	156	38.4	-23	11.7	274	29.8	17	57.4	
Δ		-3		0				-9		-3		24			1

UT	MESEC				JUPITER				SATURN						
	$S_{\zeta}$		$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\eta}$		$\delta_{\eta}$		$S_{\theta}$		$\delta_{\theta}$			
0	162	43.8	128	-23	34.7	81	120	25.2	-14	31.4	262	10.6	0	26.7	
2	191	44.3	129	-23	23.3	82	150	29.2	-14	31.1	292	15.3	0	26.6	
4	220	45.1	131	-23	11.5	84	180	33.3	-14	30.8	322	20.0	0	26.5	
6	249	46.1	132	-22	59.2	86	210	37.3	-14	30.5	352	24.7	0	26.5	
8	278	47.3	133	-22	46.5	87	240	41.4	-14	30.2	22	29.4	0	26.4	
10	307	48.8	134	-22	33.4	89	270	45.4	-14	29.9	52	34.1	0	26.3	
12	336	50.6	136	-22	19.9	90	300	49.5	-14	29.6	82	38.8	0	26.2	
14	5	52.6	137	-22	6.1	92	330	53.5	-14	29.3	112	43.5	0	26.2	
16	34	54.9	138	-21	51.8	94	0	57.6	-14	29.0	142	48.2	0	26.1	
18	63	57.5	139	-21	37.1	95	31	1.6	-14	28.6	172	52.9	0	26.0	
20	93	.3	141	-21	22.1	96	61	5.7	-14	28.3	202	57.7	0	26.0	
22	122	3.3	142	-21	6.7	98	91	9.7	-14	28.0	233	2.4	0	25.9	
Δ							20			2		24			0

UT	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$				
N	h min	h min	h min	h min	h min	min	h min	min				
60	9 0	14 53	0 58	2 46	10 34	.5	16 45	3.5				
55	8 21	15 32	0 46	2 18	9 55	.9	17 24	3.1				
50	7 54	15 59	0 39	1 60	9 28	1.1	17 50	2.8				
45	7 33	16 20	0 34	1 47	9 6	1.3	18 11	2.7				
40	7 17	16 37	0 31	1 38	8 49	1.4	18 27	2.5				
35	7 2	16 51	0 28	1 31	8 35	1.5	18 41	2.4				
30	6 50	17 3	0 26	1 26	8 22	1.6	18 53	2.3				
20	6 29	17 24	0 24	1 19	8 0	1.7	19 13	2.2				
10	6 10	17 43	0 23	1 15	7 42	1.9	19 31	2.0				
0	5 53	18 0	0 23	1 15	7 24	2.0	19 47	1.9				
10	5 35	18 18	0 23	1 18	7 6	2.1	20 4	1.8				
20	5 16	18 37	0 25	1 24	6 48	2.2	20 21	1.7				
30	4 54	18 59	0 27	1 37	6 26	2.3	20 41	1.5				
35	4 41	19 12	0 30	1 47	6 13	2.4	20 52	1.4				
40	4 26	19 27	0 33	2 3	5 58	2.5	21 6	1.3				
45	4 8	19 45	0 37	2 33	5 40	2.6	21 21	1.2				
50	3 46	20 8	0 45	:::	5 18	2.8	21 40	1.0				
55	3 16	20 38	0 58	:::	4 49	3.0	22 5	.8				
60	2 31	21 22	1 46	:::	4 7	3.4	22 39	.4				
S												

SUNCE					MESEC				
UT	$e = T_p - UT$	$\Delta/24$	$r$		Prolaz		$\Delta/24$	$\pi_{\zeta}$	$r$
h	min	s	'		h min	min	'	'	'
00	3 32.7	-1.2	16.3	$T_m$	13 36	1.9	54.4	14.8	
12	3 17.8	$T_{m\odot}$	11 h 56.7 min		Starost	1.5 d	Faza	●	

PLANETE											
Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.	Pl.	$T_m$	$\pi$	$360 - \alpha$	Vel.		
♀	h min	'	o		♄	h min	'	o		♃	
♀	11 31	.1	101	-3.8	♄	15 56	.0	34	-2.0		
♁	3 45	.2	217	-4	♃	6 30	.0	175	.9		

UT	SUNCE				PROLEĆ. TAČKA $S_{\gamma}$	VENERA				MARS					
	$S_{\odot}$		$\delta_{\odot}$			$S_{\zeta}$		$\delta_{\zeta}$		$S_{\sigma}$		$\delta_{\sigma}$			
0	180	38.3	-23	25.6	88	42.3	186	36.5	-23	12.2	304	34.6	17	57.5	
2	210	37.7	-23	25.7	118	47.3	216	34.6	-23	12.7	334	39.3	17	57.7	
4	240	37.0	-23	25.7	148	52.2	246	32.7	-23	13.3	4	44.1	17	57.9	
6	270	36.4	-23	25.8	178	57.1	276	30.8	-23	13.8	34	48.9	17	58.0	
8	300	35.8	-23	25.9	209	2.1	306	28.9	-23	14.3	64	53.7	17	58.2	
10	330	35.2	-23	25.9	239	7.0	336	27.0	-23	14.9	94	58.4	17	58.4	
12	0	34.6	-23	26.0	269	11.9	6	25.1	-23	15.4	125	3.2	17	58.6	
14	30	33.9	-23	26.0	299	16.8	36	23.2	-23	15.9	155	8.0	17	58.7	
16	60	33.3	-23	26.1	329	21.8	66	21.3	-23	16.4	185	12.8	17	58.9	
18	90	32.7	-23	26.1	359	26.7	96	19.4	-23	16.9	215	17.6	17	59.1	
20	120	32.1	-23	26.1	29	31.6	126	17.5	-23	17.4	245	22.4	17	59.3	
22	150	31.4	-23	26.2	59	36.6	156	15.6	-23	17.9	275	27.2	17	59.5	
Δ		-3		0				-10		-3		24			1

UT	MESEC				JUPITER				SATURN						
	$S_{\zeta}$		$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\eta}$		$\delta_{\eta}$		$S_{\theta}$		$\delta_{\theta}$			
0	151	6.7	143	-20	50.9	99	121	13.8	-14	27.7	263	7.1	0	25.8	
2	180	10.3	144	-20	34.8	101	151	17.8	-14	27.4	293	11.8	0	25.7	
4	209	14.1	145	-20	18.4	102	181	21.9	-14	27.1	323	16.5	0	25.7	
6	238	18.3	146	-20	1.6	103	211	25.9	-14	26.8	353	21.2	0	25.6	
8	267	22.6	147	-19	44.4	104	241	30.0	-14	26.5	23	25.9	0	25.5	
10	296	27.3	148	-19	27.0	106	271	34.0	-14	26.2	53	30.6	0	25.5	
12	325	32.2	150	-19	9.2	107	301	38.0	-14	25.9	83	35.4	0	25.4	
14	354	37.3	151	-18	51.1	108	331	42.1	-14	25.6	113	40.1	0	25.3	
16	23	42.7	151	-18	32.7	109	1	46.1	-14	25.3	143	44.8	0	25.3	
18	52	48.3	152	-18	14.0	110	31	50.2	-14	25.0	173	49.5	0	25.2	
20	81	54.2	153	-17	55.0	111	61	54.2	-14	24.6	203	54.2	0	25.1	
22	111	.4	154	-17	35.7	112	91	58.2	-14	24.3	233	58.9	0	25.1	
Δ							20			2		24			0

UT	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$				
N	h min	h min	h min	h min	h min	min	h min	min				
60	9 1	14 54	0 58	2 46	10 46	.3	18 9	3.4				
55	8 22	15 32	0 46	2 18	10 16	.7	18 37	3.1				
50	7 55	15 59	0 39	1 60	9 54	.9	18 58	2.8				
45	7 34	16 20	0 34	1 47	9 37	1.1	19 14	2.6				
40	7 17	16 37	0 31	1 38	9 23	1.2	19 28	2.5				
35	7 3	16 51	0 28	1 31	9 11	1.3	19 39	2.4				
30	6 51	17 4	0 26	1 26	9 0	1.4	19 48	2.3				
20	6 29	17 25	0 24	1 19	8 42	1.6	20 5	2.1				
10	6 11	17 43	0 23	1 15	8 26	1.7	20 20	1.9				
0	5 53	18 1	0 23	1 15	8 11	1.9	20 33	1.8				
10	5 36	18 19	0 23	1 18	7 56	2.0	20 46	1.7				
20	5 17	18 38	0 25	1 24	7 40	2.1	21 1	1.5				
30	4 55	18 60	0 27	1 37	7 22	2.3	21 17	1.3				
35	4 42	19 13	0 30	1 47	7 11	2.4	21 26	1.2				
40	4 27	19 28	0 33	2 3	6 58	2.5	21 37	1.1				
45	4 9	19 46	0 37	2 33	6 44	2.7	21 49	1.0				
50	3 46	20 8	0 45	:::	6 26	2.8	22 4	.8				
55	3 16	20 38	0 58	:::	6 2	3.1	22 23	.6				
60	2 31	21 23	1 46	:::	5 30	3.5	22 48	.3				
S												

SUNCE					MESEC				
UT	$e = T_p - UT$	$\Delta/24$	$r$		Prolaz		$\Delta/24$	$\pi_{\zeta}$	$r$
h	min	s	'		h min	min	'	'	'
00	3 3.0	-1.2	16.3	$T_m$	14 22	1.8	54.2		

UT	SUNCE				PROLEĆ. TAČKA $S_{\Upsilon}$	VENERA				MARS				
	$S_{\odot}$	$\delta_{\odot}$				$S_{\vee}$	$\delta_{\vee}$			$S_{\mars}$	$\delta_{\mars}$			
0	180	30.8	-23	26.2	89	41.5	186	13.7	-23	18.4	305	32.0	17	59.7
2	210	30.2	-23	26.2	119	46.4	216	11.8	-23	18.9	335	36.9	17	59.9
4	240	29.6	-23	26.2	149	51.3	246	9.8	-23	19.3	5	41.7	18	.1
6	270	29.0	-23	26.3	179	56.3	276	7.9	-23	19.8	35	46.5	18	.3
8	300	28.3	-23	26.3	210	1.2	306	6.0	-23	20.3	65	51.4	18	.4
10	330	27.7	-23	26.3	240	6.1	336	4.1	-23	20.8	95	56.2	18	.6
12	0	27.1	-23	26.3	270	11.0	6	2.2	-23	21.2	126	1.1	18	.8
14	30	26.5	-23	26.3	300	16.0	36	.3	-23	21.7	156	5.9	18	1.0
16	60	25.8	-23	26.3	330	20.9	65	58.4	-23	22.1	186	10.8	18	1.2
18	90	25.2	-23	26.3	0	25.8	95	56.5	-23	22.6	216	15.6	18	1.5
20	120	24.6	-23	26.3	30	30.8	125	54.5	-23	23.0	246	20.5	18	1.7
22	150	24.0	-23	26.3	60	35.7	155	52.6	-23	23.4	276	25.4	18	1.9
$\Delta$		-3		0				-10		-2		24		1

$\varphi$	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$	IZLAZ	min	ZALAZ	min
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	9 2	14 54	0 58	2 46	10 54	.2	19 31	3.4				
55	8 23	15 33	0 46	2 18	10 32	.5	19 51	3.0				
50	7 55	15 60	0 39	1 60	10 16	.7	20 6	2.8				
45	7 35	16 21	0 34	1 47	10 3	.9	20 18	2.6				
40	7 18	16 38	0 31	1 38	9 52	1.1	20 28	2.5				
35	7 4	16 52	0 28	1 31	9 42	1.2	20 36	2.3				
30	6 51	17 4	0 26	1 26	9 34	1.3	20 43	2.2				
20	6 30	17 25	0 24	1 19	9 20	1.5	20 55	2.0				
10	6 11	17 44	0 23	1 15	9 7	1.6	21 6	1.9				
0	5 54	18 1	0 23	1 15	8 56	1.8	21 16	1.7				
10	5 36	18 19	0 23	1 18	8 44	1.9	21 26	1.6				
20	5 17	18 38	0 25	1 24	8 31	2.1	21 37	1.4				
30	4 55	19 0	0 27	1 37	8 17	2.3	21 49	1.2				
35	4 42	19 13	0 30	1 47	8 8	2.4	21 56	1.1				
40	4 27	19 28	0 33	2 3	7 59	2.5	22 4	1.0				
45	4 9	19 46	0 37	2 33	7 47	2.6	22 13	.9				
50	3 46	20 9	0 45	:::	7 34	2.8	22 23	.7				
55	3 16	20 39	0 58	:::	7 16	3.1	22 37	.5				
60	2 32	21 24	1 47	:::	6 53	3.4	22 54	.2				

UT	MESEC				JUPITER				SATURN					
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\jup}$	$\delta_{\jup}$			$S_{\sat}$	$\delta_{\sat}$				
0	140	6.7	155	-17	16.1	113	122	2.3	-14	24.0	264	3.7	0	25.0
2	169	13.3	156	-16	56.3	114	152	6.3	-14	23.7	294	8.4	0	24.9
4	198	20.1	157	-16	36.2	115	182	10.3	-14	23.4	324	13.1	0	24.9
6	227	27.2	157	-16	15.8	116	212	14.4	-14	23.1	354	17.8	0	24.8
8	256	34.5	158	-15	55.2	117	242	18.4	-14	22.8	24	22.5	0	24.7
10	285	41.9	159	-15	34.3	118	272	22.5	-14	22.5	54	27.3	0	24.7
12	314	49.6	160	-15	13.2	119	302	26.5	-14	22.2	84	32.0	0	24.6
14	343	57.5	160	-14	51.9	119	332	30.5	-14	21.9	114	36.7	0	24.6
16	13	5.7	161	-14	30.3	120	2	34.6	-14	21.5	144	41.4	0	24.5
18	42	13.9	161	-14	8.5	121	32	38.6	-14	21.2	174	46.1	0	24.4
20	71	22.4	162	-13	46.5	122	62	42.6	-14	20.9	204	50.9	0	24.4
22	100	31.1	162	-13	24.2	122	92	46.6	-14	20.6	234	55.6	0	24.3
$\Delta$								20		2		24		0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	$r$	Prolaz	$\Delta/24$	$\pi_{\zeta}$	$r$
h	min	s	s	h min	min	'	'
00	2 33.3	-1.2	16.3	$T_m$ 15 6	1.7	54.1	14.7
12	2 18.4			$T_m \odot$ 11 h 57.7 min	Starost 3.5 d	Faza $\bullet$	

PLANETE									
Pl.	$T_m$	$\pi$	$360-\alpha$	Vel.	Pl.	$T_m$	$\pi$	$360-\alpha$	Vel.
$\varphi$	h min	'	°		$\varphi$	h min	'	°	
$\zeta$	11 34	.1	98	-3.8	$\jup$	15 50	.0	33	-2.0
$\sigma$	3 37	.2	217	-5	$\sat$	6 23	.0	175	.9

UT	SUNCE				PROLEĆ. TAČKA $S_{\Upsilon}$	VENERA				MARS				
	$S_{\odot}$	$\delta_{\odot}$				$S_{\vee}$	$\delta_{\vee}$			$S_{\mars}$	$\delta_{\mars}$			
0	180	23.4	-23	26.3	90	40.6	185	50.7	-23	23.9	306	30.3	18	2.1
2	210	22.7	-23	26.3	120	45.5	215	48.8	-23	24.3	336	35.2	18	2.3
4	240	22.1	-23	26.3	150	50.5	245	46.9	-23	24.7	6	40.1	18	2.5
6	270	21.5	-23	26.3	180	55.4	275	45.0	-23	25.1	36	45.0	18	2.7
8	300	20.9	-23	26.2	211	.3	305	43.0	-23	25.5	66	49.9	18	2.9
10	330	20.2	-23	26.2	241	5.3	335	41.1	-23	25.9	96	54.8	18	3.2
12	0	19.6	-23	26.2	271	10.2	5	39.2	-23	26.3	126	59.7	18	3.4
14	30	19.0	-23	26.2	301	15.1	35	37.3	-23	26.7	157	4.6	18	3.6
16	60	18.4	-23	26.1	331	20.0	65	35.4	-23	27.1	187	9.5	18	3.8
18	90	17.8	-23	26.1	1	25.0	95	33.4	-23	27.5	217	14.5	18	4.1
20	120	17.1	-23	26.0	31	29.9	125	31.5	-23	27.9	247	19.4	18	4.3
22	150	16.5	-23	26.0	61	34.8	155	29.6	-23	28.2	277	24.4	18	4.5
$\Delta$		-3		0				-10		-2		25		1

$\varphi$	SUNCE				TRAJANJE SUMRAKA				MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$	IZLAZ	min	ZALAZ	min
N	h min	h min	h min	h min	h min	min	h min	min	h min	min	h min	min
60	9 2	14 54	0 58	2 46	10 59	.2	20 52	3.3				
55	8 23	15 33	0 46	2 18	10 44	.4	21 4	3.0				
50	7 56	16 0	0 39	1 60	10 33	.7	21 13	2.8				
45	7 35	16 21	0 34	1 47	10 24	.8	21 21	2.6				
40	7 18	16 38	0 31	1 38	10 17	1.0	21 27	2.4				
35	7 4	16 52	0 28	1 31	10 10	1.1	21 32	2.3				
30	6 52	17 5	0 26	1 26	10 5	1.2	21 37	2.2				
20	6 30	17 26	0 24	1 19	9 55	1.4	21 44	2.0				
10	6 12	17 44	0 23	1 15	9 46	1.5	21 51	1.8				
0	5 54	18 2	0 23	1 15	9 38	1.7	21 58	1.7				
10	5 37	18 20	0 23	1 18	9 30	1.9	22 4	1.5				
20	5 18	18 39	0 25	1 24	9 21	2.0	22 11	1.4				
30	4 56	19 1	0 27	1 37	9 11	2.2	22 18	1.2				
35	4 43	19 14	0 30	1 47	9 5	2.3	22 23	1.1				
40	4 28	19 29	0 33	2 3	8 58	2.5	22 28	.9				
45	4 10	19 47	0 37	2 33	8 51	2.6	22 33	.8				
50	3 47	20 9	0 45	:::	8 41	2.8	22 40	.6				
55	3 17	20 40	0 58	:::	8 29	3.0	22 48	.4				
60	2 32	21 24	1 47	:::	8 14	3.3	22 59	.1				

UT	MESEC				JUPITER				SATURN			
	$S_{\zeta}$	$\Delta$	$\delta_{\zeta}$	$\Delta$	$S_{\jup}$	$\delta_{\jup}$			$S_{\sat}$	$\delta_{\sat}$		

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	180	15.9	-23 25.9	91	39.8		185	27.7	-23 28.6	307	29.3	18 4.7
2	210	15.3	-23 25.9	121	44.7		215	25.7	-23 29.0	337	34.3	18 5.0
4	240	14.6	-23 25.8	151	49.6		245	23.8	-23 29.3	7	39.2	18 5.2
6	270	14.0	-23 25.8	181	54.5		275	21.9	-23 29.7	37	44.2	18 5.4
8	300	13.4	-23 25.7	211	59.5		305	20.0	-23 30.0	67	49.1	18 5.7
10	330	12.8	-23 25.7	242	4.4		335	18.0	-23 30.4	97	54.1	18 5.9
12	0	12.2	-23 25.6	272	9.3		5	16.1	-23 30.7	127	59.1	18 6.2
14	30	11.5	-23 25.5	302	14.3		35	14.2	-23 31.0	158	4.1	18 6.4
16	60	10.9	-23 25.4	332	19.2		65	12.3	-23 31.4	188	9.1	18 6.7
18	90	10.3	-23 25.4	2	24.1		95	10.3	-23 31.7	218	14.1	18 6.9
20	120	9.7	-23 25.3	32	29.0		125	8.4	-23 32.0	248	19.1	18 7.2
22	150	9.0	-23 25.2	62	34.0		155	6.5	-23 32.3	278	24.1	18 7.4
Δ		-3	0					-10	-2		25	1

φ	SUNCE			TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ		GRAD.	ASTR.	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 2	.1	22 11	3.3	
55	8 24	15 34	0 46	2 18	10 55	.4	22 16	3.0	
50	7 56	16 1	0 39	1 60	10 49	.6	22 20	2.8	
45	7 36	16 22	0 34	1 47	10 44	.8	22 23	2.6	
40	7 19	16 39	0 31	1 38	10 40	.9	22 26	2.5	
35	7 5	16 53	0 28	1 31	10 37	1.0	22 28	2.3	
30	6 52	17 5	0 26	1 26	10 33	1.2	22 30	2.2	
20	6 31	17 26	0 24	1 19	10 28	1.4	22 33	2.0	
10	6 12	17 45	0 23	1 15	10 23	1.5	22 36	1.8	
0	5 55	18 2	0 23	1 15	10 19	1.7	22 38	1.7	
10	5 37	18 20	0 23	1 18	10 14	1.8	22 41	1.5	
20	5 18	18 39	0 25	1 24	10 9	2.0	22 43	1.4	
30	4 56	19 1	0 27	1 37	10 4	2.2	22 46	1.2	
35	4 43	19 14	0 30	1 47	10 1	2.3	22 48	1.0	
40	4 28	19 29	0 33	2 3	9 57	2.5	22 50	.9	
45	4 10	19 47	0 37	2 33	9 53	2.6	22 52	.8	
50	3 47	20 10	0 45	:	9 48	2.8	22 55	.6	
55	3 17	20 40	0 58	:	9 42	3.0	22 58	.4	
60	2 32	21 25	1 47	:	9 34	3.3	23 2	.1	

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	"/	°	'	"/	°	'	"/
0	119	37.7	165 -	8 18.5	129	123 39.0	-14 16.5	265 57.1	0 23.5
2	148	48.2	165 -	7 53.9	129	153 43.0	-14 16.2	296 1.8	0 23.5
4	177	58.9	165 -	7 29.2	130	183 47.0	-14 15.9	326 6.5	0 23.4
6	207	9.6	165 -	7 4.3	130	213 51.0	-14 15.6	356 11.3	0 23.3
8	236	20.4	164 -	6 39.3	130	243 55.1	-14 15.2	26 16.0	0 23.3
10	265	31.2	164 -	6 14.3	131	273 59.1	-14 14.9	56 20.8	0 23.2
12	294	42.1	164 -	5 49.1	131	304 3.1	-14 14.6	86 25.5	0 23.2
14	323	53.0	164 -	5 23.7	131	334 7.1	-14 14.3	116 30.2	0 23.1
16	353	4.0	163 -	4 58.3	131	4 11.1	-14 14.0	146 35.0	0 23.0
18	22	15.0	163 -	4 32.8	131	34 15.2	-14 13.6	176 39.7	0 23.0
20	51	26.0	162 -	4 7.3	131	64 19.2	-14 13.3	206 44.5	0 22.9
22	80	37.0	162 -	3 41.6	131	94 23.2	-14 13.0	236 49.2	0 22.9
Δ						20	2	24	0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	1 33.6	-1.2	16.3	T <sub>m</sub>	16 29	1.7	54.2	14.8
12	1 18.6	T <sub>m☉</sub>	11 h 58.7 min	Starost	5.5 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	11 37	.1	95	-3.8	♃	15 43	.0	33	-2.0
♁	3 29	.2	217	-5	♂	6 15	.0	175	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	180	8.4	-23 25.1	92	38.9		185	4.5	-23 32.6	308	29.1	18 7.7
2	210	7.8	-23 25.0	122	43.8		215	2.6	-23 32.9	338	34.1	18 7.9
4	240	7.2	-23 24.9	152	48.8		245	.7	-23 33.2	8	39.2	18 8.2
6	270	6.6	-23 24.8	182	53.7		274	58.7	-23 33.5	38	44.2	18 8.4
8	300	5.9	-23 24.7	212	58.6		304	56.8	-23 33.8	68	49.2	18 8.7
10	330	5.3	-23 24.6	243	3.5		334	54.9	-23 34.1	98	54.3	18 8.9
12	0	4.7	-23 24.5	273	8.5		4	52.9	-23 34.4	128	59.3	18 9.2
14	30	4.1	-23 24.4	303	13.4		34	51.0	-23 34.6	159	4.4	18 9.5
16	60	3.5	-23 24.3	333	18.3		64	49.1	-23 34.9	189	9.4	18 9.7
18	90	2.8	-23 24.2	3	23.3		94	47.1	-23 35.2	219	14.5	18 10.0
20	120	2.2	-23 24.1	33	28.2		124	45.2	-23 35.4	249	19.6	18 10.3
22	150	1.6	-23 23.9	63	33.1		154	43.3	-23 35.7	279	24.6	18 10.6
Δ		-3	1					-10	-1		25	1

φ	SUNCE			TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ		GRAD.	ASTR.	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 6	.1	23 31	3.4	
55	8 24	15 34	0 46	2 18	11 5	.4	23 29	3.1	
50	7 57	16 1	0 39	1 60	11 4	.6	23 27	2.9	
45	7 36	16 22	0 34	1 47	11 3	.8	23 26	2.7	
40	7 19	16 39	0 31	1 38	11 2	.9	23 25	2.5	
35	7 5	16 53	0 28	1 31	11 2	1.1	23 24	2.4	
30	6 53	17 6	0 26	1 26	11 1	1.2	23 23	2.3	
20	6 31	17 27	0 24	1 19	11 0	1.4	23 21	2.1	
10	6 13	17 45	0 23	1 15	10 60	1.5	23 20	1.9	
0	5 55	18 3	0 23	1 15	10 59	1.7	23 19	1.7	
10	5 38	18 21	0 23	1 18	10 58	1.9	23 17	1.6	
20	5 19	18 40	0 25	1 24	10 58	2.0	23 16	1.4	
30	4 57	19 2	0 27	1 37	10 57	2.2	23 14	1.2	
35	4 44	19 15	0 30	1 47	10 57	2.4	23 13	1.1	
40	4 29	19 30	0 33	2 3	10 56	2.5	23 12	1.0	
45	4 11	19 48	0 37	2 33	10 56	2.6	23 11	.8	
50	3 48	20 10	0 45	:	10 55	2.8	23 10	.6	
55	3 18	20 40	0 58	:	10 54	3.1	23 8	.4	
60	2 33	21 25	1 46	:	10 53	3.4	23 5	.1	

UT	MESEC				JUPITER		SATURN		
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>	
h	°	'	"/	°	'	"/	°	'	"/
0	109	48.0	161 -	3 15.8	132	124 27.2	-14 12.7	266 53.9	0 22.8
2	138	59.0	161 -	2 50.0	132	154 31.2	-14 12.4	296 58.7	0 22.8
4	168	10.0	160 -	2 24.1	132	184 35.2	-14 12.0	327 3.4	0 22.7
6	197	21.0	159 -	1 58.1	132	214 39.2	-14 11.7	357 8.2	0 22.7
8	226	31.9	158 -	1 32.1	131	244 43.2	-14 11.4	27 12.9	0 22.6
10	255	42.8	158 -	1 6.1	131	274 47.3	-14 11.1	57 17.7	0 22.6
12	284	53.7	157 -	0 39.9	131	304 51.3	-14 10.8	87 22.4	0 22.5
14	314	4.5	156 -	0 13.8	131	334 55.3	-14 10.4	117 27.1	0 22.4
16	343	15.2	155 0	12.4	131	4 59.3	-14 10.1	147 31.9	0 22.4
18	12	25.8	154 0	38.6	131	35 3.3	-14 9.8	177 36.6	0 22.3
20	41	36.4	153 1	4.9	131	65 7.3	-14 9.5	207 41.4	0 22.3
22	70	46.9	152 1	31.2	130	95 11.3	-14 9.1	237 46.1	0 22.2
Δ						20	2	24	0

SUNCE				MESEC				
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r	
h	min	s	s	h min	min	'	'	
00	1 3.7	-1.2	16.3	T <sub>m</sub>	17 9	1.7	54.5	14.8
12	0 48.8	T <sub>m☉</sub>	11 h 59.2 min	Starost	6.5 d	Faza	☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	11 39	.1	94	-3.8	♃	15 40	.0	33	-2.0
♁	3 25	.2	217	-5	♂	6 11	.0	175	.9



UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	180	1.0	-23 23.8	93	38.0	184	41.3	-23 35.9	309	29.7	18 10.8	
2	210	.4	-23 23.7	123	43.0	214	39.4	-23 36.2	339	34.8	18 11.1	
4	239	59.7	-23 23.6	153	47.9	244	37.4	-23 36.4	9	39.9	18 11.4	
6	269	59.1	-23 23.4	183	52.8	274	35.5	-23 36.6	39	45.0	18 11.7	
8	299	58.5	-23 23.3	213	57.7	304	33.6	-23 36.9	69	50.1	18 11.9	
10	329	57.9	-23 23.1	244	2.7	334	31.6	-23 37.1	99	55.2	18 12.2	
12	359	57.3	-23 23.0	274	7.6	4	29.7	-23 37.3	130	.3	18 12.5	
14	29	56.6	-23 22.8	304	12.5	34	27.8	-23 37.5	160	5.4	18 12.8	
16	59	56.0	-23 22.7	334	17.5	64	25.8	-23 37.7	190	10.6	18 13.1	
18	89	55.4	-23 22.5	4	22.4	94	23.9	-23 37.9	220	15.7	18 13.4	
20	119	54.8	-23 22.4	34	27.3	124	21.9	-23 38.1	250	20.8	18 13.7	
22	149	54.2	-23 22.2	64	32.2	154	20.0	-23 38.3	280	26.0	18 14.0	
Δ		-3	1				-10	-1		26		1

φ	SUNCE			TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 56	0 58	2 46	11 9	.2	. . . .	.0
55	8 24	15 35	0 46	2 18	11 14	.5	. . . .	.0
50	7 57	16 2	0 39	1 60	11 18	.7	. . . .	.0
45	7 37	16 23	0 34	1 47	11 22	.9	. . . .	.0
40	7 20	16 40	0 31	1 38	11 25	1.0	. . . .	.0
35	7 6	16 54	0 28	1 31	11 27	1.1	. . . .	.0
30	6 53	17 6	0 26	1 26	11 29	1.2	. . . .	.0
20	6 32	17 27	0 24	1 19	11 33	1.4	. . . .	.0
10	6 13	17 46	0 23	1 15	11 37	1.6	. . . .	.0
0	5 56	18 3	0 23	1 15	11 40	1.8	. . . .	.0
10	5 38	18 21	0 23	1 18	11 43	1.9	23 55	1.7
20	5 19	18 40	0 25	1 24	11 47	2.1	23 49	1.5
30	4 57	19 2	0 27	1 37	11 51	2.3	23 43	1.3
35	4 44	19 15	0 30	1 47	11 53	2.4	23 39	1.2
40	4 29	19 30	0 33	2 3	11 56	2.6	23 35	1.1
45	4 11	19 48	0 37	2 33	11 59	2.7	23 30	.9
50	3 49	20 11	0 45	:::	12 3	2.9	23 25	.7
55	3 19	20 41	0 58	:::	12 8	3.2	23 18	.5
60	2 34	21 25	1 46	:::	12 14	3.5	23 9	.2

UT	MESEC				JUPITER		SATURN						
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>					
h	°	'	"/	°	'	"/	°	'	"/				
0	99	57.2	151	1	57.5	130	125	15.3	-14 8.8	267	50.9	0	22.2
2	129	7.5	150	2	23.8	130	155	19.3	-14 8.5	297	55.6	0	22.1
4	158	17.6	148	2	50.1	129	185	23.3	-14 8.2	328	.4	0	22.1
6	187	27.6	147	3	16.4	129	215	27.3	-14 7.8	358	5.1	0	22.0
8	216	37.4	146	3	42.7	128	245	31.3	-14 7.5	28	9.9	0	22.0
10	245	47.1	144	4	9.0	128	275	35.3	-14 7.2	58	14.6	0	21.9
12	274	56.7	143	4	35.3	127	305	39.3	-14 6.9	88	19.4	0	21.9
14	304	6.0	141	5	1.6	127	335	43.4	-14 6.5	118	24.1	0	21.8
16	333	15.2	140	5	27.8	126	5	47.4	-14 6.2	148	28.9	0	21.8
18	2	24.2	138	5	54.0	125	35	51.4	-14 5.9	178	33.7	0	21.7
20	31	33.0	137	6	20.2	125	65	55.4	-14 5.6	208	38.4	0	21.7
22	60	41.6	135	6	46.3	124	95	59.4	-14 5.2	238	43.2	0	21.6
Δ								20	2		24		0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	0 33.9	-1.2	16.3	T <sub>m</sub>	17 50	1.8	54.9 15.0
12	0 19.0	T <sub>m</sub> ☉	11 h 59.7 min	Starost	7.5 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360 - α	Vel.	Pl.	T <sub>m</sub>	π	360 - α	Vel.
	h min	'	°			h min	'	°	
♀	11 40	.1	92	-3.8	♃	15 37	.0	33	-2.0
♂	3 21	.2	217	-6	♄	6 8	.0	175	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	179	53.6	-23 22.0	94	37.2	184	18.0	-23 38.5	310	31.1	18 14.2	
2	209	52.9	-23 21.9	124	42.1	214	16.1	-23 38.7	340	36.3	18 14.5	
4	239	52.3	-23 21.7	154	47.0	244	14.2	-23 38.9	10	41.4	18 14.8	
6	269	51.7	-23 21.5	184	52.0	274	12.2	-23 39.0	40	46.6	18 15.1	
8	299	51.1	-23 21.4	214	56.9	304	10.3	-23 39.2	70	51.8	18 15.4	
10	329	50.5	-23 21.2	245	1.8	334	8.3	-23 39.4	100	57.0	18 15.7	
12	359	49.9	-23 21.0	275	6.7	4	6.4	-23 39.5	131	2.1	18 16.1	
14	29	49.2	-23 20.8	305	11.7	34	4.5	-23 39.7	161	7.3	18 16.4	
16	59	48.6	-23 20.6	335	16.6	64	2.5	-23 39.8	191	12.5	18 16.7	
18	89	48.0	-23 20.4	5	21.5	94	.6	-23 39.9	221	17.7	18 17.0	
20	119	47.4	-23 20.2	35	26.5	123	58.6	-23 40.1	251	22.9	18 17.3	
22	149	46.8	-23 20.0	65	31.4	153	56.7	-23 40.2	281	28.1	18 17.6	
Δ		-3	1				-10	-1		26		2

φ	SUNCE			TRAJANJE SUMRAKA		MESEC		
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 57	0 58	2 46	11 13	.2	0 54	3.6
55	8 25	15 36	0 46	2 18	11 25	.6	0 44	3.2
50	7 58	16 3	0 38	1 60	11 35	.8	0 37	3.0
45	7 37	16 23	0 34	1 47	11 42	1.0	0 31	2.8
40	7 20	16 40	0 31	1 38	11 49	1.1	0 26	2.6
35	7 6	16 54	0 28	1 31	11 54	1.3	0 21	2.5
30	6 54	17 7	0 26	1 26	11 59	1.4	0 18	2.4
20	6 32	17 28	0 24	1 19	12 8	1.6	0 11	2.2
10	6 14	17 47	0 23	1 15	12 16	1.7	0 6	2.0
0	5 56	18 4	0 23	1 15	12 23	1.9	0 0	1.8
10	5 39	18 21	0 23	1 18	12 30	2.1	. . . .	.0
20	5 20	18 40	0 25	1 24	12 38	2.2	. . . .	.0
30	4 58	19 2	0 27	1 37	12 47	2.4	. . . .	.0
35	4 45	19 15	0 30	1 47	12 52	2.6	. . . .	.0
40	4 30	19 30	0 33	2 3	12 58	2.7	. . . .	.0
45	4 12	19 48	0 37	2 33	13 5	2.9	23 52	1.1
50	3 49	20 11	0 45	:::	13 13	3.1	23 42	.9
55	3 19	20 41	0 58	:::	13 24	3.3	23 29	.6
60	2 35	21 25	1 45	:::	13 37	3.7	23 13	.3

UT	MESEC				JUPITER		SATURN						
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>					
h	°	'	"/	°	'	"/	°	'	"/				
0	89	50.0	133	7	12.3	123	126	3.4	-14 4.9	268	47.9	0	21.6
2	118	58.2	132	7	38.3	122	156	7.4	-14 4.6	298	52.7	0	21.5
4	148	6.1	130	8	4.2	122	186	11.4	-14 4.3	328	57.4	0	21.5
6	177	13.8	128	8	30.0	121	216	15.3	-14 3.9	359	2.2	0	21.4
8	206	21.2	126	8	55.8	120	246	19.3	-14 3.6	29	7.0	0	21.4
10	235	28.3	124	9	21.5	119	276	23.3	-14 3.3	59	11.7	0	21.3
12	264	35.2	122	9	47.0	118	306	27.3	-14 3.0	89	16.5	0	21.3
14	293	41.8	120	10	12.5	117	336	31.3	-14 2.6	119	21.2	0	21.2
16	322	48.1	118	10	37.9	115	6	35.3	-14 2.3	149	26.0	0	21.2
18	351	54.1	116	11	3.1	114	36	39.3	-14 2.0	179	30.8	0	21.2
20	20	59.8	114	11	28.2	113	66	43.3	-14 1.6	209	35.5	0	21.1
22	50	5.1	112	11	53.1	111	96	47.3	-14 1.3	239	40.3	0	21.1
Δ								20	2		24		0

SUNCE				MESEC			
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r
h	min	s	s	h min	min	'	'
00	0 4.1	-1.2	16.3	T <sub>m</sub>	18 33	2.0	55.5 15.1
12	- 0 10.8	T <sub>m</sub> ☉	12 h .2 min	Starost	8.5 d	Faza ☉	

PLANETE									
Pl.	T <sub>m</sub>	π	360 - α	Vel.	Pl.	T <sub>m</sub>	π	360 - α	Vel.
	h min	'	°			h min	'	°	
♀	11 42	.1	91	-3.8	♃	15 34	.0	32	-2.0
♂	3 17	.2	217	-6	♄	6 4			

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	179	46.2	-23 19.8	95	36.3	183	54.7	-23 40.3	311	33.4	18 17.9	
2	209	45.5	-23 19.6	125	41.2	213	52.8	-23 40.5	341	38.6	18 18.2	
4	239	44.9	-23 19.4	155	46.2	243	50.8	-23 40.6	11	43.8	18 18.6	
6	269	44.3	-23 19.2	185	51.1	273	48.9	-23 40.7	41	49.0	18 18.9	
8	299	43.7	-23 19.0	215	56.0	303	47.0	-23 40.8	71	54.3	18 19.2	
10	329	43.1	-23 18.7	246	1.0	333	45.0	-23 40.9	101	59.5	18 19.5	
12	359	42.5	-23 18.5	276	5.9	3	43.1	-23 41.0	132	4.8	18 19.9	
14	29	41.9	-23 18.3	306	10.8	33	41.1	-23 41.1	162	10.0	18 20.2	
16	59	41.3	-23 18.1	336	15.7	63	39.2	-23 41.2	192	15.3	18 20.5	
18	89	40.6	-23 17.8	6	20.7	93	37.2	-23 41.2	222	20.6	18 20.8	
20	119	40.0	-23 17.6	36	25.6	123	35.3	-23 41.3	252	25.8	18 21.2	
22	149	39.4	-23 17.3	66	30.5	153	33.3	-23 41.4	282	31.1	18 21.5	
Δ		-3	1				-10	0		26	2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 58	0 58	2 46	11 18	.4	2 20	3.8
55	8 25	15 36	0 45	2 18	11 38	.7	2 2	3.4
50	7 58	16 3	0 38	1 59	11 54	1.0	1 48	3.1
45	7 37	16 24	0 34	1 47	12 6	1.2	1 38	2.9
40	7 20	16 41	0 31	1 38	12 16	1.3	1 29	2.8
35	7 6	16 55	0 28	1 31	12 25	1.5	1 21	2.6
30	6 54	17 7	0 26	1 25	12 32	1.6	1 15	2.5
20	6 33	17 29	0 24	1 19	12 46	1.8	1 3	2.3
10	6 14	17 47	0 23	1 15	12 57	1.9	0 53	2.1
0	5 57	18 4	0 23	1 15	13 8	2.1	0 44	2.0
10	5 39	18 22	0 23	1 18	13 20	2.2	0 35	1.8
20	5 20	18 41	0 25	1 24	13 32	2.4	0 25	1.7
30	4 58	19 3	0 27	1 36	13 45	2.6	0 14	1.5
35	4 45	19 16	0 30	1 47	13 54	2.7	0 8	1.3
40	4 30	19 31	0 33	2 3	14 3	2.8	0 1	1.2
45	4 12	19 49	0 37	2 33	14 14	3.0	...	.0
50	3 50	20 11	0 45	:::	14 27	3.2	...	.0
55	3 20	20 41	0 58	:::	14 44	3.5	23 44	.9
60	2 35	21 25	1 44	:::	15 6	3.9	23 19	.4
S								

UT	MESEC				JUPITER		SATURN					
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>				
h	°	'	"/	°	°	'	"/	°	'	"/		
0	79	10.2	110	12	18.0	110	126	51.3	-14 1.0	269	45.1	0 21.0
2	108	14.8	107	12	42.6	109	156	55.3	-14 .6	299	49.8	0 21.0
4	137	19.2	105	13	7.1	107	186	59.3	-14 .3	329	54.6	0 20.9
6	166	23.2	103	13	31.4	106	217	3.3	-13 60.0	359	59.4	0 20.9
8	195	26.8	101	13	55.5	104	247	7.3	-13 59.7	30	4.1	0 20.8
10	224	30.0	98	14	19.5	102	277	11.3	-13 59.3	60	8.9	0 20.8
12	253	32.9	96	14	43.2	100	307	15.2	-13 59.0	90	13.7	0 20.8
14	282	35.3	93	15	6.8	99	337	19.2	-13 58.7	120	18.4	0 20.7
16	311	37.4	91	15	30.0	97	7	23.2	-13 58.3	150	23.2	0 20.7
18	340	39.0	89	15	53.1	95	37	27.2	-13 58.0	180	28.0	0 20.6
20	9	40.2	86	16	15.9	93	67	31.2	-13 57.7	210	32.7	0 20.6
22	38	41.0	84	16	38.5	91	97	35.2	-13 57.3	240	37.5	0 20.5
Δ								20	2		24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 0 25.6	-1.2	16.3	T <sub>m</sub>	19 20	2.1	56.3	15.3	
12	- 0 40.4	T <sub>m</sub> ☉	12 h .7 min	Starost	9.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 44	.1	90	-3.8	♃	15 31	.0	32	-2.0
♂	3 13	.2	217	-.6	♄	6 0	.0	175	.9

UT	SUNCE			PROLEĆ. TAČKA S <sub>γ</sub>	VENERA			MARS				
	S <sub>☉</sub>	δ <sub>☉</sub>			S <sub>♀</sub>	δ <sub>♀</sub>		S <sub>♂</sub>	δ <sub>♂</sub>			
h	°	'	"/	°	'	"/	°	'	"/	°	'	"/
0	179	38.8	-23 17.1	96	35.5	183	31.4	-23 41.4	312	36.4	18 21.9	
2	209	38.2	-23 16.9	126	40.4	213	29.4	-23 41.5	342	41.7	18 22.2	
4	239	37.6	-23 16.6	156	45.3	243	27.5	-23 41.6	12	47.0	18 22.5	
6	269	37.0	-23 16.4	186	50.2	273	25.6	-23 41.6	42	52.3	18 22.9	
8	299	36.4	-23 16.1	216	55.2	303	23.6	-23 41.6	72	57.6	18 23.2	
10	329	35.8	-23 15.8	247	.1	333	21.7	-23 41.7	103	2.9	18 23.6	
12	359	35.2	-23 15.6	277	5.0	3	19.7	-23 41.7	133	8.2	18 23.9	
14	29	34.5	-23 15.3	307	9.9	33	17.8	-23 41.7	163	13.5	18 24.3	
16	59	33.9	-23 15.0	337	14.9	63	15.8	-23 41.8	193	18.9	18 24.6	
18	89	33.3	-23 14.8	7	19.8	93	13.9	-23 41.8	223	24.2	18 25.0	
20	119	32.7	-23 14.5	37	24.7	123	11.9	-23 41.8	253	29.6	18 25.3	
22	149	32.1	-23 14.2	67	29.7	153	10.0	-23 41.8	283	34.9	18 25.7	
Δ		-3	1				-10	0		27	2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 59	0 58	2 46	11 27	.6	3 50	4.0
55	8 25	15 37	0 45	2 17	11 56	1.0	3 23	3.5
50	7 58	16 4	0 38	1 59	12 17	1.3	3 3	3.2
45	7 38	16 25	0 34	1 47	12 34	1.5	2 48	3.0
40	7 21	16 42	0 31	1 38	12 48	1.6	2 35	2.9
35	7 7	16 56	0 28	1 31	12 60	1.8	2 24	2.8
30	6 54	17 8	0 26	1 25	13 10	1.9	2 15	2.7
20	6 33	17 29	0 24	1 19	13 28	2.0	1 59	2.5
10	6 15	17 48	0 23	1 15	13 44	2.2	1 45	2.3
0	5 57	18 5	0 23	1 15	13 58	2.3	1 32	2.2
10	5 40	18 22	0 23	1 18	14 13	2.4	1 19	2.0
20	5 21	18 41	0 25	1 24	14 29	2.6	1 5	1.9
30	4 59	19 3	0 27	1 36	14 48	2.7	0 49	1.7
35	4 46	19 16	0 30	1 47	14 58	2.8	0 40	1.6
40	4 31	19 31	0 33	2 3	15 11	2.9	0 30	1.5
45	4 13	19 49	0 37	2 32	15 26	3.1	0 18	1.3
50	3 51	20 11	0 44	:::	15 44	3.3	0 3	1.1
55	3 21	20 41	0 58	:::	16 7	3.6	...	.0
60	2 36	21 25	1 43	:::	16 40	4.0	23 30	.8
S								

UT	MESEC				JUPITER		SATURN					
	S <sub>♃</sub>	Δ	δ <sub>♃</sub>	Δ	S <sub>♃</sub>	δ <sub>♃</sub>	S <sub>♄</sub>	δ <sub>♄</sub>				
h	°	'	"/	°	°	'	"/	°	'	"/		
0	67	41.4	81	17	.8	89	127	39.2	-13 57.0	270	42.3	0 20.5
2	96	41.3	79	17	22.8	86	157	43.1	-13 56.7	300	47.1	0 20.5
4	125	40.8	76	17	44.5	84	187	47.1	-13 56.3	330	51.8	0 20.4
6	154	39.8	74	18	6.0	82	217	51.1	-13 56.0	0	56.6	0 20.4
8	183	38.4	72	18	27.1	79	247	55.1	-13 55.7	31	1.4	0 20.3
10	212	36.5	69	18	47.9	77	277	59.1	-13 55.3	61	6.2	0 20.3
12	241	34.2	67	19	8.3	74	308	3.1	-13 55.0	91	10.9	0 20.3
14	270	31.3	64	19	28.4	72	338	7.0	-13 54.7	121	15.7	0 20.2
16	299	28.0	62	19	48.1	69	8	11.0	-13 54.3	151	20.5	0 20.2
18	328	24.2	60	20	7.5	66	38	15.0	-13 54.0	181	25.3	0 20.1
20	357	20.0	57	20	26.4	63	68	19.0	-13 53.7	211	30.1	0 20.1
22	26	15.2	55	20	45.0	60	98	23.0	-13 53.3	241	34.8	0 20.1
Δ								20	2		24	0

SUNCE				MESEC					
UT	e = T <sub>p</sub> - UT	Δ/24	r	Prolaz	Δ/24	π <sub>☉</sub>	r		
h	min	s	'	h min	min	'	'		
00	- 0 55.2	-1.2	16.3	T <sub>m</sub>	20 11	2.3	57.1	15.6	
12	- 1 9.9	T <sub>m</sub> ☉	12 h 1.2 min	Starost	10.5 d	Faza	☉		
PLANETE									
Pl.	T <sub>m</sub>	π	360-α	Vel.	Pl.	T <sub>m</sub>	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	11 45	.1	88	-3.8	♃	15 27	.0	32	-2.0
♂	3 9	.2	217	-.6	♄	5 56	.0	175	.9

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, and MARS. Includes astronomical data for the first 24 hours of the month.

Table with columns for SUNCE, TRAJANJE SUMRAKA, and MESEC. Includes data for sunrise, sunset, and moon phases for the first 30 days.

Table with columns for MESEC, JUPITER, and SATURN. Includes data for the moon and the planets Jupiter and Saturn.

Summary table for SUNCE, MESEC, and PLANETE. Includes orbital parameters and planetary positions.

Table with columns for UT, SUNCE, PROLEĆ. TAČKA, VENERA, and MARS. Includes astronomical data for the first 24 hours of the month.

Table with columns for SUNCE, TRAJANJE SUMRAKA, and MESEC. Includes data for sunrise, sunset, and moon phases for the first 30 days.

Table with columns for MESEC, JUPITER, and SATURN. Includes data for the moon and the planets Jupiter and Saturn.

Summary table for SUNCE, MESEC, and PLANETE. Includes orbital parameters and planetary positions.

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include times from 0 to 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include times from 0 to 30 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include times from 0 to 22 and a delta row.

Table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows include times from 00 to 12 and a delta row.

1. JANUAR

PETAK

Table with columns: UT, SUNCE (S\_sun, delta\_sun), PROLEĆ. TAČKA (S\_gamma), VENERA (S\_venus, delta\_venus), MARS (S\_mars, delta\_mars). Rows include times from 0 to 22 and a delta row.

Table with columns: SUNCE (IZLAZ, ZALAZ, GRAD., ASTR.), TRAJANJE SUMRAKA, MESEC (IZLAZ, delta/24, ZALAZ, delta/24). Rows include times from 0 to 30 and a delta row.

Table with columns: MESEC (S\_alpha, delta\_alpha, delta), JUPITER (S\_jup, delta\_jup), SATURN (S\_sat, delta\_sat). Rows include times from 0 to 22 and a delta row.

Table with columns: SUNCE (e=T\_p-UT, delta/24, r), MESEC (Prolaz, delta/24, pi\_alpha, r), PLANETE (Pl., T\_m, pi, 360-alpha, Vel.). Rows include times from 00 to 12 and a delta row.



# ***Efemeride***

*NAUTIČKIH ZVEZDA*

# SUREKTASCENZIJE NAUTIČKIH ZVEZDA

za 1. u mesecu

R.b.	Ime zvezde	360°-α	2009 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2010 JAN
		°	'	'	'	'	'	'	'	'	'	'	'	'	'
1	ALPHERATZ	357	47.1	47.2	47.2	47.2	47.0	46.8	46.6	46.3	46.1	46.1	46.1	46.1	46.2
2	CAPH	357	35.1	35.3	35.4	35.4	35.2	34.9	34.5	34.1	33.8	33.7	33.8	33.9	34.2
3	DIPHDA	348	59.2	59.3	59.3	59.3	59.2	59.0	58.8	58.5	58.3	58.2	58.2	58.3	58.4
4	ACHERNAR	335	28.8	29.1	29.3	29.4	29.4	29.2	28.9	28.5	28.2	28.0	28.0	28.1	28.3
5	HAMAL	328	4.4	4.5	4.6	4.7	4.6	4.5	4.3	4.0	3.7	3.6	3.5	3.5	3.5
6	POLARIS	319	9.4	21.9	33.6	42.4	44.0	38.4	27.0	12.1	57.4	45.9	39.2	39.2	46.1
7	MIRFAK	308	44.9	45.0	45.2	45.4	45.4	45.3	45.0	44.7	44.3	44.0	43.8	43.7	43.7
8	ALDEBARAN	290	52.9	53.0	53.1	53.2	53.2	53.2	53.1	52.8	52.6	52.4	52.2	52.0	52.0
9	RIGEL	281	14.9	15.0	15.1	15.2	15.3	15.3	15.2	15.0	14.8	14.6	14.4	14.2	14.2
10	CAPELLA	280	38.9	39.0	39.1	39.3	39.4	39.4	39.3	39.0	38.7	38.4	38.1	37.9	37.7
11	BELLATRIX	278	35.2	35.3	35.4	35.5	35.6	35.6	35.5	35.3	35.1	34.8	34.6	34.5	34.4
12	EL NATH	278	16.5	16.5	16.6	16.7	16.8	16.8	16.7	16.5	16.2	16.0	15.7	15.6	15.4
13	ALNILAM	275	49.4	49.4	49.5	49.6	49.7	49.7	49.7	49.5	49.3	49.1	48.9	48.7	48.6
14	BETELGEUSE	271	4.6	4.6	4.6	4.8	4.9	4.9	4.8	4.6	4.4	4.2	4.0	3.8	3.7
15	CANOPUS	263	57.1	57.2	57.3	57.6	57.9	58.0	58.0	57.9	57.6	57.3	57.0	56.8	56.7
16	SIRIUS	258	36.3	36.3	36.4	36.5	36.6	36.7	36.7	36.5	36.4	36.1	35.9	35.7	35.6
17	ADHARA	255	14.8	14.8	14.8	15.0	15.1	15.2	15.2	15.1	14.9	14.7	14.5	14.3	14.1
18	PROCYON	245	2.9	2.8	2.8	2.9	3.0	3.1	3.1	3.0	2.9	2.7	2.4	2.2	2.0
19	POLLUX	243	31.4	31.3	31.3	31.4	31.6	31.6	31.6	31.5	31.4	31.1	30.9	30.6	30.4
20	AVIOR	234	18.9	18.9	19.0	19.2	19.5	19.8	20.0	20.0	19.8	19.6	19.2	18.8	18.6
21	AL SUHAIL	222	54.6	54.5	54.5	54.6	54.8	55.0	55.1	55.1	55.0	54.8	54.6	54.3	54.0
22	MIAPLACIDUS	221	39.9	39.8	39.9	40.2	40.6	41.0	41.3	41.5	41.4	41.1	40.6	40.1	39.7
23	ALPHARD	217	59.1	59.0	58.9	59.0	59.1	59.2	59.2	59.2	59.1	59.0	58.8	58.6	58.3
24	REGULUS	207	46.8	46.6	46.5	46.6	46.6	46.7	46.8	46.8	46.8	46.6	46.5	46.2	46.0
25	DUBHE	193	55.1	54.8	54.6	54.6	54.8	55.0	55.3	55.4	55.5	55.4	55.1	54.7	54.3
26	DENEbola	182	36.9	36.7	36.5	36.5	36.5	36.6	36.7	36.7	36.8	36.7	36.6	36.4	36.1
27	ACRUX	173	13.3	12.9	12.6	12.5	12.5	12.7	12.9	13.2	13.4	13.4	13.2	12.8	12.4
28	GACRUX	172	4.8	4.5	4.2	4.1	4.1	4.2	4.4	4.6	4.8	4.8	4.6	4.3	3.9
29	MINOSA	167	56.2	55.7	55.5	55.3	55.3	55.4	55.6	55.8	56.0	56.0	55.9	55.6	55.1
30	ALIOth	166	23.4	23.0	22.8	22.6	22.6	22.8	23.0	23.2	23.4	23.4	23.3	23.1	22.8
31	MIZAR	158	55.5	55.2	54.9	54.7	54.7	54.8	55.0	55.2	55.4	55.5	55.5	55.3	55.0
32	SPICA	158	34.8	34.6	34.4	34.3	34.2	34.2	34.3	34.4	34.4	34.5	34.4	34.3	34.0
33	ALKAID	153	1.5	1.1	0.9	0.7	0.7	0.7	0.9	1.1	1.2	1.3	1.3	1.2	0.9
34	MENKENT	148	11.7	11.4	11.2	11.0	10.9	10.9	11.0	11.1	11.2	11.3	11.2	11.1	10.8
35	ARCTURUS	145	58.8	58.6	58.4	58.2	58.1	58.1	58.2	58.3	58.4	58.5	58.5	58.4	58.1
36	RIGEL KENTAURUS	139	56.9	56.5	56.1	55.8	55.6	55.6	55.7	55.9	56.2	56.3	56.4	56.2	55.8
37	KOHAB	137	20.1	19.5	18.9	18.5	18.3	18.4	18.8	19.4	20.0	20.5	20.7	20.7	20.3
38	ALPHECCA	126	14.0	13.8	13.6	13.3	13.2	13.1	13.2	13.3	13.4	13.5	13.6	13.5	13.4
39	DSCHUBBA	119	47.1	46.8	46.6	46.3	46.2	46.0	46.0	46.1	46.2	46.3	46.4	46.3	46.1
40	ANTARES	112	30.7	30.4	30.2	29.9	29.7	29.6	29.6	29.6	29.7	29.8	29.9	29.9	29.7
41	ATRIA	107	36.1	35.6	35.1	34.5	34.0	33.7	33.6	33.7	34.1	34.4	34.7	34.7	34.4
42	SHAULA	96	26.8	26.6	26.3	26.0	25.8	25.6	25.5	25.5	25.6	25.7	25.9	25.9	25.8
43	RASALHAGUE	96	9.9	9.7	9.5	9.2	9.0	8.9	8.8	8.8	8.9	9.1	9.2	9.2	9.1
44	ELTANIN	90	48.2	48.0	47.8	47.5	47.2	47.0	47.0	47.0	47.2	47.5	47.7	47.9	47.9
45	KAUS AUSTRALIS	83	48.6	48.4	48.2	47.9	47.6	47.4	47.3	47.2	47.3	47.4	47.6	47.6	47.6
46	VEGA	80	41.7	41.5	41.3	41.1	40.8	40.6	40.5	40.5	40.7	40.8	41.0	41.1	41.1
47	NUNKI	76	2.8	2.6	2.4	2.2	1.9	1.7	1.5	1.5	1.5	1.7	1.8	1.9	1.8
48	ALTAIR	62	11.8	11.7	11.6	11.4	11.2	10.9	10.8	10.7	10.7	10.8	11.0	11.0	11.0
49	PEACOCK	53	24.9	24.8	24.6	24.2	23.8	23.5	23.1	23.0	23.0	23.1	23.4	23.6	23.6
50	DENEb	49	34.3	34.3	34.2	33.9	33.6	33.4	33.2	33.0	33.1	33.2	33.4	33.6	33.7
51	ENIF	33	50.6	50.6	50.6	50.4	50.2	50.0	49.8	49.6	49.6	49.6	49.7	49.8	49.9
52	AL NA IR	27	48.0	48.1	48.0	47.8	47.6	47.2	46.9	46.7	46.6	46.6	46.8	47.0	47.1
53	FOMALHAUT	15	27.7	27.8	27.7	27.6	27.5	27.2	27.0	26.7	26.6	26.6	26.7	26.8	26.9
54	MARKAB	13	41.8	41.9	41.9	41.8	41.6	41.4	41.1	40.9	40.8	40.8	40.9	40.9	41.0

# DEKLINACIJE NAUČIČKIH ZVEZDA

za 1. u mesecu

R. b.	Zvezda-Sazvežđe	δ	2009 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2010 JAN
		°	'	'	'	'	'	'	'	'	'	'	'	'	'
1	α Andromedae	+29	8.6	8.6	8.5	8.4	8.4	8.4	8.5	8.7	8.8	8.9	9.0	9.0	9.0
2	β Cassiopeae	+59	12.3	12.3	12.2	12.0	11.9	11.9	12.0	12.1	12.2	12.4	12.6	12.7	12.7
3	β Ceti	-17	56.3	56.3	56.3	56.2	56.1	56.0	55.8	55.8	55.7	55.8	55.8	55.9	55.9
4	α Eridani	-57	11.6	11.6	11.6	11.4	11.2	11.0	10.9	10.9	10.9	11.0	11.1	11.3	11.3
5	α Arietis	+23	30.5	30.5	30.4	30.4	30.4	30.4	30.4	30.5	30.6	30.7	30.7	30.8	30.8
6	α Ursae Minoris	+89	18.6	18.7	18.6	18.5	18.4	18.2	18.1	18.1	18.2	18.3	18.5	18.7	18.8
7	α Persei	+49	53.9	53.9	53.9	53.8	53.7	53.6	53.6	53.6	53.7	53.8	53.9	54.0	54.1
8	α Tauri	+16	31.7	31.7	31.7	31.7	31.7	31.7	31.7	31.8	31.8	31.9	31.9	31.8	31.8
9	β Orionis	- 8	11.4	11.5	11.6	11.6	11.5	11.4	11.3	11.3	11.2	11.2	11.2	11.3	11.4
10	α Aurigae	+46	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6
11	γ Orionis	+ 6	21.5	21.5	21.5	21.5	21.5	21.5	21.6	21.6	21.7	21.6	21.6	21.6	21.5
12	β Tauri	+28	37.0	37.0	37.0	37.0	37.0	37.0	36.9	36.9	36.9	37.0	37.0	37.0	37.0
13	ε Orionis	- 1	11.7	11.8	11.8	11.8	11.8	11.8	11.7	11.6	11.6	11.6	11.6	11.7	11.7
14	α Orionis	+ 7	24.6	24.5	24.5	24.5	24.5	24.5	24.6	24.6	24.7	24.7	24.6	24.6	24.5
15	α Carinae	-52	42.0	42.2	42.3	42.3	42.3	42.1	42.0	41.8	41.7	41.7	41.8	41.9	42.1
16	α Canis Majoris	-16	43.7	43.8	43.9	43.9	43.9	43.8	43.7	43.6	43.5	43.5	43.6	43.7	43.8
17	ε Canis Majoris	-28	59.0	59.2	59.3	59.3	59.3	59.2	59.1	59.0	58.9	58.8	58.9	59.0	59.2
18	α Canis Minoris	+ 5	12.1	12.0	12.0	12.0	12.0	12.0	12.1	12.1	12.1	12.1	12.0	12.0	11.9
19	β Geminorum	+28	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0
20	ε Carinae	-59	32.2	32.4	32.5	32.7	32.7	32.6	32.5	32.4	32.2	32.2	32.2	32.3	32.4
21	λ Velorum	-43	28.0	28.2	28.4	28.5	28.5	28.5	28.4	28.3	28.2	28.1	28.1	28.2	28.3
22	β Carinae	-69	45.1	45.3	45.5	45.6	45.7	45.7	45.6	45.5	45.3	45.2	45.1	45.2	45.4
23	α Hydrae	- 8	41.9	42.0	42.1	42.1	42.1	42.1	42.1	42.0	42.0	41.9	42.0	42.1	42.2
24	α Leonis	+11	55.3	55.2	55.2	55.2	55.2	55.2	55.3	55.3	55.2	55.2	55.1	55.0	54.9
25	α Ursae Majoris	+61	41.8	41.8	41.9	42.0	42.1	42.2	42.2	42.1	41.9	41.8	41.6	41.5	41.4
26	β Leonis	+14	31.1	31.0	31.0	31.0	31.1	31.1	31.1	31.2	31.1	31.1	31.0	30.9	30.7
27	α Crucis	-63	8.7	8.9	9.0	9.2	9.4	9.5	9.5	9.4	9.3	9.2	9.1	9.0	9.1
28	γ Crucis	-57	9.6	9.8	9.9	10.1	10.2	10.3	10.4	10.3	10.2	10.1	10.0	9.9	10.0
29	β Crucis	-59	44.1	44.2	44.3	44.5	44.7	44.8	44.8	44.8	44.7	44.6	44.4	44.4	44.4
30	ε Ursae Majoris	+55	54.3	54.2	54.3	54.4	54.5	54.6	54.7	54.7	54.5	54.4	54.2	54.1	53.9
31	ζ Ursae Majoris	+54	52.3	52.3	52.3	52.4	52.5	52.7	52.7	52.7	52.6	52.5	52.3	52.1	52.0
32	α Virginis	-11	12.6	12.7	12.7	12.8	12.8	12.8	12.8	12.8	12.7	12.7	12.7	12.8	12.9
33	η Ursae Majoris	+49	15.7	15.7	15.7	15.8	15.9	16.0	16.1	16.1	16.0	15.9	15.8	15.6	15.4
34	θ Centauri	-36	24.8	24.9	25.0	25.1	25.2	25.2	25.3	25.3	25.2	25.1	25.1	25.0	25.1
35	α Bootis	+19	7.9	7.8	7.8	7.8	7.8	7.9	8.0	8.0	8.0	8.0	7.9	7.7	7.6
36	α Centauri	-60	52.2	52.2	52.3	52.5	52.6	52.7	52.8	52.8	52.8	52.7	52.6	52.5	52.4
37	β Ursae Minoris	+74	6.7	6.6	6.6	6.7	6.9	7.0	7.2	7.2	7.1	7.0	6.8	6.6	6.5
38	α Coronae Borealis	+26	40.8	40.7	40.7	40.7	40.8	40.9	41.0	41.1	41.1	41.0	40.9	40.8	40.7
39	δ Scorpis	-22	38.9	38.9	39.0	39.0	39.0	39.0	39.1	39.0	39.0	39.0	39.0	39.0	39.0
40	α Scorpis	-26	27.1	27.2	27.2	27.2	27.3	27.3	27.3	27.3	27.3	27.3	27.2	27.2	27.2
41	α Trianguli Australi	-69	2.6	2.5	2.5	2.5	2.6	2.7	2.9	3.0	3.0	3.0	2.9	2.7	2.6
42	λ Scorpis	-37	6.6	6.6	6.6	6.6	6.6	6.7	6.7	6.7	6.8	6.8	6.7	6.7	6.6
43	α Ophiuchi	+12	33.1	33.0	32.9	32.9	33.0	33.1	33.2	33.3	33.3	33.3	33.3	33.2	33.1
44	γ Draconis	+51	29.1	29.0	28.9	28.9	29.0	29.1	29.3	29.4	29.5	29.5	29.5	29.3	29.2
45	ε Sagittarii	-34	22.9	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.9	22.9	22.9	22.8	22.8
46	α Lyrae	+38	47.4	47.3	47.2	47.2	47.2	47.4	47.5	47.7	47.8	47.8	47.8	47.7	47.6
47	σ Sagittarii	-26	17.2	17.2	17.2	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
48	α Aquilae	+ 8	53.5	53.4	53.4	53.4	53.4	53.5	53.6	53.7	53.8	53.8	53.8	53.8	53.7
49	α Pavonis	-56	42.5	42.4	42.3	42.1	42.1	42.1	42.1	42.2	42.3	42.4	42.4	42.3	42.2
50	α Cygni	+45	18.9	18.7	18.6	18.5	18.5	18.6	18.8	19.0	19.1	19.2	19.3	19.2	19.1
51	ε Pegasi	+ 9	55.0	55.0	54.9	54.9	55.0	55.0	55.2	55.3	55.4	55.4	55.4	55.4	55.4
52	α Gruis	-46	55.2	55.1	55.0	54.9	54.7	54.7	54.6	54.6	54.7	54.8	54.9	54.9	54.9
53	α Piscis Austrini	-29	34.6	34.5	34.5	34.4	34.2	34.1	34.1	34.0	34.0	34.1	34.2	34.2	34.2
54	α Pegasi	+15	15.3	15.3	15.2	15.2	15.2	15.3	15.4	15.5	15.6	15.7	15.7	15.7	15.7

# VREMENA GORNJIH PROLAZA NAUTIČKIH ZVEZDA

kroz meridijan u Griniču

za 1. u mesecu

R. b.	Ime zvezde	2009	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2010
		JAN												JAN
		h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min
1	ALPHERATZ	17 26	15 24	13 33	11 31	9 33	7 30	5 32	3 30	1 28	23 29	21 27	19 29	17 27
2	CAPH	17 27	15 24	13 34	11 32	9 33	7 31	5 33	3 31	1 29	23 30	21 28	19 30	17 28
3	DIPHDA	18 1	15 59	14 8	12 6	10 8	8 6	6 7	4 5	2 3	0 5	22 2	20 4	18 2
4	ACHERNAR	18 55	16 53	15 2	13 0	11 2	8 60	7 1	4 59	2 57	0 59	22 56	20 58	18 56
5	HAMAL	19 25	17 22	15 32	13 30	11 31	9 29	7 31	5 29	3 27	1 28	23 26	21 28	19 26
6	POLARIS	20 0	17 57	16 6	14 3	12 5	10 3	8 6	6 4	4 3	2 6	0 4	22 5	20 3
7	MIRFAK	20 42	18 40	16 49	14 47	12 49	10 47	8 48	6 46	4 44	2 46	0 43	22 45	20 43
8	ALDEBARAN	21 53	19 51	18 1	15 59	14 0	11 58	9 60	7 58	5 55	3 57	1 55	23 57	21 54
9	RIGEL	22 32	20 30	18 39	16 37	14 39	12 37	10 38	8 36	6 34	4 36	2 33	0 35	22 33
10	CAPELLA	22 34	20 32	18 42	16 39	14 41	12 39	10 41	8 38	6 36	4 38	2 36	0 38	22 35
11	BELLATRIX	22 43	20 40	18 50	16 48	14 49	12 47	10 49	8 47	6 44	4 46	2 44	0 46	22 44
12	EL NATH	22 44	20 42	18 51	16 49	14 51	12 48	10 50	8 48	6 46	4 47	2 45	0 47	22 45
13	ALNILAM	22 54	20 51	19 1	16 59	15 0	12 58	10 60	8 58	6 56	4 57	2 55	0 57	22 55
14	BETELGEUSE	23 13	21 10	19 20	17 18	15 19	13 17	11 19	9 17	7 15	5 16	3 14	1 16	23 14
15	CANOPUS	23 41	21 39	19 48	17 46	15 48	13 46	11 47	9 45	7 43	5 45	3 43	1 44	23 42
16	SIRIUS	0 2	22 0	20 10	18 8	16 9	14 7	12 9	10 7	8 4	6 6	4 4	2 6	0 3
17	ADHARA	0 16	22 14	20 23	18 21	16 23	14 21	12 22	10 20	8 18	6 20	4 17	2 19	0 17
18	PROCYON	0 57	22 54	21 4	19 2	17 4	15 1	13 3	11 1	8 59	7 0	4 58	2 60	0 58
19	POLLUX	1 3	23 1	21 10	19 8	17 10	15 7	13 9	11 7	9 5	7 6	5 4	3 6	1 4
20	AVIOR	1 40	23 37	21 47	19 45	17 46	15 44	13 46	11 44	9 42	7 43	5 41	3 43	1 41
21	AL SUHAIL	2 25	0 23	22 33	20 30	18 32	16 30	14 32	12 29	10 27	8 29	6 27	4 28	2 26
22	MIAPLACIDUS	2 30	0 28	22 38	20 35	18 37	16 35	14 37	12 34	10 32	8 34	6 32	4 33	2 31
23	ALPHARD	2 45	0 43	22 52	20 50	18 52	16 50	14 51	12 49	10 47	8 49	6 46	4 48	2 46
24	REGULUS	3 26	1 24	23 33	21 31	19 33	17 30	15 32	13 30	11 28	9 29	7 27	5 29	3 27
25	DUBHE	4 21	2 19	0 29	22 26	20 28	18 26	16 28	14 25	12 23	10 25	8 23	6 24	4 22
26	DENEbola	5 6	3 4	1 14	23 12	21 13	19 11	17 13	15 11	13 8	11 10	9 8	7 10	5 7
27	ACRUX	5 44	3 42	1 51	23 49	21 51	19 49	17 50	15 48	13 46	11 48	9 45	7 47	5 45
28	GACRUX	5 49	3 46	1 56	23 54	21 55	19 53	17 55	15 53	13 51	11 52	9 50	7 52	5 50
29	MINOSA	6 5	4 3	2 13	0 10	22 12	20 10	18 12	16 9	14 7	12 9	10 7	8 8	6 6
30	ALIOth	6 11	4 9	2 19	0 17	22 18	20 16	18 18	16 16	14 13	12 15	10 13	8 15	6 12
31	MIZAR	6 41	4 39	2 49	0 46	22 48	20 46	18 48	16 45	14 43	12 45	10 43	8 44	6 42
32	SPICA	6 43	4 40	2 50	0 48	22 49	20 47	18 49	16 47	14 45	12 46	10 44	8 46	6 44
33	ALKAID	7 5	5 3	3 12	1 10	23 12	21 10	19 11	17 9	15 7	13 8	11 6	9 8	7 6
34	MENKENT	7 24	5 22	3 32	1 29	23 31	21 29	19 31	17 28	15 26	13 28	11 26	9 27	7 25
35	ARCTURUS	7 33	5 31	3 40	1 38	23 40	21 38	19 39	17 37	15 35	13 37	11 34	9 36	7 34
36	RIGEL KENTAURUS	7 57	5 55	4 5	2 2	0 4	22 2	20 4	18 1	15 59	14 1	11 59	10 0	7 58
37	KOHAB	8 8	6 5	4 15	2 13	0 15	22 12	20 14	18 12	16 9	14 11	12 9	10 11	8 8
38	ALPHECCA	8 52	6 50	4 59	2 57	0 59	22 57	20 58	18 56	16 54	14 56	12 53	10 55	8 53
39	DSCHUBBA	9 18	7 16	5 25	3 23	1 25	23 22	21 24	19 22	17 20	15 21	13 19	11 21	9 19
40	ANTARES	9 47	7 45	5 54	3 52	1 54	23 52	21 53	19 51	17 49	15 51	13 48	11 50	9 48
41	ATRIA	10 6	8 4	6 14	4 12	2 14	0 11	22 13	20 11	18 9	16 10	14 8	12 10	10 8
42	SHAULA	10 51	8 49	6 59	4 56	2 58	0 56	22 58	20 55	18 53	16 55	14 53	12 54	10 52
43	RASALHAGUE	10 52	8 50	6 60	4 57	2 59	0 57	22 59	20 56	18 54	16 56	14 54	12 55	10 53
44	ELTANIN	11 14	9 11	7 21	5 19	3 21	1 18	23 20	21 18	19 16	17 17	15 15	13 17	11 15
45	KAUS AUSTRALIS	11 42	9 39	7 49	5 47	3 49	1 46	23 48	21 46	19 44	17 45	15 43	13 45	11 43
46	VEGA	11 54	9 52	8 2	5 59	4 1	1 59	0 1	21 58	19 56	17 58	15 56	13 57	11 55
47	NUNKI	12 13	10 10	8 20	6 18	4 20	2 17	0 19	22 17	20 15	18 16	16 14	14 16	12 14
48	ALTAIR	13 8	11 6	9 15	7 13	5 15	3 13	1 15	23 12	21 10	19 12	17 10	15 11	13 9
49	PEACOCK	13 43	11 41	9 51	7 48	5 50	3 48	1 50	23 48	21 45	19 47	17 45	15 46	13 44
50	DENEb	13 59	11 56	10 6	8 4	6 6	4 3	2 5	0 3	22 1	20 2	18 0	16 2	13 60
51	ENIF	15 2	12 59	11 9	9 7	7 8	5 6	3 8	1 6	23 4	21 5	19 3	17 5	15 3
52	AL NA IR	15 26	13 23	11 33	9 31	7 33	5 30	3 32	1 30	23 28	21 29	19 27	17 29	15 27
53	FOMALHAUT	16 15	14 13	12 22	10 20	8 22	6 20	4 21	2 19	0 17	22 19	20 17	18 18	16 16
54	MARKAB	16 22	14 20	12 29	10 27	8 29	6 27	4 29	2 26	0 24	22 26	20 24	18 25	16 23

## POPRAVKA ZA DATUM

uvek 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	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	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



★ ★ ★ ★ ★

# *Tablice*

ZA

*ODREĐIVANJE GEOGRAFSKE ŠIRINE  
POMOĆU VISINE I AZIMUTA SEVERNJAČE*

# TABLICA I

S <sub>γ</sub>	Popravka	S <sub>γ</sub>	Popravka	S <sub>γ</sub>	Popravka	S <sub>γ</sub>	Popravka	S <sub>γ</sub>	Popravka	S <sub>γ</sub>	Popravka
0	-31.9	60	-39.0	120	-7.1	180	31.9	240	39.0	300	7.1
1	-32.3	61	-38.7	121	-6.4	181	32.3	241	38.7	301	6.4
2	-32.8	62	-38.4	122	-5.6	182	32.8	242	38.4	302	5.6
3	-33.2	63	-38.1	123	-4.9	183	33.2	243	38.1	303	4.9
4	-33.7	64	-37.9	124	-4.2	184	33.7	244	37.9	304	4.2
5	-34.1	65	-37.6	125	-3.5	185	34.1	245	37.6	305	3.5
6	-34.5	66	-37.2	126	-2.8	186	34.5	246	37.2	306	2.8
7	-34.9	67	-36.9	127	-2.0	187	34.9	247	36.9	307	2.0
8	-35.3	68	-36.6	128	-1.3	188	35.3	248	36.6	308	1.3
9	-35.6	69	-36.2	129	-0.6	189	35.6	249	36.2	309	0.6
10	-36.0	70	-35.9	130	0.1	190	36.0	250	35.9	310	-0.1
11	-36.4	71	-35.5	131	0.9	191	36.4	251	35.5	311	-0.9
12	-36.7	72	-35.1	132	1.6	192	36.7	252	35.1	312	-1.6
13	-37.0	73	-34.7	133	2.3	193	37.0	253	34.7	313	-2.3
14	-37.4	74	-34.3	134	3.0	194	37.4	254	34.3	314	-3.0
15	-37.7	75	-33.9	135	3.8	195	37.7	255	33.9	315	-3.8
16	-38.0	76	-33.5	136	4.5	196	38.0	256	33.5	316	-4.5
17	-38.3	77	-33.1	137	5.2	197	38.3	257	33.1	317	-5.2
18	-38.5	78	-32.6	138	5.9	198	38.5	258	32.6	318	-5.9
19	-38.8	79	-32.2	139	6.6	199	38.8	259	32.2	319	-6.6
20	-39.0	80	-31.7	140	7.3	200	39.0	260	31.7	320	-7.3
21	-39.3	81	-31.2	141	8.1	201	39.3	261	31.2	321	-8.1
22	-39.5	82	-30.8	142	8.8	202	39.5	262	30.8	322	-8.8
23	-39.7	83	-30.3	143	9.5	203	39.7	263	30.3	323	-9.5
24	-39.9	84	-29.8	144	10.2	204	39.9	264	29.8	324	-10.2
25	-40.1	85	-29.3	145	10.9	205	40.1	265	29.3	325	-10.9
26	-40.3	86	-28.7	146	11.6	206	40.3	266	28.7	326	-11.6
27	-40.5	87	-28.2	147	12.3	207	40.5	267	28.2	327	-12.3
28	-40.6	88	-27.7	148	13.0	208	40.6	268	27.7	328	-13.0
29	-40.8	89	-27.1	149	13.6	209	40.8	269	27.1	329	-13.6
30	-40.9	90	-26.6	150	14.3	210	40.9	270	26.6	330	-14.3
31	-41.0	91	-26.0	151	15.0	211	41.0	271	26.0	331	-15.0
32	-41.1	92	-25.4	152	15.7	212	41.1	272	25.4	332	-15.7
33	-41.2	93	-24.9	153	16.3	213	41.2	273	24.9	333	-16.3
34	-41.3	94	-24.3	154	17.0	214	41.3	274	24.3	334	-17.0
35	-41.4	95	-23.7	155	17.7	215	41.4	275	23.7	335	-17.7
36	-41.4	96	-23.1	156	18.3	216	41.4	276	23.1	336	-18.3
37	-41.4	97	-22.5	157	19.0	217	41.4	277	22.5	337	-19.0
38	-41.5	98	-21.9	158	19.6	218	41.5	278	21.9	338	-19.6
39	-41.5	99	-21.3	159	20.2	219	41.5	279	21.3	339	-20.2
40	-41.5	100	-20.6	160	20.9	220	41.5	280	20.6	340	-20.9
41	-41.5	101	-20.0	161	21.5	221	41.5	281	20.0	341	-21.5
42	-41.5	102	-19.4	162	22.1	222	41.5	282	19.4	342	-22.1
43	-41.4	103	-18.7	163	22.7	223	41.4	283	18.7	343	-22.7
44	-41.4	104	-18.1	164	23.3	224	41.4	284	18.1	344	-23.3
45	-41.3	105	-17.4	165	23.9	225	41.3	285	17.4	345	-23.9
46	-41.3	106	-16.8	166	24.5	226	41.3	286	16.8	346	-24.5
47	-41.2	107	-16.1	167	25.1	227	41.2	287	16.1	347	-25.1
48	-41.1	108	-15.4	168	25.7	228	41.1	288	15.4	348	-25.7
49	-41.0	109	-14.7	169	26.2	229	41.0	289	14.7	349	-26.2
50	-40.8	110	-14.1	170	26.8	230	40.8	290	14.1	350	-26.8
51	-40.7	111	-13.4	171	27.3	231	40.7	291	13.4	351	-27.3
52	-40.6	112	-12.7	172	27.9	232	40.6	292	12.7	352	-27.9
53	-40.4	113	-12.0	173	28.4	233	40.4	293	12.0	353	-28.4
54	-40.2	114	-11.3	174	28.9	234	40.2	294	11.3	354	-28.9
55	-40.1	115	-10.6	175	29.4	235	40.1	295	10.6	355	-29.4
56	-39.9	116	-9.9	176	29.9	236	39.9	296	9.9	356	-29.9
57	-39.6	117	-9.2	177	30.4	237	39.6	297	9.2	357	-30.4
58	-39.4	118	-8.5	178	30.9	238	39.4	298	8.5	358	-30.9
59	-39.2	119	-7.8	179	31.4	239	39.2	299	7.8	359	-31.4
60	-39.0	120	-7.1	180	31.9	240	39.0	300	7.1	360	-31.9

### TABLICA II

S <sub>γ</sub> \ φ		φ															S <sub>γ</sub> \ φ	
		0°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	62°	64°	66°		
h	o	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	o	h
1	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	75	5
6	90	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	90	6
7	105	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.4	105	7
8	120	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.5	120	8
9	135	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	0.5	0.5	135	9
10	150	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	150	10
11	165	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	165	11
12	180	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	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	0.0	0.0	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	0.0	0.1	0.1	240	16
17	255	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	0.2	255	17
18	270	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	270	18
19	285	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.4	285	19
20	300	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.5	0.5	300	20
21	315	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	0.5	0.5	315	21
22	330	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	330	22
23	345	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4	345	23
24	360	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	360	24

### TABLICA III

S <sub>γ</sub> \ Datum		2008												2009	Datum \ S <sub>γ</sub>	
		1. JAN	1. FEB	1. MAR	1. APR	1. MAJ	1. JUN	1. JUL	1. AVG	1. SEP	1. OKT	1. NOV	1. DEC	1. JAN		
h	o	/	/	/	/	/	/	/	/	/	/	/	/	/	o	h
1	15	-1	-2	-1	.0	.0	.2	.3	.4	.3	.2	.0	-1	-2	15	1
2	30	-1	-2	-1	.0	.1	.3	.4	.4	.3	.2	.0	-2	-3	30	2
3	45	-1	-2	-1	.0	.1	.3	.4	.4	.3	.2	.0	-2	-3	45	3
4	60	-1	-2	-1	.0	.1	.3	.4	.4	.3	.2	.0	-2	-3	60	4
5	75	-1	-1	.0	.1	.1	.3	.4	.3	.2	.1	-1	-2	-3	75	5
6	90	-1	-1	.0	.1	.1	.3	.3	.3	.2	.1	-1	-2	-3	90	6
7	105	.0	-1	.0	.1	.1	.2	.2	.2	.1	.0	-1	-2	-2	105	7
8	120	.0	.0	.0	.1	.1	.1	.1	.1	.0	.0	-1	-1	-1	120	8
9	135	.0	.0	.1	.1	.1	.1	.0	.0	-1	-1	-1	-1	-1	135	9
10	150	.0	.1	.1	.1	.1	.0	-1	-1	-1	-1	-1	.0	.0	150	10
11	165	.1	.1	.1	.1	.0	-1	-2	-2	-2	-2	-1	.0	.1	165	11
12	180	.1	.2	.1	.1	.0	-2	-3	-3	-3	-2	-1	.1	.2	180	12
13	195	.1	.2	.1	.0	.0	-2	-3	-4	-3	-2	.0	.1	.2	195	13
14	210	.1	.2	.1	.0	-1	-3	-4	-4	-3	-2	.0	.2	.3	210	14
15	225	.1	.2	.1	.0	-1	-3	-4	-4	-3	-2	.0	.2	.3	225	15
16	240	.1	.2	.1	.0	-1	-3	-4	-4	-3	-2	.0	.2	.3	240	16
17	255	.1	.1	.0	-1	-1	-3	-4	-3	-2	-1	.1	.2	.3	255	17
18	270	.1	.1	.0	-1	-1	-3	-3	-3	-2	-1	.1	.2	.3	270	18
19	285	.0	.1	.0	-1	-1	-2	-2	-2	-1	.0	.1	.2	.2	285	19
20	300	.0	.0	.0	-1	-1	-1	-1	-1	.0	.0	.1	.1	.1	300	20
21	315	.0	.0	-1	-1	-1	-1	.0	.0	.1	.1	.1	.1	.1	315	21
22	330	.0	-1	-1	-1	-1	.0	.1	.1	.1	.1	.1	.0	.0	330	22
23	345	-1	-1	-1	-1	.0	.1	.2	.2	.2	.2	.1	.0	-1	345	23
24	360	-1	-2	-1	-1	.0	.2	.3	.3	.3	.2	.1	-1	-2	360	24

# AZIMUTI SEVERNJAČE

$\varphi$ $s_{\Gamma}$	0°	30°	40°	50°	55°	60°	65°	70°	75°	+ $\varphi = \nu$
0	0.5	0.6	0.6	0.7	0.8	1.0	1.1	1.4	1.9	0
15	0.3	0.4	0.4	0.5	0.6	0.6	0.8	1.0	1.3	15
30	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.6	30
45	359.9	359.9	359.9	359.9	359.9	359.9	359.9	359.8	359.8	45
60	359.8	359.7	359.7	359.6	359.6	359.5	359.4	359.3	359.0	60
75	359.6	359.5	359.5	359.4	359.3	359.2	359.0	358.8	358.4	75
90	359.5	359.4	359.3	359.1	359.0	358.9	358.7	358.4	357.8	90
105	359.3	359.2	359.1	359.0	358.9	358.7	358.4	358.1	357.4	105
120	359.3	359.2	359.1	358.9	358.8	358.6	358.3	357.9	357.2	120
135	359.3	359.2	359.1	358.9	358.7	358.6	358.3	357.9	357.2	135
150	359.3	359.2	359.1	358.9	358.8	358.6	358.4	358.0	357.4	150
165	359.4	359.3	359.2	359.1	359.0	358.8	358.6	358.3	357.7	165
180	359.5	359.5	359.4	359.3	359.2	359.1	358.9	358.7	358.2	180
195	359.7	359.6	359.6	359.5	359.5	359.4	359.3	359.1	358.8	195
210	359.9	359.8	359.8	359.8	359.8	359.7	359.7	359.6	359.5	210
225	0.1	0.1	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	0.5	0.5	0.7	0.9	240
255	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.2	1.5	255
270	0.5	0.6	0.7	0.8	0.9	1.1	1.3	1.6	2.1	270
285	0.7	0.8	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	1.4	1.8	2.4	345
360	0.5	0.6	0.6	0.7	0.8	1.0	1.1	1.4	1.9	360

## O B J A Š N J E N J E

Poslednja rubrika daje podatak, koji algebarski sabran 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 merenju visine Severnjače.

★ ★ ★ ★ ★

# ***$I_n$ terpolacione***

|

*POMOĆNE TABLICE*

# INTERPOLACIONA TABLICA

## za izračunavanje trenutaka izlaza i zalaza Sunca i Meseca

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
$\Delta\varphi$ $\Delta t_s$	1°	2°	3°	4°	5°	6°	7°	8°	9°
1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
2	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8
3	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
4	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6
5	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
6	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4
7	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
8	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2
9	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1
10	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
11	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9
12	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8
13	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7
14	1.4	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6
15	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5
16	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4
17	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3
18	1.8	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2
19	1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1
20	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0
21	2.1	4.2	6.3	8.4	10.5	12.6	14.7	16.8	18.9
22	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8
23	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7
24	2.4	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6
25	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5
26	2.6	5.2	7.8	10.4	13.0	15.6	18.2	20.8	23.4
27	2.7	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3
28	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2
29	2.9	5.8	8.7	11.6	14.5	17.4	20.3	23.2	26.1
30	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0
31	3.1	6.2	9.3	12.4	15.5	18.6	21.7	24.8	27.9
32	3.2	6.4	9.6	12.8	16.0	19.2	22.4	25.6	28.8
33	3.3	6.6	9.9	13.2	16.5	19.8	23.1	26.4	29.7
34	3.4	6.8	10.2	13.6	17.0	20.4	23.8	27.2	30.6
35	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5
36	3.6	7.2	10.8	14.4	18.0	21.6	25.2	28.8	32.4
37	3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	33.3
38	3.8	7.6	11.4	15.2	19.0	22.8	26.6	30.4	34.2
39	3.9	7.8	11.7	15.6	19.5	23.4	27.3	31.2	35.1
40	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
41	4.1	8.2	12.3	16.4	20.5	24.6	28.7	32.8	36.9
42	4.2	8.4	12.6	16.8	21.0	25.2	29.4	33.6	37.8
43	4.3	8.6	12.9	17.2	21.5	25.8	30.1	34.4	38.7
44	4.4	8.8	13.2	17.6	22.0	26.4	30.8	35.2	39.6
45	4.5	9.0	13.5	18.0	22.5	27.0	31.5	36.0	40.5
46	4.6	9.2	13.8	18.4	23.0	27.6	32.2	36.8	41.4
47	4.7	9.4	14.1	18.8	23.5	28.2	32.9	37.6	42.3
48	4.8	9.6	14.4	19.2	24.0	28.8	33.6	38.4	43.2
49	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.2	44.1
50	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
51	5.1	10.2	15.3	20.4	25.5	30.6	35.7	40.8	45.9
52	5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8
53	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7
54	5.4	10.8	16.2	21.6	27.0	32.4	37.8	43.2	48.6
55	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5
56	5.6	11.2	16.8	22.4	28.0	33.6	39.2	44.8	50.4
57	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3
58	5.8	11.6	17.4	23.2	29.0	34.8	40.6	46.4	52.2
59	5.9	11.8	17.7	23.6	29.5	35.4	41.3	47.2	53.1
60	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ $\Delta t_s$
0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	1
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	2
0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	3
0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	4
0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	5
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	6
0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.6	7
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	8
0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	10
0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	11
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	12
0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.0	1.2	13
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	14
0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	15
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	16
0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.5	17
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	18
0.2	0.4	0.6	0.8	1.0	1.1	1.3	1.5	1.7	19
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	20
0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.7	1.9	21
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	22
0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	23
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	24
0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.0	2.3	25
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	26
0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.4	27
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	28
0.3	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.6	29
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	30
0.3	0.6	0.9	1.2	1.6	1.9	2.2	2.5	2.8	31
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	32
0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0	33
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	34
0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2	35
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	36
0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0	3.3	37
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	38
0.4	0.8	1.2	1.6	2.0	2.3	2.7	3.1	3.5	39
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	40
0.4	0.8	1.2	1.6	2.1	2.5	2.9	3.3	3.7	41
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	42
0.4	0.9	1.3	1.7	2.2	2.6	3.0	3.4	3.9	43
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	44
0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.6	4.1	45
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	46
0.5	0.9	1.4	1.9	2.4	2.8	3.3	3.8	4.2	47
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	48
0.5	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4	49
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	50
0.5	1.0	1.5	2.0	2.6	3.1	3.6	4.1	4.6	51
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	52
0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.2	4.8	53
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	54
0.6	1.1	1.7	2.2	2.8	3.3	3.9	4.4	5.0	55
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	56
0.6	1.1	1.7	2.3	2.9	3.4	4.0	4.6	5.1	57
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	58
0.6	1.2	1.8	2.4	3.0	3.5	4.1	4.7	5.3	59
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 Meseca

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$				
$\Delta\varphi$ $\Delta t_s$	1°	2°	3°	4°
1	0.2	0.4	0.6	0.8
2	0.4	0.8	1.2	1.6
3	0.6	1.2	1.8	2.4
4	0.8	1.6	2.4	3.2
5	1.0	2.0	3.0	4.0
6	1.2	2.4	3.6	4.8
7	1.4	2.8	4.2	5.6
8	1.6	3.2	4.8	6.4
9	1.8	3.6	5.4	7.2
10	2.0	4.0	6.0	8.0
11	2.2	4.4	6.6	8.8
12	2.4	4.8	7.2	9.6
13	2.6	5.2	7.8	10.4
14	2.8	5.6	8.4	11.2
15	3.0	6.0	9.0	12.0
16	3.2	6.4	9.6	12.8
17	3.4	6.8	10.2	13.6
18	3.6	7.2	10.8	14.4
19	3.8	7.6	11.4	15.2
20	4.0	8.0	12.0	16.0
21	4.2	8.4	12.6	16.8
22	4.4	8.8	13.2	17.6
23	4.6	9.2	13.8	18.4
24	4.8	9.6	14.4	19.2
25	5.0	10.0	15.0	20.0
26	5.2	10.4	15.6	20.8
27	5.4	10.8	16.2	21.6
28	5.6	11.2	16.8	22.4
29	5.8	11.6	17.4	23.2
30	6.0	12.0	18.0	24.0
31	6.2	12.4	18.6	24.8
32	6.4	12.8	19.2	25.6
33	6.6	13.2	19.8	26.4
34	6.8	13.6	20.4	27.2
35	7.0	14.0	21.0	28.0
36	7.2	14.4	21.6	28.8
37	7.4	14.8	22.2	29.6
38	7.6	15.2	22.8	30.4
39	7.8	15.6	23.4	31.2
40	8.0	16.0	24.0	32.0
41	8.2	16.4	24.6	32.8
42	8.4	16.8	25.2	33.6
43	8.6	17.2	25.8	34.4
44	8.8	17.6	26.4	35.2
45	9.0	18.0	27.0	36.0
46	9.2	18.4	27.6	36.8
47	9.4	18.8	28.2	37.6
48	9.6	19.2	28.8	38.4
49	9.8	19.6	29.4	39.2
50	10.0	20.0	30.0	40.0
51	10.2	20.4	30.6	40.8
52	10.4	20.8	31.2	41.6
53	10.6	21.2	31.8	42.4
54	10.8	21.6	32.4	43.2
55	11.0	22.0	33.0	44.0
56	11.2	22.4	33.6	44.8
57	11.4	22.8	34.2	45.6
58	11.6	23.2	34.8	46.4
59	11.8	23.6	35.4	47.2
60	12.0	24.0	36.0	48.0

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$													
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ $\Delta t_s$				
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1				
0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	2				
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	3				
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	4				
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	5				
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	6				
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	7				
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	8				
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	9				
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	10				
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	11				
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	12				
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	13				
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	14				
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	15				
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	16				
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	17				
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	18				
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	19				
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	20				
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	21				
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	22				
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	23				
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	24				
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	25				
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	26				
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	27				
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	28				
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	29				
0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	30				
0.6	1.2	1.9	2.5	3.1	3.7	4.3	5.0	5.6	31				
0.6	1.3	1.9	2.6	3.2	3.8	4.5	5.1	5.8	32				
0.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	33				
0.7	1.4	2.0	2.7	3.4	4.1	4.8	5.4	6.1	34				
0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	35				
0.7	1.4	2.2	2.9	3.6	4.3	5.0	5.8	6.5	36				
0.7	1.5	2.2	3.0	3.7	4.4	5.2	5.9	6.7	37				
0.8	1.5	2.3	3.0	3.8	4.6	5.3	6.1	6.8	38				
0.8	1.6	2.3	3.1	3.9	4.7	5.5	6.2	7.0	39				
0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	40				
0.8	1.6	2.5	3.3	4.1	4.9	5.7	6.6	7.4	41				
0.8	1.7	2.5	3.4	4.2	5.0	5.9	6.7	7.6	42				
0.9	1.7	2.6	3.4	4.3	5.2	6.0	6.9	7.7	43				
0.9	1.8	2.6	3.5	4.4	5.3	6.2	7.0	7.9	44				
0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	45				
0.9	1.8	2.8	3.7	4.6	5.5	6.4	7.4	8.3	46				
0.9	1.9	2.8	3.8	4.7	5.6	6.6	7.5	8.5	47				
1.0	1.9	2.9	3.8	4.8	5.8	6.7	7.7	8.6	48				
1.0	2.0	2.9	3.9	4.9	5.9	6.9	7.8	8.8	49				
1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	50				
1.0	2.0	3.1	4.1	5.1	6.1	7.1	8.2	9.2	51				
1.0	2.1	3.1	4.2	5.2	6.2	7.3	8.3	9.4	52				
1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.5	53				
1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	54				
1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9	55				
1.1	2.2	3.4	4.5	5.6	6.7	7.8	9.0	10.1	56				
1.1	2.3	3.4	4.6	5.7	6.8	8.0	9.1	10.3	57				
1.2	2.3	3.5	4.6	5.8	7.0	8.1	9.3	10.4	58				
1.2	2.4	3.5	4.7	5.9	7.1	8.3	9.4	10.6	59				
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 Meseca kroz meridijan

$\lambda$																				$\lambda$	
$\frac{\Delta}{24}$	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	$\frac{\Delta}{24}$
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	0.1
0.2	0.0	0.0	0.0	0.1	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	0.3	0.3	0.2
0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3
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	0.5	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	0.7	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	0.6	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	0.7
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	0.8	0.9	1.0	1.0	1.1	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	0.9
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	1.0
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	1.1
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	1.2
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	1.3	1.4	1.5	1.6	1.6	1.7	1.3
1.4	0.1	0.2	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	1.9	1.4
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	1.5
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	2.1	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	1.7
1.8	0.1	0.2	0.4	0.5	0.6	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	2.3	2.4	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	2.5	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	2.7	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	2.1
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	2.9	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	2.3
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	2.4
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	2.5
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	3.5	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	3.6	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	3.7	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	2.9
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	3.0
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	3.1
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	4.3	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	3.3
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	3.4
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	3.5
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	3.6
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	3.7
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	3.8
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	3.9
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	4.0
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	4.1
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	4.2
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	4.3
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	4.4
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	4.5
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	4.6
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	4.7
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	4.8
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	4.9
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	5.0



# INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan

$\lambda$ $\frac{\Delta}{24}$	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	$\lambda$ $\frac{\Delta}{24}$
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	16.1	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

★ ★ ★ ★ ★

# ***I<sub>n</sub>terpolaciona tablica***

ZA

*POPRAVKU ČASOVNOG UGLA I DEKLINACIJE*

## 0 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	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	0	1.0	0	1.0	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

## 0 h 1 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	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	18.1	0	17.2	12	.0	72	.2	132	.3
13	0	18.3	0	18.3	0	17.4	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	23.1	0	22.0	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	24.1	0	22.9	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	18	

## 0 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 30.0	0 30.1	0 28.6	0	.0	60	.3
1	0 30.3	0 30.3	0 28.9	1	.0	61	.3
2	0 30.5	0 30.6	0 29.1	2	.0	62	.3
3	0 30.8	0 30.8	0 29.3	3	.0	63	.3
4	0 31.0	0 31.1	0 29.6	4	.0	64	.3
5	0 31.3	0 31.3	0 29.8	5	.0	65	.3
6	0 31.5	0 31.6	0 30.1	6	.0	66	.3
7	0 31.8	0 31.8	0 30.3	7	.0	67	.3
8	0 32.0	0 32.1	0 30.5	8	.0	68	.3
9	0 32.3	0 32.3	0 30.8	9	.0	69	.3
10	0 32.5	0 32.6	0 31.0	10	.0	70	.3
11	0 32.8	0 32.8	0 31.3	11	.0	71	.3
12	0 33.0	0 33.1	0 31.5	12	.1	72	.3
13	0 33.3	0 33.3	0 31.7	13	.1	73	.3
14	0 33.5	0 33.6	0 32.0	14	.1	74	.3
15	0 33.8	0 33.8	0 32.2	15	.1	75	.3
16	0 34.0	0 34.1	0 32.5	16	.1	76	.3
17	0 34.3	0 34.3	0 32.7	17	.1	77	.3
18	0 34.5	0 34.6	0 32.9	18	.1	78	.3
19	0 34.8	0 34.8	0 33.2	19	.1	79	.3
20	0 35.0	0 35.1	0 33.4	20	.1	80	.3
21	0 35.3	0 35.3	0 33.6	21	.1	81	.3
22	0 35.5	0 35.6	0 33.9	22	.1	82	.3
23	0 35.8	0 35.8	0 34.1	23	.1	83	.3
24	0 36.0	0 36.1	0 34.4	24	.1	84	.4
25	0 36.3	0 36.4	0 34.6	25	.1	85	.4
26	0 36.5	0 36.6	0 34.8	26	.1	86	.4
27	0 36.8	0 36.9	0 35.1	27	.1	87	.4
28	0 37.0	0 37.1	0 35.3	28	.1	88	.4
29	0 37.3	0 37.4	0 35.6	29	.1	89	.4
30	0 37.5	0 37.6	0 35.8	30	.1	90	.4
31	0 37.8	0 37.9	0 36.0	31	.1	91	.4
32	0 38.0	0 38.1	0 36.3	32	.1	92	.4
33	0 38.3	0 38.4	0 36.5	33	.1	93	.4
34	0 38.5	0 38.6	0 36.7	34	.1	94	.4
35	0 38.8	0 38.9	0 37.0	35	.1	95	.4
36	0 39.0	0 39.1	0 37.2	36	.2	96	.4
37	0 39.3	0 39.4	0 37.5	37	.2	97	.4
38	0 39.5	0 39.6	0 37.7	38	.2	98	.4
39	0 39.8	0 39.9	0 37.9	39	.2	99	.4
40	0 40.0	0 40.1	0 38.2	40	.2	100	.4
41	0 40.3	0 40.4	0 38.4	41	.2	101	.4
42	0 40.5	0 40.6	0 38.7	42	.2	102	.4
43	0 40.8	0 40.9	0 38.9	43	.2	103	.4
44	0 41.0	0 41.1	0 39.1	44	.2	104	.4
45	0 41.3	0 41.4	0 39.4	45	.2	105	.4
46	0 41.5	0 41.6	0 39.6	46	.2	106	.4
47	0 41.8	0 41.9	0 39.8	47	.2	107	.4
48	0 42.0	0 42.1	0 40.1	48	.2	108	.5
49	0 42.3	0 42.4	0 40.3	49	.2	109	.5
50	0 42.5	0 42.6	0 40.6	50	.2	110	.5
51	0 42.8	0 42.9	0 40.8	51	.2	111	.5
52	0 43.0	0 43.1	0 41.0	52	.2	112	.5
53	0 43.3	0 43.4	0 41.3	53	.2	113	.5
54	0 43.5	0 43.6	0 41.5	54	.2	114	.5
55	0 43.8	0 43.9	0 41.8	55	.2	115	.5
56	0 44.0	0 44.1	0 42.0	56	.2	116	.5
57	0 44.3	0 44.4	0 42.2	57	.2	117	.5
58	0 44.5	0 44.6	0 42.5	58	.2	118	.5
59	0 44.8	0 44.9	0 42.7	59	.2	119	.5
60	0 45.0	0 45.1	0 43.0	60	.3	120	.5

## 0 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 45.0	0 45.1	0 43.0	0	.0	60	.4
1	0 45.3	0 45.4	0 43.2	1	.0	61	.4
2	0 45.5	0 45.6	0 43.4	2	.0	62	.4
3	0 45.8	0 45.9	0 43.7	3	.0	63	.4
4	0 46.0	0 46.1	0 43.9	4	.0	64	.4
5	0 46.3	0 46.4	0 44.1	5	.0	65	.4
6	0 46.5	0 46.6	0 44.4	6	.0	66	.4
7	0 46.8	0 46.9	0 44.6	7	.0	67	.4
8	0 47.0	0 47.1	0 44.9	8	.0	68	.4
9	0 47.3	0 47.4	0 45.1	9	.1	69	.4
10	0 47.5	0 47.6	0 45.3	10	.1	70	.4
11	0 47.8	0 47.9	0 45.6	11	.1	71	.4
12	0 48.0	0 48.1	0 45.8	12	.1	72	.4
13	0 48.3	0 48.4	0 46.1	13	.1	73	.4
14	0 48.5	0 48.6	0 46.3	14	.1	74	.4
15	0 48.8	0 48.9	0 46.5	15	.1	75	.4
16	0 49.0	0 49.1	0 46.8	16	.1	76	.4
17	0 49.3	0 49.4	0 47.0	17	.1	77	.4
18	0 49.5	0 49.6	0 47.2	18	.1	78	.5
19	0 49.8	0 49.9	0 47.5	19	.1	79	.5
20	0 50.0	0 50.1	0 47.7	20	.1	80	.5
21	0 50.3	0 50.4	0 48.0	21	.1	81	.5
22	0 50.5	0 50.6	0 48.2	22	.1	82	.5
23	0 50.8	0 50.9	0 48.4	23	.1	83	.5
24	0 51.0	0 51.1	0 48.7	24	.1	84	.5
25	0 51.3	0 51.4	0 48.9	25	.1	85	.5
26	0 51.5	0 51.6	0 49.2	26	.2	86	.5
27	0 51.8	0 51.9	0 49.4	27	.2	87	.5
28	0 52.0	0 52.1	0 49.6	28	.2	88	.5
29	0 52.3	0 52.4	0 49.9	29	.2	89	.5
30	0 52.5	0 52.6	0 50.1	30	.2	90	.5
31	0 52.8	0 52.9	0 50.3	31	.2	91	.5
32	0 53.0	0 53.1	0 50.6	32	.2	92	.5
33	0 53.3	0 53.4	0 50.8	33	.2	93	.5
34	0 53.5	0 53.6	0 51.1	34	.2	94	.5
35	0 53.8	0 53.9	0 51.3	35	.2	95	.6
36	0 54.0	0 54.2	0 51.5	36	.2	96	.6
37	0 54.3	0 54.4	0 51.8	37	.2	97	.6
38	0 54.5	0 54.7	0 52.0	38	.2	98	.6
39	0 54.8	0 54.9	0 52.3	39	.2	99	.6
40	0 55.0	0 55.2	0 52.5	40	.2	100	.6
41	0 55.3	0 55.4	0 52.7	41	.2	101	.6
42	0 55.5	0 55.7	0 53.0	42	.2	102	.6
43	0 55.8	0 55.9	0 53.2	43	.3	103	.6
44	0 56.0	0 56.2	0 53.4	44	.3	104	.6
45	0 56.3	0 56.4	0 53.7	45	.3	105	.6
46	0 56.5	0 56.7	0 53.9	46	.3	106	.6
47	0 56.8	0 56.9	0 54.2	47	.3	107	.6
48	0 57.0	0 57.2	0 54.4	48	.3	108	.6
49	0 57.3	0 57.4	0 54.6	49	.3	109	.6
50	0 57.5	0 57.7	0 54.9	50	.3	110	.6
51	0 57.8	0 57.9	0 55.1	51	.3	111	.6
52	0 58.0	0 58.2	0 55.4	52	.3	112	.7
53	0 58.3	0 58.4	0 55.6	53	.3	113	.7
54	0 58.5	0 58.7	0 55.8	54	.3	114	.7
55	0 58.8	0 58.9	0 56.1	55	.3	115	.7
56	0 59.0	0 59.2	0 56.3	56	.3	116	.7
57	0 59.3	0 59.4	0 56.6	57	.3	117	.7
58	0 59.5	0 59.7	0 56.8	58	.3	118	.7
59	0 59.8	0 59.9	0 57.0	59	.3	119	.7
60	1 .0	1 .2	0 57.3	60	.4	120	.7

**0 h 4 min**

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	o	'			
0	1	.0	1	.2	0	57.3	0	.0	60 .5 120 .9
1	1	.3	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	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 .5 134 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, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.
	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 1.0 164 1.5
45	1	26.3	1	26.5	1	22.3	45	.4	105 1.0 165 1.5
46	1	26.5	1	26.7	1	22.6	46	.4	106 1.0 166 1.5
47	1	26.8	1	27.0	1	22.8	47	.4	107 1.0 167 1.5
48	1	27.0	1	27.2	1	23.0	48	.4	108 1.0 168 1.5
49	1	27.3	1	27.5	1	23.3	49	.4	109 1.0 169 1.5
50	1	27.5	1	27.7	1	23.5	50	.5	110 1.0 170 1.6
51	1	27.8	1	28.0	1	23.8	51	.5	111 1.0 171 1.6
52	1	28.0	1	28.2	1	24.0	52	.5	112 1.0 172 1.6
53	1	28.3	1	28.5	1	24.2	53	.5	113 1.0 173 1.6
54	1	28.5	1	28.7	1	24.5	54	.5	114 1.0 174 1.6
55	1	28.8	1	29.0	1	24.7	55	.5	115 1.1 175 1.6
56	1	29.0	1	29.2	1	24.9	56	.5	116 1.1 176 1.6
57	1	29.3	1	29.5	1	25.2	57	.5	117 1.1 177 1.6
58	1	29.5	1	29.7	1	25.4	58	.5	118 1.1 178 1.6
59	1	29.8	1	30.0	1	25.7	59	.5	119 1.1 179 1.6
60	1	30.0	1	30.3	1	25.9	60	.6	120 1.1 180 1.7

## 0 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	148 1.6
29	1 37.3	1 37.5	1 32.8	29 .3	89 1.0	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, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	136 1.7
17	1 49.3	1 49.6	1 44.3	17 .2	77 1.0	137 1.7
18	1 49.5	1 49.8	1 44.5	18 .2	78 1.0	138 1.7
19	1 49.8	1 50.1	1 44.8	19 .2	79 1.0	139 1.7
20	1 50.0	1 50.3	1 45.0	20 .3	80 1.0	140 1.8
21	1 50.3	1 50.6	1 45.2	21 .3	81 1.0	141 1.8
22	1 50.5	1 50.8	1 45.5	22 .3	82 1.0	142 1.8
23	1 50.8	1 51.1	1 45.7	23 .3	83 1.0	143 1.8
24	1 51.0	1 51.3	1 45.9	24 .3	84 1.1	144 1.8
25	1 51.3	1 51.6	1 46.2	25 .3	85 1.1	145 1.8
26	1 51.5	1 51.8	1 46.4	26 .3	86 1.1	146 1.8
27	1 51.8	1 52.1	1 46.7	27 .3	87 1.1	147 1.8
28	1 52.0	1 52.3	1 46.9	28 .4	88 1.1	148 1.9
29	1 52.3	1 52.6	1 47.1	29 .4	89 1.1	149 1.9
30	1 52.5	1 52.8	1 47.4	30 .4	90 1.1	150 1.9
31	1 52.8	1 53.1	1 47.6	31 .4	91 1.1	151 1.9
32	1 53.0	1 53.3	1 47.9	32 .4	92 1.2	152 1.9
33	1 53.3	1 53.6	1 48.1	33 .4	93 1.2	153 1.9
34	1 53.5	1 53.8	1 48.3	34 .4	94 1.2	154 1.9
35	1 53.8	1 54.1	1 48.6	35 .4	95 1.2	155 1.9
36	1 54.0	1 54.3	1 48.8	36 .5	96 1.2	156 2.0
37	1 54.3	1 54.6	1 49.0	37 .5	97 1.2	157 2.0
38	1 54.5	1 54.8	1 49.3	38 .5	98 1.2	158 2.0
39	1 54.8	1 55.1	1 49.5	39 .5	99 1.2	159 2.0
40	1 55.0	1 55.3	1 49.8	40 .5	100 1.3	160 2.0
41	1 55.3	1 55.6	1 50.0	41 .5	101 1.3	161 2.0
42	1 55.5	1 55.8	1 50.2	42 .5	102 1.3	162 2.0
43	1 55.8	1 56.1	1 50.5	43 .5	103 1.3	163 2.0
44	1 56.0	1 56.3	1 50.7	44 .6	104 1.3	164 2.1
45	1 56.3	1 56.6	1 51.0	45 .6	105 1.3	165 2.1
46	1 56.5	1 56.8	1 51.2	46 .6	106 1.3	166 2.1
47	1 56.8	1 57.1	1 51.4	47 .6	107 1.3	167 2.1
48	1 57.0	1 57.3	1 51.7	48 .6	108 1.4	168 2.1
49	1 57.3	1 57.6	1 51.9	49 .6	109 1.4	169 2.1
50	1 57.5	1 57.8	1 52.1	50 .6	110 1.4	170 2.1
51	1 57.8	1 58.1	1 52.4	51 .6	111 1.4	171 2.1
52	1 58.0	1 58.3	1 52.6	52 .7	112 1.4	172 2.2
53	1 58.3	1 58.6	1 52.9	53 .7	113 1.4	173 2.2
54	1 58.5	1 58.8	1 53.1	54 .7	114 1.4	174 2.2
55	1 58.8	1 59.1	1 53.3	55 .7	115 1.4	175 2.2
56	1 59.0	1 59.3	1 53.6	56 .7	116 1.5	176 2.2
57	1 59.3	1 59.6	1 53.8	57 .7	117 1.5	177 2.2
58	1 59.5	1 59.8	1 54.1	58 .7	118 1.5	178 2.2
59	1 59.8	2 .1	1 54.3	59 .7	119 1.5	179 2.2
60	2 .0	2 .3	1 54.5	60 .8	120 1.5	180 2.3

0 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	2	.0	2	.3	1	54.5	0	.0	60	.9	120	1.7
1	2	.3	2	.6	1	54.8	1	.0	61	.9	121	1.7
2	2	.5	2	.8	1	55.0	2	.0	62	.9	122	1.7
3	2	.8	2	1.1	1	55.2	3	.0	63	.9	123	1.7
4	2	1.0	2	1.3	1	55.5	4	.1	64	.9	124	1.8
5	2	1.3	2	1.6	1	55.7	5	.1	65	.9	125	1.8
6	2	1.5	2	1.8	1	56.0	6	.1	66	.9	126	1.8
7	2	1.8	2	2.1	1	56.2	7	.1	67	.9	127	1.8
8	2	2.0	2	2.3	1	56.4	8	.1	68	1.0	128	1.8
9	2	2.3	2	2.6	1	56.7	9	.1	69	1.0	129	1.8
10	2	2.5	2	2.8	1	56.9	10	.1	70	1.0	130	1.8
11	2	2.8	2	3.1	1	57.2	11	.2	71	1.0	131	1.9
12	2	3.0	2	3.3	1	57.4	12	.2	72	1.0	132	1.9
13	2	3.3	2	3.6	1	57.6	13	.2	73	1.0	133	1.9
14	2	3.5	2	3.8	1	57.9	14	.2	74	1.0	134	1.9
15	2	3.8	2	4.1	1	58.1	15	.2	75	1.1	135	1.9
16	2	4.0	2	4.3	1	58.4	16	.2	76	1.1	136	1.9
17	2	4.3	2	4.6	1	58.6	17	.2	77	1.1	137	1.9
18	2	4.5	2	4.8	1	58.8	18	.3	78	1.1	138	2.0
19	2	4.8	2	5.1	1	59.1	19	.3	79	1.1	139	2.0
20	2	5.0	2	5.3	1	59.3	20	.3	80	1.1	140	2.0
21	2	5.3	2	5.6	1	59.5	21	.3	81	1.1	141	2.0
22	2	5.5	2	5.8	1	59.8	22	.3	82	1.2	142	2.0
23	2	5.8	2	6.1	2	.0	23	.3	83	1.2	143	2.0
24	2	6.0	2	6.4	2	.3	24	.3	84	1.2	144	2.0
25	2	6.3	2	6.6	2	.5	25	.4	85	1.2	145	2.1
26	2	6.5	2	6.9	2	.7	26	.4	86	1.2	146	2.1
27	2	6.8	2	7.1	2	1.0	27	.4	87	1.2	147	2.1
28	2	7.0	2	7.4	2	1.2	28	.4	88	1.2	148	2.1
29	2	7.3	2	7.6	2	1.5	29	.4	89	1.3	149	2.1
30	2	7.5	2	7.9	2	1.7	30	.4	90	1.3	150	2.1
31	2	7.8	2	8.1	2	1.9	31	.4	91	1.3	151	2.1
32	2	8.0	2	8.4	2	2.2	32	.5	92	1.3	152	2.2
33	2	8.3	2	8.6	2	2.4	33	.5	93	1.3	153	2.2
34	2	8.5	2	8.9	2	2.6	34	.5	94	1.3	154	2.2
35	2	8.8	2	9.1	2	2.9	35	.5	95	1.3	155	2.2
36	2	9.0	2	9.4	2	3.1	36	.5	96	1.4	156	2.2
37	2	9.3	2	9.6	2	3.4	37	.5	97	1.4	157	2.2
38	2	9.5	2	9.9	2	3.6	38	.5	98	1.4	158	2.2
39	2	9.8	2	10.1	2	3.8	39	.6	99	1.4	159	2.3
40	2	10.0	2	10.4	2	4.1	40	.6	100	1.4	160	2.3
41	2	10.3	2	10.6	2	4.3	41	.6	101	1.4	161	2.3
42	2	10.5	2	10.9	2	4.6	42	.6	102	1.4	162	2.3
43	2	10.8	2	11.1	2	4.8	43	.6	103	1.5	163	2.3
44	2	11.0	2	11.4	2	5.0	44	.6	104	1.5	164	2.3
45	2	11.3	2	11.6	2	5.3	45	.6	105	1.5	165	2.3
46	2	11.5	2	11.9	2	5.5	46	.7	106	1.5	166	2.4
47	2	11.8	2	12.1	2	5.7	47	.7	107	1.5	167	2.4
48	2	12.0	2	12.4	2	6.0	48	.7	108	1.5	168	2.4
49	2	12.3	2	12.6	2	6.2	49	.7	109	1.5	169	2.4
50	2	12.5	2	12.9	2	6.5	50	.7	110	1.6	170	2.4
51	2	12.8	2	13.1	2	6.7	51	.7	111	1.6	171	2.4
52	2	13.0	2	13.4	2	6.9	52	.7	112	1.6	172	2.4
53	2	13.3	2	13.6	2	7.2	53	.8	113	1.6	173	2.5
54	2	13.5	2	13.9	2	7.4	54	.8	114	1.6	174	2.5
55	2	13.8	2	14.1	2	7.7	55	.8	115	1.6	175	2.5
56	2	14.0	2	14.4	2	7.9	56	.8	116	1.6	176	2.5
57	2	14.3	2	14.6	2	8.1	57	.8	117	1.7	177	2.5
58	2	14.5	2	14.9	2	8.4	58	.8	118	1.7	178	2.5
59	2	14.8	2	15.1	2	8.6	59	.8	119	1.7	179	2.5
60	2	15.0	2	15.4	2	8.9	60	.9	120	1.7	180	2.6

0 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
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
2	2	15.5	2	15.9	2	9.3	2	.0	62	1.0	122	1.9
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
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
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
9	2	17.3	2	17.6	2	11.0	9	.1	69	1.1	129	2.0
10	2	17.5	2	17.9	2	11.2	10	.2	70	1.1	130	2.1
11	2	17.8	2	18.1	2	11.5	11	.2	71	1.1	131	2.1
12	2	18.0	2	18.4	2	11.7	12	.2	72	1.1	132	2.1
13	2	18.3	2	18.6	2	12.0	13	.2	73	1.2	133	2.1
14	2	18.5	2	18.9	2	12.2	14	.2	74	1.2	134	2.1
15	2	18.8	2	19.1	2	12.4	15	.2	75	1.2	135	2.1
16	2	19.0	2	19.4	2	12.7	16	.3	76	1.2	136	2.2
17	2	19.3	2	19.6	2	12.9	17	.3	77	1.2	137	2.2
18	2	19.5	2	19.9	2	13.1	18	.3	78	1.2	138	2.2
19	2	19.8	2	20.1	2	13.4	19	.3	79	1.3	139	2.2
20	2	20.0	2	20.4	2	13.6	20	.3	80	1.3	140	2.2
21	2	20.3	2	20.6	2	13.9	21	.3	81	1.3	141	2.2
22	2	20.5	2	20.9	2	14.1	22	.3	82	1.3	142	2.2
23	2	20.8	2	21.1	2	14.3	23	.4	83	1.3	143	2.3
24	2	21.0	2	21.4	2	14.6	24	.4	84	1.3	144	2.3
25	2	21.3	2	21.6	2	14.8	25	.4	85	1.3	145	2.3
26	2	21.5	2	21.9	2	15.1	26	.4	86	1.4	146	2.3
27	2	21.8	2	22.1	2	15.3	27	.4	87	1.4	147	2.3
28	2	22.0	2	22.4	2	15.5	28	.4	88	1.4	148	2.3
29	2	22.3	2	22.6	2	15.8	29	.5	89	1.4	149	2.4
30	2	22.5	2	22.9	2	16.0	30	.5	90	1.4	150	2.4
31	2	22.8	2	23.1	2	16.2	31	.5	91	1.4	151	2.4
32	2	23.0	2	23.4	2	16.5	32	.5	92	1.5	152	2.4
33	2	23.3	2	23.6	2	16.7	33	.5	93	1.5	153	2.4
34	2	23.5	2	23.9	2	17.0	34	.5	94	1.5	154	2.4
35	2	23.8	2	24.1	2	17.2	35	.6	95	1.5	155	2.5
36	2	24.0	2	24.4	2	17.4	36	.6	96	1.5	156	2.5
37	2	24.3	2	24.7	2	17.7	37	.6	97	1.5	157	2.5
38	2	24.5	2	24.9	2	17.9	38	.6	98	1.6	158	2.5
39	2	24.8	2	25.2	2	18.2	39	.6	99	1.6	159	2.5
40	2	25.0	2	25.4	2	18.4	40	.6	100	1.6	160	2.5
41	2	25.3	2	25.7	2	18.6	41	.6	101	1.6	161	2.5
42	2	25.5	2	25.9	2	18.9	42	.7	102	1.6	162	2.6
43	2	25.8	2	26.2	2	19.1	43	.7	103	1.6	163	2.6
44	2	26.0	2	26.4	2	19.3	44	.7	104	1.6	164	2.6
45	2	26.3	2	26.7	2	19.6	45	.7	105	1.7	165	2.6
46	2	26.5	2	26.9	2	19.8	46	.7	106	1.7	166	2.6
47	2	26.8	2	27.2	2	20.1	47	.7	107	1.7	167	2.6
48	2	27.0	2	27.4	2	20.3	48	.8	108	1.7	168	2.7
49	2	27.3	2	27.7	2	20.5	49	.8	109	1.7	169	2.7
50	2	27.5	2	27.9	2	20.8	50	.8	110	1.7	170	2.7
51	2	27.8	2	28.2	2	21.0	51	.8	111	1.8	171	2.7
52	2	28.0	2	28.4	2	21.3	52	.8	112	1.8	172	2.7
53	2	28.3	2	28.7	2	21.5	53	.8	113	1.8	173	2.7
54	2	28.5	2	28.9	2	21.7	54	.9	114	1.8	174	2.8
55	2	28.8	2	29.2	2	22.0	55	.9	115	1.8	175	2.8
56	2	29.0	2	29.4	2	22.2	56	.9	116	1.8	176	2.8
57	2	29.3	2	29.7	2	22.5	57</					

## 0 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.			
				Δ	popr.	Δ popr.	
	° /	° /	° /	′	″	′	
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

## 0 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.			
				Δ	popr.	Δ popr.	
	° /	° /	° /	′	″	′	
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	3 .2	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

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	° /	° /	° /	/	/	/	
0	3 .0	3 .5	2 51.8	0 .0	60 1.3	120 2.5	
1	3 .3	3 .8	2 52.0	1 .0	61 1.3	121 2.5	
2	3 .5	3 1.0	2 52.3	2 .0	62 1.3	122 2.5	
3	3 .8	3 1.3	2 52.5	3 .1	63 1.3	123 2.6	
4	3 1.0	3 1.5	2 52.8	4 .1	64 1.3	124 2.6	
5	3 1.3	3 1.8	2 53.0	5 .1	65 1.4	125 2.6	
6	3 1.5	3 2.0	2 53.2	6 .1	66 1.4	126 2.6	
7	3 1.8	3 2.3	2 53.5	7 .1	67 1.4	127 2.6	
8	3 2.0	3 2.5	2 53.7	8 .2	68 1.4	128 2.7	
9	3 2.3	3 2.8	2 53.9	9 .2	69 1.4	129 2.7	
10	3 2.5	3 3.0	2 54.2	10 .2	70 1.5	130 2.7	
11	3 2.8	3 3.3	2 54.4	11 .2	71 1.5	131 2.7	
12	3 3.0	3 3.5	2 54.7	12 .3	72 1.5	132 2.8	
13	3 3.3	3 3.8	2 54.9	13 .3	73 1.5	133 2.8	
14	3 3.5	3 4.0	2 55.1	14 .3	74 1.5	134 2.8	
15	3 3.8	3 4.3	2 55.4	15 .3	75 1.6	135 2.8	
16	3 4.0	3 4.5	2 55.6	16 .3	76 1.6	136 2.8	
17	3 4.3	3 4.8	2 55.9	17 .4	77 1.6	137 2.9	
18	3 4.5	3 5.0	2 56.1	18 .4	78 1.6	138 2.9	
19	3 4.8	3 5.3	2 56.3	19 .4	79 1.6	139 2.9	
20	3 5.0	3 5.5	2 56.6	20 .4	80 1.7	140 2.9	
21	3 5.3	3 5.8	2 56.8	21 .4	81 1.7	141 2.9	
22	3 5.5	3 6.0	2 57.0	22 .5	82 1.7	142 3.0	
23	3 5.8	3 6.3	2 57.3	23 .5	83 1.7	143 3.0	
24	3 6.0	3 6.5	2 57.5	24 .5	84 1.8	144 3.0	
25	3 6.3	3 6.8	2 57.8	25 .5	85 1.8	145 3.0	
26	3 6.5	3 7.0	2 58.0	26 .5	86 1.8	146 3.0	
27	3 6.8	3 7.3	2 58.2	27 .6	87 1.8	147 3.1	
28	3 7.0	3 7.5	2 58.5	28 .6	88 1.8	148 3.1	
29	3 7.3	3 7.8	2 58.7	29 .6	89 1.9	149 3.1	
30	3 7.5	3 8.0	2 59.0	30 .6	90 1.9	150 3.1	
31	3 7.8	3 8.3	2 59.2	31 .6	91 1.9	151 3.1	
32	3 8.0	3 8.5	2 59.4	32 .7	92 1.9	152 3.2	
33	3 8.3	3 8.8	2 59.7	33 .7	93 1.9	153 3.2	
34	3 8.5	3 9.0	2 59.9	34 .7	94 2.0	154 3.2	
35	3 8.8	3 9.3	3 .2 35	.7 95	2.0 155	3.2 3.2	
36	3 9.0	3 9.5	3 .4 36	.8 96	2.0 156	3.3 3.3	
37	3 9.3	3 9.8	3 .6 37	.8 97	2.0 157	3.3 3.3	
38	3 9.5	3 10.0	3 .9 38	.8 98	2.0 158	3.3 3.3	
39	3 9.8	3 10.3	3 1.1 39	.8 99	2.1 159	3.3 3.3	
40	3 10.0	3 10.5	3 1.3 40	.8 100	2.1 160	3.3 3.3	
41	3 10.3	3 10.8	3 1.6 41	.9 101	2.1 161	3.4 3.4	
42	3 10.5	3 11.0	3 1.8 42	.9 102	2.1 162	3.4 3.4	
43	3 10.8	3 11.3	3 2.1 43	.9 103	2.1 163	3.4 3.4	
44	3 11.0	3 11.5	3 2.3 44	.9 104	2.2 164	3.4 3.4	
45	3 11.3	3 11.8	3 2.5 45	.9 105	2.2 165	3.4 3.4	
46	3 11.5	3 12.0	3 2.8 46	1.0 106	2.2 166	3.5 3.5	
47	3 11.8	3 12.3	3 3.0 47	1.0 107	2.2 167	3.5 3.5	
48	3 12.0	3 12.5	3 3.3 48	1.0 108	2.3 168	3.5 3.5	
49	3 12.3	3 12.8	3 3.5 49	1.0 109	2.3 169	3.5 3.5	
50	3 12.5	3 13.0	3 3.7 50	1.0 110	2.3 170	3.5 3.5	
51	3 12.8	3 13.3	3 4.0 51	1.1 111	2.3 171	3.6 3.6	
52	3 13.0	3 13.5	3 4.2 52	1.1 112	2.3 172	3.6 3.6	
53	3 13.3	3 13.8	3 4.4 53	1.1 113	2.4 173	3.6 3.6	
54	3 13.5	3 14.0	3 4.7 54	1.1 114	2.4 174	3.6 3.6	
55	3 13.8	3 14.3	3 4.9 55	1.1 115	2.4 175	3.6 3.6	
56	3 14.0	3 14.5	3 5.2 56	1.2 116	2.4 176	3.7 3.7	
57	3 14.3	3 14.8	3 5.4 57	1.2 117	2.4 177	3.7 3.7	
58	3 14.5	3 15.0	3 5.6 58	1.2 118	2.5 178	3.7 3.7	
59	3 14.8	3 15.3	3 5.9 59	1.2 119	2.5 179	3.7 3.7	
60	3 15.0	3 15.5	3 6.1 60	1.3 120	2.5 180	3.8 3.8	

0 h 13 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	° /	° /	° /	/	/	/	
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	
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 .1	63 1.4	123 2.8	
4	3 16.0	3 16.5	3 7.1	4 .1	64 1.4	124 2.8	
5	3 16.3	3 16.8	3 7.3	5 .1	65 1.5	125 2.8	
6	3 16.5	3 17.0	3 7.5	6 .1	66 1.5	126 2.8	
7	3 16.8	3 17.3	3 7.8	7 .2	67 1.5	127 2.9	
8	3 17.0	3 17.5	3 8.0	8 .2	68 1.5	128 2.9	
9	3 17.3	3 17.8	3 8.3	9 .2	69 1.6	129 2.9	
10	3 17.5	3 18.0	3 8.5	10 .2	70 1.6	130 2.9	
11	3 17.8	3 18.3	3 8.7	11 .2	71 1.6	131 2.9	
12	3 18.0	3 18.6	3 9.0	12 .3	72 1.6	132 3.0	
13	3 18.3	3 18.8	3 9.2	13 .3	73 1.6	133 3.0	
14	3 18.5	3 19.1	3 9.5	14 .3	74 1.7	134 3.0	
15	3 18.8	3 19.3	3 9.7	15 .3	75 1.7	135 3.0	
16	3 19.0	3 19.6	3 9.9	16 .4	76 1.7	136 3.1	
17	3 19.3	3 19.8	3 10.2	17 .4	77 1.7	137 3.1	
18	3 19.5	3 20.1	3 10.4	18 .4	78 1.8	138 3.1	
19	3 19.8	3 20.3	3 10.7	19 .4	79 1.8	139 3.1	
20	3 20.0	3 20.6	3 10.9	20 .5	80 1.8	140 3.2	
21	3 20.3	3 20.8	3 11.1	21 .5	81 1.8	141 3.2	
22	3 20.5	3 21.1	3 11.4	22 .5	82 1.8	142 3.2	
23	3 20.8	3 21.3	3 11.6	23 .5	83 1.9	143 3.2	
24	3 21.0	3 21.6	3 11.8	24 .5	84 1.9	144 3.2	
25	3 21.3	3 21.8	3 12.1	25 .6	85 1.9	145 3.3	
26	3 21.5	3 22.1	3 12.3	26 .6	86 1.9	146 3.3	
27	3 21.8	3 22.3	3 12.6	27 .6	87 2.0	147 3.3	
28	3 22.0	3 22.6	3 12.8	28 .6	88 2.0	148 3.3	
29	3 22.3	3 22.8	3 13.0	29 .7	89 2.0	149 3.4	
30	3 22.5	3 23.1	3 13.3	30 .7	90 2.0	150 3.4	
31	3 22.8	3 23.3	3 13.5	31 .7	91 2.0	151 3.4	
32	3 23.0	3 23.6	3 13.8	32 .7	92 2.1	152 3.4	
33	3 23.3	3 23.8	3 14.0	33 .7	93 2.1	153 3.4	
34	3 23.5	3 24.1	3 14.2	34 .8	94 2.1	154 3.5	
35	3 23.8	3 24.3	3 14.5	35 .8	95 2.1	155 3.5	
36	3 24.0	3 24.6	3 14.7	36 .8	96 2.2	156 3.5	
37	3 24.3	3 24.8	3 14.9	37 .8	97 2.2	157 3.5	
38	3 24.5	3 25.1	3 15.2	38 .9	98 2.2	158 3.6	
39	3 24.8	3 25.3	3 15.4	39 .9	99 2.2	159 3.6	
40	3 25.0	3 25.6	3 15.7	40 .9	100 2.3	160 3.6	
41	3 25.3	3 25.8	3 15.9	41 .9	101 2.3	161 3.6	
42	3 25.5	3 26.1	3 16.1	42 .9	102 2.3	162 3.6	
43	3 25.8	3 26.3	3 16.4	43 1.0	103 2.3	163 3.7	
44	3 26.0	3 26.6	3 16.6	44 1.0	104 2.3	164 3.7	
45	3 26.3	3 26.8	3 16.9	45 1.0	105 2.4	165 3.7	
46	3 26.5	3 27.1	3 17.1	46 1.0	106 2.4	166 3.7	
47	3 26.8	3 27.3	3 17.3	47 1.1	107 2.4	167 3.8	
48	3 27.0	3 27.6	3 17.6	48 1.1	108 2.4	168 3.8	
49	3 27.3	3 27.8	3 17.8	49 1.1	109 2.5	169 3.8	
50	3 27.5	3 28.1	3 18.0	50 1.1	110 2.5	170 3.8	
51	3 27.8	3 28.3	3 18.3	51 1.1	111 2.5	171 3.8	
52	3 28.0	3 28.6	3 18.5	52 1.2	112 2.5	172 3.9	
53	3 28.3	3 28.8	3 18.8	53 1.2	113 2.5	173 3.9	
54	3 28.5	3 29.1	3 19.0	54 1.2	114 2.6	174 3.9	
55	3 28.8	3 29.3	3 19.2	55 1.2	115 2.6	175 3.9	
56	3 29.0	3 29.6	3 19.5	56 1.3	116 2.6	176 4.0	
57	3 29.3	3 29.8	3 19.7	57 1.3	117 2.6	177 4.0	
58	3 29.5	3 30.1	3 20.0	58 1.3	118 2.7	178 4.0	
59	3 29.8	3 30.3	3 20.2	59 1.3	119 2.7	179 4.0	
60	3 30.0	3 30.6	3 20.4	60 1.4	120 2.7	180 4.1	

## 0 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
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	

## 0 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
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 1.0	97 2.5	157 4.1	
38	3 54.5	3 55.2	3 43.8	38 1.0	98 2.5	158 4.1	
39	3 54.8	3 55.4	3 44.1	39 1.0	99 2.6	159 4.1	
40	3 55.0	3 55.7	3 44.3	40 1.0	100 2.6	160 4.1	
41	3 55.3	3 55.9	3 44.5	41 1.1	101 2.6	161 4.2	
42	3 55.5	3 56.2	3 44.8	42 1.1	102 2.6	162 4.2	
43	3 55.8	3 56.4	3 45.0	43 1.1	103 2.7	163 4.2	
44	3 56.0	3 56.7	3 45.2	44 1.1	104 2.7	164 4.2	
45	3 56.3	3 56.9	3 45.5	45 1.2	105 2.7	165 4.3	
46	3 56.5	3 57.2	3 45.7	46 1.2	106 2.7	166 4.3	
47	3 56.8	3 57.4	3 46.0	47 1.2	107 2.8	167 4.3	
48	3 57.0	3 57.7	3 46.2	48 1.2	108 2.8	168 4.3	
49	3 57.3	3 57.9	3 46.4	49 1.3	109 2.8	169 4.4	
50	3 57.5	3 58.2	3 46.7	50 1.3	110 2.8	170 4.4	
51	3 57.8	3 58.4	3 46.9	51 1.3	111 2.9	171 4.4	
52	3 58.0	3 58.7	3 47.2	52 1.3	112 2.9	172 4.4	
53	3 58.3	3 58.9	3 47.4	53 1.4	113 2.9	173 4.5	
54	3 58.5	3 59.2	3 47.6	54 1.4	114 2.9	174 4.5	
55	3 58.8	3 59.4	3 47.9	55 1.4	115 3.0	175 4.5	
56	3 59.0	3 59.7	3 48.1	56 1.4	116 3.0	176 4.5	
57	3 59.3	3 59.9	3 48.4	57 1.5	117 3.0	177 4.6	
58	3 59.5	4 .2	3 48.6	58 1.5	118 3.0	178 4.6	
59	3 59.8	4 .4	3 48.8	59 1.5	119 3.1	179 4.6	
60	4 .0	4 .7	3 49.1	60 1.6	120 3.1	180 4.7	

0 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	°	'			°	'	°	'				
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	46	1.3	106	2.9	166	4.6
47	4	11.8	4	12.4	4	.3	47	1.3	107	2.9	167	4.6
48	4	12.0	4	12.7	4	.5	48	1.3	108	3.0	168	4.6
49	4	12.3	4	13.0	4	.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

0 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	°	'			°	'	°	'				
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	22.2	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	1.0	93	2.7	153	4.5
34	4	23.5	4	24.2	4	11.5	34	1.0	94	2.7	154	4.5
35	4	23.8	4	24.5	4	11.7	35	1.0	95	2.8	155	4.5
36	4	24.0	4	24.7	4	12.0	36	1.1	96	2.8	156	4.6
37	4	24.3	4	25.0	4	12.2	37	1.1	97	2.8	157	4.6
38	4	24.5	4	25.2	4	12.5	38	1.1	98	2.9	158	4.6
39	4	24.8	4	25.5	4	12.7	39	1.1	99	2.9	159	4.6
40	4	25.0	4	25.7	4	12.9	40	1.2	100	2.9	160	4.7
41	4	25.3	4	26.0	4	13.2	41	1.2	101	2.9	161	4.7
42	4	25.5	4	26.2	4	13.4	42	1.2	102	3.0	162	4.7
43	4	25.8	4	26.5	4	13.6	43	1.3	103	3.0	163	4.8
44	4	26.0	4	26.7	4	13.9	44	1.3	104	3.0	164	4.8
45	4	26.3	4	27.0	4	14.1	45	1.3	105	3.1	165	4.8
46	4	26.5	4	27.2	4	14.4	46	1.3	106	3.1	166	4.8
47	4	26.8	4	27.5	4	14.6	47	1.4	107	3.1	167	4.9
48	4	27.0	4	27.7	4	14.8	48	1.4	108	3.2	168	4.9
49	4	27.3	4	28.0	4	15.1	49	1.4	109	3.2	169	4.9
50	4	27.5	4	28.2	4	15.3	50	1.5	110	3.2	170	5.0
51	4	27.8	4	28.5	4	15.6	51	1.5	111	3.2	171	5.0
52	4	28.0	4	28.7	4	15.8	52	1.5	112	3.3	172	5.0
53	4	28.3	4	29.0	4	16.0	53	1.5	113	3.3	173	5.0
54	4	28.5	4	29.2	4	16.3	54	1.6	114	3.3	174	5.1
55	4	28.8	4	29.5	4	16.5	55	1.6	115	3.4	175	5.1
56	4	29.0	4	29.7								

## 0 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	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	1.0	91	2.8	151	4.7
32	4	38.0	4	38.8	4	25.3	32	1.0	92	2.8	152	4.7
33	4	38.3	4	39.0	4	25.6	33	1.0	93	2.9	153	4.7
34	4	38.5	4	39.3	4	25.8	34	1.0	94	2.9	154	4.7
35	4	38.8	4	39.5	4	26.1	35	1.1	95	2.9	155	4.8
36	4	39.0	4	39.8	4	26.3	36	1.1	96	3.0	156	4.8
37	4	39.3	4	40.0	4	26.5	37	1.1	97	3.0	157	4.8
38	4	39.5	4	40.3	4	26.8	38	1.2	98	3.0	158	4.9
39	4	39.8	4	40.5	4	27.0	39	1.2	99	3.1	159	4.9
40	4	40.0	4	40.8	4	27.2	40	1.2	100	3.1	160	4.9
41	4	40.3	4	41.0	4	27.5	41	1.3	101	3.1	161	5.0
42	4	40.5	4	41.3	4	27.7	42	1.3	102	3.1	162	5.0
43	4	40.8	4	41.5	4	28.0	43	1.3	103	3.2	163	5.0
44	4	41.0	4	41.8	4	28.2	44	1.4	104	3.2	164	5.1
45	4	41.3	4	42.0	4	28.4	45	1.4	105	3.2	165	5.1
46	4	41.5	4	42.3	4	28.7	46	1.4	106	3.3	166	5.1
47	4	41.8	4	42.5	4	28.9	47	1.4	107	3.3	167	5.1
48	4	42.0	4	42.8	4	29.2	48	1.5	108	3.3	168	5.2
49	4	42.3	4	43.0	4	29.4	49	1.5	109	3.4	169	5.2
50	4	42.5	4	43.3	4	29.6	50	1.5	110	3.4	170	5.2
51	4	42.8	4	43.5	4	29.9	51	1.6	111	3.4	171	5.3
52	4	43.0	4	43.8	4	30.1	52	1.6	112	3.5	172	5.3
53	4	43.3	4	44.0	4	30.3	53	1.6	113	3.5	173	5.3
54	4	43.5	4	44.3	4	30.6	54	1.7	114	3.5	174	5.4
55	4	43.8	4	44.5	4	30.8	55	1.7	115	3.5	175	5.4
56	4	44.0	4	44.8	4	31.1	56	1.7	116	3.6	176	5.4
57	4	44.3	4	45.0	4	31.3	57	1.8	117	3.6	177	5.5
58	4	44.5	4	45.3	4	31.5	58	1.8	118	3.6	178	5.5
59	4	44.8	4	45.5	4	31.8	59	1.8	119	3.7	179	5.5
60	4	45.0	4	45.8	4	32.0	60	1.9	120	3.7	180	5.6

## 0 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	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	1.0	90	2.9	150	4.9
31	4	52.8	4	53.6	4	39.4	31	1.0	91	3.0	151	4.9
32	4	53.0	4	53.8	4	39.7	32	1.0	92	3.0	152	4.9
33	4	53.3	4	54.1	4	39.9	33	1.1	93	3.0	153	5.0
34	4	53.5	4	54.3	4	40.1	34	1.1	94	3.1	154	5.0
35	4	53.8	4	54.6	4	40.4	35	1.1	95	3.1	155	5.0
36	4	54.0	4	54.8	4	40.6	36	1.2	96	3.1	156	5.1
37	4	54.3	4	55.1	4	40.8	37	1.2	97	3.2	157	5.1
38	4	54.5	4	55.3	4	41.1	38	1.2	98	3.2	158	5.1
39	4	54.8	4	55.6	4	41.3	39	1.3	99	3.2	159	5.2
40	4	55.0	4	55.8	4	41.6	40	1.3	100	3.3	160	5.2
41	4	55.3	4	56.1	4	41.8	41	1.3	101	3.3	161	5.2
42	4	55.5	4	56.3	4	42.0	42	1.4	102	3.3	162	5.3
43	4	55.8	4	56.6	4	42.3	43	1.4	103	3.3	163	5.3
44	4	56.0	4	56.8	4	42.5	44	1.4	104	3.4	164	5.3
45	4	56.3	4	57.1	4	42.8	45	1.5	105	3.4	165	5.4
46	4	56.5	4	57.3	4	43.0	46	1.5	106	3.4	166	5.4
47	4	56.8	4	57.6	4	43.2	47	1.5	107	3.5	167	5.4
48	4	57.0	4	57.8	4	43.5	48	1.6	108	3.5	168	5.5
49	4	57.3	4	58.1	4	43.7	49	1.6	109	3.5	169	5.5
50	4	57.5	4	58.3	4	43.9	50	1.6	110	3.6	170	5.5
51	4	57.8	4	58.6	4	44.2	51	1.7	111	3.6	171	5.6
52	4	58.0	4	58.8	4	44.4	52	1.7	112	3.6	172	5.6
53	4	58.3	4	59.1	4	44.7	53	1.7	113	3.7	173	5.6
54	4	58.5	4	59.3	4	44.9	54	1.				

## 0 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	5	.0	5	.8	4 46.3	0 .0	60 2.1 120 4.1
1	5	.3	5	1.1	4 46.6	1 .0	61 2.1 121 4.1
2	5	.5	5	1.3	4 46.8	2 .1	62 2.1 122 4.2
3	5	.8	5	1.6	4 47.0	3 .1	63 2.2 123 4.2
4	5	1.0	5	1.8	4 47.3	4 .1	64 2.2 124 4.2
5	5	1.3	5	2.1	4 47.5	5 .2	65 2.2 125 4.3
6	5	1.5	5	2.3	4 47.8	6 .2	66 2.3 126 4.3
7	5	1.8	5	2.6	4 48.0	7 .2	67 2.3 127 4.3
8	5	2.0	5	2.8	4 48.2	8 .3	68 2.3 128 4.4
9	5	2.3	5	3.1	4 48.5	9 .3	69 2.4 129 4.4
10	5	2.5	5	3.3	4 48.7	10 .3	70 2.4 130 4.4
11	5	2.8	5	3.6	4 49.0	11 .4	71 2.4 131 4.5
12	5	3.0	5	3.8	4 49.2	12 .4	72 2.5 132 4.5
13	5	3.3	5	4.1	4 49.4	13 .4	73 2.5 133 4.5
14	5	3.5	5	4.3	4 49.7	14 .5	74 2.5 134 4.6
15	5	3.8	5	4.6	4 49.9	15 .5	75 2.6 135 4.6
16	5	4.0	5	4.8	4 50.2	16 .5	76 2.6 136 4.6
17	5	4.3	5	5.1	4 50.4	17 .6	77 2.6 137 4.7
18	5	4.5	5	5.3	4 50.6	18 .6	78 2.7 138 4.7
19	5	4.8	5	5.6	4 50.9	19 .6	79 2.7 139 4.7
20	5	5.0	5	5.8	4 51.1	20 .7	80 2.7 140 4.8
21	5	5.3	5	6.1	4 51.3	21 .7	81 2.8 141 4.8
22	5	5.5	5	6.3	4 51.6	22 .8	82 2.8 142 4.9
23	5	5.8	5	6.6	4 51.8	23 .8	83 2.8 143 4.9
24	5	6.0	5	6.9	4 52.1	24 .8	84 2.9 144 4.9
25	5	6.3	5	7.1	4 52.3	25 .9	85 2.9 145 5.0
26	5	6.5	5	7.4	4 52.5	26 .9	86 2.9 146 5.0
27	5	6.8	5	7.6	4 52.8	27 .9	87 3.0 147 5.0
28	5	7.0	5	7.9	4 53.0	28 1.0	88 3.0 148 5.1
29	5	7.3	5	8.1	4 53.3	29 1.0	89 3.0 149 5.1
30	5	7.5	5	8.4	4 53.5	30 1.0	90 3.1 150 5.1
31	5	7.8	5	8.6	4 53.7	31 1.1	91 3.1 151 5.2
32	5	8.0	5	8.9	4 54.0	32 1.1	92 3.1 152 5.2
33	5	8.3	5	9.1	4 54.2	33 1.1	93 3.2 153 5.2
34	5	8.5	5	9.4	4 54.4	34 1.2	94 3.2 154 5.3
35	5	8.8	5	9.6	4 54.7	35 1.2	95 3.2 155 5.3
36	5	9.0	5	9.9	4 54.9	36 1.2	96 3.3 156 5.3
37	5	9.3	5	10.1	4 55.2	37 1.3	97 3.3 157 5.4
38	5	9.5	5	10.4	4 55.4	38 1.3	98 3.3 158 5.4
39	5	9.8	5	10.6	4 55.6	39 1.3	99 3.4 159 5.4
40	5	10.0	5	10.9	4 55.9	40 1.4	100 3.4 160 5.5
41	5	10.3	5	11.1	4 56.1	41 1.4	101 3.5 161 5.5
42	5	10.5	5	11.4	4 56.4	42 1.4	102 3.5 162 5.5
43	5	10.8	5	11.6	4 56.6	43 1.5	103 3.5 163 5.6
44	5	11.0	5	11.9	4 56.8	44 1.5	104 3.6 164 5.6
45	5	11.3	5	12.1	4 57.1	45 1.5	105 3.6 165 5.6
46	5	11.5	5	12.4	4 57.3	46 1.6	106 3.6 166 5.7
47	5	11.8	5	12.6	4 57.5	47 1.6	107 3.7 167 5.7
48	5	12.0	5	12.9	4 57.8	48 1.6	108 3.7 168 5.7
49	5	12.3	5	13.1	4 58.0	49 1.7	109 3.7 169 5.8
50	5	12.5	5	13.4	4 58.3	50 1.7	110 3.8 170 5.8
51	5	12.8	5	13.6	4 58.5	51 1.7	111 3.8 171 5.8
52	5	13.0	5	13.9	4 58.7	52 1.8	112 3.8 172 5.9
53	5	13.3	5	14.1	4 59.0	53 1.8	113 3.9 173 5.9
54	5	13.5	5	14.4	4 59.2	54 1.8	114 3.9 174 5.9
55	5	13.8	5	14.6	4 59.5	55 1.9	115 3.9 175 6.0
56	5	14.0	5	14.9	4 59.7	56 1.9	116 4.0 176 6.0
57	5	14.3	5	15.1	4 59.9	57 1.9	117 4.0 177 6.0
58	5	14.5	5	15.4	5 .2	58 2.0	118 4.0 178 6.1
59	5	14.8	5	15.6	5 .4	59 2.0	119 4.1 179 6.1
60	5	15.0	5	15.9	5 .7	60 2.1	120 4.1 180 6.2

## 0 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	5	15.0	5	15.9	5 .7	0 .0	60 2.2 120 4.3
1	5	15.3	5	16.1	5 .9	1 .0	61 2.2 121 4.3
2	5	15.5	5	16.4	5 1.1	2 .1	62 2.2 122 4.4
3	5	15.8	5	16.6	5 1.4	3 .1	63 2.3 123 4.4
4	5	16.0	5	16.9	5 1.6	4 .1	64 2.3 124 4.4
5	5	16.3	5	17.1	5 1.8	5 .2	65 2.3 125 4.5
6	5	16.5	5	17.4	5 2.1	6 .2	66 2.4 126 4.5
7	5	16.8	5	17.6	5 2.3	7 .3	67 2.4 127 4.6
8	5	17.0	5	17.9	5 2.6	8 .3	68 2.4 128 4.6
9	5	17.3	5	18.1	5 2.8	9 .3	69 2.5 129 4.6
10	5	17.5	5	18.4	5 3.0	10 .4	70 2.5 130 4.7
11	5	17.8	5	18.6	5 3.3	11 .4	71 2.5 131 4.7
12	5	18.0	5	18.9	5 3.5	12 .4	72 2.6 132 4.7
13	5	18.3	5	19.1	5 3.8	13 .5	73 2.6 133 4.8
14	5	18.5	5	19.4	5 4.0	14 .5	74 2.7 134 4.8
15	5	18.8	5	19.6	5 4.2	15 .5	75 2.7 135 4.8
16	5	19.0	5	19.9	5 4.5	16 .6	76 2.7 136 4.9
17	5	19.3	5	20.1	5 4.7	17 .6	77 2.8 137 4.9
18	5	19.5	5	20.4	5 4.9	18 .6	78 2.8 138 4.9
19	5	19.8	5	20.6	5 5.2	19 .7	79 2.8 139 5.0
20	5	20.0	5	20.9	5 5.4	20 .7	80 2.9 140 5.0
21	5	20.3	5	21.1	5 5.7	21 .8	81 2.9 141 5.1
22	5	20.5	5	21.4	5 5.9	22 .8	82 2.9 142 5.1
23	5	20.8	5	21.6	5 6.1	23 .8	83 3.0 143 5.1
24	5	21.0	5	21.9	5 6.4	24 .9	84 3.0 144 5.2
25	5	21.3	5	22.1	5 6.6	25 .9	85 3.0 145 5.2
26	5	21.5	5	22.4	5 6.9	26 .9	86 3.1 146 5.2
27	5	21.8	5	22.6	5 7.1	27 1.0	87 3.1 147 5.3
28	5	22.0	5	22.9	5 7.3	28 1.0	88 3.2 148 5.3
29	5	22.3	5	23.1	5 7.6	29 1.0	89 3.2 149 5.3
30	5	22.5	5	23.4	5 7.8	30 1.1	90 3.2 150 5.4
31	5	22.8	5	23.6	5 8.0	31 1.1	91 3.3 151 5.4
32	5	23.0	5	23.9	5 8.3	32 1.1	92 3.3 152 5.4
33	5	23.3	5	24.1	5 8.5	33 1.2	93 3.3 153 5.5
34	5	23.5	5	24.4	5 8.8	34 1.2	94 3.4 154 5.5
35	5	23.8	5	24.6	5 9.0	35 1.3	95 3.4 155 5.6
36	5	24.0	5	24.9	5 9.2	36 1.3	96 3.4 156 5.6
37	5	24.3	5	25.2	5 9.5	37 1.3	97 3.5 157 5.6
38	5	24.5	5	25.4	5 9.7	38 1.4	98 3.5 158 5.7
39	5	24.8	5	25.7	5 10.0	39 1.4	99 3.5 159 5.7
40	5	25.0	5	25.9	5 10.2	40 1.4	100 3.6 160 5.7
41	5	25.3	5	26.2	5 10.4	41 1.5	101 3.6 161 5.8
42	5	25.5	5	26.4	5 10.7	42 1.5	102 3.7 162 5.8
43	5	25.8	5	26.7	5 10.9	43 1.5	103 3.7 163 5.8
44	5	26.0	5	26.9	5 11.1	44 1.6	104 3.7 164 5.9
45	5	26.3	5	27.2	5 11.4	45 1.6	105 3.8 165 5.9
46	5	26.5	5	27.4	5 11.6	46 1.6	106 3.8 166 5.9
47	5	26.8	5	27.7	5 11.9	47 1.7	107 3.8 167 6.0
48	5	27.0	5	27.9	5 12.1	48 1.7	108 3.9 168 6.0
49	5	27.3	5	28.2	5 12.3	49 1.8	109 3.9 169 6.1
50	5	27.5	5	28.4	5 12.6	50 1.8	110 3.9 170 6.1
51	5	27.8	5	28.7	5 12.8	51 1.8	111 4.0 171 6.1
52	5	28.0	5	28.9	5 13.1	52 1.9	112 4.0 172 6.2
53	5	28.3	5	29.2	5 13.3	53 1.9	113 4.0 173 6.2
54	5	28.5	5	29.4	5 13.5	54 1.9	114 4.1 174 6.2
55	5	28.8	5	29.7	5 13.8	55 2.0	115 4.1 175 6.3
56	5	29.0	5	29.9	5 14.0	56 2.0	116 4.2 176 6.3
57	5	29.3	5	30.2	5 14.3	57 2.0	117 4.2 177 6.3
58	5	29.5	5	30.4	5 14.5	58 2.1	118 4.2 178 6.4
59	5	29.8	5	30.7	5 14.7	59 2.1	119 4.3 179 6.4
60	5	30.0	5	30.9	5 15.0	60 2.2	120 4.3 180 6.5

0 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 16.9	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 1.0	86 3.2	146 5.5
27	5 36.8	5 37.7	5 21.4	27 1.0	87 3.3	147 5.5
28	5 37.0	5 37.9	5 21.6	28 1.1	88 3.3	148 5.6
29	5 37.3	5 38.2	5 21.9	29 1.1	89 3.3	149 5.6
30	5 37.5	5 38.4	5 22.1	30 1.1	90 3.4	150 5.6
31	5 37.8	5 38.7	5 22.4	31 1.2	91 3.4	151 5.7
32	5 38.0	5 38.9	5 22.6	32 1.2	92 3.5	152 5.7
33	5 38.3	5 39.2	5 22.8	33 1.2	93 3.5	153 5.7
34	5 38.5	5 39.4	5 23.1	34 1.3	94 3.5	154 5.8
35	5 38.8	5 39.7	5 23.3	35 1.3	95 3.6	155 5.8
36	5 39.0	5 39.9	5 23.6	36 1.4	96 3.6	156 5.9
37	5 39.3	5 40.2	5 23.8	37 1.4	97 3.6	157 5.9
38	5 39.5	5 40.4	5 24.0	38 1.4	98 3.7	158 5.9
39	5 39.8	5 40.7	5 24.3	39 1.5	99 3.7	159 6.0
40	5 40.0	5 40.9	5 24.5	40 1.5	100 3.8	160 6.0
41	5 40.3	5 41.2	5 24.7	41 1.5	101 3.8	161 6.0
42	5 40.5	5 41.4	5 25.0	42 1.6	102 3.8	162 6.1
43	5 40.8	5 41.7	5 25.2	43 1.6	103 3.9	163 6.1
44	5 41.0	5 41.9	5 25.5	44 1.7	104 3.9	164 6.2
45	5 41.3	5 42.2	5 25.7	45 1.7	105 3.9	165 6.2
46	5 41.5	5 42.4	5 25.9	46 1.7	106 4.0	166 6.2
47	5 41.8	5 42.7	5 26.2	47 1.8	107 4.0	167 6.3
48	5 42.0	5 43.0	5 26.4	48 1.8	108 4.1	168 6.3
49	5 42.3	5 43.2	5 26.7	49 1.8	109 4.1	169 6.3
50	5 42.5	5 43.5	5 26.9	50 1.9	110 4.1	170 6.4
51	5 42.8	5 43.7	5 27.1	51 1.9	111 4.2	171 6.4
52	5 43.0	5 44.0	5 27.4	52 2.0	112 4.2	172 6.5
53	5 43.3	5 44.2	5 27.6	53 2.0	113 4.2	173 6.5
54	5 43.5	5 44.5	5 27.9	54 2.0	114 4.3	174 6.5
55	5 43.8	5 44.7	5 28.1	55 2.1	115 4.3	175 6.6
56	5 44.0	5 45.0	5 28.3	56 2.1	116 4.4	176 6.6
57	5 44.3	5 45.2	5 28.6	57 2.1	117 4.4	177 6.6
58	5 44.5	5 45.5	5 28.8	58 2.2	118 4.4	178 6.7
59	5 44.8	5 45.7	5 29.0	59 2.2	119 4.5	179 6.7
60	5 45.0	5 46.0	5 29.3	60 2.3	120 4.5	180 6.8

0 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	85 3.3	145 5.7
26	5 51.5	5 52.5	5 35.5	26 1.0	86 3.4	146 5.7
27	5 51.8	5 52.7	5 35.7	27 1.1	87 3.4	147 5.8
28	5 52.0	5 53.0	5 36.0	28 1.1	88 3.4	148 5.8
29	5 52.3	5 53.2	5 36.2	29 1.1	89 3.5	149 5.8
30	5 52.5	5 53.5	5 36.4	30 1.2	90 3.5	150 5.9
31	5 52.8	5 53.7	5 36.7	31 1.2	91 3.6	151 5.9
32	5 53.0	5 54.0	5 36.9	32 1.3	92 3.6	152 6.0
33	5 53.3	5 54.2	5 37.2	33 1.3	93 3.6	153 6.0
34	5 53.5	5 54.5	5 37.4	34 1.3	94 3.7	154 6.0
35	5 53.8	5 54.7	5 37.6	35 1.4	95 3.7	155 6.1
36	5 54.0	5 55.0	5 37.9	36 1.4	96 3.8	156 6.1
37	5 54.3	5 55.2	5 38.1	37 1.4	97 3.8	157 6.1
38	5 54.5	5 55.5	5 38.4	38 1.5	98 3.8	158 6.2
39	5 54.8	5 55.7	5 38.6	39 1.5	99 3.9	159 6.2
40	5 55.0	5 56.0	5 38.8	40 1.6	100 3.9	160 6.3
41	5 55.3	5 56.2	5 39.1	41 1.6	101 4.0	161 6.3
42	5 55.5	5 56.5	5 39.3	42 1.6	102 4.0	162 6.3
43	5 55.8	5 56.7	5 39.5	43 1.7	103 4.0	163 6.4
44	5 56.0	5 57.0	5 39.8	44 1.7	104 4.1	164 6.4
45	5 56.3	5 57.2	5 40.0	45 1.8	105 4.1	165 6.5
46	5 56.5	5 57.5	5 40.3	46 1.8	106 4.2	166 6.5
47	5 56.8	5 57.7	5 40.5	47 1.8	107 4.2	167 6.5
48	5 57.0	5 58.0	5 40.7	48 1.9	108 4.2	168 6.6
49	5 57.3	5 58.2	5 41.0	49 1.9	109 4.3	169 6.6
50	5 57.5	5 58.5	5 41.2	50 2.0	110 4.3	170 6.7
51	5 57.8	5 58.7	5 41.5	51 2.0	111 4.3	171 6.7
52	5 58.0	5 59.0	5 41.7	52 2.0	112 4.4	172 6.7
53	5 58.3	5 59.2	5 41.9	53 2.1	113 4.4	173 6.8
54	5 58.5	5 59.5	5 42.2	54 2.1	114 4.5	174 6.8
55	5 58.8	5 59.7	5 42.4	55 2.2	115 4.5	175 6.9
56	5 59.0	5 60.0	5 42.6	56 2.2	116 4.5	176 6.9
57	5 59.3	6 .2	5 42.9	57 2.2	117 4.6	177 6.9
58	5 59.5	6 .5	5 43.1	58 2.3	118 4.6	178 7.0
59	5 59.8	6 .7	5 43.4	59 2.3	119 4.7	179 7.0
60	6 .0	6 1.0	5 43.6	60 2.4	120 4.7	180 7.1

0 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	6	.0	6	1.0	5	43.6	0 .0 60 2.5 120 4.9
1	6	.3	6	1.3	5	43.8	1 .0 61 2.5 121 4.9
2	6	.5	6	1.5	5	44.1	2 .1 62 2.5 122 5.0
3	6	.8	6	1.8	5	44.3	3 .1 63 2.6 123 5.0
4	6	1.0	6	2.0	5	44.6	4 .2 64 2.6 124 5.1
5	6	1.3	6	2.3	5	44.8	5 .2 65 2.7 125 5.1
6	6	1.5	6	2.5	5	45.0	6 .2 66 2.7 126 5.1
7	6	1.8	6	2.8	5	45.3	7 .3 67 2.7 127 5.2
8	6	2.0	6	3.0	5	45.5	8 .3 68 2.8 128 5.2
9	6	2.3	6	3.3	5	45.7	9 .4 69 2.8 129 5.3
10	6	2.5	6	3.5	5	46.0	10 .4 70 2.9 130 5.3
11	6	2.8	6	3.8	5	46.2	11 .4 71 2.9 131 5.3
12	6	3.0	6	4.0	5	46.5	12 .5 72 2.9 132 5.4
13	6	3.3	6	4.3	5	46.7	13 .5 73 3.0 133 5.4
14	6	3.5	6	4.5	5	46.9	14 .6 74 3.0 134 5.5
15	6	3.8	6	4.8	5	47.2	15 .6 75 3.1 135 5.5
16	6	4.0	6	5.0	5	47.4	16 .7 76 3.1 136 5.6
17	6	4.3	6	5.3	5	47.7	17 .7 77 3.1 137 5.6
18	6	4.5	6	5.5	5	47.9	18 .7 78 3.2 138 5.6
19	6	4.8	6	5.8	5	48.1	19 .8 79 3.2 139 5.7
20	6	5.0	6	6.0	5	48.4	20 .8 80 3.3 140 5.7
21	6	5.3	6	6.3	5	48.6	21 .9 81 3.3 141 5.8
22	6	5.5	6	6.5	5	48.8	22 .9 82 3.3 142 5.8
23	6	5.8	6	6.8	5	49.1	23 .9 83 3.4 143 5.8
24	6	6.0	6	7.0	5	49.3	24 1.0 84 3.4 144 5.9
25	6	6.3	6	7.3	5	49.6	25 1.0 85 3.5 145 5.9
26	6	6.5	6	7.5	5	49.8	26 1.1 86 3.5 146 6.0
27	6	6.8	6	7.8	5	50.0	27 1.1 87 3.6 147 6.0
28	6	7.0	6	8.0	5	50.3	28 1.1 88 3.6 148 6.0
29	6	7.3	6	8.3	5	50.5	29 1.2 89 3.6 149 6.1
30	6	7.5	6	8.5	5	50.8	30 1.2 90 3.7 150 6.1
31	6	7.8	6	8.8	5	51.0	31 1.3 91 3.7 151 6.2
32	6	8.0	6	9.0	5	51.2	32 1.3 92 3.8 152 6.2
33	6	8.3	6	9.3	5	51.5	33 1.3 93 3.8 153 6.2
34	6	8.5	6	9.5	5	51.7	34 1.4 94 3.8 154 6.3
35	6	8.8	6	9.8	5	52.0	35 1.4 95 3.9 155 6.3
36	6	9.0	6	10.0	5	52.2	36 1.5 96 3.9 156 6.4
37	6	9.3	6	10.3	5	52.4	37 1.5 97 4.0 157 6.4
38	6	9.5	6	10.5	5	52.7	38 1.6 98 4.0 158 6.5
39	6	9.8	6	10.8	5	52.9	39 1.6 99 4.0 159 6.5
40	6	10.0	6	11.0	5	53.1	40 1.6 100 4.1 160 6.5
41	6	10.3	6	11.3	5	53.4	41 1.7 101 4.1 161 6.6
42	6	10.5	6	11.5	5	53.6	42 1.7 102 4.2 162 6.6
43	6	10.8	6	11.8	5	53.9	43 1.8 103 4.2 163 6.7
44	6	11.0	6	12.0	5	54.1	44 1.8 104 4.2 164 6.7
45	6	11.3	6	12.3	5	54.3	45 1.8 105 4.3 165 6.7
46	6	11.5	6	12.5	5	54.6	46 1.9 106 4.3 166 6.8
47	6	11.8	6	12.8	5	54.8	47 1.9 107 4.4 167 6.8
48	6	12.0	6	13.0	5	55.1	48 2.0 108 4.4 168 6.9
49	6	12.3	6	13.3	5	55.3	49 2.0 109 4.5 169 6.9
50	6	12.5	6	13.5	5	55.5	50 2.0 110 4.5 170 6.9
51	6	12.8	6	13.8	5	55.8	51 2.1 111 4.5 171 7.0
52	6	13.0	6	14.0	5	56.0	52 2.1 112 4.6 172 7.0
53	6	13.3	6	14.3	5	56.2	53 2.2 113 4.6 173 7.1
54	6	13.5	6	14.5	5	56.5	54 2.2 114 4.7 174 7.1
55	6	13.8	6	14.8	5	56.7	55 2.2 115 4.7 175 7.1
56	6	14.0	6	15.0	5	57.0	56 2.3 116 4.7 176 7.2
57	6	14.3	6	15.3	5	57.2	57 2.3 117 4.8 177 7.2
58	6	14.5	6	15.5	5	57.4	58 2.4 118 4.8 178 7.3
59	6	14.8	6	15.8	5	57.7	59 2.4 119 4.9 179 7.3
60	6	15.0	6	16.0	5	57.9	60 2.5 120 4.9 180 7.4

0 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	6	15.0	6	16.0	5	57.9	0 .0 60 2.6 120 5.1
1	6	15.3	6	16.3	5	58.2	1 .0 61 2.6 121 5.1
2	6	15.5	6	16.5	5	58.4	2 .1 62 2.6 122 5.2
3	6	15.8	6	16.8	5	58.6	3 .1 63 2.7 123 5.2
4	6	16.0	6	17.0	5	58.9	4 .2 64 2.7 124 5.3
5	6	16.3	6	17.3	5	59.1	5 .2 65 2.8 125 5.3
6	6	16.5	6	17.5	5	59.3	6 .3 66 2.8 126 5.4
7	6	16.8	6	17.8	5	59.6	7 .3 67 2.8 127 5.4
8	6	17.0	6	18.0	5	59.8	8 .3 68 2.9 128 5.4
9	6	17.3	6	18.3	6	.1	9 .4 69 2.9 129 5.5
10	6	17.5	6	18.5	6	.3	10 .4 70 3.0 130 5.5
11	6	17.8	6	18.8	6	.5	11 .5 71 3.0 131 5.6
12	6	18.0	6	19.1	6	.8	12 .5 72 3.1 132 5.6
13	6	18.3	6	19.3	6	1.0	13 .6 73 3.1 133 5.7
14	6	18.5	6	19.6	6	1.3	14 .6 74 3.1 134 5.7
15	6	18.8	6	19.8	6	1.5	15 .6 75 3.2 135 5.7
16	6	19.0	6	20.1	6	1.7	16 .7 76 3.2 136 5.8
17	6	19.3	6	20.3	6	2.0	17 .7 77 3.3 137 5.8
18	6	19.5	6	20.6	6	2.2	18 .8 78 3.3 138 5.9
19	6	19.8	6	20.8	6	2.5	19 .8 79 3.4 139 5.9
20	6	20.0	6	21.1	6	2.7	20 .9 80 3.4 140 6.0
21	6	20.3	6	21.3	6	2.9	21 .9 81 3.4 141 6.0
22	6	20.5	6	21.6	6	3.2	22 .9 82 3.5 142 6.0
23	6	20.8	6	21.8	6	3.4	23 1.0 83 3.5 143 6.1
24	6	21.0	6	22.1	6	3.6	24 1.0 84 3.6 144 6.1
25	6	21.3	6	22.3	6	3.9	25 1.1 85 3.6 145 6.2
26	6	21.5	6	22.6	6	4.1	26 1.1 86 3.7 146 6.2
27	6	21.8	6	22.8	6	4.4	27 1.1 87 3.7 147 6.2
28	6	22.0	6	23.1	6	4.6	28 1.2 88 3.7 148 6.3
29	6	22.3	6	23.3	6	4.8	29 1.2 89 3.8 149 6.3
30	6	22.5	6	23.6	6	5.1	30 1.3 90 3.8 150 6.4
31	6	22.8	6	23.8	6	5.3	31 1.3 91 3.9 151 6.4
32	6	23.0	6	24.1	6	5.6	32 1.4 92 3.9 152 6.5
33	6	23.3	6	24.3	6	5.8	33 1.4 93 4.0 153 6.5
34	6	23.5	6	24.6	6	6.0	34 1.4 94 4.0 154 6.5
35	6	23.8	6	24.8	6	6.3	35 1.5 95 4.0 155 6.6
36	6	24.0	6	25.1	6	6.5	36 1.5 96 4.1 156 6.6
37	6	24.3	6	25.3	6	6.7	37 1.6 97 4.1 157 6.7
38	6	24.5	6	25.6	6	7.0	38 1.6 98 4.2 158 6.7
39	6	24.8	6	25.8	6	7.2	39 1.7 99 4.2 159 6.8
40	6	25.0	6	26.1	6	7.5	40 1.7 100 4.3 160 6.8
41	6	25.3	6	26.3	6	7.7	41 1.7 101 4.3 161 6.8
42	6	25.5	6	26.6	6	7.9	42 1.8 102 4.3 162 6.9
43	6	25.8	6	26.8	6	8.2	43 1.8 103 4.4 163 6.9
44	6	26.0	6	27.1	6	8.4	44 1.9 104 4.4 164 7.0
45	6	26.3	6	27.3	6	8.7	45 1.9 105 4.5 165 7.0
46	6	26.5	6	27.6	6	8.9	46 2.0 106 4.5 166 7.1
47	6	26.8	6	27.8	6	9.1	47 2.0 107 4.5 167 7.1
48	6	27.0	6	28.1	6	9.4	48 2.0 108 4.6 168 7.1
49	6	27.3	6	28.3	6	9.6	49 2.1 109 4.6 169 7.2
50	6	27.5	6	28.6	6	9.8	50 2.1 110 4.7 170 7.2
51	6	27.8	6	28.8	6	10.1	51 2.2 111 4.7 171 7.3
52	6	28.0	6	29.1	6	10.3	52 2.2 112 4.8 172 7.3
53	6	28.3	6	29.3	6	10.6	53 2.3 113 4.8 173 7.4
54	6	28.5	6	29.6	6	10.8	54 2.3 114 4.8 174 7.4
55	6	28.8	6	29.8	6	11.0	55 2.3 115 4.9 175 7.4
56	6	29.0	6	30.1	6	11.3	56 2.4 116 4.9 176 7.5
57	6	29.3	6	30.3	6	11.5	57 2.4 117 5.0 177 7.5
58	6	29.5	6	30.6	6	11.8	58 2.5 118 5.0 178 7.6
59	6	29.8	6	30.8	6	12.0	59 2.5 119 5.1 179 7.6
60	6	30.0	6	31.1	6	12.2	60 2.6 120 5.1 180 7.7

0 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	82 3.6	142 6.3
23	6 35.8	6 36.8	6 17.7	23 1.0	83 3.7	143 6.3
24	6 36.0	6 37.1	6 18.0	24 1.1	84 3.7	144 6.4
25	6 36.3	6 37.4	6 18.2	25 1.1	85 3.8	145 6.4
26	6 36.5	6 37.6	6 18.4	26 1.1	86 3.8	146 6.4
27	6 36.8	6 37.9	6 18.7	27 1.2	87 3.8	147 6.5
28	6 37.0	6 38.1	6 18.9	28 1.2	88 3.9	148 6.5
29	6 37.3	6 38.4	6 19.2	29 1.3	89 3.9	149 6.6
30	6 37.5	6 38.6	6 19.4	30 1.3	90 4.0	150 6.6
31	6 37.8	6 38.9	6 19.6	31 1.4	91 4.0	151 6.7
32	6 38.0	6 39.1	6 19.9	32 1.4	92 4.1	152 6.7
33	6 38.3	6 39.4	6 20.1	33 1.5	93 4.1	153 6.8
34	6 38.5	6 39.6	6 20.3	34 1.5	94 4.2	154 6.8
35	6 38.8	6 39.9	6 20.6	35 1.5	95 4.2	155 6.8
36	6 39.0	6 40.1	6 20.8	36 1.6	96 4.2	156 6.9
37	6 39.3	6 40.4	6 21.1	37 1.6	97 4.3	157 6.9
38	6 39.5	6 40.6	6 21.3	38 1.7	98 4.3	158 7.0
39	6 39.8	6 40.9	6 21.5	39 1.7	99 4.4	159 7.0
40	6 40.0	6 41.1	6 21.8	40 1.8	100 4.4	160 7.1
41	6 40.3	6 41.4	6 22.0	41 1.8	101 4.5	161 7.1
42	6 40.5	6 41.6	6 22.3	42 1.9	102 4.5	162 7.2
43	6 40.8	6 41.9	6 22.5	43 1.9	103 4.5	163 7.2
44	6 41.0	6 42.1	6 22.7	44 1.9	104 4.6	164 7.2
45	6 41.3	6 42.4	6 23.0	45 2.0	105 4.6	165 7.3
46	6 41.5	6 42.6	6 23.2	46 2.0	106 4.7	166 7.3
47	6 41.8	6 42.9	6 23.4	47 2.1	107 4.7	167 7.4
48	6 42.0	6 43.1	6 23.7	48 2.1	108 4.8	168 7.4
49	6 42.3	6 43.4	6 23.9	49 2.2	109 4.8	169 7.5
50	6 42.5	6 43.6	6 24.2	50 2.2	110 4.9	170 7.5
51	6 42.8	6 43.9	6 24.4	51 2.3	111 4.9	171 7.6
52	6 43.0	6 44.1	6 24.6	52 2.3	112 4.9	172 7.6
53	6 43.3	6 44.4	6 24.9	53 2.3	113 5.0	173 7.6
54	6 43.5	6 44.6	6 25.1	54 2.4	114 5.0	174 7.7
55	6 43.8	6 44.9	6 25.4	55 2.4	115 5.1	175 7.7
56	6 44.0	6 45.1	6 25.6	56 2.5	116 5.1	176 7.8
57	6 44.3	6 45.4	6 25.8	57 2.5	117 5.2	177 7.8
58	6 44.5	6 45.6	6 26.1	58 2.6	118 5.2	178 7.9
59	6 44.8	6 45.9	6 26.3	59 2.6	119 5.3	179 7.9
60	6 45.0	6 46.1	6 26.6	60 2.7	120 5.3	180 8.0

0 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	81 3.7	141 6.5
22	6 50.5	6 51.6	6 31.8	22 1.0	82 3.8	142 6.5
23	6 50.8	6 51.9	6 32.0	23 1.1	83 3.8	143 6.6
24	6 51.0	6 52.1	6 32.3	24 1.1	84 3.9	144 6.6
25	6 51.3	6 52.4	6 32.5	25 1.1	85 3.9	145 6.6
26	6 51.5	6 52.6	6 32.8	26 1.2	86 3.9	146 6.7
27	6 51.8	6 52.9	6 33.0	27 1.2	87 4.0	147 6.7
28	6 52.0	6 53.1	6 33.2	28 1.3	88 4.0	148 6.8
29	6 52.3	6 53.4	6 33.5	29 1.3	89 4.1	149 6.8
30	6 52.5	6 53.6	6 33.7	30 1.4	90 4.1	150 6.9
31	6 52.8	6 53.9	6 33.9	31 1.4	91 4.2	151 6.9
32	6 53.0	6 54.1	6 34.2	32 1.5	92 4.2	152 7.0
33	6 53.3	6 54.4	6 34.4	33 1.5	93 4.3	153 7.0
34	6 53.5	6 54.6	6 34.7	34 1.6	94 4.3	154 7.1
35	6 53.8	6 54.9	6 34.9	35 1.6	95 4.4	155 7.1
36	6 54.0	6 55.2	6 35.1	36 1.7	96 4.4	156 7.2
37	6 54.3	6 55.4	6 35.4	37 1.7	97 4.4	157 7.2
38	6 54.5	6 55.7	6 35.6	38 1.7	98 4.5	158 7.2
39	6 54.8	6 55.9	6 35.9	39 1.8	99 4.5	159 7.3
40	6 55.0	6 56.2	6 36.1	40 1.8	100 4.6	160 7.3
41	6 55.3	6 56.4	6 36.3	41 1.9	101 4.6	161 7.4
42	6 55.5	6 56.7	6 36.6	42 1.9	102 4.7	162 7.4
43	6 55.8	6 56.9	6 36.8	43 2.0	103 4.7	163 7.5
44	6 56.0	6 57.2	6 37.0	44 2.0	104 4.8	164 7.5
45	6 56.3	6 57.4	6 37.3	45 2.1	105 4.8	165 7.6
46	6 56.5	6 57.7	6 37.5	46 2.1	106 4.9	166 7.6
47	6 56.8	6 57.9	6 37.8	47 2.2	107 4.9	167 7.7
48	6 57.0	6 58.2	6 38.0	48 2.2	108 5.0	168 7.7
49	6 57.3	6 58.4	6 38.2	49 2.2	109 5.0	169 7.7
50	6 57.5	6 58.7	6 38.5	50 2.3	110 5.0	170 7.8
51	6 57.8	6 58.9	6 38.7	51 2.3	111 5.1	171 7.8
52	6 58.0	6 59.2	6 39.0	52 2.4	112 5.1	172 7.9
53	6 58.3	6 59.4	6 39.2	53 2.4	113 5.2	173 7.9
54	6 58.5	6 59.7	6 39.4	54 2.5	114 5.2	174 8.0
55	6 58.8	6 59.9	6 39.7	55 2.5	115 5.3	175 8.0
56	6 59.0	7 .2	6 39.9	56 2.6	116 5.3	176 8.1
57	6 59.3	7 .4	6 40.2	57 2.6	117 5.4	177 8.1
58	6 59.5	7 .7	6 40.4	58 2.7	118 5.4	178 8.2
59	6 59.8	7 .9	6 40.6	59 2.7	119 5.5	179 8.2
60	7 .0	7 1.2	6 40.9	60 2.8	120 5.5	180 8.3



0 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	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

0 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	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	21	1.0	81	4.0	141	6.9
22	7	20.5	7	21.7	7	.4	22	1.1	82	4.0	142	7.0
23	7	20.8	7	22.0	7	.7	23	1.1	83	4.1	143	7.0
24	7	21.0	7	22.2	7	.9	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	17	

## 0 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	°	'	°	'	°	'
0	7 30.0	7 31.3	7 9.5	0	.0	60	3.1	120	6.1
1	7 30.3	7 31.5	7 9.7	1	.1	61	3.1	121	6.2
2	7 30.5	7 31.8	7 10.0	2	.1	62	3.2	122	6.2
3	7 30.8	7 32.0	7 10.2	3	.2	63	3.2	123	6.3
4	7 31.0	7 32.3	7 10.5	4	.2	64	3.3	124	6.3
5	7 31.3	7 32.5	7 10.7	5	.3	65	3.3	125	6.4
6	7 31.5	7 32.8	7 10.9	6	.3	66	3.4	126	6.4
7	7 31.8	7 33.0	7 11.2	7	.4	67	3.4	127	6.5
8	7 32.0	7 33.3	7 11.4	8	.4	68	3.5	128	6.5
9	7 32.3	7 33.5	7 11.6	9	.5	69	3.5	129	6.6
10	7 32.5	7 33.8	7 11.9	10	.5	70	3.6	130	6.6
11	7 32.8	7 34.0	7 12.1	11	.6	71	3.6	131	6.7
12	7 33.0	7 34.3	7 12.4	12	.6	72	3.7	132	6.7
13	7 33.3	7 34.5	7 12.6	13	.7	73	3.7	133	6.8
14	7 33.5	7 34.8	7 12.8	14	.7	74	3.8	134	6.8
15	7 33.8	7 35.0	7 13.1	15	.8	75	3.8	135	6.9
16	7 34.0	7 35.3	7 13.3	16	.8	76	3.9	136	6.9
17	7 34.3	7 35.5	7 13.6	17	.9	77	3.9	137	7.0
18	7 34.5	7 35.8	7 13.8	18	.9	78	4.0	138	7.0
19	7 34.8	7 36.0	7 14.0	19	1.0	79	4.0	139	7.1
20	7 35.0	7 36.3	7 14.3	20	1.0	80	4.1	140	7.1
21	7 35.3	7 36.5	7 14.5	21	1.1	81	4.1	141	7.2
22	7 35.5	7 36.8	7 14.7	22	1.1	82	4.2	142	7.2
23	7 35.8	7 37.0	7 15.0	23	1.2	83	4.2	143	7.3
24	7 36.0	7 37.3	7 15.2	24	1.2	84	4.3	144	7.3
25	7 36.3	7 37.5	7 15.5	25	1.3	85	4.3	145	7.4
26	7 36.5	7 37.8	7 15.7	26	1.3	86	4.4	146	7.4
27	7 36.8	7 38.0	7 15.9	27	1.4	87	4.4	147	7.5
28	7 37.0	7 38.3	7 16.2	28	1.4	88	4.5	148	7.5
29	7 37.3	7 38.5	7 16.4	29	1.5	89	4.5	149	7.6
30	7 37.5	7 38.8	7 16.7	30	1.5	90	4.6	150	7.6
31	7 37.8	7 39.0	7 16.9	31	1.6	91	4.6	151	7.7
32	7 38.0	7 39.3	7 17.1	32	1.6	92	4.7	152	7.7
33	7 38.3	7 39.5	7 17.4	33	1.7	93	4.7	153	7.8
34	7 38.5	7 39.8	7 17.6	34	1.7	94	4.8	154	7.8
35	7 38.8	7 40.0	7 17.9	35	1.8	95	4.8	155	7.9
36	7 39.0	7 40.3	7 18.1	36	1.8	96	4.9	156	7.9
37	7 39.3	7 40.5	7 18.3	37	1.9	97	4.9	157	8.0
38	7 39.5	7 40.8	7 18.6	38	1.9	98	5.0	158	8.0
39	7 39.8	7 41.0	7 18.8	39	2.0	99	5.0	159	8.1
40	7 40.0	7 41.3	7 19.0	40	2.0	100	5.1	160	8.1
41	7 40.3	7 41.5	7 19.3	41	2.1	101	5.1	161	8.2
42	7 40.5	7 41.8	7 19.5	42	2.1	102	5.2	162	8.2
43	7 40.8	7 42.0	7 19.8	43	2.2	103	5.2	163	8.3
44	7 41.0	7 42.3	7 20.0	44	2.2	104	5.3	164	8.3
45	7 41.3	7 42.5	7 20.2	45	2.3	105	5.3	165	8.4
46	7 41.5	7 42.8	7 20.5	46	2.3	106	5.4	166	8.4
47	7 41.8	7 43.0	7 20.7	47	2.4	107	5.4	167	8.5
48	7 42.0	7 43.3	7 21.0	48	2.4	108	5.5	168	8.5
49	7 42.3	7 43.5	7 21.2	49	2.5	109	5.5	169	8.6
50	7 42.5	7 43.8	7 21.4	50	2.5	110	5.6	170	8.6
51	7 42.8	7 44.0	7 21.7	51	2.6	111	5.6	171	8.7
52	7 43.0	7 44.3	7 21.9	52	2.6	112	5.7	172	8.7
53	7 43.3	7 44.5	7 22.1	53	2.7	113	5.7	173	8.8
54	7 43.5	7 44.8	7 22.4	54	2.7	114	5.8	174	8.8
55	7 43.8	7 45.0	7 22.6	55	2.8	115	5.8	175	8.9
56	7 44.0	7 45.3	7 22.9	56	2.8	116	5.9	176	8.9
57	7 44.3	7 45.5	7 23.1	57	2.9	117	5.9	177	9.0
58	7 44.5	7 45.8	7 23.3	58	2.9	118	6.0	178	9.0
59	7 44.8	7 46.0	7 23.6	59	3.0	119	6.0	179	9.1
60	7 45.0	7 46.3	7 23.8	60	3.1	120	6.1	180	9.2

## 0 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /	°	'	°	'	°	'
0	7 45.0	7 46.3	7 23.8	0	.0	60	3.2	120	6.3
1	7 45.3	7 46.5	7 24.1	1	.1	61	3.2	121	6.4
2	7 45.5	7 46.8	7 24.3	2	.1	62	3.3	122	6.4
3	7 45.8	7 47.0	7 24.5	3	.2	63	3.3	123	6.5
4	7 46.0	7 47.3	7 24.8	4	.2	64	3.4	124	6.5
5	7 46.3	7 47.5	7 25.0	5	.3	65	3.4	125	6.6
6	7 46.5	7 47.8	7 25.2	6	.3	66	3.5	126	6.6
7	7 46.8	7 48.0	7 25.5	7	.4	67	3.5	127	6.7
8	7 47.0	7 48.3	7 25.7	8	.4	68	3.6	128	6.7
9	7 47.3	7 48.5	7 26.0	9	.5	69	3.6	129	6.8
10	7 47.5	7 48.8	7 26.2	10	.5	70	3.7	130	6.8
11	7 47.8	7 49.0	7 26.4	11	.6	71	3.7	131	6.9
12	7 48.0	7 49.3	7 26.7	12	.6	72	3.8	132	6.9
13	7 48.3	7 49.6	7 26.9	13	.7	73	3.8	133	7.0
14	7 48.5	7 49.8	7 27.2	14	.7	74	3.9	134	7.0
15	7 48.8	7 50.1	7 27.4	15	.8	75	3.9	135	7.1
16	7 49.0	7 50.3	7 27.6	16	.8	76	4.0	136	7.1
17	7 49.3	7 50.6	7 27.9	17	.9	77	4.0	137	7.2
18	7 49.5	7 50.8	7 28.1	18	.9	78	4.1	138	7.2
19	7 49.8	7 51.1	7 28.4	19	1.0	79	4.1	139	7.3
20	7 50.0	7 51.3	7 28.6	20	1.1	80	4.2	140	7.4
21	7 50.3	7 51.6	7 28.8	21	1.1	81	4.3	141	7.4
22	7 50.5	7 51.8	7 29.1	22	1.2	82	4.3	142	7.5
23	7 50.8	7 52.1	7 29.3	23	1.2	83	4.4	143	7.5
24	7 51.0	7 52.3	7 29.5	24	1.3	84	4.4	144	7.6
25	7 51.3	7 52.6	7 29.8	25	1.3	85	4.5	145	7.6
26	7 51.5	7 52.8	7 30.0	26	1.4	86	4.5	146	7.7
27	7 51.8	7 53.1	7 30.3	27	1.4	87	4.6	147	7.7
28	7 52.0	7 53.3	7 30.5	28	1.5	88	4.6	148	7.8
29	7 52.3	7 53.6	7 30.7	29	1.5	89	4.7	149	7.8
30	7 52.5	7 53.8	7 31.0	30	1.6	90	4.7	150	7.9
31	7 52.8	7 54.1	7 31.2	31	1.6	91	4.8	151	7.9
32	7 53.0	7 54.3	7 31.5	32	1.7	92	4.8	152	8.0
33	7 53.3	7 54.6	7 31.7	33	1.7	93	4.9	153	8.0
34	7 53.5	7 54.8	7 31.9	34	1.8	94	4.9	154	8.1
35	7 53.8	7 55.1	7 32.2	35	1.8	95	5.0	155	8.1
36	7 54.0	7 55.3	7 32.4	36	1.9	96	5.0	156	8.2
37	7 54.3	7 55.6	7 32.6	37	1.9	97	5.1	157	8.2
38	7 54.5	7 55.8	7 32.9	38	2.0	98	5.1	158	8.3
39	7 54.8	7 56.1	7 33.1	39	2.0	99	5.2	159	8.3
40	7 55.0	7 56.3	7 33.4	40	2.1	100	5.3	160	8.4
41	7 55.3	7 56.6	7 33.6	41	2.2	101	5.3	161	8.5
42	7 55.5	7 56.8	7 33.8	42	2.2	102	5.4	162	8.5
43	7 55.8	7 57.1	7 34.1	43	2.3	103	5.4	163	8.6
44	7 56.0	7 57.3	7 34.3	44	2.3	104	5.5	164	8.6
45	7 56.3	7 57.6	7 34.6	45	2.4	105	5.5	165	8.7
46	7 56.5	7 57.8	7 34.8	46	2.4	106	5.6	166	8.7
47	7 56.8	7 58.1	7 35.0	47	2.5	107	5.6	167	8.8
48	7 57.0	7 58.3	7 35.3	48	2.5	108	5.7	168	8.8
49	7 57.3	7 58.6	7 35.5	49	2.6	109	5.7	169	8.9
50	7 57.5	7 58.8	7 35.7	50	2.6	110	5.8	170	8.9
51	7 57.8	7 59.1	7 36.0	51	2.7	111	5.8	171	9.0
52	7 58.0	7 59.3	7 36.2	52	2.7	112	5.9	172	9.0
53	7 58.3	7 59.6	7 36.5	53	2.8	113	5.9	173	9.1
54	7 58.5	7 59.8	7 36.7	54	2.8	114	6.0	174	9.1
55	7 58.8	8 .1	7 36.9	55	2.9	115	6.0	175	9.2
56	7 59.0	8 .3	7 37.2	56	2.9	116	6.1	176	9.2
57	7 59.3	8 .6	7 37.4	57	3.0	117	6.1	177	9.3
58	7 59.5	8 .8	7 37.7	58	3.0	118	6.2	178	9.3
59	7 59.8	8 1.1	7 37.9	59	3.1	119	6.2	179	9.4
60	8 .0	8 1.3	7 38.1	60	3.2	120	6.3	180	9.5

0 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	8	.0	8	1.3	7	38.1	0 .0 60 3.3 120 6.5
1	8	.3	8	1.6	7	38.4	1 .1 61 3.3 121 6.6
2	8	.5	8	1.8	7	38.6	2 .1 62 3.4 122 6.6
3	8	.8	8	2.1	7	38.8	3 .2 63 3.4 123 6.7
4	8	1.0	8	2.3	7	39.1	4 .2 64 3.5 124 6.7
5	8	1.3	8	2.6	7	39.3	5 .3 65 3.5 125 6.8
6	8	1.5	8	2.8	7	39.6	6 .3 66 3.6 126 6.8
7	8	1.8	8	3.1	7	39.8	7 .4 67 3.6 127 6.9
8	8	2.0	8	3.3	7	40.0	8 .4 68 3.7 128 6.9
9	8	2.3	8	3.6	7	40.3	9 .5 69 3.7 129 7.0
10	8	2.5	8	3.8	7	40.5	10 .5 70 3.8 130 7.0
11	8	2.8	8	4.1	7	40.8	11 .6 71 3.8 131 7.1
12	8	3.0	8	4.3	7	41.0	12 .7 72 3.9 132 7.2
13	8	3.3	8	4.6	7	41.2	13 .7 73 4.0 133 7.2
14	8	3.5	8	4.8	7	41.5	14 .8 74 4.0 134 7.3
15	8	3.8	8	5.1	7	41.7	15 .8 75 4.1 135 7.3
16	8	4.0	8	5.3	7	42.0	16 .9 76 4.1 136 7.4
17	8	4.3	8	5.6	7	42.2	17 .9 77 4.2 137 7.4
18	8	4.5	8	5.8	7	42.4	18 1.0 78 4.2 138 7.5
19	8	4.8	8	6.1	7	42.7	19 1.0 79 4.3 139 7.5
20	8	5.0	8	6.3	7	42.9	20 1.1 80 4.3 140 7.6
21	8	5.3	8	6.6	7	43.1	21 1.1 81 4.4 141 7.6
22	8	5.5	8	6.8	7	43.4	22 1.2 82 4.4 142 7.7
23	8	5.8	8	7.1	7	43.6	23 1.2 83 4.5 143 7.7
24	8	6.0	8	7.4	7	43.9	24 1.3 84 4.6 144 7.8
25	8	6.3	8	7.6	7	44.1	25 1.4 85 4.6 145 7.9
26	8	6.5	8	7.9	7	44.3	26 1.4 86 4.7 146 7.9
27	8	6.8	8	8.1	7	44.6	27 1.5 87 4.7 147 8.0
28	8	7.0	8	8.4	7	44.8	28 1.5 88 4.8 148 8.0
29	8	7.3	8	8.6	7	45.1	29 1.6 89 4.8 149 8.1
30	8	7.5	8	8.9	7	45.3	30 1.6 90 4.9 150 8.1
31	8	7.8	8	9.1	7	45.5	31 1.7 91 4.9 151 8.2
32	8	8.0	8	9.4	7	45.8	32 1.7 92 5.0 152 8.2
33	8	8.3	8	9.6	7	46.0	33 1.8 93 5.0 153 8.3
34	8	8.5	8	9.9	7	46.2	34 1.8 94 5.1 154 8.3
35	8	8.8	8	10.1	7	46.5	35 1.9 95 5.1 155 8.4
36	8	9.0	8	10.4	7	46.7	36 2.0 96 5.2 156 8.5
37	8	9.3	8	10.6	7	47.0	37 2.0 97 5.3 157 8.5
38	8	9.5	8	10.9	7	47.2	38 2.1 98 5.3 158 8.6
39	8	9.8	8	11.1	7	47.4	39 2.1 99 5.4 159 8.6
40	8	10.0	8	11.4	7	47.7	40 2.2 100 5.4 160 8.7
41	8	10.3	8	11.6	7	47.9	41 2.2 101 5.5 161 8.7
42	8	10.5	8	11.9	7	48.2	42 2.3 102 5.5 162 8.8
43	8	10.8	8	12.1	7	48.4	43 2.3 103 5.6 163 8.8
44	8	11.0	8	12.4	7	48.6	44 2.4 104 5.6 164 8.9
45	8	11.3	8	12.6	7	48.9	45 2.4 105 5.7 165 8.9
46	8	11.5	8	12.9	7	49.1	46 2.5 106 5.7 166 9.0
47	8	11.8	8	13.1	7	49.3	47 2.5 107 5.8 167 9.0
48	8	12.0	8	13.4	7	49.6	48 2.6 108 5.9 168 9.1
49	8	12.3	8	13.6	7	49.8	49 2.7 109 5.9 169 9.2
50	8	12.5	8	13.9	7	50.1	50 2.7 110 6.0 170 9.2
51	8	12.8	8	14.1	7	50.3	51 2.8 111 6.0 171 9.3
52	8	13.0	8	14.4	7	50.5	52 2.8 112 6.1 172 9.3
53	8	13.3	8	14.6	7	50.8	53 2.9 113 6.1 173 9.4
54	8	13.5	8	14.9	7	51.0	54 2.9 114 6.2 174 9.4
55	8	13.8	8	15.1	7	51.3	55 3.0 115 6.2 175 9.5
56	8	14.0	8	15.4	7	51.5	56 3.0 116 6.3 176 9.5
57	8	14.3	8	15.6	7	51.7	57 3.1 117 6.3 177 9.6
58	8	14.5	8	15.9	7	52.0	58 3.1 118 6.4 178 9.6
59	8	14.8	8	16.1	7	52.2	59 3.2 119 6.4 179 9.7
60	8	15.0	8	16.4	7	52.5	60 3.3 120 6.5 180 9.8

0 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	8	15.0	8	16.4	7	52.5	0 .0 60 3.4 120 6.7
1	8	15.3	8	16.6	7	52.7	1 .1 61 3.4 121 6.8
2	8	15.5	8	16.9	7	52.9	2 .1 62 3.5 122 6.8
3	8	15.8	8	17.1	7	53.2	3 .2 63 3.5 123 6.9
4	8	16.0	8	17.4	7	53.4	4 .2 64 3.6 124 6.9
5	8	16.3	8	17.6	7	53.6	5 .3 65 3.6 125 7.0
6	8	16.5	8	17.9	7	53.9	6 .3 66 3.7 126 7.0
7	8	16.8	8	18.1	7	54.1	7 .4 67 3.7 127 7.1
8	8	17.0	8	18.4	7	54.4	8 .4 68 3.8 128 7.1
9	8	17.3	8	18.6	7	54.6	9 .5 69 3.9 129 7.2
10	8	17.5	8	18.9	7	54.8	10 .6 70 3.9 130 7.3
11	8	17.8	8	19.1	7	55.1	11 .6 71 4.0 131 7.3
12	8	18.0	8	19.4	7	55.3	12 .7 72 4.0 132 7.4
13	8	18.3	8	19.6	7	55.6	13 .7 73 4.1 133 7.4
14	8	18.5	8	19.9	7	55.8	14 .8 74 4.1 134 7.5
15	8	18.8	8	20.1	7	56.0	15 .8 75 4.2 135 7.5
16	8	19.0	8	20.4	7	56.3	16 .9 76 4.2 136 7.6
17	8	19.3	8	20.6	7	56.5	17 .9 77 4.3 137 7.6
18	8	19.5	8	20.9	7	56.7	18 1.0 78 4.4 138 7.7
19	8	19.8	8	21.1	7	57.0	19 1.1 79 4.4 139 7.8
20	8	20.0	8	21.4	7	57.2	20 1.1 80 4.5 140 7.8
21	8	20.3	8	21.6	7	57.5	21 1.2 81 4.5 141 7.9
22	8	20.5	8	21.9	7	57.7	22 1.2 82 4.6 142 7.9
23	8	20.8	8	22.1	7	57.9	23 1.3 83 4.6 143 8.0
24	8	21.0	8	22.4	7	58.2	24 1.3 84 4.7 144 8.0
25	8	21.3	8	22.6	7	58.4	25 1.4 85 4.7 145 8.1
26	8	21.5	8	22.9	7	58.7	26 1.5 86 4.8 146 8.2
27	8	21.8	8	23.1	7	58.9	27 1.5 87 4.9 147 8.2
28	8	22.0	8	23.4	7	59.1	28 1.6 88 4.9 148 8.3
29	8	22.3	8	23.6	7	59.4	29 1.6 89 5.0 149 8.3
30	8	22.5	8	23.9	7	59.6	30 1.7 90 5.0 150 8.4
31	8	22.8	8	24.1	7	59.8	31 1.7 91 5.1 151 8.4
32	8	23.0	8	24.4	8	.1 32 1.8 92 5.1 152 8.5	
33	8	23.3	8	24.6	8	.3 33 1.8 93 5.2 153 8.5	
34	8	23.5	8	24.9	8	.6 34 1.9 94 5.2 154 8.6	
35	8	23.8	8	25.1	8	.8 35 2.0 95 5.3 155 8.7	
36	8	24.0	8	25.4	8	1.0 36 2.0 96 5.4 156 8.7	
37	8	24.3	8	25.7	8	1.3 37 2.1 97 5.4 157 8.8	
38	8	24.5	8	25.9	8	1.5 38 2.1 98 5.5 158 8.8	
39	8	24.8	8	26.2	8	1.8 39 2.2 99 5.5 159 8.9	
40	8	25.0	8	26.4	8	2.0 40 2.2 100 5.6 160 8.9	
41	8	25.3	8	26.7	8	2.2 41 2.3 101 5.6 161 9.0	
42	8	25.5	8	26.9	8	2.5 42 2.3 102 5.7 162 9.0	
43	8	25.8	8	27.2	8	2.7 43 2.4 103 5.8 163 9.1	
44	8	26.0	8	27.4	8	2.9 44 2.5 104 5.8 164 9.2	
45	8	26.3	8	27.7	8	3.2 45 2.5 105 5.9 165 9.2	
46	8	26.5	8	27.9	8	3.4 46 2.6 106 5.9 166 9.3	
47	8	26.8	8	28.2	8	3.7 47 2.6 107 6.0 167 9.3	
48	8	27.0	8	28.4	8	3.9 48 2.7 108 6.0 168 9.4	
49	8	27.3	8	28.7	8	4.1 49 2.7 109 6.1 169 9.4	
50	8	27.5	8	28.9	8	4.4 50 2.8 110 6.1 170 9.5	
51	8	27.8	8	29.2	8	4.6 51 2.8 111 6.2 171 9.5	
52	8	28.0	8	29.4	8	4.9 52 2.9 112 6.3 172 9.6	
53	8	28.3	8	29.7	8	5.1 53 3.0 113 6.3 173 9.7	
54	8	28.5	8	29.9	8	5.3 54 3.0 114 6.4 174 9.7	
55	8	28.8	8	30.2	8	5.6 55 3.1 115 6.4 175 9.8	
56	8	29.0	8	30.4	8	5.8 56 3.1 116 6.5 176 9.8	
57	8	29.3	8	30.7	8	6.1 57 3.2 117 6.5 177 9.9	
58	8	29.5	8	30.9	8	6.3 58 3.2 118 6.6 178 9.9	
59	8	29.8	8	31.2	8	6.5 59 3.3 119 6.6 179 10.0	
60	8	30.0	8	31.4	8	6.8 60 3.4 120 6.7 180 10.1	

0 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 30.0	8 31.4	8 6.8	0	.0	60	3.5
1	8 30.3	8 31.7	8 7.0	1	.1	61	3.5
2	8 30.5	8 31.9	8 7.2	2	.1	62	3.6
3	8 30.8	8 32.2	8 7.5	3	.2	63	3.6
4	8 31.0	8 32.4	8 7.7	4	.2	64	3.7
5	8 31.3	8 32.7	8 8.0	5	.3	65	3.7
6	8 31.5	8 32.9	8 8.2	6	.3	66	3.8
7	8 31.8	8 33.2	8 8.4	7	.4	67	3.9
8	8 32.0	8 33.4	8 8.7	8	.5	68	3.9
9	8 32.3	8 33.7	8 8.9	9	.5	69	4.0
10	8 32.5	8 33.9	8 9.2	10	.6	70	4.0
11	8 32.8	8 34.2	8 9.4	11	.6	71	4.1
12	8 33.0	8 34.4	8 9.6	12	.7	72	4.1
13	8 33.3	8 34.7	8 9.9	13	.7	73	4.2
14	8 33.5	8 34.9	8 10.1	14	.8	74	4.3
15	8 33.8	8 35.2	8 10.3	15	.9	75	4.3
16	8 34.0	8 35.4	8 10.6	16	.9	76	4.4
17	8 34.3	8 35.7	8 10.8	17	1.0	77	4.4
18	8 34.5	8 35.9	8 11.1	18	1.0	78	4.5
19	8 34.8	8 36.2	8 11.3	19	1.1	79	4.5
20	8 35.0	8 36.4	8 11.5	20	1.2	80	4.6
21	8 35.3	8 36.7	8 11.8	21	1.2	81	4.7
22	8 35.5	8 36.9	8 12.0	22	1.3	82	4.7
23	8 35.8	8 37.2	8 12.3	23	1.3	83	4.8
24	8 36.0	8 37.4	8 12.5	24	1.4	84	4.8
25	8 36.3	8 37.7	8 12.7	25	1.4	85	4.9
26	8 36.5	8 37.9	8 13.0	26	1.5	86	4.9
27	8 36.8	8 38.2	8 13.2	27	1.6	87	5.0
28	8 37.0	8 38.4	8 13.4	28	1.6	88	5.1
29	8 37.3	8 38.7	8 13.7	29	1.7	89	5.1
30	8 37.5	8 38.9	8 13.9	30	1.7	90	5.2
31	8 37.8	8 39.2	8 14.2	31	1.8	91	5.2
32	8 38.0	8 39.4	8 14.4	32	1.8	92	5.3
33	8 38.3	8 39.7	8 14.6	33	1.9	93	5.3
34	8 38.5	8 39.9	8 14.9	34	2.0	94	5.4
35	8 38.8	8 40.2	8 15.1	35	2.0	95	5.5
36	8 39.0	8 40.4	8 15.4	36	2.1	96	5.5
37	8 39.3	8 40.7	8 15.6	37	2.1	97	5.6
38	8 39.5	8 40.9	8 15.8	38	2.2	98	5.6
39	8 39.8	8 41.2	8 16.1	39	2.2	99	5.7
40	8 40.0	8 41.4	8 16.3	40	2.3	100	5.8
41	8 40.3	8 41.7	8 16.5	41	2.4	101	5.8
42	8 40.5	8 41.9	8 16.8	42	2.4	102	5.9
43	8 40.8	8 42.2	8 17.0	43	2.5	103	5.9
44	8 41.0	8 42.4	8 17.3	44	2.5	104	6.0
45	8 41.3	8 42.7	8 17.5	45	2.6	105	6.0
46	8 41.5	8 42.9	8 17.7	46	2.6	106	6.1
47	8 41.8	8 43.2	8 18.0	47	2.7	107	6.2
48	8 42.0	8 43.5	8 18.2	48	2.8	108	6.2
49	8 42.3	8 43.7	8 18.5	49	2.8	109	6.3
50	8 42.5	8 44.0	8 18.7	50	2.9	110	6.3
51	8 42.8	8 44.2	8 18.9	51	2.9	111	6.4
52	8 43.0	8 44.5	8 19.2	52	3.0	112	6.4
53	8 43.3	8 44.7	8 19.4	53	3.0	113	6.5
54	8 43.5	8 45.0	8 19.7	54	3.1	114	6.6
55	8 43.8	8 45.2	8 19.9	55	3.2	115	6.6
56	8 44.0	8 45.5	8 20.1	56	3.2	116	6.7
57	8 44.3	8 45.7	8 20.4	57	3.3	117	6.7
58	8 44.5	8 46.0	8 20.6	58	3.3	118	6.8
59	8 44.8	8 46.2	8 20.8	59	3.4	119	6.8
60	8 45.0	8 46.5	8 21.1	60	3.5	120	6.9

0 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 45.0	8 46.5	8 21.1	0	.0	60	3.6
1	8 45.3	8 46.7	8 21.3	1	.1	61	3.6
2	8 45.5	8 47.0	8 21.6	2	.1	62	3.7
3	8 45.8	8 47.2	8 21.8	3	.2	63	3.7
4	8 46.0	8 47.5	8 22.0	4	.2	64	3.8
5	8 46.3	8 47.7	8 22.3	5	.3	65	3.8
6	8 46.5	8 48.0	8 22.5	6	.4	66	3.9
7	8 46.8	8 48.2	8 22.8	7	.4	67	4.0
8	8 47.0	8 48.5	8 23.0	8	.5	68	4.0
9	8 47.3	8 48.7	8 23.2	9	.5	69	4.1
10	8 47.5	8 49.0	8 23.5	10	.6	70	4.1
11	8 47.8	8 49.2	8 23.7	11	.7	71	4.2
12	8 48.0	8 49.5	8 23.9	12	.7	72	4.3
13	8 48.3	8 49.7	8 24.2	13	.8	73	4.3
14	8 48.5	8 50.0	8 24.4	14	.8	74	4.4
15	8 48.8	8 50.2	8 24.7	15	.9	75	4.4
16	8 49.0	8 50.5	8 24.9	16	.9	76	4.5
17	8 49.3	8 50.7	8 25.1	17	1.0	77	4.6
18	8 49.5	8 51.0	8 25.4	18	1.1	78	4.6
19	8 49.8	8 51.2	8 25.6	19	1.1	79	4.7
20	8 50.0	8 51.5	8 25.9	20	1.2	80	4.7
21	8 50.3	8 51.7	8 26.1	21	1.2	81	4.8
22	8 50.5	8 52.0	8 26.3	22	1.3	82	4.9
23	8 50.8	8 52.2	8 26.6	23	1.4	83	4.9
24	8 51.0	8 52.5	8 26.8	24	1.4	84	5.0
25	8 51.3	8 52.7	8 27.0	25	1.5	85	5.0
26	8 51.5	8 53.0	8 27.3	26	1.5	86	5.1
27	8 51.8	8 53.2	8 27.5	27	1.6	87	5.1
28	8 52.0	8 53.5	8 27.8	28	1.7	88	5.2
29	8 52.3	8 53.7	8 28.0	29	1.7	89	5.3
30	8 52.5	8 54.0	8 28.2	30	1.8	90	5.3
31	8 52.8	8 54.2	8 28.5	31	1.8	91	5.4
32	8 53.0	8 54.5	8 28.7	32	1.9	92	5.4
33	8 53.3	8 54.7	8 29.0	33	2.0	93	5.5
34	8 53.5	8 55.0	8 29.2	34	2.0	94	5.6
35	8 53.8	8 55.2	8 29.4	35	2.1	95	5.6
36	8 54.0	8 55.5	8 29.7	36	2.1	96	5.7
37	8 54.3	8 55.7	8 29.9	37	2.2	97	5.7
38	8 54.5	8 56.0	8 30.2	38	2.2	98	5.8
39	8 54.8	8 56.2	8 30.4	39	2.3	99	5.9
40	8 55.0	8 56.5	8 30.6	40	2.4	100	5.9
41	8 55.3	8 56.7	8 30.9	41	2.4	101	6.0
42	8 55.5	8 57.0	8 31.1	42	2.5	102	6.0
43	8 55.8	8 57.2	8 31.3	43	2.5	103	6.1
44	8 56.0	8 57.5	8 31.6	44	2.6	104	6.2
45	8 56.3	8 57.7	8 31.8	45	2.7	105	6.2
46	8 56.5	8 58.0	8 32.1	46	2.7	106	6.3
47	8 56.8	8 58.2	8 32.3	47	2.8	107	6.3
48	8 57.0	8 58.5	8 32.5	48	2.8	108	6.4
49	8 57.3	8 58.7	8 32.8	49	2.9	109	6.4
50	8 57.5	8 59.0	8 33.0	50	3.0	110	6.5
51	8 57.8	8 59.2	8 33.3	51	3.0	111	6.6
52	8 58.0	8 59.5	8 33.5	52	3.1	112	6.6
53	8 58.3	8 59.7	8 33.7	53	3.1	113	6.7
54	8 58.5	8 60.0	8 34.0	54	3.2	114	6.7
55	8 58.8	9 .2	8 34.2	55	3.3	115	6.8
56	8 59.0	9 .5	8 34.4	56	3.3	116	6.9
57	8 59.3	9 .7	8 34.7	57	3.4	117	6.9
58	8 59.5	9 1.0	8 34.9	58	3.4	118	7.0
59	8 59.8	9 1.2	8 35.2	59	3.5	119	7.0
60	9 .0	9 1.5	8 35.4	60	3.6	120	7.1

0 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	9	.0	9	1.5	8	35.4	0	.0	60	3.7	120	7.3
1	9	.3	9	1.8	8	35.6	1	.1	61	3.7	121	7.4
2	9	.5	9	2.0	8	35.9	2	.1	62	3.8	122	7.4
3	9	.8	9	2.3	8	36.1	3	.2	63	3.8	123	7.5
4	9	1.0	9	2.5	8	36.4	4	.2	64	3.9	124	7.5
5	9	1.3	9	2.8	8	36.6	5	.3	65	4.0	125	7.6
6	9	1.5	9	3.0	8	36.8	6	.4	66	4.0	126	7.7
7	9	1.8	9	3.3	8	37.1	7	.4	67	4.1	127	7.7
8	9	2.0	9	3.5	8	37.3	8	.5	68	4.1	128	7.8
9	9	2.3	9	3.8	8	37.5	9	.5	69	4.2	129	7.8
10	9	2.5	9	4.0	8	37.8	10	.6	70	4.3	130	7.9
11	9	2.8	9	4.3	8	38.0	11	.7	71	4.3	131	8.0
12	9	3.0	9	4.5	8	38.3	12	.7	72	4.4	132	8.0
13	9	3.3	9	4.8	8	38.5	13	.8	73	4.4	133	8.1
14	9	3.5	9	5.0	8	38.7	14	.9	74	4.5	134	8.2
15	9	3.8	9	5.3	8	39.0	15	.9	75	4.6	135	8.2
16	9	4.0	9	5.5	8	39.2	16	1.0	76	4.6	136	8.3
17	9	4.3	9	5.8	8	39.5	17	1.0	77	4.7	137	8.3
18	9	4.5	9	6.0	8	39.7	18	1.1	78	4.7	138	8.4
19	9	4.8	9	6.3	8	39.9	19	1.2	79	4.8	139	8.5
20	9	5.0	9	6.5	8	40.2	20	1.2	80	4.9	140	8.5
21	9	5.3	9	6.8	8	40.4	21	1.3	81	4.9	141	8.6
22	9	5.5	9	7.0	8	40.6	22	1.3	82	5.0	142	8.6
23	9	5.8	9	7.3	8	40.9	23	1.4	83	5.0	143	8.7
24	9	6.0	9	7.5	8	41.1	24	1.5	84	5.1	144	8.8
25	9	6.3	9	7.8	8	41.4	25	1.5	85	5.2	145	8.8
26	9	6.5	9	8.0	8	41.6	26	1.6	86	5.2	146	8.9
27	9	6.8	9	8.3	8	41.8	27	1.6	87	5.3	147	8.9
28	9	7.0	9	8.5	8	42.1	28	1.7	88	5.4	148	9.0
29	9	7.3	9	8.8	8	42.3	29	1.8	89	5.4	149	9.1
30	9	7.5	9	9.0	8	42.6	30	1.8	90	5.5	150	9.1
31	9	7.8	9	9.3	8	42.8	31	1.9	91	5.5	151	9.2
32	9	8.0	9	9.5	8	43.0	32	1.9	92	5.6	152	9.2
33	9	8.3	9	9.8	8	43.3	33	2.0	93	5.7	153	9.3
34	9	8.5	9	10.0	8	43.5	34	2.1	94	5.7	154	9.4
35	9	8.8	9	10.3	8	43.8	35	2.1	95	5.8	155	9.4
36	9	9.0	9	10.5	8	44.0	36	2.2	96	5.8	156	9.5
37	9	9.3	9	10.8	8	44.2	37	2.3	97	5.9	157	9.6
38	9	9.5	9	11.0	8	44.5	38	2.3	98	6.0	158	9.6
39	9	9.8	9	11.3	8	44.7	39	2.4	99	6.0	159	9.7
40	9	10.0	9	11.5	8	44.9	40	2.4	100	6.1	160	9.7
41	9	10.3	9	11.8	8	45.2	41	2.5	101	6.1	161	9.8
42	9	10.5	9	12.0	8	45.4	42	2.6	102	6.2	162	9.9
43	9	10.8	9	12.3	8	45.7	43	2.6	103	6.3	163	9.9
44	9	11.0	9	12.5	8	45.9	44	2.7	104	6.3	164	10.0
45	9	11.3	9	12.8	8	46.1	45	2.7	105	6.4	165	10.0
46	9	11.5	9	13.0	8	46.4	46	2.8	106	6.4	166	10.1
47	9	11.8	9	13.3	8	46.6	47	2.9	107	6.5	167	10.2
48	9	12.0	9	13.5	8	46.9	48	2.9	108	6.6	168	10.2
49	9	12.3	9	13.8	8	47.1	49	3.0	109	6.6	169	10.3
50	9	12.5	9	14.0	8	47.3	50	3.0	110	6.7	170	10.3
51	9	12.8	9	14.3	8	47.6	51	3.1	111	6.8	171	10.4
52	9	13.0	9	14.5	8	47.8	52	3.2	112	6.8	172	10.5
53	9	13.3	9	14.8	8	48.0	53	3.2	113	6.9	173	10.5
54	9	13.5	9	15.0	8	48.3	54	3.3	114	6.9	174	10.6
55	9	13.8	9	15.3	8	48.5	55	3.3	115	7.0	175	10.6
56	9	14.0	9	15.5	8	48.8	56	3.4	116	7.1	176	10.7
57	9	14.3	9	15.8	8	49.0	57	3.5	117	7.1	177	10.8
58	9	14.5	9	16.0	8	49.2	58	3.5	118	7.2	178	10.8
59	9	14.8	9	16.3	8	49.5	59	3.6	119	7.2	179	10.9
60	9	15.0	9	16.5	8	49.7	60	3.7	120	7.3	180	11.0

0 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	9	15.0	9	16.5	8	49.7	0	.0	60	3.8	120	7.5
1	9	15.3	9	16.8	8	50.0	1	.1	61	3.8	121	7.6
2	9	15.5	9	17.0	8	50.2	2	.1	62	3.9	122	7.6
3	9	15.8	9	17.3	8	50.4	3	.2	63	3.9	123	7.7
4	9	16.0	9	17.5	8	50.7	4	.3	64	4.0	124	7.8
5	9	16.3	9	17.8	8	50.9	5	.3	65	4.1	125	7.8
6	9	16.5	9	18.0	8	51.1	6	.4	66	4.1	126	7.9
7	9	16.8	9	18.3	8	51.4	7	.4	67	4.2	127	7.9
8	9	17.0	9	18.5	8	51.6	8	.5	68	4.3	128	8.0
9	9	17.3	9	18.8	8	51.9	9	.6	69	4.3	129	8.1
10	9	17.5	9	19.0	8	52.1	10	.6	70	4.4	130	8.1
11	9	17.8	9	19.3	8	52.3	11	.7	71	4.4	131	8.2
12	9	18.0	9	19.6	8	52.6	12	.8	72	4.5	132	8.3
13	9	18.3	9	19.8	8	52.8	13	.8	73	4.6	133	8.3
14	9	18.5	9	20.1	8	53.1	14	.9	74	4.6	134	8.4
15	9	18.8	9	20.3	8	53.3	15	.9	75	4.7	135	8.4
16	9	19.0	9	20.6	8	53.5	16	1.0	76	4.8	136	8.5
17	9	19.3	9	20.8	8	53.8	17	1.1	77	4.8	137	8.6
18	9	19.5	9	21.1	8	54.0	18	1.1	78	4.9	138	8.6
19	9	19.8	9	21.3	8	54.3	19	1.2	79	4.9	139	8.7
20	9	20.0	9	21.6	8	54.5	20	1.3	80	5.0	140	8.8
21	9	20.3	9	21.8	8	54.7	21	1.3	81	5.1	141	8.8
22	9	20.5	9	22.1	8	55.0	22	1.4	82	5.1	142	8.9
23	9	20.8	9	22.3	8	55.2	23	1.4	83	5.2	143	8.9
24	9	21.0	9	22.6	8	55.4	24	1.5	84	5.3	144	9.0
25	9	21.3	9	22.8	8	55.7	25	1.6	85	5.3	145	9.1
26	9	21.5	9	23.1	8	55.9	26	1.6	86	5.4	146	9.1
27	9	21.8	9	23.3	8	56.2	27	1.7	87	5.4	147	9.2
28	9	22.0	9	23.6	8	56.4	28	1.8	88	5.5	148	9.3
29	9	22.3	9	23.8	8	56.6	29	1.8	89	5.6	149	9.3
30	9	22.5	9	24.1	8	56.9	30	1.9	90	5.6	150	9.4
31	9	22.8	9	24.3	8	57.1	31	1.9	91	5.7	151	9.4
32	9	23.0	9	24.6	8	57.4	32	2.0	92	5.8	152	9.5
33	9	23.3	9	24.8	8	57.6	33	2.1	93	5.8	153	9.6
34	9	23.5	9	25.1	8	57.8	34	2.1	94	5.9	154	9.6
35	9	23.8	9	25.3	8	58.1	35	2.2	95	5.9	155	9.7
36	9	24.0	9	25.6	8	58.3	36	2.3	96	6.0	156	9.8
37	9	24.3	9	25.8	8	58.5	37	2.3	97	6.1	157	9.8
38	9	24.5	9	26.1	8	58.8	38	2.4	98	6.1	158	9.9
39	9	24.8	9	26.3	8	59.0	39	2.4	99	6.2	159	9.9
40	9	25.0	9	26.6	8	59.3	40	2.5	100	6.3	160	10.0
41	9	25.3	9	26.8	8	59.5	41	2.6	101	6.3	161	10.1
42	9	25.5	9	27.1	8	59.7	42	2.6	102	6.4	162	10.1
43	9	25.8	9	27.3	8	60.0	43	2.7	103	6.4	163	10.2
44	9	26.0	9	27.6	9	.2	44	2.8	104	6.5	164	10.3
45	9	26.3	9	27.8	9	.5	45	2.8	105	6.6	165	10.3
46	9	26.5	9	28.1	9	.7	46	2.9	106	6.6	166	10.4
47	9	26.8	9	28.3	9	.9	47	2.9	107	6.7	167	10.4
48	9	27.0	9	28.6	9	1.2	48	3.0	108	6.8	168	10.5
49	9	27.3	9	28.8	9	1.4	49	3.1	109	6.8	169	10.6
50	9	27.5	9	29.1	9	1.6	50	3.1	110	6.9	170	10.6
51	9	27.8	9	29.3	9	1.9	51	3.2	111	6.9	171	10.7
52	9	28.0	9	29.6	9	2.1	52	3.3	112	7.0	172	10.8
53	9	28.3	9	29.8	9	2.4	53	3.3	113	7.1	173	10.8
54	9											

0 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	9 30.0	9 31.6	9 4.0	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 1.0	75 4.8	135 8.7
16	9 34.0	9 35.6	9 7.9	16 1.0	76 4.9	136 8.7
17	9 34.3	9 35.8	9 8.1	17 1.1	77 4.9	137 8.8
18	9 34.5	9 36.1	9 8.3	18 1.2	78 5.0	138 8.9
19	9 34.8	9 36.3	9 8.6	19 1.2	79 5.1	139 8.9
20	9 35.0	9 36.6	9 8.8	20 1.3	80 5.1	140 9.0
21	9 35.3	9 36.8	9 9.0	21 1.3	81 5.2	141 9.0
22	9 35.5	9 37.1	9 9.3	22 1.4	82 5.3	142 9.1
23	9 35.8	9 37.3	9 9.5	23 1.5	83 5.3	143 9.2
24	9 36.0	9 37.6	9 9.8	24 1.5	84 5.4	144 9.2
25	9 36.3	9 37.9	9 10.0	25 1.6	85 5.5	145 9.3
26	9 36.5	9 38.1	9 10.2	26 1.7	86 5.5	146 9.4
27	9 36.8	9 38.4	9 10.5	27 1.7	87 5.6	147 9.4
28	9 37.0	9 38.6	9 10.7	28 1.8	88 5.6	148 9.5
29	9 37.3	9 38.9	9 11.0	29 1.9	89 5.7	149 9.6
30	9 37.5	9 39.1	9 11.2	30 1.9	90 5.8	150 9.6
31	9 37.8	9 39.4	9 11.4	31 2.0	91 5.8	151 9.7
32	9 38.0	9 39.6	9 11.7	32 2.1	92 5.9	152 9.8
33	9 38.3	9 39.9	9 11.9	33 2.1	93 6.0	153 9.8
34	9 38.5	9 40.1	9 12.1	34 2.2	94 6.0	154 9.9
35	9 38.8	9 40.4	9 12.4	35 2.2	95 6.1	155 9.9
36	9 39.0	9 40.6	9 12.6	36 2.3	96 6.2	156 10.0
37	9 39.3	9 40.9	9 12.9	37 2.4	97 6.2	157 10.1
38	9 39.5	9 41.1	9 13.1	38 2.4	98 6.3	158 10.1
39	9 39.8	9 41.4	9 13.3	39 2.5	99 6.4	159 10.2
40	9 40.0	9 41.6	9 13.6	40 2.6	100 6.4	160 10.3
41	9 40.3	9 41.9	9 13.8	41 2.6	101 6.5	161 10.3
42	9 40.5	9 42.1	9 14.1	42 2.7	102 6.5	162 10.4
43	9 40.8	9 42.4	9 14.3	43 2.8	103 6.6	163 10.5
44	9 41.0	9 42.6	9 14.5	44 2.8	104 6.7	164 10.5
45	9 41.3	9 42.9	9 14.8	45 2.9	105 6.7	165 10.6
46	9 41.5	9 43.1	9 15.0	46 3.0	106 6.8	166 10.7
47	9 41.8	9 43.4	9 15.2	47 3.0	107 6.9	167 10.7
48	9 42.0	9 43.6	9 15.5	48 3.1	108 6.9	168 10.8
49	9 42.3	9 43.9	9 15.7	49 3.1	109 7.0	169 10.8
50	9 42.5	9 44.1	9 16.0	50 3.2	110 7.1	170 10.9
51	9 42.8	9 44.4	9 16.2	51 3.3	111 7.1	171 11.0
52	9 43.0	9 44.6	9 16.4	52 3.3	112 7.2	172 11.0
53	9 43.3	9 44.9	9 16.7	53 3.4	113 7.3	173 11.1
54	9 43.5	9 45.1	9 16.9	54 3.5	114 7.3	174 11.2
55	9 43.8	9 45.4	9 17.2	55 3.5	115 7.4	175 11.2
56	9 44.0	9 45.6	9 17.4	56 3.6	116 7.4	176 11.3
57	9 44.3	9 45.9	9 17.6	57 3.7	117 7.5	177 11.4
58	9 44.5	9 46.1	9 17.9	58 3.7	118 7.6	178 11.4
59	9 44.8	9 46.4	9 18.1	59 3.8	119 7.6	179 11.5
60	9 45.0	9 46.6	9 18.4	60 3.9	120 7.7	180 11.6

0 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
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 1.0	75 4.9	135 8.9
16	9 49.0	9 50.6	9 22.2	16 1.1	76 5.0	136 9.0
17	9 49.3	9 50.9	9 22.4	17 1.1	77 5.1	137 9.0
18	9 49.5	9 51.1	9 22.6	18 1.2	78 5.1	138 9.1
19	9 49.8	9 51.4	9 22.9	19 1.3	79 5.2	139 9.2
20	9 50.0	9 51.6	9 23.1	20 1.3	80 5.3	140 9.2
21	9 50.3	9 51.9	9 23.4	21 1.4	81 5.3	141 9.3
22	9 50.5	9 52.1	9 23.6	22 1.4	82 5.4	142 9.3
23	9 50.8	9 52.4	9 23.8	23 1.5	83 5.5	143 9.4
24	9 51.0	9 52.6	9 24.1	24 1.6	84 5.5	144 9.5
25	9 51.3	9 52.9	9 24.3	25 1.6	85 5.6	145 9.5
26	9 51.5	9 53.1	9 24.6	26 1.7	86 5.7	146 9.6
27	9 51.8	9 53.4	9 24.8	27 1.8	87 5.7	147 9.7
28	9 52.0	9 53.6	9 25.0	28 1.8	88 5.8	148 9.7
29	9 52.3	9 53.9	9 25.3	29 1.9	89 5.9	149 9.8
30	9 52.5	9 54.1	9 25.5	30 2.0	90 5.9	150 9.9
31	9 52.8	9 54.4	9 25.7	31 2.0	91 6.0	151 9.9
32	9 53.0	9 54.6	9 26.0	32 2.1	92 6.1	152 10.0
33	9 53.3	9 54.9	9 26.2	33 2.2	93 6.1	153 10.1
34	9 53.5	9 55.1	9 26.5	34 2.2	94 6.2	154 10.1
35	9 53.8	9 55.4	9 26.7	35 2.3	95 6.3	155 10.2
36	9 54.0	9 55.7	9 26.9	36 2.4	96 6.3	156 10.3
37	9 54.3	9 55.9	9 27.2	37 2.4	97 6.4	157 10.3
38	9 54.5	9 56.2	9 27.4	38 2.5	98 6.5	158 10.4
39	9 54.8	9 56.4	9 27.7	39 2.6	99 6.5	159 10.5
40	9 55.0	9 56.7	9 27.9	40 2.6	100 6.6	160 10.5
41	9 55.3	9 56.9	9 28.1	41 2.7	101 6.6	161 10.6
42	9 55.5	9 57.2	9 28.4	42 2.8	102 6.7	162 10.7
43	9 55.8	9 57.4	9 28.6	43 2.8	103 6.8	163 10.7
44	9 56.0	9 57.7	9 28.8	44 2.9	104 6.8	164 10.8
45	9 56.3	9 57.9	9 29.1	45 3.0	105 6.9	165 10.9
46	9 56.5	9 58.2	9 29.3	46 3.0	106 7.0	166 10.9
47	9 56.8	9 58.4	9 29.6	47 3.1	107 7.0	167 11.0
48	9 57.0	9 58.7	9 29.8	48 3.2	108 7.1	168 11.1
49	9 57.3	9 58.9	9 30.0	49 3.2	109 7.2	169 11.1
50	9 57.5	9 59.2	9 30.3	50 3.3	110 7.2	170 11.2
51	9 57.8	9 59.4	9 30.5	51 3.4	111 7.3	171 11.3
52	9 58.0	9 59.7	9 30.8	52 3.4	112 7.4	172 11.3
53	9 58.3	9 59.9	9 31.0	53 3.5	113 7.4	173 11.4
54	9 58.5	10 .2	9 31.2	54 3.6	114 7.5	174 11.5
55	9 58.8	10 .4	9 31.5	55 3.6	115 7.6	175 11.5
56	9 59.0	10 .7	9 31.7	56 3.7	116 7.6	176 11.6
57	9 59.3	10 .9	9 32.0	57 3.8	117 7.7	177 11.7
58	9 59.5	10 1.2	9 32.2	58 3.8	118 7.8	178 11.7
59	9 59.8	10 1.4	9 32.4	59 3.9	119 7.8	179 11.8
60	10 .0	10 1.7	9 32.7	60 4.0	120 7.9	180 11.9

## 0 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
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	1.0	75	5.1	135	9.1
16	10	4.0	10	5.7	9	36.5	16	1.1	76	5.1	136	9.2
17	10	4.3	10	5.9	9	36.7	17	1.1	77	5.2	137	9.2
18	10	4.5	10	6.2	9	37.0	18	1.2	78	5.3	138	9.3
19	10	4.8	10	6.4	9	37.2	19	1.3	79	5.3	139	9.4
20	10	5.0	10	6.7	9	37.4	20	1.4	80	5.4	140	9.5
21	10	5.3	10	6.9	9	37.7	21	1.4	81	5.5	141	9.5
22	10	5.5	10	7.2	9	37.9	22	1.5	82	5.5	142	9.6
23	10	5.8	10	7.4	9	38.2	23	1.6	83	5.6	143	9.7
24	10	6.0	10	7.7	9	38.4	24	1.6	84	5.7	144	9.7
25	10	6.3	10	7.9	9	38.6	25	1.7	85	5.7	145	9.8
26	10	6.5	10	8.2	9	38.9	26	1.8	86	5.8	146	9.9
27	10	6.8	10	8.4	9	39.1	27	1.8	87	5.9	147	9.9
28	10	7.0	10	8.7	9	39.3	28	1.9	88	5.9	148	10.0
29	10	7.3	10	8.9	9	39.6	29	2.0	89	6.0	149	10.1
30	10	7.5	10	9.2	9	39.8	30	2.0	90	6.1	150	10.1
31	10	7.8	10	9.4	9	40.1	31	2.1	91	6.1	151	10.2
32	10	8.0	10	9.7	9	40.3	32	2.2	92	6.2	152	10.3
33	10	8.3	10	9.9	9	40.5	33	2.2	93	6.3	153	10.3
34	10	8.5	10	10.2	9	40.8	34	2.3	94	6.3	154	10.4
35	10	8.8	10	10.4	9	41.0	35	2.4	95	6.4	155	10.5
36	10	9.0	10	10.7	9	41.3	36	2.4	96	6.5	156	10.5
37	10	9.3	10	10.9	9	41.5	37	2.5	97	6.5	157	10.6
38	10	9.5	10	11.2	9	41.7	38	2.6	98	6.6	158	10.7
39	10	9.8	10	11.4	9	42.0	39	2.6	99	6.7	159	10.7
40	10	10.0	10	11.7	9	42.2	40	2.7	100	6.8	160	10.8
41	10	10.3	10	11.9	9	42.4	41	2.8	101	6.8	161	10.9
42	10	10.5	10	12.2	9	42.7	42	2.8	102	6.9	162	10.9
43	10	10.8	10	12.4	9	42.9	43	2.9	103	7.0	163	11.0
44	10	11.0	10	12.7	9	43.2	44	3.0	104	7.0	164	11.1
45	10	11.3	10	12.9	9	43.4	45	3.0	105	7.1	165	11.1
46	10	11.5	10	13.2	9	43.6	46	3.1	106	7.2	166	11.2
47	10	11.8	10	13.4	9	43.9	47	3.2	107	7.2	167	11.3
48	10	12.0	10	13.7	9	44.1	48	3.2	108	7.3	168	11.3
49	10	12.3	10	14.0	9	44.4	49	3.3	109	7.4	169	11.4
50	10	12.5	10	14.2	9	44.6	50	3.4	110	7.4	170	11.5
51	10	12.8	10	14.5	9	44.8	51	3.4	111	7.5	171	11.5
52	10	13.0	10	14.7	9	45.1	52	3.5	112	7.6	172	11.6
53	10	13.3	10	15.0	9	45.3	53	3.6	113	7.6	173	11.7
54	10	13.5	10	15.2	9	45.6	54	3.6	114	7.7	174	11.7
55	10	13.8	10	15.5	9	45.8	55	3.7	115	7.8	175	11.8
56	10	14.0	10	15.7	9	46.0	56	3.8	116	7.8	176	11.9
57	10	14.3	10	16.0	9	46.3	57	3.8	117	7.9	177	11.9
58	10	14.5	10	16.2	9	46.5	58	3.9	118	8.0	178	12.0
59	10	14.8	10	16.5	9	46.7	59	4.0	119	8.0	179	12.1
60	10	15.0	10	16.7	9	47.0	60	4.1	120	8.1	180	12.2

## 0 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
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	.5	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	1.0	74	5.1	134	9.3
15	10	18.8	10	20.5	9	50.6	15	1.0	75	5.2	135	9.3
16	10	19.0	10	20.7	9	50.8	16	1.1	76	5.3	136	9.4
17	10	19.3	10	21.0	9	51.0	17	1.2	77	5.3	137	9.5
18	10	19.5	10	21.2	9	51.3	18	1.2	78	5.4	138	9.5
19	10	19.8	10	21.5	9	51.5	19	1.3	79	5.5	139	9.6
20	10	20.0	10	21.7	9	51.8	20	1.4	80	5.5	140	9.7
21	10	20.3	10	22.0	9	52.0	21	1.5	81	5.6	141	9.8
22	10	20.5	10	22.2	9	52.2	22	1.5	82	5.7	142	9.8
23	10	20.8	10	22.5	9	52.5	23	1.6	83	5.7	143	9.9
24	10	21.0	10	22.7	9	52.7	24	1.7	84	5.8	144	10.0
25	10	21.3	10	23.0	9	52.9	25	1.7	85	5.9	145	10.0
26	10	21.5	10	23.2	9	53.2	26	1.8	86	5.9	146	10.1
27	10	21.8	10	23.5	9	53.4	27	1.9	87	6.0	147	10.2
28	10	22.0	10	23.7	9	53.7	28	1.9	88	6.1	148	10.2
29	10	22.3	10	24.0	9	53.9	29	2.0	89	6.2	149	10.3
30	10	22.5	10	24.2	9	54.1	30	2.1	90	6.2	150	10.4
31	10	22.8	10	24.5	9	54.4	31	2.1	91	6.3	151	10.4
32	10	23.0	10	24.7	9	54.6	32	2.2	92	6.4	152	10.5
33	10	23.3	10	25.0	9	54.9	33	2.3	93	6.4	153	10.6
34	10	23.5	10	25.2	9	55.1	34	2.4	94	6.5	154	10.7
35	10	23.8	10	25.5	9	55.3	35	2.4	95	6.6	155	10.7
36	10	24.0	10	25.7	9	55.6	36	2.5	96	6.6	156	10.8
37	10	24.3	10	26.0	9	55.8	37	2.6	97	6.7	157	10.9
38	10	24.5	10	26.2	9	56.1	38	2.6	98	6.8	158	10.9
39	10	24.8	10	26.5	9	56.3	39	2.7	99	6.8	159	11.0
40	10	25.0	10	26.7	9	56.5	40	2.8	100	6.9	160	11.1
41	10	25.3	10	27.0	9	56.8	41	2.8	101	7.0	161	11.1
42	10	25.5	10	27.2	9	57.0	42	2.9	102	7.1	162	11.2
43	10	25.8	10	27.5	9	57.2	43	3.0	103	7.1	163	11.3
44	10	26.0	10	27.7	9	57.5	44	3.0	104	7.2	164	11.3
45	10	26.3	10	28.0	9	57.7	45	3.1	105	7.3	165	11.4
46	10	26.5	10	28.2	9	58.0	46	3.2	106	7.3	166	11.5
47	10	26.8	10	28.5	9	58.2	47	3.3	107	7.4	167	11.6
48	10	27.0	10	28.7	9	58.4	48	3.3	108	7.5	168	11.6
49	10	27.3	10	29.0	9	58.7	49	3.4	109	7.5	169	11.7
50	10	27.5	10	29.2	9	58.9	50	3.5	110	7.6	170	11.8
51	10	27.8	10	29.5	9	59.2	51	3.5	111	7.7	171	11.8
52	10	28.0	10									

0 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	10	30.0	10	31.8	10	1.3	0 .0	60 4.3	120 8.5
1	10	30.3	10	32.0	10	1.5	1 .1	61 4.3	121 8.6
2	10	30.5	10	32.3	10	1.8	2 .1	62 4.4	122 8.6
3	10	30.8	10	32.5	10	2.0	3 .2	63 4.5	123 8.7
4	10	31.0	10	32.8	10	2.3	4 .3	64 4.5	124 8.8
5	10	31.3	10	33.0	10	2.5	5 .4	65 4.6	125 8.9
6	10	31.5	10	33.3	10	2.7	6 .4	66 4.7	126 8.9
7	10	31.8	10	33.5	10	3.0	7 .5	67 4.7	127 9.0
8	10	32.0	10	33.8	10	3.2	8 .6	68 4.8	128 9.1
9	10	32.3	10	34.0	10	3.4	9 .6	69 4.9	129 9.1
10	10	32.5	10	34.3	10	3.7	10 .7	70 5.0	130 9.2
11	10	32.8	10	34.5	10	3.9	11 .8	71 5.0	131 9.3
12	10	33.0	10	34.8	10	4.2	12 .9	72 5.1	132 9.4
13	10	33.3	10	35.0	10	4.4	13 .9	73 5.2	133 9.4
14	10	33.5	10	35.3	10	4.6	14 1.0	74 5.2	134 9.5
15	10	33.8	10	35.5	10	4.9	15 1.1	75 5.3	135 9.6
16	10	34.0	10	35.8	10	5.1	16 1.1	76 5.4	136 9.6
17	10	34.3	10	36.0	10	5.4	17 1.2	77 5.5	137 9.7
18	10	34.5	10	36.3	10	5.6	18 1.3	78 5.5	138 9.8
19	10	34.8	10	36.5	10	5.8	19 1.3	79 5.6	139 9.8
20	10	35.0	10	36.8	10	6.1	20 1.4	80 5.7	140 9.9
21	10	35.3	10	37.0	10	6.3	21 1.5	81 5.7	141 10.0
22	10	35.5	10	37.3	10	6.5	22 1.6	82 5.8	142 10.1
23	10	35.8	10	37.5	10	6.8	23 1.6	83 5.9	143 10.1
24	10	36.0	10	37.8	10	7.0	24 1.7	84 6.0	144 10.2
25	10	36.3	10	38.0	10	7.3	25 1.8	85 6.0	145 10.3
26	10	36.5	10	38.3	10	7.5	26 1.8	86 6.1	146 10.3
27	10	36.8	10	38.5	10	7.7	27 1.9	87 6.2	147 10.4
28	10	37.0	10	38.8	10	8.0	28 2.0	88 6.2	148 10.5
29	10	37.3	10	39.0	10	8.2	29 2.1	89 6.3	149 10.6
30	10	37.5	10	39.3	10	8.5	30 2.1	90 6.4	150 10.6
31	10	37.8	10	39.5	10	8.7	31 2.2	91 6.4	151 10.7
32	10	38.0	10	39.8	10	8.9	32 2.3	92 6.5	152 10.8
33	10	38.3	10	40.0	10	9.2	33 2.3	93 6.6	153 10.8
34	10	38.5	10	40.3	10	9.4	34 2.4	94 6.7	154 10.9
35	10	38.8	10	40.5	10	9.7	35 2.5	95 6.7	155 11.0
36	10	39.0	10	40.8	10	9.9	36 2.6	96 6.8	156 11.1
37	10	39.3	10	41.0	10	10.1	37 2.6	97 6.9	157 11.1
38	10	39.5	10	41.3	10	10.4	38 2.7	98 6.9	158 11.2
39	10	39.8	10	41.5	10	10.6	39 2.8	99 7.0	159 11.3
40	10	40.0	10	41.8	10	10.8	40 2.8	100 7.1	160 11.3
41	10	40.3	10	42.0	10	11.1	41 2.9	101 7.2	161 11.4
42	10	40.5	10	42.3	10	11.3	42 3.0	102 7.2	162 11.5
43	10	40.8	10	42.5	10	11.6	43 3.0	103 7.3	163 11.5
44	10	41.0	10	42.8	10	11.8	44 3.1	104 7.4	164 11.6
45	10	41.3	10	43.0	10	12.0	45 3.2	105 7.4	165 11.7
46	10	41.5	10	43.3	10	12.3	46 3.3	106 7.5	166 11.8
47	10	41.8	10	43.5	10	12.5	47 3.3	107 7.6	167 11.8
48	10	42.0	10	43.8	10	12.8	48 3.4	108 7.7	168 11.9
49	10	42.3	10	44.0	10	13.0	49 3.5	109 7.7	169 12.0
50	10	42.5	10	44.3	10	13.2	50 3.5	110 7.8	170 12.0
51	10	42.8	10	44.5	10	13.5	51 3.6	111 7.9	171 12.1
52	10	43.0	10	44.8	10	13.7	52 3.7	112 7.9	172 12.2
53	10	43.3	10	45.0	10	13.9	53 3.8	113 8.0	173 12.3
54	10	43.5	10	45.3	10	14.2	54 3.8	114 8.1	174 12.3
55	10	43.8	10	45.5	10	14.4	55 3.9	115 8.1	175 12.4
56	10	44.0	10	45.8	10	14.7	56 4.0	116 8.2	176 12.5
57	10	44.3	10	46.0	10	14.9	57 4.0	117 8.3	177 12.5
58	10	44.5	10	46.3	10	15.1	58 4.1	118 8.4	178 12.6
59	10	44.8	10	46.5	10	15.4	59 4.2	119 8.4	179 12.7
60	10	45.0	10	46.8	10	15.6	60 4.3	120 8.5	180 12.8

0 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	10	45.0	10	46.8	10	15.6	0 .0	60 4.4	120 8.7
1	10	45.3	10	47.0	10	15.9	1 .1	61 4.4	121 8.8
2	10	45.5	10	47.3	10	16.1	2 .1	62 4.5	122 8.8
3	10	45.8	10	47.5	10	16.3	3 .2	63 4.6	123 8.9
4	10	46.0	10	47.8	10	16.6	4 .3	64 4.6	124 9.0
5	10	46.3	10	48.0	10	16.8	5 .4	65 4.7	125 9.1
6	10	46.5	10	48.3	10	17.0	6 .4	66 4.8	126 9.1
7	10	46.8	10	48.5	10	17.3	7 .5	67 4.9	127 9.2
8	10	47.0	10	48.8	10	17.5	8 .6	68 4.9	128 9.3
9	10	47.3	10	49.0	10	17.8	9 .7	69 5.0	129 9.4
10	10	47.5	10	49.3	10	18.0	10 .7	70 5.1	130 9.4
11	10	47.8	10	49.5	10	18.2	11 .8	71 5.1	131 9.5
12	10	48.0	10	49.8	10	18.5	12 .9	72 5.2	132 9.6
13	10	48.3	10	50.1	10	18.7	13 .9	73 5.3	133 9.6
14	10	48.5	10	50.3	10	19.0	14 1.0	74 5.4	134 9.7
15	10	48.8	10	50.6	10	19.2	15 1.1	75 5.4	135 9.8
16	10	49.0	10	50.8	10	19.4	16 1.2	76 5.5	136 9.9
17	10	49.3	10	51.1	10	19.7	17 1.2	77 5.6	137 9.9
18	10	49.5	10	51.3	10	19.9	18 1.3	78 5.7	138 10.0
19	10	49.8	10	51.6	10	20.2	19 1.4	79 5.7	139 10.1
20	10	50.0	10	51.8	10	20.4	20 1.5	80 5.8	140 10.2
21	10	50.3	10	52.1	10	20.6	21 1.5	81 5.9	141 10.2
22	10	50.5	10	52.3	10	20.9	22 1.6	82 5.9	142 10.3
23	10	50.8	10	52.6	10	21.1	23 1.7	83 6.0	143 10.4
24	10	51.0	10	52.8	10	21.3	24 1.7	84 6.1	144 10.4
25	10	51.3	10	53.1	10	21.6	25 1.8	85 6.2	145 10.5
26	10	51.5	10	53.3	10	21.8	26 1.9	86 6.2	146 10.6
27	10	51.8	10	53.6	10	22.1	27 2.0	87 6.3	147 10.7
28	10	52.0	10	53.8	10	22.3	28 2.0	88 6.4	148 10.7
29	10	52.3	10	54.1	10	22.5	29 2.1	89 6.5	149 10.8
30	10	52.5	10	54.3	10	22.8	30 2.2	90 6.5	150 10.9
31	10	52.8	10	54.6	10	23.0	31 2.2	91 6.6	151 10.9
32	10	53.0	10	54.8	10	23.3	32 2.3	92 6.7	152 11.0
33	10	53.3	10	55.1	10	23.5	33 2.4	93 6.7	153 11.1
34	10	53.5	10	55.3	10	23.7	34 2.5	94 6.8	154 11.2
35	10	53.8	10	55.6	10	24.0	35 2.5	95 6.9	155 11.2
36	10	54.0	10	55.8	10	24.2	36 2.6	96 7.0	156 11.3
37	10	54.3	10	56.1	10	24.4	37 2.7	97 7.0	157 11.4
38	10	54.5	10	56.3	10	24.7	38 2.8	98 7.1	158 11.5
39	10	54.8	10	56.6	10	24.9	39 2.8	99 7.2	159 11.5
40	10	55.0	10	56.8	10	25.2	40 2.9	100 7.3	160 11.6
41	10	55.3	10	57.1	10	25.4	41 3.0	101 7.3	161 11.7
42	10	55.5	10	57.3	10	25.6	42 3.0	102 7.4	162 11.7
43	10	55.8	10	57.6	10	25.9	43 3.1	103 7.5	163 11.8
44	10	56.0	10	57.8	10	26.1	44 3.2	104 7.5	164 11.9
45	10	56.3	10	58.1	10	26.4	45 3.3	105 7.6	165 12.0
46	10	56.5	10	58.3	10	26.6	46 3.3	106 7.7	166 12.0
47	10	56.8	10	58.6	10	26.8	47 3.4	107 7.8	167 12.1
48	10	57.0	10	58.8	10	27.1	48 3.5	108 7.8	168 12.2
49	10	57.3	10	59.1	10	27.3	49 3.6	109 7.9	169 12.3
50	10	57.5	10	59.3	10	27.5	50 3.6	110 8.0	170 12.3
51	10	57.8	10	59.6	10	27.8	51 3.7	111 8.0	171 12.4
52	10	58.0	10	59.8	10	28.0	52 3.8	112 8.1	172 12.5
53	10	58.3	11	.1	10	28.3	53 3.8	113 8.2	173 12.5
54	10	58.5	11	.3	10	28.5	54 3.9	114 8.3	174 12.6
55	10	58.8	11	.6	10	28.7	55 4.0	115 8.3	175 12.7
56	10	59.0	11	.8	10	29.0	56 4.1	116 8.4	176 12.8
57	10	59.3	11	1.1	10	29.2	57 4.1	117 8.5	177 12.8
58	10	59.5	11	1.3	10	29.5	58 4.2	118 8.6	178 12.9
59	10	59.8	11	1.6	10	29.7	59 4.3	119 8.6	179 13.0
60	11	.0	11	1.8	10	29.9	60 4.4	120 8.7	180 13.1



0 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	11	.0	11	1.8	10	29.9	0	.0	60	4.5	120	8.9
1	11	.3	11	2.1	10	30.2	1	.1	61	4.5	121	9.0
2	11	.5	11	2.3	10	30.4	2	.1	62	4.6	122	9.0
3	11	.8	11	2.6	10	30.6	3	.2	63	4.7	123	9.1
4	11	1.0	11	2.8	10	30.9	4	.3	64	4.7	124	9.2
5	11	1.3	11	3.1	10	31.1	5	.4	65	4.8	125	9.3
6	11	1.5	11	3.3	10	31.4	6	.4	66	4.9	126	9.3
7	11	1.8	11	3.6	10	31.6	7	.5	67	5.0	127	9.4
8	11	2.0	11	3.8	10	31.8	8	.6	68	5.0	128	9.5
9	11	2.3	11	4.1	10	32.1	9	.7	69	5.1	129	9.6
10	11	2.5	11	4.3	10	32.3	10	.7	70	5.2	130	9.6
11	11	2.8	11	4.6	10	32.6	11	.8	71	5.3	131	9.7
12	11	3.0	11	4.8	10	32.8	12	.9	72	5.3	132	9.8
13	11	3.3	11	5.1	10	33.0	13	1.0	73	5.4	133	9.9
14	11	3.5	11	5.3	10	33.3	14	1.0	74	5.5	134	9.9
15	11	3.8	11	5.6	10	33.5	15	1.1	75	5.6	135	10.0
16	11	4.0	11	5.8	10	33.8	16	1.2	76	5.6	136	10.1
17	11	4.3	11	6.1	10	34.0	17	1.3	77	5.7	137	10.2
18	11	4.5	11	6.3	10	34.2	18	1.3	78	5.8	138	10.2
19	11	4.8	11	6.6	10	34.5	19	1.4	79	5.9	139	10.3
20	11	5.0	11	6.8	10	34.7	20	1.5	80	5.9	140	10.4
21	11	5.3	11	7.1	10	34.9	21	1.6	81	6.0	141	10.5
22	11	5.5	11	7.3	10	35.2	22	1.6	82	6.1	142	10.5
23	11	5.8	11	7.6	10	35.4	23	1.7	83	6.2	143	10.6
24	11	6.0	11	7.9	10	35.7	24	1.8	84	6.2	144	10.7
25	11	6.3	11	8.1	10	35.9	25	1.9	85	6.3	145	10.8
26	11	6.5	11	8.4	10	36.1	26	1.9	86	6.4	146	10.8
27	11	6.8	11	8.6	10	36.4	27	2.0	87	6.5	147	10.9
28	11	7.0	11	8.9	10	36.6	28	2.1	88	6.5	148	11.0
29	11	7.3	11	9.1	10	36.9	29	2.2	89	6.6	149	11.1
30	11	7.5	11	9.4	10	37.1	30	2.2	90	6.7	150	11.1
31	11	7.8	11	9.6	10	37.3	31	2.3	91	6.7	151	11.2
32	11	8.0	11	9.9	10	37.6	32	2.4	92	6.8	152	11.3
33	11	8.3	11	10.1	10	37.8	33	2.4	93	6.9	153	11.3
34	11	8.5	11	10.4	10	38.0	34	2.5	94	7.0	154	11.4
35	11	8.8	11	10.6	10	38.3	35	2.6	95	7.0	155	11.5
36	11	9.0	11	10.9	10	38.5	36	2.7	96	7.1	156	11.6
37	11	9.3	11	11.1	10	38.8	37	2.7	97	7.2	157	11.6
38	11	9.5	11	11.4	10	39.0	38	2.8	98	7.3	158	11.7
39	11	9.8	11	11.6	10	39.2	39	2.9	99	7.3	159	11.8
40	11	10.0	11	11.9	10	39.5	40	3.0	100	7.4	160	11.9
41	11	10.3	11	12.1	10	39.7	41	3.0	101	7.5	161	11.9
42	11	10.5	11	12.4	10	40.0	42	3.1	102	7.6	162	12.0
43	11	10.8	11	12.6	10	40.2	43	3.2	103	7.6	163	12.1
44	11	11.0	11	12.9	10	40.4	44	3.3	104	7.7	164	12.2
45	11	11.3	11	13.1	10	40.7	45	3.3	105	7.8	165	12.2
46	11	11.5	11	13.4	10	40.9	46	3.4	106	7.9	166	12.3
47	11	11.8	11	13.6	10	41.1	47	3.5	107	7.9	167	12.4
48	11	12.0	11	13.9	10	41.4	48	3.6	108	8.0	168	12.5
49	11	12.3	11	14.1	10	41.6	49	3.6	109	8.1	169	12.5
50	11	12.5	11	14.4	10	41.9	50	3.7	110	8.2	170	12.6
51	11	12.8	11	14.6	10	42.1	51	3.8	111	8.2	171	12.7
52	11	13.0	11	14.9	10	42.3	52	3.9	112	8.3	172	12.8
53	11	13.3	11	15.1	10	42.6	53	3.9	113	8.4	173	12.8
54	11	13.5	11	15.4	10	42.8	54	4.0	114	8.5	174	12.9
55	11	13.8	11	15.6	10	43.1	55	4.1	115	8.5	175	13.0
56	11	14.0	11	15.9	10	43.3	56	4.2	116	8.6	176	13.1
57	11	14.3	11	16.1	10	43.5	57	4.2	117	8.7	177	13.1
58	11	14.5	11	16.4	10	43.8	58	4.3	118	8.8	178	13.2
59	11	14.8	11	16.6	10	44.0	59	4.4	119	8.8	179	13.3
60	11	15.0	11	16.9	10	44.3	60	4.5	120	8.9	180	13.4

0 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	11	15.0	11	16.9	10	44.3	0	.0	60	4.6	120	9.1
1	11	15.3	11	17.1	10	44.5	1	.1	61	4.6	121	9.2
2	11	15.5	11	17.4	10	44.7	2	.2	62	4.7	122	9.3
3	11	15.8	11	17.6	10	45.0	3	.2	63	4.8	123	9.3
4	11	16.0	11	17.9	10	45.2	4	.3	64	4.9	124	9.4
5	11	16.3	11	18.1	10	45.4	5	.4	65	4.9	125	9.5
6	11	16.5	11	18.4	10	45.7	6	.5	66	5.0	126	9.6
7	11	16.8	11	18.6	10	45.9	7	.5	67	5.1	127	9.6
8	11	17.0	11	18.9	10	46.2	8	.6	68	5.2	128	9.7
9	11	17.3	11	19.1	10	46.4	9	.7	69	5.2	129	9.8
10	11	17.5	11	19.4	10	46.6	10	.8	70	5.3	130	9.9
11	11	17.8	11	19.6	10	46.9	11	.8	71	5.4	131	9.9
12	11	18.0	11	19.9	10	47.1	12	.9	72	5.5	132	10.0
13	11	18.3	11	20.1	10	47.4	13	1.0	73	5.5	133	10.1
14	11	18.5	11	20.4	10	47.6	14	1.1	74	5.6	134	10.2
15	11	18.8	11	20.6	10	47.8	15	1.1	75	5.7	135	10.2
16	11	19.0	11	20.9	10	48.1	16	1.2	76	5.8	136	10.3
17	11	19.3	11	21.1	10	48.3	17	1.3	77	5.8	137	10.4
18	11	19.5	11	21.4	10	48.5	18	1.4	78	5.9	138	10.5
19	11	19.8	11	21.6	10	48.8	19	1.4	79	6.0	139	10.5
20	11	20.0	11	21.9	10	49.0	20	1.5	80	6.1	140	10.6
21	11	20.3	11	22.1	10	49.3	21	1.6	81	6.1	141	10.7
22	11	20.5	11	22.4	10	49.5	22	1.7	82	6.2	142	10.8
23	11	20.8	11	22.6	10	49.7	23	1.7	83	6.3	143	10.8
24	11	21.0	11	22.9	10	50.0	24	1.8	84	6.4	144	10.9
25	11	21.3	11	23.1	10	50.2	25	1.9	85	6.4	145	11.0
26	11	21.5	11	23.4	10	50.5	26	2.0	86	6.5	146	11.1
27	11	21.8	11	23.6	10	50.7	27	2.0	87	6.6	147	11.1
28	11	22.0	11	23.9	10	50.9	28	2.1	88	6.7	148	11.2
29	11	22.3	11	24.1	10	51.2	29	2.2	89	6.7	149	11.3
30	11	22.5	11	24.4	10	51.4	30	2.3	90	6.8	150	11.4
31	11	22.8	11	24.6	10	51.6	31	2.4	91	6.9	151	11.5
32	11	23.0	11	24.9	10	51.9	32	2.4	92	7.0	152	11.5
33	11	23.3	11	25.1	10	52.1	33	2.5	93	7.1	153	11.6
34	11	23.5	11	25.4	10	52.4	34	2.6	94	7.1	154	11.7
35	11	23.8	11	25.6	10	52.6	35	2.7	95	7.2	155	11.8
36	11	24.0	11	25.9	10	52.8	36	2.7	96	7.3	156	11.8
37	11	24.3	11	26.2	10	53.1	37	2.8	97	7.4	157	11.9
38	11	24.5	11	26.4	10	53.3	38	2.9	98	7.4	158	12.0
39	11	24.8	11	26.7	10	53.6	39	3.0	99	7.5	159	12.1
40	11	25.0	11	26.9	10	53.8	40	3.0	100	7.6	160	12.1
41	11	25.3	11	27.2	10	54.0	41	3.1	101	7.7	161	12.2
42	11	25.5	11	27.4	10	54.3	42	3.2	102	7.7	162	12.3
43	11	25.8	11	27.7	10	54.5	43	3.3	103	7.8	163	12.4
44	11	26.0	11	27.9	10	54.7	44	3.3	104	7.9	164	12.4
45	11	26.3	11	28.2	10	55.0	45	3.4	105	8.0	165	12.5
46	11	26.5	11	28.4	10	55.2	46	3.5	106	8.0	166	12.6
47	11	26.8	11	28.7	10	55.5	47	3.6	107	8.1	167	12.7
48	11	27.0	11	28.9	10	55.7	48	3.6	108	8.2	168	12.7
49	11	27.3	11	29.2	10	55.9	49	3.7	109	8.3	169	12.8
50	11	27.5	11	29.4	10	56.2	50	3.8	110			

0 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	11	30.0	11	31.9	10	58.6	0 .0	60 4.7	120 9.3
1	11	30.3	11	32.2	10	58.8	1 .1	61 4.7	121 9.4
2	11	30.5	11	32.4	10	59.0	2 .2	62 4.8	122 9.5
3	11	30.8	11	32.7	10	59.3	3 .2	63 4.9	123 9.5
4	11	31.0	11	32.9	10	59.5	4 .3	64 5.0	124 9.6
5	11	31.3	11	33.2	10	59.8	5 .4	65 5.0	125 9.7
6	11	31.5	11	33.4	10	60.0	6 .5	66 5.1	126 9.8
7	11	31.8	11	33.7	11	.2	7 .5	67 5.2	127 9.8
8	11	32.0	11	33.9	11	.5	8 .6	68 5.3	128 9.9
9	11	32.3	11	34.2	11	.7	9 .7	69 5.3	129 10.0
10	11	32.5	11	34.4	11	1.0	10 .8	70 5.4	130 10.1
11	11	32.8	11	34.7	11	1.2	11 .9	71 5.5	131 10.2
12	11	33.0	11	34.9	11	1.4	12 .9	72 5.6	132 10.2
13	11	33.3	11	35.2	11	1.7	13 1.0	73 5.7	133 10.3
14	11	33.5	11	35.4	11	1.9	14 1.1	74 5.7	134 10.4
15	11	33.8	11	35.7	11	2.1	15 1.2	75 5.8	135 10.5
16	11	34.0	11	35.9	11	2.4	16 1.2	76 5.9	136 10.5
17	11	34.3	11	36.2	11	2.6	17 1.3	77 6.0	137 10.6
18	11	34.5	11	36.4	11	2.9	18 1.4	78 6.0	138 10.7
19	11	34.8	11	36.7	11	3.1	19 1.5	79 6.1	139 10.8
20	11	35.0	11	36.9	11	3.3	20 1.6	80 6.2	140 10.9
21	11	35.3	11	37.2	11	3.6	21 1.6	81 6.3	141 10.9
22	11	35.5	11	37.4	11	3.8	22 1.7	82 6.4	142 11.0
23	11	35.8	11	37.7	11	4.1	23 1.8	83 6.4	143 11.1
24	11	36.0	11	37.9	11	4.3	24 1.9	84 6.5	144 11.2
25	11	36.3	11	38.2	11	4.5	25 1.9	85 6.6	145 11.2
26	11	36.5	11	38.4	11	4.8	26 2.0	86 6.7	146 11.3
27	11	36.8	11	38.7	11	5.0	27 2.1	87 6.7	147 11.4
28	11	37.0	11	38.9	11	5.2	28 2.2	88 6.8	148 11.5
29	11	37.3	11	39.2	11	5.5	29 2.2	89 6.9	149 11.5
30	11	37.5	11	39.4	11	5.7	30 2.3	90 7.0	150 11.6
31	11	37.8	11	39.7	11	6.0	31 2.4	91 7.1	151 11.7
32	11	38.0	11	39.9	11	6.2	32 2.5	92 7.1	152 11.8
33	11	38.3	11	40.2	11	6.4	33 2.6	93 7.2	153 11.9
34	11	38.5	11	40.4	11	6.7	34 2.6	94 7.3	154 11.9
35	11	38.8	11	40.7	11	6.9	35 2.7	95 7.4	155 12.0
36	11	39.0	11	40.9	11	7.2	36 2.8	96 7.4	156 12.1
37	11	39.3	11	41.2	11	7.4	37 2.9	97 7.5	157 12.2
38	11	39.5	11	41.4	11	7.6	38 2.9	98 7.6	158 12.2
39	11	39.8	11	41.7	11	7.9	39 3.0	99 7.7	159 12.3
40	11	40.0	11	41.9	11	8.1	40 3.1	100 7.8	160 12.4
41	11	40.3	11	42.2	11	8.3	41 3.2	101 7.8	161 12.5
42	11	40.5	11	42.4	11	8.6	42 3.3	102 7.9	162 12.6
43	11	40.8	11	42.7	11	8.8	43 3.3	103 8.0	163 12.6
44	11	41.0	11	42.9	11	9.1	44 3.4	104 8.1	164 12.7
45	11	41.3	11	43.2	11	9.3	45 3.5	105 8.1	165 12.8
46	11	41.5	11	43.4	11	9.5	46 3.6	106 8.2	166 12.9
47	11	41.8	11	43.7	11	9.8	47 3.6	107 8.3	167 12.9
48	11	42.0	11	44.0	11	10.0	48 3.7	108 8.4	168 13.0
49	11	42.3	11	44.2	11	10.3	49 3.8	109 8.4	169 13.1
50	11	42.5	11	44.5	11	10.5	50 3.9	110 8.5	170 13.2
51	11	42.8	11	44.7	11	10.7	51 4.0	111 8.6	171 13.3
52	11	43.0	11	45.0	11	11.0	52 4.0	112 8.7	172 13.3
53	11	43.3	11	45.2	11	11.2	53 4.1	113 8.8	173 13.4
54	11	43.5	11	45.5	11	11.5	54 4.2	114 8.8	174 13.5
55	11	43.8	11	45.7	11	11.7	55 4.3	115 8.9	175 13.6
56	11	44.0	11	46.0	11	11.9	56 4.3	116 9.0	176 13.6
57	11	44.3	11	46.2	11	12.2	57 4.4	117 9.1	177 13.7
58	11	44.5	11	46.5	11	12.4	58 4.5	118 9.1	178 13.8
59	11	44.8	11	46.7	11	12.6	59 4.6	119 9.2	179 13.9
60	11	45.0	11	47.0	11	12.9	60 4.7	120 9.3	180 14.0

0 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	11	45.0	11	47.0	11	12.9	0 .0	60 4.8	120 9.5
1	11	45.3	11	47.2	11	13.1	1 .1	61 4.8	121 9.6
2	11	45.5	11	47.5	11	13.4	2 .2	62 4.9	122 9.7
3	11	45.8	11	47.7	11	13.6	3 .2	63 5.0	123 9.7
4	11	46.0	11	48.0	11	13.8	4 .3	64 5.1	124 9.8
5	11	46.3	11	48.2	11	14.1	5 .4	65 5.1	125 9.9
6	11	46.5	11	48.5	11	14.3	6 .5	66 5.2	126 10.0
7	11	46.8	11	48.7	11	14.6	7 .6	67 5.3	127 10.1
8	11	47.0	11	49.0	11	14.8	8 .6	68 5.4	128 10.1
9	11	47.3	11	49.2	11	15.0	9 .7	69 5.5	129 10.2
10	11	47.5	11	49.5	11	15.3	10 .8	70 5.5	130 10.3
11	11	47.8	11	49.7	11	15.5	11 .9	71 5.6	131 10.4
12	11	48.0	11	50.0	11	15.7	12 1.0	72 5.7	132 10.5
13	11	48.3	11	50.2	11	16.0	13 1.0	73 5.8	133 10.5
14	11	48.5	11	50.5	11	16.2	14 1.1	74 5.9	134 10.6
15	11	48.8	11	50.7	11	16.5	15 1.2	75 5.9	135 10.7
16	11	49.0	11	51.0	11	16.7	16 1.3	76 6.0	136 10.8
17	11	49.3	11	51.2	11	16.9	17 1.3	77 6.1	137 10.8
18	11	49.5	11	51.5	11	17.2	18 1.4	78 6.2	138 10.9
19	11	49.8	11	51.7	11	17.4	19 1.5	79 6.3	139 11.0
20	11	50.0	11	52.0	11	17.7	20 1.6	80 6.3	140 11.1
21	11	50.3	11	52.2	11	17.9	21 1.7	81 6.4	141 11.2
22	11	50.5	11	52.5	11	18.1	22 1.7	82 6.5	142 11.2
23	11	50.8	11	52.7	11	18.4	23 1.8	83 6.6	143 11.3
24	11	51.0	11	53.0	11	18.6	24 1.9	84 6.7	144 11.4
25	11	51.3	11	53.2	11	18.8	25 2.0	85 6.7	145 11.5
26	11	51.5	11	53.5	11	19.1	26 2.1	86 6.8	146 11.6
27	11	51.8	11	53.7	11	19.3	27 2.1	87 6.9	147 11.6
28	11	52.0	11	54.0	11	19.6	28 2.2	88 7.0	148 11.7
29	11	52.3	11	54.2	11	19.8	29 2.3	89 7.0	149 11.8
30	11	52.5	11	54.5	11	20.0	30 2.4	90 7.1	150 11.9
31	11	52.8	11	54.7	11	20.3	31 2.5	91 7.2	151 12.0
32	11	53.0	11	55.0	11	20.5	32 2.5	92 7.3	152 12.0
33	11	53.3	11	55.2	11	20.8	33 2.6	93 7.4	153 12.1
34	11	53.5	11	55.5	11	21.0	34 2.7	94 7.4	154 12.2
35	11	53.8	11	55.7	11	21.2	35 2.8	95 7.5	155 12.3
36	11	54.0	11	56.0	11	21.5	36 2.9	96 7.6	156 12.4
37	11	54.3	11	56.2	11	21.7	37 2.9	97 7.7	157 12.4
38	11	54.5	11	56.5	11	22.0	38 3.0	98 7.8	158 12.5
39	11	54.8	11	56.7	11	22.2	39 3.1	99 7.8	159 12.6
40	11	55.0	11	57.0	11	22.4	40 3.2	100 7.9	160 12.7
41	11	55.3	11	57.2	11	22.7	41 3.2	101 8.0	161 12.7
42	11	55.5	11	57.5	11	22.9	42 3.3	102 8.1	162 12.8
43	11	55.8	11	57.7	11	23.1	43 3.4	103 8.2	163 12.9
44	11	56.0	11	58.0	11	23.4	44 3.5	104 8.2	164 13.0
45	11	56.3	11	58.2	11	23.6	45 3.6	105 8.3	165 13.1
46	11	56.5	11	58.5	11	23.9	46 3.6	106 8.4	166 13.1
47	11	56.8	11	58.7	11	24.1	47 3.7	107 8.5	167 13.2
48	11	57.0	11	59.0	11	24.3	48 3.8	108 8.6	168 13.3
49	11	57.3	11	59.2	11	24.6	49 3.9	109 8.6	169 13.4
50	11	57.5	11	59.5	11	24.8	50 4.0	110 8.7	170 13.5
51	11	57.8	11	59.7	11	25.1	51 4.0	111 8.8	171 13.5
52	11	58.0	11	60.0	11	25.3	52 4.1	112 8.9	172 13.6
53	11	58.3	12	.2	11	25.5	53 4.2	113 8.9	173 13.7
54	11	58.5	12	.5	11	25.8	54 4.3	114 9.0	174 13.8
55	11	58.8	12	.7	11	26.0	55 4.4	115 9.1	175 13.9
56	11	59.0	12	1.0	11	26.2	56 4.4	116 9.2	176 13.9
57	11	59.3	12	1.2	11	26.5	57 4.5	117 9.3	177 14.0
58	11	59.5	12	1.5	11	26.7	58 4.6	118 9.3	178 14.1
59	11	59.8	12	1.7	11	27.0	59 4.7	119 9.4	179 14.2
60	12	.0	12	2.0	11	27.2	60 4.8	120 9.5	180 14.3

0 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	12	.0	12	2.0	11	27.2	0 .0 60 4.9 120 9.7
1	12	.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 1.0 72 5.8 132 10.7
13	12	3.3	12	5.3	11	30.3	13 1.1 73 5.9 133 10.8
14	12	3.5	12	5.5	11	30.5	14 1.1 74 6.0 134 10.8
15	12	3.8	12	5.8	11	30.8	15 1.2 75 6.1 135 10.9
16	12	4.0	12	6.0	11	31.0	16 1.3 76 6.1 136 11.0
17	12	4.3	12	6.3	11	31.3	17 1.4 77 6.2 137 11.1
18	12	4.5	12	6.5	11	31.5	18 1.5 78 6.3 138 11.2
19	12	4.8	12	6.8	11	31.7	19 1.5 79 6.4 139 11.2
20	12	5.0	12	7.0	11	32.0	20 1.6 80 6.5 140 11.3
21	12	5.3	12	7.3	11	32.2	21 1.7 81 6.5 141 11.4
22	12	5.5	12	7.5	11	32.4	22 1.8 82 6.6 142 11.5
23	12	5.8	12	7.8	11	32.7	23 1.9 83 6.7 143 11.6
24	12	6.0	12	8.0	11	32.9	24 1.9 84 6.8 144 11.6
25	12	6.3	12	8.3	11	33.2	25 2.0 85 6.9 145 11.7
26	12	6.5	12	8.5	11	33.4	26 2.1 86 7.0 146 11.8
27	12	6.8	12	8.8	11	33.6	27 2.2 87 7.0 147 11.9
28	12	7.0	12	9.0	11	33.9	28 2.3 88 7.1 148 12.0
29	12	7.3	12	9.3	11	34.1	29 2.3 89 7.2 149 12.0
30	12	7.5	12	9.5	11	34.4	30 2.4 90 7.3 150 12.1
31	12	7.8	12	9.8	11	34.6	31 2.5 91 7.4 151 12.2
32	12	8.0	12	10.0	11	34.8	32 2.6 92 7.4 152 12.3
33	12	8.3	12	10.3	11	35.1	33 2.7 93 7.5 153 12.4
34	12	8.5	12	10.5	11	35.3	34 2.7 94 7.6 154 12.4
35	12	8.8	12	10.8	11	35.6	35 2.8 95 7.7 155 12.5
36	12	9.0	12	11.0	11	35.8	36 2.9 96 7.8 156 12.6
37	12	9.3	12	11.3	11	36.0	37 3.0 97 7.8 157 12.7
38	12	9.5	12	11.5	11	36.3	38 3.1 98 7.9 158 12.8
39	12	9.8	12	11.8	11	36.5	39 3.2 99 8.0 159 12.9
40	12	10.0	12	12.0	11	36.7	40 3.2 100 8.1 160 12.9
41	12	10.3	12	12.3	11	37.0	41 3.3 101 8.2 161 13.0
42	12	10.5	12	12.5	11	37.2	42 3.4 102 8.2 162 13.1
43	12	10.8	12	12.8	11	37.5	43 3.5 103 8.3 163 13.2
44	12	11.0	12	13.0	11	37.7	44 3.6 104 8.4 164 13.3
45	12	11.3	12	13.3	11	37.9	45 3.6 105 8.5 165 13.3
46	12	11.5	12	13.5	11	38.2	46 3.7 106 8.6 166 13.4
47	12	11.8	12	13.8	11	38.4	47 3.8 107 8.6 167 13.5
48	12	12.0	12	14.0	11	38.7	48 3.9 108 8.7 168 13.6
49	12	12.3	12	14.3	11	38.9	49 4.0 109 8.8 169 13.7
50	12	12.5	12	14.5	11	39.1	50 4.0 110 8.9 170 13.7
51	12	12.8	12	14.8	11	39.4	51 4.1 111 9.0 171 13.8
52	12	13.0	12	15.0	11	39.6	52 4.2 112 9.1 172 13.9
53	12	13.3	12	15.3	11	39.8	53 4.3 113 9.1 173 14.0
54	12	13.5	12	15.5	11	40.1	54 4.4 114 9.2 174 14.1
55	12	13.8	12	15.8	11	40.3	55 4.4 115 9.3 175 14.1
56	12	14.0	12	16.0	11	40.6	56 4.5 116 9.4 176 14.2
57	12	14.3	12	16.3	11	40.8	57 4.6 117 9.5 177 14.3
58	12	14.5	12	16.5	11	41.0	58 4.7 118 9.5 178 14.4
59	12	14.8	12	16.8	11	41.3	59 4.8 119 9.6 179 14.5
60	12	15.0	12	17.0	11	41.5	60 4.9 120 9.7 180 14.6

0 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	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 1.0 72 5.9 132 10.9
13	12	18.3	12	20.3	11	44.6	13 1.1 73 6.0 133 11.0
14	12	18.5	12	20.6	11	44.9	14 1.2 74 6.1 134 11.1
15	12	18.8	12	20.8	11	45.1	15 1.2 75 6.2 135 11.1
16	12	19.0	12	21.1	11	45.3	16 1.3 76 6.3 136 11.2
17	12	19.3	12	21.3	11	45.6	17 1.4 77 6.4 137 11.3
18	12	19.5	12	21.6	11	45.8	18 1.5 78 6.4 138 11.4
19	12	19.8	12	21.8	11	46.1	19 1.6 79 6.5 139 11.5
20	12	20.0	12	22.1	11	46.3	20 1.7 80 6.6 140 11.6
21	12	20.3	12	22.3	11	46.5	21 1.7 81 6.7 141 11.6
22	12	20.5	12	22.6	11	46.8	22 1.8 82 6.8 142 11.7
23	12	20.8	12	22.8	11	47.0	23 1.9 83 6.8 143 11.8
24	12	21.0	12	23.1	11	47.2	24 2.0 84 6.9 144 11.9
25	12	21.3	12	23.3	11	47.5	25 2.1 85 7.0 145 12.0
26	12	21.5	12	23.6	11	47.7	26 2.1 86 7.1 146 12.0
27	12	21.8	12	23.8	11	48.0	27 2.2 87 7.2 147 12.1
28	12	22.0	12	24.1	11	48.2	28 2.3 88 7.3 148 12.2
29	12	22.3	12	24.3	11	48.4	29 2.4 89 7.3 149 12.3
30	12	22.5	12	24.6	11	48.7	30 2.5 90 7.4 150 12.4
31	12	22.8	12	24.8	11	48.9	31 2.6 91 7.5 151 12.5
32	12	23.0	12	25.1	11	49.2	32 2.6 92 7.6 152 12.5
33	12	23.3	12	25.3	11	49.4	33 2.7 93 7.7 153 12.6
34	12	23.5	12	25.6	11	49.6	34 2.8 94 7.8 154 12.7
35	12	23.8	12	25.8	11	49.9	35 2.9 95 7.8 155 12.8
36	12	24.0	12	26.1	11	50.1	36 3.0 96 7.9 156 12.9
37	12	24.3	12	26.3	11	50.3	37 3.1 97 8.0 157 13.0
38	12	24.5	12	26.6	11	50.6	38 3.1 98 8.1 158 13.0
39	12	24.8	12	26.8	11	50.8	39 3.2 99 8.2 159 13.1
40	12	25.0	12	27.1	11	51.1	40 3.3 100 8.3 160 13.2
41	12	25.3	12	27.3	11	51.3	41 3.4 101 8.3 161 13.3
42	12	25.5	12	27.6	11	51.5	42 3.5 102 8.4 162 13.4
43	12	25.8	12	27.8	11	51.8	43 3.5 103 8.5 163 13.4
44	12	26.0	12	28.1	11	52.0	44 3.6 104 8.6 164 13.5
45	12	26.3	12	28.3	11	52.3	45 3.7 105 8.7 165 13.6
46	12	26.5	12	28.6	11	52.5	46 3.8 106 8.7 166 13.7
47	12	26.8	12	28.8	11	52.7	47 3.9 107 8.8 167 13.8
48	12	27.0	12	29.1	11	53.0	48 4.0 108 8.9 168 13.9
49	12	27.3	12	29.3	11	53.2	49 4.0 109 9.0 169 13.9
50	12	27.5	12	29.6	11	53.4	50 4.1 110 9.1 170 14.0
51	12	27.8	12	29.8	11	53.7	51 4.2 111 9.2 171 14.1
52	12	28.0	12	30.1	11	53.9	52 4.3 112 9.2 172 14.2
53	12	28.3	12	30.3	11	54.2	53 4.4 113 9.3 173 14.3
54	12	28.5	12	30.6	11	54.4	54 4.5 114 9.4 174 14.4
55	12	28.8	12	30.8	11	54.6	55 4.5 115 9.5 175 14.4
56	12	29.0	12	31.1	11	54.9	56 4.6 116 9.6 176 14.5
57	12	29.3	12	31.3	11	55.1	57 4.7 117 9.7 177 14.6
58	12	29.5	12	31.6	11	55.4	58 4.8 118 9.7 178 14.7
59	12	29.8	12	31.8	11	55.6	59 4.9 119 9.8 179 14.8
60	12	30.0	12	32.1	11	55.8	60 5.0 120 9.9 180 14.9

## 0 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	12 30.0	12 32.1	11 55.8	0 .0	60 5.1	120 10.1
1	12 30.3	12 32.3	11 56.1	1 .1	61 5.1	121 10.2
2	12 30.5	12 32.6	11 56.3	2 .2	62 5.2	122 10.3
3	12 30.8	12 32.8	11 56.5	3 .3	63 5.3	123 10.4
4	12 31.0	12 33.1	11 56.8	4 .3	64 5.4	124 10.4
5	12 31.3	12 33.3	11 57.0	5 .4	65 5.5	125 10.5
6	12 31.5	12 33.6	11 57.3	6 .5	66 5.6	126 10.6
7	12 31.8	12 33.8	11 57.5	7 .6	67 5.6	127 10.7
8	12 32.0	12 34.1	11 57.7	8 .7	68 5.7	128 10.8
9	12 32.3	12 34.3	11 58.0	9 .8	69 5.8	129 10.9
10	12 32.5	12 34.6	11 58.2	10 .8	70 5.9	130 10.9
11	12 32.8	12 34.8	11 58.5	11 .9	71 6.0	131 11.0
12	12 33.0	12 35.1	11 58.7	12 1.0	72 6.1	132 11.1
13	12 33.3	12 35.3	11 58.9	13 1.1	73 6.1	133 11.2
14	12 33.5	12 35.6	11 59.2	14 1.2	74 6.2	134 11.3
15	12 33.8	12 35.8	11 59.4	15 1.3	75 6.3	135 11.4
16	12 34.0	12 36.1	11 59.7	16 1.3	76 6.4	136 11.4
17	12 34.3	12 36.3	11 59.9	17 1.4	77 6.5	137 11.5
18	12 34.5	12 36.6	12 .1	18 1.5	78 6.6	138 11.6
19	12 34.8	12 36.8	12 .4	19 1.6	79 6.6	139 11.7
20	12 35.0	12 37.1	12 .6	20 1.7	80 6.7	140 11.8
21	12 35.3	12 37.3	12 .8	21 1.8	81 6.8	141 11.9
22	12 35.5	12 37.6	12 1.1	22 1.9	82 6.9	142 12.0
23	12 35.8	12 37.8	12 1.3	23 1.9	83 7.0	143 12.0
24	12 36.0	12 38.1	12 1.6	24 2.0	84 7.1	144 12.1
25	12 36.3	12 38.4	12 1.8	25 2.1	85 7.2	145 12.2
26	12 36.5	12 38.6	12 2.0	26 2.2	86 7.2	146 12.3
27	12 36.8	12 38.9	12 2.3	27 2.3	87 7.3	147 12.4
28	12 37.0	12 39.1	12 2.5	28 2.4	88 7.4	148 12.5
29	12 37.3	12 39.4	12 2.8	29 2.4	89 7.5	149 12.5
30	12 37.5	12 39.6	12 3.0	30 2.5	90 7.6	150 12.6
31	12 37.8	12 39.9	12 3.2	31 2.6	91 7.7	151 12.7
32	12 38.0	12 40.1	12 3.5	32 2.7	92 7.7	152 12.8
33	12 38.3	12 40.4	12 3.7	33 2.8	93 7.8	153 12.9
34	12 38.5	12 40.6	12 3.9	34 2.9	94 7.9	154 13.0
35	12 38.8	12 40.9	12 4.2	35 2.9	95 8.0	155 13.0
36	12 39.0	12 41.1	12 4.4	36 3.0	96 8.1	156 13.1
37	12 39.3	12 41.4	12 4.7	37 3.1	97 8.2	157 13.2
38	12 39.5	12 41.6	12 4.9	38 3.2	98 8.2	158 13.3
39	12 39.8	12 41.9	12 5.1	39 3.3	99 8.3	159 13.4
40	12 40.0	12 42.1	12 5.4	40 3.4	100 8.4	160 13.5
41	12 40.3	12 42.4	12 5.6	41 3.5	101 8.5	161 13.6
42	12 40.5	12 42.6	12 5.9	42 3.5	102 8.6	162 13.6
43	12 40.8	12 42.9	12 6.1	43 3.6	103 8.7	163 13.7
44	12 41.0	12 43.1	12 6.3	44 3.7	104 8.8	164 13.8
45	12 41.3	12 43.4	12 6.6	45 3.8	105 8.8	165 13.9
46	12 41.5	12 43.6	12 6.8	46 3.9	106 8.9	166 14.0
47	12 41.8	12 43.9	12 7.0	47 4.0	107 9.0	167 14.1
48	12 42.0	12 44.1	12 7.3	48 4.0	108 9.1	168 14.1
49	12 42.3	12 44.4	12 7.5	49 4.1	109 9.2	169 14.2
50	12 42.5	12 44.6	12 7.8	50 4.2	110 9.3	170 14.3
51	12 42.8	12 44.9	12 8.0	51 4.3	111 9.3	171 14.4
52	12 43.0	12 45.1	12 8.2	52 4.4	112 9.4	172 14.5
53	12 43.3	12 45.4	12 8.5	53 4.5	113 9.5	173 14.6
54	12 43.5	12 45.6	12 8.7	54 4.5	114 9.6	174 14.6
55	12 43.8	12 45.9	12 9.0	55 4.6	115 9.7	175 14.7
56	12 44.0	12 46.1	12 9.2	56 4.7	116 9.8	176 14.8
57	12 44.3	12 46.4	12 9.4	57 4.8	117 9.8	177 14.9
58	12 44.5	12 46.6	12 9.7	58 4.9	118 9.9	178 15.0
59	12 44.8	12 46.9	12 9.9	59 5.0	119 10.0	179 15.1
60	12 45.0	12 47.1	12 10.2	60 5.1	120 10.1	180 15.2

## 0 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	12 45.0	12 47.1	12 10.2	0 .0	60 5.2	120 10.3
1	12 45.3	12 47.4	12 10.4	1 .1	61 5.2	121 10.4
2	12 45.5	12 47.6	12 10.6	2 .2	62 5.3	122 10.5
3	12 45.8	12 47.9	12 10.9	3 .3	63 5.4	123 10.6
4	12 46.0	12 48.1	12 11.1	4 .3	64 5.5	124 10.6
5	12 46.3	12 48.4	12 11.3	5 .4	65 5.6	125 10.7
6	12 46.5	12 48.6	12 11.6	6 .5	66 5.7	126 10.8
7	12 46.8	12 48.9	12 11.8	7 .6	67 5.8	127 10.9
8	12 47.0	12 49.1	12 12.1	8 .7	68 5.8	128 11.0
9	12 47.3	12 49.4	12 12.3	9 .8	69 5.9	129 11.1
10	12 47.5	12 49.6	12 12.5	10 .9	70 6.0	130 11.2
11	12 47.8	12 49.9	12 12.8	11 .9	71 6.1	131 11.2
12	12 48.0	12 50.1	12 13.0	12 1.0	72 6.2	132 11.3
13	12 48.3	12 50.4	12 13.3	13 1.1	73 6.3	133 11.4
14	12 48.5	12 50.6	12 13.5	14 1.2	74 6.4	134 11.5
15	12 48.8	12 50.9	12 13.7	15 1.3	75 6.4	135 11.6
16	12 49.0	12 51.1	12 14.0	16 1.4	76 6.5	136 11.7
17	12 49.3	12 51.4	12 14.2	17 1.5	77 6.6	137 11.8
18	12 49.5	12 51.6	12 14.4	18 1.5	78 6.7	138 11.8
19	12 49.8	12 51.9	12 14.7	19 1.6	79 6.8	139 11.9
20	12 50.0	12 52.1	12 14.9	20 1.7	80 6.9	140 12.0
21	12 50.3	12 52.4	12 15.2	21 1.8	81 7.0	141 12.1
22	12 50.5	12 52.6	12 15.4	22 1.9	82 7.0	142 12.2
23	12 50.8	12 52.9	12 15.6	23 2.0	83 7.1	143 12.3
24	12 51.0	12 53.1	12 15.9	24 2.1	84 7.2	144 12.4
25	12 51.3	12 53.4	12 16.1	25 2.1	85 7.3	145 12.4
26	12 51.5	12 53.6	12 16.4	26 2.2	86 7.4	146 12.5
27	12 51.8	12 53.9	12 16.6	27 2.3	87 7.5	147 12.6
28	12 52.0	12 54.1	12 16.8	28 2.4	88 7.6	148 12.7
29	12 52.3	12 54.4	12 17.1	29 2.5	89 7.6	149 12.8
30	12 52.5	12 54.6	12 17.3	30 2.6	90 7.7	150 12.9
31	12 52.8	12 54.9	12 17.5	31 2.7	91 7.8	151 13.0
32	12 53.0	12 55.1	12 17.8	32 2.7	92 7.9	152 13.0
33	12 53.3	12 55.4	12 18.0	33 2.8	93 8.0	153 13.1
34	12 53.5	12 55.6	12 18.3	34 2.9	94 8.1	154 13.2
35	12 53.8	12 55.9	12 18.5	35 3.0	95 8.2	155 13.3
36	12 54.0	12 56.2	12 18.7	36 3.1	96 8.2	156 13.4
37	12 54.3	12 56.4	12 19.0	37 3.2	97 8.3	157 13.5
38	12 54.5	12 56.7	12 19.2	38 3.3	98 8.4	158 13.6
39	12 54.8	12 56.9	12 19.5	39 3.3	99 8.5	159 13.6
40	12 55.0	12 57.2	12 19.7	40 3.4	100 8.6	160 13.7
41	12 55.3	12 57.4	12 19.9	41 3.5	101 8.7	161 13.8
42	12 55.5	12 57.7	12 20.2	42 3.6	102 8.8	162 13.9
43	12 55.8	12 57.9	12 20.4	43 3.7	103 8.8	163 14.0
44	12 56.0	12 58.2	12 20.6	44 3.8	104 8.9	164 14.1
45	12 56.3	12 58.4	12 20.9	45 3.9	105 9.0	165 14.2
46	12 56.5	12 58.7	12 21.1	46 3.9	106 9.1	166 14.2
47	12 56.8	12 58.9	12 21.4	47 4.0	107 9.2	167 14.3
48	12 57.0	12 59.2	12 21.6	48 4.1	108 9.3	168 14.4
49	12 57.3	12 59.4	12 21.8	49 4.2	109 9.4	169 14.5
50	12 57.5	12 59.7	12 22.1	50 4.3	110 9.4	170 14.6
51	12 57.8	12 59.9	12 22.3	51 4.4	111 9.5	171 14.7
52	12 58.0	13 .2	12 22.6	52 4.5	112 9.6	172 14.8
53	12 58.3	13 .4	12 22.8	53 4.5	113 9.7	173 14.8
54	12 58.5	13 .7	12 23.0	54 4.6	114 9.8	174 14.9
55	12 58.8	13 .9	12 23.3	55 4.7	115 9.9	175 15.0
56	12 59.0	13 1.2	12 23.5	56 4.8	116 10.0	176 15.1
57	12 59.3	13 1.4	12 23.8	57 4.9	117 10.0	177 15.2
58	12 59.5	13 1.7	12 24.0	58 5.0	118 10.1	178 15.3
59	12 59.8	13 1.9	12 24.2	59 5.1	119 10.2	179 15.4
60	13 .0	13 2.2	12 24.5	60 5.2	120 10.3	180 15.5

0 h 52 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	.0	13	2.2	12	24.5	0	.0	60	5.3	120	10.5
1	13	.3	13	2.4	12	24.7	1	.1	61	5.3	121	10.6
2	13	.5	13	2.7	12	24.9	2	.2	62	5.4	122	10.7
3	13	.8	13	2.9	12	25.2	3	.3	63	5.5	123	10.8
4	13	1.0	13	3.2	12	25.4	4	.4	64	5.6	124	10.9
5	13	1.3	13	3.4	12	25.7	5	.4	65	5.7	125	10.9
6	13	1.5	13	3.7	12	25.9	6	.5	66	5.8	126	11.0
7	13	1.8	13	3.9	12	26.1	7	.6	67	5.9	127	11.1
8	13	2.0	13	4.2	12	26.4	8	.7	68	6.0	128	11.2
9	13	2.3	13	4.4	12	26.6	9	.8	69	6.0	129	11.3
10	13	2.5	13	4.7	12	26.9	10	.9	70	6.1	130	11.4
11	13	2.8	13	4.9	12	27.1	11	1.0	71	6.2	131	11.5
12	13	3.0	13	5.2	12	27.3	12	1.1	72	6.3	132	11.6
13	13	3.3	13	5.4	12	27.6	13	1.1	73	6.4	133	11.6
14	13	3.5	13	5.7	12	27.8	14	1.2	74	6.5	134	11.7
15	13	3.8	13	5.9	12	28.0	15	1.3	75	6.6	135	11.8
16	13	4.0	13	6.2	12	28.3	16	1.4	76	6.7	136	11.9
17	13	4.3	13	6.4	12	28.5	17	1.5	77	6.7	137	12.0
18	13	4.5	13	6.7	12	28.8	18	1.6	78	6.8	138	12.1
19	13	4.8	13	6.9	12	29.0	19	1.7	79	6.9	139	12.2
20	13	5.0	13	7.2	12	29.2	20	1.8	80	7.0	140	12.3
21	13	5.3	13	7.4	12	29.5	21	1.8	81	7.1	141	12.3
22	13	5.5	13	7.7	12	29.7	22	1.9	82	7.2	142	12.4
23	13	5.8	13	7.9	12	30.0	23	2.0	83	7.3	143	12.5
24	13	6.0	13	8.2	12	30.2	24	2.1	84	7.4	144	12.6
25	13	6.3	13	8.4	12	30.4	25	2.2	85	7.4	145	12.7
26	13	6.5	13	8.7	12	30.7	26	2.3	86	7.5	146	12.8
27	13	6.8	13	8.9	12	30.9	27	2.4	87	7.6	147	12.9
28	13	7.0	13	9.2	12	31.1	28	2.5	88	7.7	148	13.0
29	13	7.3	13	9.4	12	31.4	29	2.5	89	7.8	149	13.0
30	13	7.5	13	9.7	12	31.6	30	2.6	90	7.9	150	13.1
31	13	7.8	13	9.9	12	31.9	31	2.7	91	8.0	151	13.2
32	13	8.0	13	10.2	12	32.1	32	2.8	92	8.1	152	13.3
33	13	8.3	13	10.4	12	32.3	33	2.9	93	8.1	153	13.4
34	13	8.5	13	10.7	12	32.6	34	3.0	94	8.2	154	13.5
35	13	8.8	13	10.9	12	32.8	35	3.1	95	8.3	155	13.6
36	13	9.0	13	11.2	12	33.1	36	3.2	96	8.4	156	13.7
37	13	9.3	13	11.4	12	33.3	37	3.2	97	8.5	157	13.7
38	13	9.5	13	11.7	12	33.5	38	3.3	98	8.6	158	13.8
39	13	9.8	13	11.9	12	33.8	39	3.4	99	8.7	159	13.9
40	13	10.0	13	12.2	12	34.0	40	3.5	100	8.8	160	14.0
41	13	10.3	13	12.4	12	34.2	41	3.6	101	8.8	161	14.1
42	13	10.5	13	12.7	12	34.5	42	3.7	102	8.9	162	14.2
43	13	10.8	13	12.9	12	34.7	43	3.8	103	9.0	163	14.3
44	13	11.0	13	13.2	12	35.0	44	3.9	104	9.1	164	14.4
45	13	11.3	13	13.4	12	35.2	45	3.9	105	9.2	165	14.4
46	13	11.5	13	13.7	12	35.4	46	4.0	106	9.3	166	14.5
47	13	11.8	13	13.9	12	35.7	47	4.1	107	9.4	167	14.6
48	13	12.0	13	14.2	12	35.9	48	4.2	108	9.5	168	14.7
49	13	12.3	13	14.5	12	36.2	49	4.3	109	9.5	169	14.8
50	13	12.5	13	14.7	12	36.4	50	4.4	110	9.6	170	14.9
51	13	12.8	13	15.0	12	36.6	51	4.5	111	9.7	171	15.0
52	13	13.0	13	15.2	12	36.9	52	4.6	112	9.8	172	15.1
53	13	13.3	13	15.5	12	37.1	53	4.6	113	9.9	173	15.1
54	13	13.5	13	15.7	12	37.4	54	4.7	114	10.0	174	15.2
55	13	13.8	13	16.0	12	37.6	55	4.8	115	10.1	175	15.3
56	13	14.0	13	16.2	12	37.8	56	4.9	116	10.2	176	15.4
57	13	14.3	13	16.5	12	38.1	57	5.0	117	10.2	177	15.5
58	13	14.5	13	16.7	12	38.3	58	5.1	118	10.3	178	15.6
59	13	14.8	13	17.0	12	38.5	59	5.2	119	10.4	179	15.7
60	13	15.0	13	17.2	12	38.8	60	5.3	120	10.5	180	15.8

0 h 53 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	15.0	13	17.2	12	38.8	0	.0	60	5.4	120	10.7
1	13	15.3	13	17.5	12	39.0	1	.1	61	5.4	121	10.8
2	13	15.5	13	17.7	12	39.3	2	.2	62	5.5	122	10.9
3	13	15.8	13	18.0	12	39.5	3	.3	63	5.6	123	11.0
4	13	16.0	13	18.2	12	39.7	4	.4	64	5.7	124	11.1
5	13	16.3	13	18.5	12	40.0	5	.4	65	5.8	125	11.1
6	13	16.5	13	18.7	12	40.2	6	.5	66	5.9	126	11.2
7	13	16.8	13	19.0	12	40.5	7	.6	67	6.0	127	11.3
8	13	17.0	13	19.2	12	40.7	8	.7	68	6.1	128	11.4
9	13	17.3	13	19.5	12	40.9	9	.8	69	6.2	129	11.5
10	13	17.5	13	19.7	12	41.2	10	.9	70	6.2	130	11.6
11	13	17.8	13	20.0	12	41.4	11	1.0	71	6.3	131	11.7
12	13	18.0	13	20.2	12	41.6	12	1.1	72	6.4	132	11.8
13	13	18.3	13	20.5	12	41.9	13	1.2	73	6.5	133	11.9
14	13	18.5	13	20.7	12	42.1	14	1.2	74	6.6	134	11.9
15	13	18.8	13	21.0	12	42.4	15	1.3	75	6.7	135	12.0
16	13	19.0	13	21.2	12	42.6	16	1.4	76	6.8	136	12.1
17	13	19.3	13	21.5	12	42.8	17	1.5	77	6.9	137	12.2
18	13	19.5	13	21.7	12	43.1	18	1.6	78	7.0	138	12.3
19	13	19.8	13	22.0	12	43.3	19	1.7	79	7.0	139	12.4
20	13	20.0	13	22.2	12	43.6	20	1.8	80	7.1	140	12.5
21	13	20.3	13	22.5	12	43.8	21	1.9	81	7.2	141	12.6
22	13	20.5	13	22.7	12	44.0	22	2.0	82	7.3	142	12.7
23	13	20.8	13	23.0	12	44.3	23	2.1	83	7.4	143	12.8
24	13	21.0	13	23.2	12	44.5	24	2.1	84	7.5	144	12.8
25	13	21.3	13	23.5	12	44.7	25	2.2	85	7.6	145	12.9
26	13	21.5	13	23.7	12	45.0	26	2.3	86	7.7	146	13.0
27	13	21.8	13	24.0	12	45.2	27	2.4	87	7.8	147	13.1
28	13	22.0	13	24.2	12	45.5	28	2.5	88	7.8	148	13.2
29	13	22.3	13	24.5	12	45.7	29	2.6	89	7.9	149	13.3
30	13	22.5	13	24.7	12	45.9	30	2.7	90	8.0	150	13.4
31	13	22.8	13	25.0	12	46.2	31	2.8	91	8.1	151	13.5
32	13	23.0	13	25.2	12	46.4	32	2.9	92	8.2	152	13.6
33	13	23.3	13	25.5	12	46.7	33	2.9	93	8.3	153	13.6
34	13	23.5	13	25.7	12	46.9	34	3.0	94	8.4	154	13.7
35	13	23.8	13	26.0	12	47.1	35	3.1	95	8.5	155	13.8
36	13	24.0	13	26.2	12	47.4	36	3.2	96	8.6	156	13.9
37	13	24.3	13	26.5	12	47.6	37	3.3	97	8.6	157	14.0
38	13	24.5	13	26.7	12	47.9	38	3.4	98	8.7	158	14.1
39	13	24.8	13	27.0	12	48.1	39	3.5	99	8.8	159	14.2
40	13	25.0	13	27.2	12	48.3	40	3.6	100	8.9	160	14.3
41	13	25.3	13	27.5	12	48.6	41	3.7	101	9.0	161	14.4
42	13	25.5	13	27.7	12	48.8	42	3.7	102	9.1	162	14.4
43	13	25.8	13	28.0	12	49.0	43	3.8	103	9.2	163	14.5
44	13	26.0	13	28.2	12	49.3	44	3.9	104	9.3	164	14.6
45	13	26.3	13	28.5	12	49.5	45	4.0	105	9.4	165	14.7
46	13	26.5	13	28.7	12	49.8	46	4.1	106	9.5	166	14.8
47	13	26.8	13	29.0	12	50.0	47	4.2	107	9.5	167	14.9
48	13	27.0	13	29.2	12	50.2	48	4.3	108	9.6	168	15.0
49	13	27.3	13	29.5	12	50.5	49	4.4	109	9.7	169	15.1
50	13	27.5	13	29.7								

0 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 .5	66 6.0	126 11.4
7	13 31.8	13 34.0	12 54.8	7 .6	67 6.1	127 11.5
8	13 32.0	13 34.3	12 55.0	8 .7	68 6.2	128 11.6
9	13 32.3	13 34.5	12 55.2	9 .8	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 1.0	71 6.4	131 11.9
12	13 33.0	13 35.3	12 56.0	12 1.1	72 6.5	132 12.0
13	13 33.3	13 35.5	12 56.2	13 1.2	73 6.6	133 12.1
14	13 33.5	13 35.8	12 56.4	14 1.3	74 6.7	134 12.2
15	13 33.8	13 36.0	12 56.7	15 1.4	75 6.8	135 12.3
16	13 34.0	13 36.3	12 56.9	16 1.5	76 6.9	136 12.4
17	13 34.3	13 36.5	12 57.2	17 1.5	77 7.0	137 12.4
18	13 34.5	13 36.8	12 57.4	18 1.6	78 7.1	138 12.5
19	13 34.8	13 37.0	12 57.6	19 1.7	79 7.2	139 12.6
20	13 35.0	13 37.3	12 57.9	20 1.8	80 7.3	140 12.7
21	13 35.3	13 37.5	12 58.1	21 1.9	81 7.4	141 12.8
22	13 35.5	13 37.8	12 58.3	22 2.0	82 7.4	142 12.9
23	13 35.8	13 38.0	12 58.6	23 2.1	83 7.5	143 13.0
24	13 36.0	13 38.3	12 58.8	24 2.2	84 7.6	144 13.1
25	13 36.3	13 38.5	12 59.1	25 2.3	85 7.7	145 13.2
26	13 36.5	13 38.8	12 59.3	26 2.4	86 7.8	146 13.3
27	13 36.8	13 39.0	12 59.5	27 2.5	87 7.9	147 13.4
28	13 37.0	13 39.3	12 59.8	28 2.5	88 8.0	148 13.4
29	13 37.3	13 39.5	13 .0	29 2.6	89 8.1	149 13.5
30	13 37.5	13 39.8	13 .3	30 2.7	90 8.2	150 13.6
31	13 37.8	13 40.0	13 .5	31 2.8	91 8.3	151 13.7
32	13 38.0	13 40.3	13 .7	32 2.9	92 8.4	152 13.8
33	13 38.3	13 40.5	13 1.0	33 3.0	93 8.4	153 13.9
34	13 38.5	13 40.8	13 1.2	34 3.1	94 8.5	154 14.0
35	13 38.8	13 41.0	13 1.5	35 3.2	95 8.6	155 14.1
36	13 39.0	13 41.3	13 1.7	36 3.3	96 8.7	156 14.2
37	13 39.3	13 41.5	13 1.9	37 3.4	97 8.8	157 14.3
38	13 39.5	13 41.8	13 2.2	38 3.5	98 8.9	158 14.4
39	13 39.8	13 42.0	13 2.4	39 3.5	99 9.0	159 14.4
40	13 40.0	13 42.3	13 2.6	40 3.6	100 9.1	160 14.5
41	13 40.3	13 42.5	13 2.9	41 3.7	101 9.2	161 14.6
42	13 40.5	13 42.8	13 3.1	42 3.8	102 9.3	162 14.7
43	13 40.8	13 43.0	13 3.4	43 3.9	103 9.4	163 14.8
44	13 41.0	13 43.3	13 3.6	44 4.0	104 9.4	164 14.9
45	13 41.3	13 43.5	13 3.8	45 4.1	105 9.5	165 15.0
46	13 41.5	13 43.8	13 4.1	46 4.2	106 9.6	166 15.1
47	13 41.8	13 44.0	13 4.3	47 4.3	107 9.7	167 15.2
48	13 42.0	13 44.3	13 4.6	48 4.4	108 9.8	168 15.3
49	13 42.3	13 44.5	13 4.8	49 4.5	109 9.9	169 15.4
50	13 42.5	13 44.8	13 5.0	50 4.5	110 10.0	170 15.4
51	13 42.8	13 45.0	13 5.3	51 4.6	111 10.1	171 15.5
52	13 43.0	13 45.3	13 5.5	52 4.7	112 10.2	172 15.6
53	13 43.3	13 45.5	13 5.7	53 4.8	113 10.3	173 15.7
54	13 43.5	13 45.8	13 6.0	54 4.9	114 10.4	174 15.8
55	13 43.8	13 46.0	13 6.2	55 5.0	115 10.4	175 15.9
56	13 44.0	13 46.3	13 6.5	56 5.1	116 10.5	176 16.0
57	13 44.3	13 46.5	13 6.7	57 5.2	117 10.6	177 16.1
58	13 44.5	13 46.8	13 6.9	58 5.3	118 10.7	178 16.2
59	13 44.8	13 47.0	13 7.2	59 5.4	119 10.8	179 16.3
60	13 45.0	13 47.3	13 7.4	60 5.5	120 10.9	180 16.4

0 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 .6	67 6.2	127 11.7
8	13 47.0	13 49.3	13 9.3	8 .7	68 6.3	128 11.8
9	13 47.3	13 49.5	13 9.6	9 .8	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 1.0	71 6.6	131 12.1
12	13 48.0	13 50.3	13 10.3	12 1.1	72 6.7	132 12.2
13	13 48.3	13 50.6	13 10.5	13 1.2	73 6.8	133 12.3
14	13 48.5	13 50.8	13 10.8	14 1.3	74 6.8	134 12.4
15	13 48.8	13 51.1	13 11.0	15 1.4	75 6.9	135 12.5
16	13 49.0	13 51.3	13 11.2	16 1.5	76 7.0	136 12.6
17	13 49.3	13 51.6	13 11.5	17 1.6	77 7.1	137 12.7
18	13 49.5	13 51.8	13 11.7	18 1.7	78 7.2	138 12.8
19	13 49.8	13 52.1	13 12.0	19 1.8	79 7.3	139 12.9
20	13 50.0	13 52.3	13 12.2	20 1.9	80 7.4	140 13.0
21	13 50.3	13 52.6	13 12.4	21 1.9	81 7.5	141 13.0
22	13 50.5	13 52.8	13 12.7	22 2.0	82 7.6	142 13.1
23	13 50.8	13 53.1	13 12.9	23 2.1	83 7.7	143 13.2
24	13 51.0	13 53.3	13 13.1	24 2.2	84 7.8	144 13.3
25	13 51.3	13 53.6	13 13.4	25 2.3	85 7.9	145 13.4
26	13 51.5	13 53.8	13 13.6	26 2.4	86 8.0	146 13.5
27	13 51.8	13 54.1	13 13.9	27 2.5	87 8.0	147 13.6
28	13 52.0	13 54.3	13 14.1	28 2.6	88 8.1	148 13.7
29	13 52.3	13 54.6	13 14.3	29 2.7	89 8.2	149 13.8
30	13 52.5	13 54.8	13 14.6	30 2.8	90 8.3	150 13.9
31	13 52.8	13 55.1	13 14.8	31 2.9	91 8.4	151 14.0
32	13 53.0	13 55.3	13 15.1	32 3.0	92 8.5	152 14.1
33	13 53.3	13 55.6	13 15.3	33 3.1	93 8.6	153 14.2
34	13 53.5	13 55.8	13 15.5	34 3.1	94 8.7	154 14.2
35	13 53.8	13 56.1	13 15.8	35 3.2	95 8.8	155 14.3
36	13 54.0	13 56.3	13 16.0	36 3.3	96 8.9	156 14.4
37	13 54.3	13 56.6	13 16.2	37 3.4	97 9.0	157 14.5
38	13 54.5	13 56.8	13 16.5	38 3.5	98 9.1	158 14.6
39	13 54.8	13 57.1	13 16.7	39 3.6	99 9.2	159 14.7
40	13 55.0	13 57.3	13 17.0	40 3.7	100 9.3	160 14.8
41	13 55.3	13 57.6	13 17.2	41 3.8	101 9.3	161 14.9
42	13 55.5	13 57.8	13 17.4	42 3.9	102 9.4	162 15.0
43	13 55.8	13 58.1	13 17.7	43 4.0	103 9.5	163 15.1
44	13 56.0	13 58.3	13 17.9	44 4.1	104 9.6	164 15.2
45	13 56.3	13 58.6	13 18.2	45 4.2	105 9.7	165 15.3
46	13 56.5	13 58.8	13 18.4	46 4.3	106 9.8	166 15.4
47	13 56.8	13 59.1	13 18.6	47 4.3	107 9.9	167 15.4
48	13 57.0	13 59.3	13 18.9	48 4.4	108 10.0	168 15.5
49	13 57.3	13 59.6	13 19.1	49 4.5	109 10.1	169 15.6
50	13 57.5	13 59.8	13 19.3	50 4.6	110 10.2	170 15.7
51	13 57.8	14 .1	13 19.6	51 4.7	111 10.3	171 15.8
52	13 58.0	14 .3	13 19.8	52 4.8	112 10.4	172 15.9
53	13 58.3	14 .6	13 20.1	53 4.9	113 10.5	173 16.0
54	13 58.5	14 .8	13 20.3	54 5.0	114 10.5	174 16.1
55	13 58.8	14 1.1	13 20.5	55 5.1	115 10.6	175 16.2
56	13 59.0	14 1.3	13 20.8	56 5.2	116 10.7	176 16.3
57	13 59.3	14 1.6	13 21.0	57 5.3	117 10.8	177 16.4
58	13 59.5	14 1.8	13 21.3	58 5.4	118 10.9	178 16.5
59	13 59.8	14 2.1	13 21.5	59 5.5	119 11.0	179 16.6
60	14 .0	14 2.3	13 21.7	60 5.6	120 11.1	180 16.7

0 h 56 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	o	'	o
0	14	.0	14	2.3	13	21.7	0 .0 60 5.7 120 11.3
1	14	.3	14	2.6	13	22.0	1 .1 61 5.7 121 11.4
2	14	.5	14	2.8	13	22.2	2 .2 62 5.8 122 11.5
3	14	.8	14	3.1	13	22.4	3 .3 63 5.9 123 11.6
4	14	1.0	14	3.3	13	22.7	4 .4 64 6.0 124 11.7
5	14	1.3	14	3.6	13	22.9	5 .5 65 6.1 125 11.8
6	14	1.5	14	3.8	13	23.2	6 .6 66 6.2 126 11.9
7	14	1.8	14	4.1	13	23.4	7 .7 67 6.3 127 12.0
8	14	2.0	14	4.3	13	23.6	8 .8 68 6.4 128 12.1
9	14	2.3	14	4.6	13	23.9	9 .8 69 6.5 129 12.1
10	14	2.5	14	4.8	13	24.1	10 .9 70 6.6 130 12.2
11	14	2.8	14	5.1	13	24.4	11 1.0 71 6.7 131 12.3
12	14	3.0	14	5.3	13	24.6	12 1.1 72 6.8 132 12.4
13	14	3.3	14	5.6	13	24.8	13 1.2 73 6.9 133 12.5
14	14	3.5	14	5.8	13	25.1	14 1.3 74 7.0 134 12.6
15	14	3.8	14	6.1	13	25.3	15 1.4 75 7.1 135 12.7
16	14	4.0	14	6.3	13	25.6	16 1.5 76 7.2 136 12.8
17	14	4.3	14	6.6	13	25.8	17 1.6 77 7.3 137 12.9
18	14	4.5	14	6.8	13	26.0	18 1.7 78 7.3 138 13.0
19	14	4.8	14	7.1	13	26.3	19 1.8 79 7.4 139 13.1
20	14	5.0	14	7.3	13	26.5	20 1.9 80 7.5 140 13.2
21	14	5.3	14	7.6	13	26.7	21 2.0 81 7.6 141 13.3
22	14	5.5	14	7.8	13	27.0	22 2.1 82 7.7 142 13.4
23	14	5.8	14	8.1	13	27.2	23 2.2 83 7.8 143 13.5
24	14	6.0	14	8.4	13	27.5	24 2.3 84 7.9 144 13.6
25	14	6.3	14	8.6	13	27.7	25 2.4 85 8.0 145 13.7
26	14	6.5	14	8.9	13	27.9	26 2.4 86 8.1 146 13.7
27	14	6.8	14	9.1	13	28.2	27 2.5 87 8.2 147 13.8
28	14	7.0	14	9.4	13	28.4	28 2.6 88 8.3 148 13.9
29	14	7.3	14	9.6	13	28.7	29 2.7 89 8.4 149 14.0
30	14	7.5	14	9.9	13	28.9	30 2.8 90 8.5 150 14.1
31	14	7.8	14	10.1	13	29.1	31 2.9 91 8.6 151 14.2
32	14	8.0	14	10.4	13	29.4	32 3.0 92 8.7 152 14.3
33	14	8.3	14	10.6	13	29.6	33 3.1 93 8.8 153 14.4
34	14	8.5	14	10.9	13	29.8	34 3.2 94 8.9 154 14.5
35	14	8.8	14	11.1	13	30.1	35 3.3 95 8.9 155 14.6
36	14	9.0	14	11.4	13	30.3	36 3.4 96 9.0 156 14.7
37	14	9.3	14	11.6	13	30.6	37 3.5 97 9.1 157 14.8
38	14	9.5	14	11.9	13	30.8	38 3.6 98 9.2 158 14.9
39	14	9.8	14	12.1	13	31.0	39 3.7 99 9.3 159 15.0
40	14	10.0	14	12.4	13	31.3	40 3.8 100 9.4 160 15.1
41	14	10.3	14	12.6	13	31.5	41 3.9 101 9.5 161 15.2
42	14	10.5	14	12.9	13	31.8	42 4.0 102 9.6 162 15.3
43	14	10.8	14	13.1	13	32.0	43 4.0 103 9.7 163 15.3
44	14	11.0	14	13.4	13	32.2	44 4.1 104 9.8 164 15.4
45	14	11.3	14	13.6	13	32.5	45 4.2 105 9.9 165 15.5
46	14	11.5	14	13.9	13	32.7	46 4.3 106 10.0 166 15.6
47	14	11.8	14	14.1	13	32.9	47 4.4 107 10.1 167 15.7
48	14	12.0	14	14.4	13	33.2	48 4.5 108 10.2 168 15.8
49	14	12.3	14	14.6	13	33.4	49 4.6 109 10.3 169 15.9
50	14	12.5	14	14.9	13	33.7	50 4.7 110 10.4 170 16.0
51	14	12.8	14	15.1	13	33.9	51 4.8 111 10.5 171 16.1
52	14	13.0	14	15.4	13	34.1	52 4.9 112 10.5 172 16.2
53	14	13.3	14	15.6	13	34.4	53 5.0 113 10.6 173 16.3
54	14	13.5	14	15.9	13	34.6	54 5.1 114 10.7 174 16.4
55	14	13.8	14	16.1	13	34.9	55 5.2 115 10.8 175 16.5
56	14	14.0	14	16.4	13	35.1	56 5.3 116 10.9 176 16.6
57	14	14.3	14	16.6	13	35.3	57 5.4 117 11.0 177 16.7
58	14	14.5	14	16.9	13	35.6	58 5.5 118 11.1 178 16.8
59	14	14.8	14	17.1	13	35.8	59 5.6 119 11.2 179 16.9
60	14	15.0	14	17.4	13	36.1	60 5.7 120 11.3 180 17.0

0 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	o	'	o
0	14	15.0	14	17.4	13	36.1	0 .0 60 5.8 120 11.5
1	14	15.3	14	17.6	13	36.3	1 .1 61 5.8 121 11.6
2	14	15.5	14	17.9	13	36.5	2 .2 62 5.9 122 11.7
3	14	15.8	14	18.1	13	36.8	3 .3 63 6.0 123 11.8
4	14	16.0	14	18.4	13	37.0	4 .4 64 6.1 124 11.9
5	14	16.3	14	18.6	13	37.2	5 .5 65 6.2 125 12.0
6	14	16.5	14	18.9	13	37.5	6 .6 66 6.3 126 12.1
7	14	16.8	14	19.1	13	37.7	7 .7 67 6.4 127 12.2
8	14	17.0	14	19.4	13	38.0	8 .8 68 6.5 128 12.3
9	14	17.3	14	19.6	13	38.2	9 .9 69 6.6 129 12.4
10	14	17.5	14	19.9	13	38.4	10 1.0 70 6.7 130 12.5
11	14	17.8	14	20.1	13	38.7	11 1.1 71 6.8 131 12.6
12	14	18.0	14	20.4	13	38.9	12 1.2 72 6.9 132 12.7
13	14	18.3	14	20.6	13	39.2	13 1.2 73 7.0 133 12.7
14	14	18.5	14	20.9	13	39.4	14 1.3 74 7.1 134 12.8
15	14	18.8	14	21.1	13	39.6	15 1.4 75 7.2 135 12.9
16	14	19.0	14	21.4	13	39.9	16 1.5 76 7.3 136 13.0
17	14	19.3	14	21.6	13	40.1	17 1.6 77 7.4 137 13.1
18	14	19.5	14	21.9	13	40.3	18 1.7 78 7.5 138 13.2
19	14	19.8	14	22.1	13	40.6	19 1.8 79 7.6 139 13.3
20	14	20.0	14	22.4	13	40.8	20 1.9 80 7.7 140 13.4
21	14	20.3	14	22.6	13	41.1	21 2.0 81 7.8 141 13.5
22	14	20.5	14	22.9	13	41.3	22 2.1 82 7.9 142 13.6
23	14	20.8	14	23.1	13	41.5	23 2.2 83 8.0 143 13.7
24	14	21.0	14	23.4	13	41.8	24 2.3 84 8.1 144 13.8
25	14	21.3	14	23.6	13	42.0	25 2.4 85 8.1 145 13.9
26	14	21.5	14	23.9	13	42.3	26 2.5 86 8.2 146 14.0
27	14	21.8	14	24.1	13	42.5	27 2.6 87 8.3 147 14.1
28	14	22.0	14	24.4	13	42.7	28 2.7 88 8.4 148 14.2
29	14	22.3	14	24.6	13	43.0	29 2.8 89 8.5 149 14.3
30	14	22.5	14	24.9	13	43.2	30 2.9 90 8.6 150 14.4
31	14	22.8	14	25.1	13	43.4	31 3.0 91 8.7 151 14.5
32	14	23.0	14	25.4	13	43.7	32 3.1 92 8.8 152 14.6
33	14	23.3	14	25.6	13	43.9	33 3.2 93 8.9 153 14.7
34	14	23.5	14	25.9	13	44.2	34 3.3 94 9.0 154 14.8
35	14	23.8	14	26.1	13	44.4	35 3.4 95 9.1 155 14.9
36	14	24.0	14	26.4	13	44.6	36 3.5 96 9.2 156 15.0
37	14	24.3	14	26.7	13	44.9	37 3.5 97 9.3 157 15.0
38	14	24.5	14	26.9	13	45.1	38 3.6 98 9.4 158 15.1
39	14	24.8	14	27.2	13	45.4	39 3.7 99 9.5 159 15.2
40	14	25.0	14	27.4	13	45.6	40 3.8 100 9.6 160 15.3
41	14	25.3	14	27.7	13	45.8	41 3.9 101 9.7 161 15.4
42	14	25.5	14	27.9	13	46.1	42 4.0 102 9.8 162 15.5
43	14	25.8	14	28.2	13	46.3	43 4.1 103 9.9 163 15.6
44	14	26.0	14	28.4	13	46.5	44 4.2 104 10.0 164 15.7
45	14	26.3	14	28.7	13	46.8	45 4.3 105 10.1 165 15.8
46	14	26.5	14	28.9	13	47.0	46 4.4 106 10.2 166 15.9
47	14	26.8	14	29.2	13	47.3	47 4.5 107 10.3 167 16.0
48	14	27.0	14	29.4	13	47.5	48 4.6 108 10.4 168 16.1
49	14	27.3	14	29.7	13	47.7	49 4.7 109 10.4 169 16.2
50	14	27.5	14	29.9	13	48.0	50 4.8 110 10.5 170 16.3
51	14	27.8	14	30.2	13	48.2	51 4.9 111 10.6 171 16.4
52	14	28.0	14	30.4	13	48.5	52 5.0 112 10.7 172 16.5
53	14	28.3	14	30.7	13	48.7	53 5.1 113 10.8 173 16.6
54	14	28.5	14	30.9	13	48.9	54 5.2 114 10.9 174 16.7
55	14	28.8	14	31.2	13	49.2	55 5.3 115 11.0 175 16.8
56	14	29.0	14	31.4	13	49.4	56 5.4 116 11.1 176 16.9
57	14	29.3	14	31.7	13	49.7	57 5.5 117 11.2 177 17.0
58	14	29.5	14	31.9	13	49.9	58 5.6 118 11.3 178 17.1
59	14	29.8	14	32.2	13	50.1	59 5.7 119 11.4 179 17.2
60	14	30.0	14	32.4	13	50.4	60 5.8 120 11.5 180 17.3

0 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 58.5	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	41 4.0	101 9.8	161 15.7
42	14 40.5	14 42.9	14 .4	42 4.1	102 9.9	162 15.8
43	14 40.8	14 43.2	14 .6	43 4.2	103 10.0	163 15.9
44	14 41.0	14 43.4	14 .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

0 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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	15 .2	14 16.9	51 5.1	111 11.0	171 17.0
52	14 58.0	15 .5	14 17.1	52 5.2	112 11.1	172 17.1
53	14 58.3	15 .7	14 17.3	53 5.3	113 11.2	173 17.2
54	14 58.5	15 1.0	14 17.6	54 5.4	114 11.3	174 17.3
55	14 58.8	15 1.2	14 17.8	55 5.5	115 11.4	175 17.4
56	14 59.0	15 1.5	14 18.0	56 5.6	116 11.5	176 17.5
57	14 59.3	15 1.7	14 18.3	57 5.7	117 11.6	177 17.6
58	14 59.5	15 2.0	14 18.5	58 5.8	118 11.7	178 17.7
59	14 59.8	15 2.2	14 18.8	59 5.9	119 11.8	179 17.8
60	15 .0	15 2.5	14 19.0	60 6.0	120 11.9	180 17.9



## 1 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	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, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	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 5.6 115 11.8 175 17.9
56	15	29.0	15	31.6	14	46.7	56 5.7 116 11.9 176 18.0
57	15	29.3	15	31.8	14	46.9	57 5.8 117 12.0 177 18.1
58	15	29.5	15	32.1	14	47.2	58 5.9 118 12.1 178 18.2
59	15	29.8	15	32.3	14	47.4	59 6.0 119 12.2 179 18.3
60	15	30.0	15	32.6	14	47.6	60 6.2 120 12.3 180 18.5

## 1 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 30.0	15 32.6	14 47.6	0 .0	60 6.3	120 12.5
1	15 30.3	15 32.8	14 47.9	1 .1	61 6.4	121 12.6
2	15 30.5	15 33.1	14 48.1	2 .2	62 6.5	122 12.7
3	15 30.8	15 33.3	14 48.3	3 .3	63 6.6	123 12.8
4	15 31.0	15 33.6	14 48.6	4 .4	64 6.7	124 12.9
5	15 31.3	15 33.8	14 48.8	5 .5	65 6.8	125 13.0
6	15 31.5	15 34.1	14 49.1	6 .6	66 6.9	126 13.1
7	15 31.8	15 34.3	14 49.3	7 .7	67 7.0	127 13.2
8	15 32.0	15 34.6	14 49.5	8 .8	68 7.1	128 13.3
9	15 32.3	15 34.8	14 49.8	9 .9	69 7.2	129 13.4
10	15 32.5	15 35.1	14 50.0	10 1.0	70 7.3	130 13.5
11	15 32.8	15 35.3	14 50.3	11 1.1	71 7.4	131 13.6
12	15 33.0	15 35.6	14 50.5	12 1.3	72 7.5	132 13.8
13	15 33.3	15 35.8	14 50.7	13 1.4	73 7.6	133 13.9
14	15 33.5	15 36.1	14 51.0	14 1.5	74 7.7	134 14.0
15	15 33.8	15 36.3	14 51.2	15 1.6	75 7.8	135 14.1
16	15 34.0	15 36.6	14 51.5	16 1.7	76 7.9	136 14.2
17	15 34.3	15 36.8	14 51.7	17 1.8	77 8.0	137 14.3
18	15 34.5	15 37.1	14 51.9	18 1.9	78 8.1	138 14.4
19	15 34.8	15 37.3	14 52.2	19 2.0	79 8.2	139 14.5
20	15 35.0	15 37.6	14 52.4	20 2.1	80 8.3	140 14.6
21	15 35.3	15 37.8	14 52.6	21 2.2	81 8.4	141 14.7
22	15 35.5	15 38.1	14 52.9	22 2.3	82 8.5	142 14.8
23	15 35.8	15 38.3	14 53.1	23 2.4	83 8.6	143 14.9
24	15 36.0	15 38.6	14 53.4	24 2.5	84 8.8	144 15.0
25	15 36.3	15 38.9	14 53.6	25 2.6	85 8.9	145 15.1
26	15 36.5	15 39.1	14 53.8	26 2.7	86 9.0	146 15.2
27	15 36.8	15 39.4	14 54.1	27 2.8	87 9.1	147 15.3
28	15 37.0	15 39.6	14 54.3	28 2.9	88 9.2	148 15.4
29	15 37.3	15 39.9	14 54.6	29 3.0	89 9.3	149 15.5
30	15 37.5	15 40.1	14 54.8	30 3.1	90 9.4	150 15.6
31	15 37.8	15 40.4	14 55.0	31 3.2	91 9.5	151 15.7
32	15 38.0	15 40.6	14 55.3	32 3.3	92 9.6	152 15.8
33	15 38.3	15 40.9	14 55.5	33 3.4	93 9.7	153 15.9
34	15 38.5	15 41.1	14 55.7	34 3.5	94 9.8	154 16.0
35	15 38.8	15 41.4	14 56.0	35 3.6	95 9.9	155 16.1
36	15 39.0	15 41.6	14 56.2	36 3.8	96 10.0	156 16.3
37	15 39.3	15 41.9	14 56.5	37 3.9	97 10.1	157 16.4
38	15 39.5	15 42.1	14 56.7	38 4.0	98 10.2	158 16.5
39	15 39.8	15 42.4	14 56.9	39 4.1	99 10.3	159 16.6
40	15 40.0	15 42.6	14 57.2	40 4.2	100 10.4	160 16.7
41	15 40.3	15 42.9	14 57.4	41 4.3	101 10.5	161 16.8
42	15 40.5	15 43.1	14 57.7	42 4.4	102 10.6	162 16.9
43	15 40.8	15 43.4	14 57.9	43 4.5	103 10.7	163 17.0
44	15 41.0	15 43.6	14 58.1	44 4.6	104 10.8	164 17.1
45	15 41.3	15 43.9	14 58.4	45 4.7	105 10.9	165 17.2
46	15 41.5	15 44.1	14 58.6	46 4.8	106 11.0	166 17.3
47	15 41.8	15 44.4	14 58.8	47 4.9	107 11.1	167 17.4
48	15 42.0	15 44.6	14 59.1	48 5.0	108 11.3	168 17.5
49	15 42.3	15 44.9	14 59.3	49 5.1	109 11.4	169 17.6
50	15 42.5	15 45.1	14 59.6	50 5.2	110 11.5	170 17.7
51	15 42.8	15 45.4	14 59.8	51 5.3	111 11.6	171 17.8
52	15 43.0	15 45.6	15 .0	52 5.4	112 11.7	172 17.9
53	15 43.3	15 45.9	15 .3	53 5.5	113 11.8	173 18.0
54	15 43.5	15 46.1	15 .5	54 5.6	114 11.9	174 18.1
55	15 43.8	15 46.4	15 .8	55 5.7	115 12.0	175 18.2
56	15 44.0	15 46.6	15 1.0	56 5.8	116 12.1	176 18.3
57	15 44.3	15 46.9	15 1.2	57 5.9	117 12.2	177 18.4
58	15 44.5	15 47.1	15 1.5	58 6.0	118 12.3	178 18.5
59	15 44.8	15 47.4	15 1.7	59 6.1	119 12.4	179 18.6
60	15 45.0	15 47.6	15 2.0	60 6.3	120 12.5	180 18.8

## 1 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 45.0	15 47.6	15 2.0	0 .0	60 6.4	120 12.7
1	15 45.3	15 47.9	15 2.2	1 .1	61 6.5	121 12.8
2	15 45.5	15 48.1	15 2.4	2 .2	62 6.6	122 12.9
3	15 45.8	15 48.4	15 2.7	3 .3	63 6.7	123 13.0
4	15 46.0	15 48.6	15 2.9	4 .4	64 6.8	124 13.1
5	15 46.3	15 48.9	15 3.1	5 .5	65 6.9	125 13.2
6	15 46.5	15 49.1	15 3.4	6 .6	66 7.0	126 13.3
7	15 46.8	15 49.4	15 3.6	7 .7	67 7.1	127 13.4
8	15 47.0	15 49.6	15 3.9	8 .8	68 7.2	128 13.5
9	15 47.3	15 49.9	15 4.1	9 1.0	69 7.3	129 13.7
10	15 47.5	15 50.1	15 4.3	10 1.1	70 7.4	130 13.8
11	15 47.8	15 50.4	15 4.6	11 1.2	71 7.5	131 13.9
12	15 48.0	15 50.6	15 4.8	12 1.3	72 7.6	132 14.0
13	15 48.3	15 50.9	15 5.1	13 1.4	73 7.7	133 14.1
14	15 48.5	15 51.1	15 5.3	14 1.5	74 7.8	134 14.2
15	15 48.8	15 51.4	15 5.5	15 1.6	75 7.9	135 14.3
16	15 49.0	15 51.6	15 5.8	16 1.7	76 8.0	136 14.4
17	15 49.3	15 51.9	15 6.0	17 1.8	77 8.1	137 14.5
18	15 49.5	15 52.1	15 6.2	18 1.9	78 8.3	138 14.6
19	15 49.8	15 52.4	15 6.5	19 2.0	79 8.4	139 14.7
20	15 50.0	15 52.6	15 6.7	20 2.1	80 8.5	140 14.8
21	15 50.3	15 52.9	15 7.0	21 2.2	81 8.6	141 14.9
22	15 50.5	15 53.1	15 7.2	22 2.3	82 8.7	142 15.0
23	15 50.8	15 53.4	15 7.4	23 2.4	83 8.8	143 15.1
24	15 51.0	15 53.6	15 7.7	24 2.5	84 8.9	144 15.2
25	15 51.3	15 53.9	15 7.9	25 2.6	85 9.0	145 15.3
26	15 51.5	15 54.1	15 8.2	26 2.8	86 9.1	146 15.5
27	15 51.8	15 54.4	15 8.4	27 2.9	87 9.2	147 15.6
28	15 52.0	15 54.6	15 8.6	28 3.0	88 9.3	148 15.7
29	15 52.3	15 54.9	15 8.9	29 3.1	89 9.4	149 15.8
30	15 52.5	15 55.1	15 9.1	30 3.2	90 9.5	150 15.9
31	15 52.8	15 55.4	15 9.3	31 3.3	91 9.6	151 16.0
32	15 53.0	15 55.6	15 9.6	32 3.4	92 9.7	152 16.1
33	15 53.3	15 55.9	15 9.8	33 3.5	93 9.8	153 16.2
34	15 53.5	15 56.1	15 10.1	34 3.6	94 9.9	154 16.3
35	15 53.8	15 56.4	15 10.3	35 3.7	95 10.1	155 16.4
36	15 54.0	15 56.7	15 10.5	36 3.8	96 10.2	156 16.5
37	15 54.3	15 56.9	15 10.8	37 3.9	97 10.3	157 16.6
38	15 54.5	15 57.2	15 11.0	38 4.0	98 10.4	158 16.7
39	15 54.8	15 57.4	15 11.3	39 4.1	99 10.5	159 16.8
40	15 55.0	15 57.7	15 11.5	40 4.2	100 10.6	160 16.9
41	15 55.3	15 57.9	15 11.7	41 4.3	101 10.7	161 17.0
42	15 55.5	15 58.2	15 12.0	42 4.4	102 10.8	162 17.1
43	15 55.8	15 58.4	15 12.2	43 4.6	103 10.9	163 17.3
44	15 56.0	15 58.7	15 12.4	44 4.7	104 11.0	164 17.4
45	15 56.3	15 58.9	15 12.7	45 4.8	105 11.1	165 17.5
46	15 56.5	15 59.2	15 12.9	46 4.9	106 11.2	166 17.6
47	15 56.8	15 59.4	15 13.2	47 5.0	107 11.3	167 17.7
48	15 57.0	15 59.7	15 13.4	48 5.1	108 11.4	168 17.8
49	15 57.3	15 59.9	15 13.6	49 5.2	109 11.5	169 17.9
50	15 57.5	16 .2	15 13.9	50 5.3	110 11.6	170 18.0
51	15 57.8	16 .4	15 14.1	51 5.4	111 11.7	171 18.1
52	15 58.0	16 .7	15 14.4	52 5.5	112 11.9	172 18.2
53	15 58.3	16 .9	15 14.6	53 5.6	113 12.0	173 18.3
54	15 58.5	16 1.2	15 14.8	54 5.7	114 12.1	174 18.4
55	15 58.8	16 1.4	15 15.1	55 5.8	115 12.2	175 18.5
56	15 59.0	16 1.7	15 15.3	56 5.9	116 12.3	176 18.6
57	15 59.3	16 1.9	15 15.6	57 6.0	117 12.4	177 18.7
58	15 59.5	16 2.2	15 15.8	58 6.1	118 12.5	178 18.8
59	15 59.8	16 2.4	15 16.0	59 6.2	119 12.6	179 18.9
60	16 .0	16 2.7	15 16.3	60 6.4	120 12.7	180 19.1

## 1 h 4 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	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

## 1 h 5 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	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 .7 66 7.2 126 13.8
7	16	16.8	16	19.5	15	32.3	7 .8 67 7.3 127 13.9
8	16	17.0	16	19.7	15	32.5	8 .9 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 9.0 142 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 6.0 115 12.6 175 19.1
56	16	29.0	16	31.7	15	43.9	56 6.1 116 12.7 176 19.2
57	16	29.3	16	32.0	15	44.2	57 6.2 117 12.8 177 19.3
58	16	29.5	16	32.2	15	44.4	58 6.3 118 12.9 178 19.4
59	16	29.8	16	32.5	15	44.7	59 6.4 119 13.0 179 19.5
60	16	30.0	16	32.8	15	44.9	60 6.6 120 13.1 180 19.7

## 1 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 30.0	16 32.8	15 44.9	0 .0	60 6.7	120 13.3
1	16 30.3	16 33.0	15 45.1	1 .1	61 6.8	121 13.4
2	16 30.5	16 33.3	15 45.4	2 .2	62 6.9	122 13.5
3	16 30.8	16 33.5	15 45.6	3 .3	63 7.0	123 13.6
4	16 31.0	16 33.8	15 45.9	4 .4	64 7.1	124 13.7
5	16 31.3	16 34.0	15 46.1	5 .6	65 7.2	125 13.9
6	16 31.5	16 34.3	15 46.3	6 .7	66 7.3	126 14.0
7	16 31.8	16 34.5	15 46.6	7 .8	67 7.4	127 14.1
8	16 32.0	16 34.8	15 46.8	8 .9	68 7.5	128 14.2
9	16 32.3	16 35.0	15 47.0	9 1.0	69 7.6	129 14.3
10	16 32.5	16 35.3	15 47.3	10 1.1	70 7.8	130 14.4
11	16 32.8	16 35.5	15 47.5	11 1.2	71 7.9	131 14.5
12	16 33.0	16 35.8	15 47.8	12 1.3	72 8.0	132 14.6
13	16 33.3	16 36.0	15 48.0	13 1.4	73 8.1	133 14.7
14	16 33.5	16 36.3	15 48.2	14 1.6	74 8.2	134 14.9
15	16 33.8	16 36.5	15 48.5	15 1.7	75 8.3	135 15.0
16	16 34.0	16 36.8	15 48.7	16 1.8	76 8.4	136 15.1
17	16 34.3	16 37.0	15 49.0	17 1.9	77 8.5	137 15.2
18	16 34.5	16 37.3	15 49.2	18 2.0	78 8.6	138 15.3
19	16 34.8	16 37.5	15 49.4	19 2.1	79 8.8	139 15.4
20	16 35.0	16 37.8	15 49.7	20 2.2	80 8.9	140 15.5
21	16 35.3	16 38.0	15 49.9	21 2.3	81 9.0	141 15.6
22	16 35.5	16 38.3	15 50.1	22 2.4	82 9.1	142 15.7
23	16 35.8	16 38.5	15 50.4	23 2.5	83 9.2	143 15.8
24	16 36.0	16 38.8	15 50.6	24 2.7	84 9.3	144 16.0
25	16 36.3	16 39.0	15 50.9	25 2.8	85 9.4	145 16.1
26	16 36.5	16 39.3	15 51.1	26 2.9	86 9.5	146 16.2
27	16 36.8	16 39.5	15 51.3	27 3.0	87 9.6	147 16.3
28	16 37.0	16 39.8	15 51.6	28 3.1	88 9.8	148 16.4
29	16 37.3	16 40.0	15 51.8	29 3.2	89 9.9	149 16.5
30	16 37.5	16 40.3	15 52.1	30 3.3	90 10.0	150 16.6
31	16 37.8	16 40.5	15 52.3	31 3.4	91 10.1	151 16.7
32	16 38.0	16 40.8	15 52.5	32 3.5	92 10.2	152 16.8
33	16 38.3	16 41.0	15 52.8	33 3.7	93 10.3	153 17.0
34	16 38.5	16 41.3	15 53.0	34 3.8	94 10.4	154 17.1
35	16 38.8	16 41.5	15 53.3	35 3.9	95 10.5	155 17.2
36	16 39.0	16 41.8	15 53.5	36 4.0	96 10.6	156 17.3
37	16 39.3	16 42.0	15 53.7	37 4.1	97 10.8	157 17.4
38	16 39.5	16 42.3	15 54.0	38 4.2	98 10.9	158 17.5
39	16 39.8	16 42.5	15 54.2	39 4.3	99 11.0	159 17.6
40	16 40.0	16 42.8	15 54.4	40 4.4	100 11.1	160 17.7
41	16 40.3	16 43.0	15 54.7	41 4.5	101 11.2	161 17.8
42	16 40.5	16 43.3	15 54.9	42 4.7	102 11.3	162 18.0
43	16 40.8	16 43.5	15 55.2	43 4.8	103 11.4	163 18.1
44	16 41.0	16 43.8	15 55.4	44 4.9	104 11.5	164 18.2
45	16 41.3	16 44.0	15 55.6	45 5.0	105 11.6	165 18.3
46	16 41.5	16 44.3	15 55.9	46 5.1	106 11.7	166 18.4
47	16 41.8	16 44.5	15 56.1	47 5.2	107 11.9	167 18.5
48	16 42.0	16 44.8	15 56.4	48 5.3	108 12.0	168 18.6
49	16 42.3	16 45.0	15 56.6	49 5.4	109 12.1	169 18.7
50	16 42.5	16 45.3	15 56.8	50 5.5	110 12.2	170 18.8
51	16 42.8	16 45.5	15 57.1	51 5.7	111 12.3	171 19.0
52	16 43.0	16 45.8	15 57.3	52 5.8	112 12.4	172 19.1
53	16 43.3	16 46.0	15 57.5	53 5.9	113 12.5	173 19.2
54	16 43.5	16 46.3	15 57.8	54 6.0	114 12.6	174 19.3
55	16 43.8	16 46.5	15 58.0	55 6.1	115 12.7	175 19.4
56	16 44.0	16 46.8	15 58.3	56 6.2	116 12.9	176 19.5
57	16 44.3	16 47.0	15 58.5	57 6.3	117 13.0	177 19.6
58	16 44.5	16 47.3	15 58.7	58 6.4	118 13.1	178 19.7
59	16 44.8	16 47.5	15 59.0	59 6.5	119 13.2	179 19.8
60	16 45.0	16 47.8	15 59.2	60 6.7	120 13.3	180 20.0

## 1 h 7 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 45.0	16 47.8	15 59.2	0 .0	60 6.8	120 13.5
1	16 45.3	16 48.0	15 59.5	1 .1	61 6.9	121 13.6
2	16 45.5	16 48.3	15 59.7	2 .2	62 7.0	122 13.7
3	16 45.8	16 48.5	15 59.9	3 .3	63 7.1	123 13.8
4	16 46.0	16 48.8	16 .2	4 .5	64 7.2	124 14.0
5	16 46.3	16 49.0	16 .4	5 .6	65 7.3	125 14.1
6	16 46.5	16 49.3	16 .6	6 .7	66 7.4	126 14.2
7	16 46.8	16 49.5	16 .9	7 .8	67 7.5	127 14.3
8	16 47.0	16 49.8	16 1.1	8 .9	68 7.7	128 14.4
9	16 47.3	16 50.0	16 1.4	9 1.0	69 7.8	129 14.5
10	16 47.5	16 50.3	16 1.6	10 1.1	70 7.9	130 14.6
11	16 47.8	16 50.5	16 1.8	11 1.2	71 8.0	131 14.7
12	16 48.0	16 50.8	16 2.1	12 1.4	72 8.1	132 14.9
13	16 48.3	16 51.1	16 2.3	13 1.5	73 8.2	133 15.0
14	16 48.5	16 51.3	16 2.6	14 1.6	74 8.3	134 15.1
15	16 48.8	16 51.6	16 2.8	15 1.7	75 8.4	135 15.2
16	16 49.0	16 51.8	16 3.0	16 1.8	76 8.6	136 15.3
17	16 49.3	16 52.1	16 3.3	17 1.9	77 8.7	137 15.4
18	16 49.5	16 52.3	16 3.5	18 2.0	78 8.8	138 15.5
19	16 49.8	16 52.6	16 3.8	19 2.1	79 8.9	139 15.6
20	16 50.0	16 52.8	16 4.0	20 2.3	80 9.0	140 15.8
21	16 50.3	16 53.1	16 4.2	21 2.4	81 9.1	141 15.9
22	16 50.5	16 53.3	16 4.5	22 2.5	82 9.2	142 16.0
23	16 50.8	16 53.6	16 4.7	23 2.6	83 9.3	143 16.1
24	16 51.0	16 53.8	16 4.9	24 2.7	84 9.5	144 16.2
25	16 51.3	16 54.1	16 5.2	25 2.8	85 9.6	145 16.3
26	16 51.5	16 54.3	16 5.4	26 2.9	86 9.7	146 16.4
27	16 51.8	16 54.6	16 5.7	27 3.0	87 9.8	147 16.5
28	16 52.0	16 54.8	16 5.9	28 3.2	88 9.9	148 16.7
29	16 52.3	16 55.1	16 6.1	29 3.3	89 10.0	149 16.8
30	16 52.5	16 55.3	16 6.4	30 3.4	90 10.1	150 16.9
31	16 52.8	16 55.6	16 6.6	31 3.5	91 10.2	151 17.0
32	16 53.0	16 55.8	16 6.9	32 3.6	92 10.4	152 17.1
33	16 53.3	16 56.1	16 7.1	33 3.7	93 10.5	153 17.2
34	16 53.5	16 56.3	16 7.3	34 3.8	94 10.6	154 17.3
35	16 53.8	16 56.6	16 7.6	35 3.9	95 10.7	155 17.4
36	16 54.0	16 56.8	16 7.8	36 4.1	96 10.8	156 17.6
37	16 54.3	16 57.1	16 8.0	37 4.2	97 10.9	157 17.7
38	16 54.5	16 57.3	16 8.3	38 4.3	98 11.0	158 17.8
39	16 54.8	16 57.6	16 8.5	39 4.4	99 11.1	159 17.9
40	16 55.0	16 57.8	16 8.8	40 4.5	100 11.3	160 18.0
41	16 55.3	16 58.1	16 9.0	41 4.6	101 11.4	161 18.1
42	16 55.5	16 58.3	16 9.2	42 4.7	102 11.5	162 18.2
43	16 55.8	16 58.6	16 9.5	43 4.8	103 11.6	163 18.3
44	16 56.0	16 58.8	16 9.7	44 5.0	104 11.7	164 18.5
45	16 56.3	16 59.1	16 10.0	45 5.1	105 11.8	165 18.6
46	16 56.5	16 59.3	16 10.2	46 5.2	106 11.9	166 18.7
47	16 56.8	16 59.6	16 10.4	47 5.3	107 12.0	167 18.8
48	16 57.0	16 59.8	16 10.7	48 5.4	108 12.2	168 18.9
49	16 57.3	17 .1	16 10.9	49 5.5	109 12.3	169 19.0
50	16 57.5	17 .3	16 11.1	50 5.6	110 12.4	170 19.1
51	16 57.8	17 .6	16 11.4	51 5.7	111 12.5	171 19.2
52	16 58.0	17 .8	16 11.6	52 5.9	112 12.6	172 19.4
53	16 58.3	17 1.1	16 11.9	53 6.0	113 12.7	173 19.5
54	16 58.5	17 1.3	16 12.1	54 6.1	114 12.8	174 19.6
55	16 58.8	17 1.6	16 12.3	55 6.2	115 12.9	175 19.7
56	16 59.0	17 1.8	16 12.6	56 6.3	116 13.1	176 19.8
57	16 59.3	17 2.1	16 12.8	57 6.4	117 13.2	177 19.9
58	16 59.5	17 2.3	16 13.1	58 6.5	118 13.3	178 20.0
59	16 59.8	17 2.6	16 13.3	59 6.6	119 13.4	179 20.1
60	17 .0	17 2.8	16 13.5	60 6.8	120 13.5	180 20.3

## 1 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	.0	17	2.8	16	13.5	0 .0 60 6.9 120 13.7
1	17	.3	17	3.1	16	13.8	1 .1 61 7.0 121 13.8
2	17	.5	17	3.3	16	14.0	2 .2 62 7.1 122 13.9
3	17	.8	17	3.6	16	14.2	3 .3 63 7.2 123 14.0
4	17	1.0	17	3.8	16	14.5	4 .5 64 7.3 124 14.2
5	17	1.3	17	4.1	16	14.7	5 .6 65 7.4 125 14.3
6	17	1.5	17	4.3	16	15.0	6 .7 66 7.5 126 14.4
7	17	1.8	17	4.6	16	15.2	7 .8 67 7.6 127 14.5
8	17	2.0	17	4.8	16	15.4	8 .9 68 7.8 128 14.6
9	17	2.3	17	5.1	16	15.7	9 1.0 69 7.9 129 14.7
10	17	2.5	17	5.3	16	15.9	10 1.1 70 8.0 130 14.8
11	17	2.8	17	5.6	16	16.2	11 1.3 71 8.1 131 15.0
12	17	3.0	17	5.8	16	16.4	12 1.4 72 8.2 132 15.1
13	17	3.3	17	6.1	16	16.6	13 1.5 73 8.3 133 15.2
14	17	3.5	17	6.3	16	16.9	14 1.6 74 8.4 134 15.3
15	17	3.8	17	6.6	16	17.1	15 1.7 75 8.6 135 15.4
16	17	4.0	17	6.8	16	17.4	16 1.8 76 8.7 136 15.5
17	17	4.3	17	7.1	16	17.6	17 1.9 77 8.8 137 15.6
18	17	4.5	17	7.3	16	17.8	18 2.1 78 8.9 138 15.8
19	17	4.8	17	7.6	16	18.1	19 2.2 79 9.0 139 15.9
20	17	5.0	17	7.8	16	18.3	20 2.3 80 9.1 140 16.0
21	17	5.3	17	8.1	16	18.5	21 2.4 81 9.2 141 16.1
22	17	5.5	17	8.3	16	18.8	22 2.5 82 9.4 142 16.2
23	17	5.8	17	8.6	16	19.0	23 2.6 83 9.5 143 16.3
24	17	6.0	17	8.9	16	19.3	24 2.7 84 9.6 144 16.4
25	17	6.3	17	9.1	16	19.5	25 2.9 85 9.7 145 16.6
26	17	6.5	17	9.4	16	19.7	26 3.0 86 9.8 146 16.7
27	17	6.8	17	9.6	16	20.0	27 3.1 87 9.9 147 16.8
28	17	7.0	17	9.9	16	20.2	28 3.2 88 10.0 148 16.9
29	17	7.3	17	10.1	16	20.5	29 3.3 89 10.2 149 17.0
30	17	7.5	17	10.4	16	20.7	30 3.4 90 10.3 150 17.1
31	17	7.8	17	10.6	16	20.9	31 3.5 91 10.4 151 17.2
32	17	8.0	17	10.9	16	21.2	32 3.7 92 10.5 152 17.4
33	17	8.3	17	11.1	16	21.4	33 3.8 93 10.6 153 17.5
34	17	8.5	17	11.4	16	21.6	34 3.9 94 10.7 154 17.6
35	17	8.8	17	11.6	16	21.9	35 4.0 95 10.8 155 17.7
36	17	9.0	17	11.9	16	22.1	36 4.1 96 11.0 156 17.8
37	17	9.3	17	12.1	16	22.4	37 4.2 97 11.1 157 17.9
38	17	9.5	17	12.4	16	22.6	38 4.3 98 11.2 158 18.0
39	17	9.8	17	12.6	16	22.8	39 4.5 99 11.3 159 18.2
40	17	10.0	17	12.9	16	23.1	40 4.6 100 11.4 160 18.3
41	17	10.3	17	13.1	16	23.3	41 4.7 101 11.5 161 18.4
42	17	10.5	17	13.4	16	23.6	42 4.8 102 11.6 162 18.5
43	17	10.8	17	13.6	16	23.8	43 4.9 103 11.8 163 18.6
44	17	11.0	17	13.9	16	24.0	44 5.0 104 11.9 164 18.7
45	17	11.3	17	14.1	16	24.3	45 5.1 105 12.0 165 18.8
46	17	11.5	17	14.4	16	24.5	46 5.3 106 12.1 166 19.0
47	17	11.8	17	14.6	16	24.7	47 5.4 107 12.2 167 19.1
48	17	12.0	17	14.9	16	25.0	48 5.5 108 12.3 168 19.2
49	17	12.3	17	15.1	16	25.2	49 5.6 109 12.4 169 19.3
50	17	12.5	17	15.4	16	25.5	50 5.7 110 12.6 170 19.4
51	17	12.8	17	15.6	16	25.7	51 5.8 111 12.7 171 19.5
52	17	13.0	17	15.9	16	25.9	52 5.9 112 12.8 172 19.6
53	17	13.3	17	16.1	16	26.2	53 6.1 113 12.9 173 19.8
54	17	13.5	17	16.4	16	26.4	54 6.2 114 13.0 174 19.9
55	17	13.8	17	16.6	16	26.7	55 6.3 115 13.1 175 20.0
56	17	14.0	17	16.9	16	26.9	56 6.4 116 13.2 176 20.1
57	17	14.3	17	17.1	16	27.1	57 6.5 117 13.4 177 20.2
58	17	14.5	17	17.4	16	27.4	58 6.6 118 13.5 178 20.3
59	17	14.8	17	17.6	16	27.6	59 6.7 119 13.6 179 20.4
60	17	15.0	17	17.9	16	27.9	60 6.9 120 13.7 180 20.6

## 1 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	15.0	17	17.9	16	27.9	0 .0 60 7.0 120 13.9
1	17	15.3	17	18.1	16	28.1	1 .1 61 7.1 121 14.0
2	17	15.5	17	18.4	16	28.3	2 .2 62 7.2 122 14.1
3	17	15.8	17	18.6	16	28.6	3 .3 63 7.3 123 14.2
4	17	16.0	17	18.9	16	28.8	4 .5 64 7.4 124 14.4
5	17	16.3	17	19.1	16	29.0	5 .6 65 7.5 125 14.5
6	17	16.5	17	19.4	16	29.3	6 .7 66 7.6 126 14.6
7	17	16.8	17	19.6	16	29.5	7 .8 67 7.8 127 14.7
8	17	17.0	17	19.9	16	29.8	8 .9 68 7.9 128 14.8
9	17	17.3	17	20.1	16	30.0	9 1.0 69 8.0 129 14.9
10	17	17.5	17	20.4	16	30.2	10 1.2 70 8.1 130 15.1
11	17	17.8	17	20.6	16	30.5	11 1.3 71 8.2 131 15.2
12	17	18.0	17	20.9	16	30.7	12 1.4 72 8.3 132 15.3
13	17	18.3	17	21.1	16	31.0	13 1.5 73 8.5 133 15.4
14	17	18.5	17	21.4	16	31.2	14 1.6 74 8.6 134 15.5
15	17	18.8	17	21.6	16	31.4	15 1.7 75 8.7 135 15.6
16	17	19.0	17	21.9	16	31.7	16 1.9 76 8.8 136 15.8
17	17	19.3	17	22.1	16	31.9	17 2.0 77 8.9 137 15.9
18	17	19.5	17	22.4	16	32.1	18 2.1 78 9.0 138 16.0
19	17	19.8	17	22.6	16	32.4	19 2.2 79 9.2 139 16.1
20	17	20.0	17	22.9	16	32.6	20 2.3 80 9.3 140 16.2
21	17	20.3	17	23.1	16	32.9	21 2.4 81 9.4 141 16.3
22	17	20.5	17	23.4	16	33.1	22 2.5 82 9.5 142 16.4
23	17	20.8	17	23.6	16	33.3	23 2.7 83 9.6 143 16.6
24	17	21.0	17	23.9	16	33.6	24 2.8 84 9.7 144 16.7
25	17	21.3	17	24.1	16	33.8	25 2.9 85 9.8 145 16.8
26	17	21.5	17	24.4	16	34.1	26 3.0 86 10.0 146 16.9
27	17	21.8	17	24.6	16	34.3	27 3.1 87 10.1 147 17.0
28	17	22.0	17	24.9	16	34.5	28 3.2 88 10.2 148 17.1
29	17	22.3	17	25.1	16	34.8	29 3.4 89 10.3 149 17.3
30	17	22.5	17	25.4	16	35.0	30 3.5 90 10.4 150 17.4
31	17	22.8	17	25.6	16	35.2	31 3.6 91 10.5 151 17.5
32	17	23.0	17	25.9	16	35.5	32 3.7 92 10.7 152 17.6
33	17	23.3	17	26.1	16	35.7	33 3.8 93 10.8 153 17.7
34	17	23.5	17	26.4	16	36.0	34 3.9 94 10.9 154 17.8
35	17	23.8	17	26.6	16	36.2	35 4.1 95 11.0 155 18.0
36	17	24.0	17	26.9	16	36.4	36 4.2 96 11.1 156 18.1
37	17	24.3	17	27.2	16	36.7	37 4.3 97 11.2 157 18.2
38	17	24.5	17	27.4	16	36.9	38 4.4 98 11.4 158 18.3
39	17	24.8	17	27.7	16	37.2	39 4.5 99 11.5 159 18.4
40	17	25.0	17	27.9	16	37.4	40 4.6 100 11.6 160 18.5
41	17	25.3	17	28.2	16	37.6	41 4.7 101 11.7 161 18.6
42	17	25.5	17	28.4	16	37.9	42 4.9 102 11.8 162 18.8
43	17	25.8	17	28.7	16	38.1	43 5.0 103 11.9 163 18.9
44	17	26.0	17	28.9	16	38.3	44 5.1 104 12.0 164 19.0
45	17	26.3	17	29.2	16	38.6	45 5.2 105 12.2 165 19.1
46	17	26.5	17	29.4	16	38.8	46 5.3 106 12.3 166 19.2
47	17	26.8	17	29.7	16	39.1	47 5.4 107 12.4 167 19.3
48	17	27.0	17	29.9	16	39.3	48 5.6 108 12.5 168 19.5
49	17	27.3	17	30.2	16	39.5	49 5.7 109 12.6 169 19.6
50	17	27.5	17	30.4	16	39.8	50 5.8 110 12.7 170 19.7
51	17	27.8	17	30.7	16	40.0	51 5.9 111 12.9 171 19.8
52	17	28.0	17	30.9	16	40.3	52 6.0 112 13.0 172 19.9
53	17	28.3	17	31.2	16	40.5	53 6.1 113 13.1 173 20.0
54	17	28.5	17	31.4	16	40.7	54 6.3 114 13.2 174 20.2
55	17	28.8	17	31.7	16	41.0	55 6.4 115 13.3 175 20.3
56	17	29.0	17	31.9	16	41.2	56 6.5 116 13.4 176 20.4
57	17	29.3	17	32.2	16	41.5	57 6.6 117 13.6 177 20.5
58	17	29.5	17	32.4	16	41.7	58 6.7 118 13.7 178 20.6
59	17	29.8	17	32.7	16	41.9	59 6.8 119 13.8 179 20.7
60	17	30.0	17	32.9	16	42.2	60 7.0 120 13.9 180 20.9

## 1 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 30.0	17 32.9	16 42.2	0 .0	60 7.1	120 14.1
1	17 30.3	17 33.2	16 42.4	1 .1	61 7.2	121 14.2
2	17 30.5	17 33.4	16 42.6	2 .2	62 7.3	122 14.3
3	17 30.8	17 33.7	16 42.9	3 .4	63 7.4	123 14.5
4	17 31.0	17 33.9	16 43.1	4 .5	64 7.5	124 14.6
5	17 31.3	17 34.2	16 43.4	5 .6	65 7.6	125 14.7
6	17 31.5	17 34.4	16 43.6	6 .7	66 7.8	126 14.8
7	17 31.8	17 34.7	16 43.8	7 .8	67 7.9	127 14.9
8	17 32.0	17 34.9	16 44.1	8 .9	68 8.0	128 15.0
9	17 32.3	17 35.2	16 44.3	9 1.1	69 8.1	129 15.2
10	17 32.5	17 35.4	16 44.6	10 1.2	70 8.2	130 15.3
11	17 32.8	17 35.7	16 44.8	11 1.3	71 8.3	131 15.4
12	17 33.0	17 35.9	16 45.0	12 1.4	72 8.5	132 15.5
13	17 33.3	17 36.2	16 45.3	13 1.5	73 8.6	133 15.6
14	17 33.5	17 36.4	16 45.5	14 1.6	74 8.7	134 15.7
15	17 33.8	17 36.7	16 45.7	15 1.8	75 8.8	135 15.9
16	17 34.0	17 36.9	16 46.0	16 1.9	76 8.9	136 16.0
17	17 34.3	17 37.2	16 46.2	17 2.0	77 9.0	137 16.1
18	17 34.5	17 37.4	16 46.5	18 2.1	78 9.2	138 16.2
19	17 34.8	17 37.7	16 46.7	19 2.2	79 9.3	139 16.3
20	17 35.0	17 37.9	16 46.9	20 2.4	80 9.4	140 16.5
21	17 35.3	17 38.2	16 47.2	21 2.5	81 9.5	141 16.6
22	17 35.5	17 38.4	16 47.4	22 2.6	82 9.6	142 16.7
23	17 35.8	17 38.7	16 47.7	23 2.7	83 9.8	143 16.8
24	17 36.0	17 38.9	16 47.9	24 2.8	84 9.9	144 16.9
25	17 36.3	17 39.2	16 48.1	25 2.9	85 10.0	145 17.0
26	17 36.5	17 39.4	16 48.4	26 3.1	86 10.1	146 17.2
27	17 36.8	17 39.7	16 48.6	27 3.2	87 10.2	147 17.3
28	17 37.0	17 39.9	16 48.8	28 3.3	88 10.3	148 17.4
29	17 37.3	17 40.2	16 49.1	29 3.4	89 10.5	149 17.5
30	17 37.5	17 40.4	16 49.3	30 3.5	90 10.6	150 17.6
31	17 37.8	17 40.7	16 49.6	31 3.6	91 10.7	151 17.7
32	17 38.0	17 40.9	16 49.8	32 3.8	92 10.8	152 17.9
33	17 38.3	17 41.2	16 50.0	33 3.9	93 10.9	153 18.0
34	17 38.5	17 41.4	16 50.3	34 4.0	94 11.0	154 18.1
35	17 38.8	17 41.7	16 50.5	35 4.1	95 11.2	155 18.2
36	17 39.0	17 41.9	16 50.8	36 4.2	96 11.3	156 18.3
37	17 39.3	17 42.2	16 51.0	37 4.3	97 11.4	157 18.4
38	17 39.5	17 42.4	16 51.2	38 4.5	98 11.5	158 18.6
39	17 39.8	17 42.7	16 51.5	39 4.6	99 11.6	159 18.7
40	17 40.0	17 42.9	16 51.7	40 4.7	100 11.8	160 18.8
41	17 40.3	17 43.2	16 51.9	41 4.8	101 11.9	161 18.9
42	17 40.5	17 43.4	16 52.2	42 4.9	102 12.0	162 19.0
43	17 40.8	17 43.7	16 52.4	43 5.1	103 12.1	163 19.2
44	17 41.0	17 43.9	16 52.7	44 5.2	104 12.2	164 19.3
45	17 41.3	17 44.2	16 52.9	45 5.3	105 12.3	165 19.4
46	17 41.5	17 44.4	16 53.1	46 5.4	106 12.5	166 19.5
47	17 41.8	17 44.7	16 53.4	47 5.5	107 12.6	167 19.6
48	17 42.0	17 45.0	16 53.6	48 5.6	108 12.7	168 19.7
49	17 42.3	17 45.2	16 53.9	49 5.8	109 12.8	169 19.9
50	17 42.5	17 45.5	16 54.1	50 5.9	110 12.9	170 20.0
51	17 42.8	17 45.7	16 54.3	51 6.0	111 13.0	171 20.1
52	17 43.0	17 46.0	16 54.6	52 6.1	112 13.2	172 20.2
53	17 43.3	17 46.2	16 54.8	53 6.2	113 13.3	173 20.3
54	17 43.5	17 46.5	16 55.1	54 6.3	114 13.4	174 20.4
55	17 43.8	17 46.7	16 55.3	55 6.5	115 13.5	175 20.6
56	17 44.0	17 47.0	16 55.5	56 6.6	116 13.6	176 20.7
57	17 44.3	17 47.2	16 55.8	57 6.7	117 13.7	177 20.8
58	17 44.5	17 47.5	16 56.0	58 6.8	118 13.9	178 20.9
59	17 44.8	17 47.7	16 56.2	59 6.9	119 14.0	179 21.0
60	17 45.0	17 48.0	16 56.5	60 7.1	120 14.1	180 21.2

## 1 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 45.0	17 48.0	16 56.5	0 .0	60 7.2	120 14.3
1	17 45.3	17 48.2	16 56.7	1 .1	61 7.3	121 14.4
2	17 45.5	17 48.5	16 57.0	2 .2	62 7.4	122 14.5
3	17 45.8	17 48.7	16 57.2	3 .4	63 7.5	123 14.7
4	17 46.0	17 49.0	16 57.4	4 .5	64 7.6	124 14.8
5	17 46.3	17 49.2	16 57.7	5 .6	65 7.7	125 14.9
6	17 46.5	17 49.5	16 57.9	6 .7	66 7.9	126 15.0
7	17 46.8	17 49.7	16 58.2	7 .8	67 8.0	127 15.1
8	17 47.0	17 50.0	16 58.4	8 1.0	68 8.1	128 15.3
9	17 47.3	17 50.2	16 58.6	9 1.1	69 8.2	129 15.4
10	17 47.5	17 50.5	16 58.9	10 1.2	70 8.3	130 15.5
11	17 47.8	17 50.7	16 59.1	11 1.3	71 8.5	131 15.6
12	17 48.0	17 51.0	16 59.3	12 1.4	72 8.6	132 15.7
13	17 48.3	17 51.2	16 59.6	13 1.5	73 8.7	133 15.8
14	17 48.5	17 51.5	16 59.8	14 1.7	74 8.8	134 16.0
15	17 48.8	17 51.7	17 .1	15 1.8	75 8.9	135 16.1
16	17 49.0	17 52.0	17 .3	16 1.9	76 9.1	136 16.2
17	17 49.3	17 52.2	17 .5	17 2.0	77 9.2	137 16.3
18	17 49.5	17 52.5	17 .8	18 2.1	78 9.3	138 16.4
19	17 49.8	17 52.7	17 1.0	19 2.3	79 9.4	139 16.6
20	17 50.0	17 53.0	17 1.3	20 2.4	80 9.5	140 16.7
21	17 50.3	17 53.2	17 1.5	21 2.5	81 9.7	141 16.8
22	17 50.5	17 53.5	17 1.7	22 2.6	82 9.8	142 16.9
23	17 50.8	17 53.7	17 2.0	23 2.7	83 9.9	143 17.0
24	17 51.0	17 54.0	17 2.2	24 2.9	84 10.0	144 17.2
25	17 51.3	17 54.2	17 2.4	25 3.0	85 10.1	145 17.3
26	17 51.5	17 54.5	17 2.7	26 3.1	86 10.2	146 17.4
27	17 51.8	17 54.7	17 2.9	27 3.2	87 10.4	147 17.5
28	17 52.0	17 55.0	17 3.2	28 3.3	88 10.5	148 17.6
29	17 52.3	17 55.2	17 3.4	29 3.5	89 10.6	149 17.8
30	17 52.5	17 55.5	17 3.6	30 3.6	90 10.7	150 17.9
31	17 52.8	17 55.7	17 3.9	31 3.7	91 10.8	151 18.0
32	17 53.0	17 56.0	17 4.1	32 3.8	92 11.0	152 18.1
33	17 53.3	17 56.2	17 4.4	33 3.9	93 11.1	153 18.2
34	17 53.5	17 56.5	17 4.6	34 4.1	94 11.2	154 18.4
35	17 53.8	17 56.7	17 4.8	35 4.2	95 11.3	155 18.5
36	17 54.0	17 57.0	17 5.1	36 4.3	96 11.4	156 18.6
37	17 54.3	17 57.2	17 5.3	37 4.4	97 11.6	157 18.7
38	17 54.5	17 57.5	17 5.6	38 4.5	98 11.7	158 18.8
39	17 54.8	17 57.7	17 5.8	39 4.6	99 11.8	159 18.9
40	17 55.0	17 58.0	17 6.0	40 4.8	100 11.9	160 19.1
41	17 55.3	17 58.2	17 6.3	41 4.9	101 12.0	161 19.2
42	17 55.5	17 58.5	17 6.5	42 5.0	102 12.2	162 19.3
43	17 55.8	17 58.7	17 6.7	43 5.1	103 12.3	163 19.4
44	17 56.0	17 59.0	17 7.0	44 5.2	104 12.4	164 19.5
45	17 56.3	17 59.2	17 7.2	45 5.4	105 12.5	165 19.7
46	17 56.5	17 59.5	17 7.5	46 5.5	106 12.6	166 19.8
47	17 56.8	17 59.7	17 7.7	47 5.6	107 12.8	167 19.9
48	17 57.0	17 60.0	17 7.9	48 5.7	108 12.9	168 20.0
49	17 57.3	18 .2	17 8.2	49 5.8	109 13.0	169 20.1
50	17 57.5	18 .5	17 8.4	50 6.0	110 13.1	170 20.3
51	17 57.8	18 .7	17 8.7	51 6.1	111 13.2	171 20.4
52	17 58.0	18 1.0	17 8.9	52 6.2	112 13.3	172 20.5
53	17 58.3	18 1.2	17 9.1	53 6.3	113 13.5	173 20.6
54	17 58.5	18 1.5	17 9.4	54 6.4	114 13.6	174 20.7
55	17 58.8	18 1.7	17 9.6	55 6.6	115 13.7	175 20.9
56	17 59.0	18 2.0	17 9.8	56 6.7	116 13.8	176 21.0
57	17 59.3	18 2.2	17 10.1	57 6.8	117 13.9	177 21.1
58	17 59.5	18 2.5	17 10.3	58 6.9	118 14.1	178 21.2
59	17 59.8	18 2.7	17 10.6	59 7.0	119 14.2	179 21.3
60	18 .0	18 3.0	17 10.8	60 7.2	120 14.3	180 21.5

## 1 h 12 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	°
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 1.0 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, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	°
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 1.0 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	18	31.8	17	38.2	55 6.7 115 14.1 175 21.4
56	18	29.0	18	32.1	17	38.5	56 6.9 116 14.2 176 21.6
57	18	29.3	18	32.3	17	38.7	57 7.0 117 14.3 177 21.7
58	18	29.5	18	32.6	17	39.0	58 7.1 118 14.5 178 21.8
59	18	29.8	18	32.8	17	39.2	59 7.2 119 14.6 179 21.9
60	18	30.0	18	33.1	17	39.4	60 7.4 120 14.7 180 22.1

1 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	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

1 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 .3	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	18 .2	27 3.4	87 10.9	147 18.5
28	18 52.0	18 55.1	18 .4	28 3.5	88 11.1	148 18.6
29	18 52.3	18 55.4	18 .7	29 3.6	89 11.2	149 18.7
30	18 52.5	18 55.6	18 .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 .2	18 5.2	48 6.0	108 13.6	168 21.1
49	18 57.3	19 .4	18 5.4	49 6.2	109 13.7	169 21.3
50	18 57.5	19 .7	18 5.7	50 6.3	110 13.8	170 21.4
51	18 57.8	19 .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	19 1.7	18 6.6	54 6.8	114 14.3	174 21.9
55	18 58.8	19 1.9	18 6.9	55 6.9	115 14.5	175 22.0
56	18 59.0	19 2.2	18 7.1	56 7.0	116 14.6	176 22.1
57	18 59.3	19 2.4	18 7.4	57 7.2	117 14.7	177 22.3
58	18 59.5	19 2.7	18 7.6	58 7.3	118 14.8	178 22.4
59	18 59.8	19 2.9	18 7.8	59 7.4	119 15.0	179 22.5
60	19 .0	19 3.2	18 8.1	60 7.6	120 15.1	180 22.7



## 1 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	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 1.0 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

## 1 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	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	31.5	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	54 7.0 114 14.7 174 22.5
55	19	28.8	19	32.0	18	35.5	55 7.1 115 14.9 175 22.6
56	19	29.0	19	32.2	18	35.7	56 7.2 116 15.0 176 22.7
57	19	29.3	19	32.5	18	36.0	57 7.4 117 15.1 177 22.9
58	19	29.5	19	32.7	18	36.2	58 7.5 118 15.2 178 23.0
59	19	29.8	19	33.0	18	36.5	59 7.6 119 15.4 179 23.1
60	19	30.0	19	33.3	18	36.7	60 7.8 120 15.5 180 23.3

## 1 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	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

## 1 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 .3	39 5.2	99 13.1	159 21.1
40	19 55.0	19 58.3	19 .6	40 5.3	100 13.3	160 21.2
41	19 55.3	19 58.6	19 .8	41 5.4	101 13.4	161 21.3
42	19 55.5	19 58.8	19 1.0	42 5.6	102 13.5	162 21.5
43	19 55.8	19 59.1	19 1.3	43 5.7	103 13.6	163 21.6
44	19 56.0	19 59.3	19 1.5	44 5.8	104 13.8	164 21.7
45	19 56.3	19 59.6	19 1.8	45 6.0	105 13.9	165 21.9
46	19 56.5	19 59.8	19 2.0	46 6.1	106 14.0	166 22.0
47	19 56.8	20 .1	19 2.2	47 6.2	107 14.2	167 22.1
48	19 57.0	20 .3	19 2.5	48 6.4	108 14.3	168 22.3
49	19 57.3	20 .6	19 2.7	49 6.5	109 14.4	169 22.4
50	19 57.5	20 .8	19 2.9	50 6.6	110 14.6	170 22.5
51	19 57.8	20 1.1	19 3.2	51 6.8	111 14.7	171 22.7
52	19 58.0	20 1.3	19 3.4	52 6.9	112 14.8	172 22.8
53	19 58.3	20 1.6	19 3.7	53 7.0	113 15.0	173 22.9
54	19 58.5	20 1.8	19 3.9	54 7.2	114 15.1	174 23.1
55	19 58.8	20 2.1	19 4.1	55 7.3	115 15.2	175 23.2
56	19 59.0	20 2.3	19 4.4	56 7.4	116 15.4	176 23.3
57	19 59.3	20 2.6	19 4.6	57 7.6	117 15.5	177 23.5
58	19 59.5	20 2.8	19 4.9	58 7.7	118 15.6	178 23.6
59	19 59.8	20 3.1	19 5.1	59 7.8	119 15.8	179 23.7
60	20 .0	20 3.3	19 5.3	60 8.0	120 15.9	180 23.9

## 1 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	'
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 1.1 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

## 1 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	'
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 1.0 67 9.1 127 17.3
8	20	17.0	20	20.4	19	21.6	8 1.1 68 9.2 128 17.4
9	20	17.3	20	20.6	19	21.8	9 1.2 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 7.3 114 15.5 174 23.6
55	20	28.8	20	32.2	19	32.8	55 7.5 115 15.6 175 23.8
56	20	29.0	20	32.4	19	33.0	56 7.6 116 15.8 176 23.9
57	20	29.3	20	32.7	19	33.3	57 7.7 117 15.9 177 24.0
58	20	29.5	20	32.9	19	33.5	58 7.9 118 16.0 178 24.2
59	20	29.8	20	33.2	19	33.7	59 8.0 119 16.2 179 24.3
60	20	30.0	20	33.4	19	34.0	60 8.2 120 16.3 180 24.5

1 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	67 9.2	127 17.5
8	20 32.0	20 35.4	19 35.9	8 1.1	68 9.4	128 17.6
9	20 32.3	20 35.7	19 36.1	9 1.2	69 9.5	129 17.7
10	20 32.5	20 35.9	19 36.4	10 1.4	70 9.6	130 17.9
11	20 32.8	20 36.2	19 36.6	11 1.5	71 9.8	131 18.0
12	20 33.0	20 36.4	19 36.8	12 1.7	72 9.9	132 18.2
13	20 33.3	20 36.7	19 37.1	13 1.8	73 10.0	133 18.3
14	20 33.5	20 36.9	19 37.3	14 1.9	74 10.2	134 18.4
15	20 33.8	20 37.2	19 37.5	15 2.1	75 10.3	135 18.6
16	20 34.0	20 37.4	19 37.8	16 2.2	76 10.5	136 18.7
17	20 34.3	20 37.7	19 38.0	17 2.3	77 10.6	137 18.8
18	20 34.5	20 37.9	19 38.3	18 2.5	78 10.7	138 19.0
19	20 34.8	20 38.2	19 38.5	19 2.6	79 10.9	139 19.1
20	20 35.0	20 38.4	19 38.7	20 2.8	80 11.0	140 19.3
21	20 35.3	20 38.7	19 39.0	21 2.9	81 11.1	141 19.4
22	20 35.5	20 38.9	19 39.2	22 3.0	82 11.3	142 19.5
23	20 35.8	20 39.2	19 39.5	23 3.2	83 11.4	143 19.7
24	20 36.0	20 39.4	19 39.7	24 3.3	84 11.6	144 19.8
25	20 36.3	20 39.7	19 39.9	25 3.4	85 11.7	145 19.9
26	20 36.5	20 39.9	19 40.2	26 3.6	86 11.8	146 20.1
27	20 36.8	20 40.2	19 40.4	27 3.7	87 12.0	147 20.2
28	20 37.0	20 40.4	19 40.6	28 3.9	88 12.1	148 20.4
29	20 37.3	20 40.7	19 40.9	29 4.0	89 12.2	149 20.5
30	20 37.5	20 40.9	19 41.1	30 4.1	90 12.4	150 20.6
31	20 37.8	20 41.2	19 41.4	31 4.3	91 12.5	151 20.8
32	20 38.0	20 41.4	19 41.6	32 4.4	92 12.7	152 20.9
33	20 38.3	20 41.7	19 41.8	33 4.5	93 12.8	153 21.0
34	20 38.5	20 41.9	19 42.1	34 4.7	94 12.9	154 21.2
35	20 38.8	20 42.2	19 42.3	35 4.8	95 13.1	155 21.3
36	20 39.0	20 42.4	19 42.6	36 5.0	96 13.2	156 21.5
37	20 39.3	20 42.7	19 42.8	37 5.1	97 13.3	157 21.6
38	20 39.5	20 42.9	19 43.0	38 5.2	98 13.5	158 21.7
39	20 39.8	20 43.2	19 43.3	39 5.4	99 13.6	159 21.9
40	20 40.0	20 43.4	19 43.5	40 5.5	100 13.8	160 22.0
41	20 40.3	20 43.7	19 43.7	41 5.6	101 13.9	161 22.1
42	20 40.5	20 43.9	19 44.0	42 5.8	102 14.0	162 22.3
43	20 40.8	20 44.2	19 44.2	43 5.9	103 14.2	163 22.4
44	20 41.0	20 44.4	19 44.5	44 6.1	104 14.3	164 22.6
45	20 41.3	20 44.7	19 44.7	45 6.2	105 14.4	165 22.7
46	20 41.5	20 44.9	19 44.9	46 6.3	106 14.6	166 22.8
47	20 41.8	20 45.2	19 45.2	47 6.5	107 14.7	167 23.0
48	20 42.0	20 45.5	19 45.4	48 6.6	108 14.9	168 23.1
49	20 42.3	20 45.7	19 45.7	49 6.7	109 15.0	169 23.2
50	20 42.5	20 46.0	19 45.9	50 6.9	110 15.1	170 23.4
51	20 42.8	20 46.2	19 46.1	51 7.0	111 15.3	171 23.5
52	20 43.0	20 46.5	19 46.4	52 7.2	112 15.4	172 23.7
53	20 43.3	20 46.7	19 46.6	53 7.3	113 15.5	173 23.8
54	20 43.5	20 47.0	19 46.9	54 7.4	114 15.7	174 23.9
55	20 43.8	20 47.2	19 47.1	55 7.6	115 15.8	175 24.1
56	20 44.0	20 47.5	19 47.3	56 7.7	116 16.0	176 24.2
57	20 44.3	20 47.7	19 47.6	57 7.8	117 16.1	177 24.3
58	20 44.5	20 48.0	19 47.8	58 8.0	118 16.2	178 24.5
59	20 44.8	20 48.2	19 48.0	59 8.1	119 16.4	179 24.6
60	20 45.0	20 48.5	19 48.3	60 8.3	120 16.5	180 24.8

1 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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 1.0	67 9.3	127 17.7
8	20 47.0	20 50.5	19 50.2	8 1.1	68 9.5	128 17.8
9	20 47.3	20 50.7	19 50.4	9 1.3	69 9.6	129 18.0
10	20 47.5	20 51.0	19 50.7	10 1.4	70 9.7	130 18.1
11	20 47.8	20 51.2	19 50.9	11 1.5	71 9.9	131 18.2
12	20 48.0	20 51.5	19 51.1	12 1.7	72 10.0	132 18.4
13	20 48.3	20 51.7	19 51.4	13 1.8	73 10.2	133 18.5
14	20 48.5	20 52.0	19 51.6	14 1.9	74 10.3	134 18.6
15	20 48.8	20 52.2	19 51.9	15 2.1	75 10.4	135 18.8
16	20 49.0	20 52.5	19 52.1	16 2.2	76 10.6	136 18.9
17	20 49.3	20 52.7	19 52.3	17 2.4	77 10.7	137 19.1
18	20 49.5	20 53.0	19 52.6	18 2.5	78 10.9	138 19.2
19	20 49.8	20 53.2	19 52.8	19 2.6	79 11.0	139 19.3
20	20 50.0	20 53.5	19 53.1	20 2.8	80 11.1	140 19.5
21	20 50.3	20 53.7	19 53.3	21 2.9	81 11.3	141 19.6
22	20 50.5	20 54.0	19 53.5	22 3.1	82 11.4	142 19.8
23	20 50.8	20 54.2	19 53.8	23 3.2	83 11.6	143 19.9
24	20 51.0	20 54.5	19 54.0	24 3.3	84 11.7	144 20.0
25	20 51.3	20 54.7	19 54.2	25 3.5	85 11.8	145 20.2
26	20 51.5	20 55.0	19 54.5	26 3.6	86 12.0	146 20.3
27	20 51.8	20 55.2	19 54.7	27 3.8	87 12.1	147 20.5
28	20 52.0	20 55.5	19 55.0	28 3.9	88 12.2	148 20.6
29	20 52.3	20 55.7	19 55.2	29 4.0	89 12.4	149 20.7
30	20 52.5	20 56.0	19 55.4	30 4.2	90 12.5	150 20.9
31	20 52.8	20 56.2	19 55.7	31 4.3	91 12.7	151 21.0
32	20 53.0	20 56.5	19 55.9	32 4.5	92 12.8	152 21.2
33	20 53.3	20 56.7	19 56.2	33 4.6	93 12.9	153 21.3
34	20 53.5	20 57.0	19 56.4	34 4.7	94 13.1	154 21.4
35	20 53.8	20 57.2	19 56.6	35 4.9	95 13.2	155 21.6
36	20 54.0	20 57.5	19 56.9	36 5.0	96 13.4	156 21.7
37	20 54.3	20 57.7	19 57.1	37 5.1	97 13.5	157 21.8
38	20 54.5	20 58.0	19 57.4	38 5.3	98 13.6	158 22.0
39	20 54.8	20 58.2	19 57.6	39 5.4	99 13.8	159 22.1
40	20 55.0	20 58.5	19 57.8	40 5.6	100 13.9	160 22.3
41	20 55.3	20 58.7	19 58.1	41 5.7	101 14.1	161 22.4
42	20 55.5	20 59.0	19 58.3	42 5.8	102 14.2	162 22.5
43	20 55.8	20 59.2	19 58.5	43 6.0	103 14.3	163 22.7
44	20 56.0	20 59.5	19 58.8	44 6.1	104 14.5	164 22.8
45	20 56.3	20 59.7	19 59.0	45 6.3	105 14.6	165 23.0
46	20 56.5	20 60.0	19 59.3	46 6.4	106 14.8	166 23.1
47	20 56.8	21 .2	19 59.5	47 6.5	107 14.9	167 23.2
48	20 57.0	21 .5	19 59.7	48 6.7	108 15.0	168 23.4
49	20 57.3	21 .7	19 60.0	49 6.8	109 15.2	169 23.5
50	20 57.5	21 1.0	20 .2	50 7.0	110 15.3	170 23.7
51	20 57.8	21 1.2	20 .5	51 7.1	111 15.4	171 23.8
52	20 58.0	21 1.5	20 .7	52 7.2	112 15.6	172 23.9
53	20 58.3	21 1.7	20 .9	53 7.4	113 15.7	173 24.1
54	20 58.5	21 2.0	20 1.2	54 7.5	114 15.9	174 24.2
55	20 58.8	21 2.2	20 1.4	55 7.7	115 16.0	175 24.4
56	20 59.0	21 2.5	20 1.6	56 7.8	116 16.1	176 24.5
57	20 59.3	21 2.7	20 1.9	57 7.9	117 16.3	177 24.6
58	20 59.5	21 3.0	20 2.1	58 8.1	118 16.4	178 24.8
59	20 59.8	21 3.2	20 2.4	59 8.2	119 16.6	179 24.9
60	21 .0	21 3.5	20 2.6	60 8.4	120 16.7	180 25.1

## 1 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta						
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.			
	o	'	o	'	o	'	Δ	'	Δ	
0	21	.0	21	3.5	20	2.6	0	.0	60 8.5	120 16.9
1	21	.3	21	3.8	20	2.8	1	.1	61 8.6	121 17.0
2	21	.5	21	4.0	20	3.1	2	.3	62 8.7	122 17.2
3	21	.8	21	4.3	20	3.3	3	.4	63 8.9	123 17.3
4	21	1.0	21	4.5	20	3.6	4	.6	64 9.0	124 17.5
5	21	1.3	21	4.8	20	3.8	5	.7	65 9.2	125 17.6
6	21	1.5	21	5.0	20	4.0	6	.8	66 9.3	126 17.7
7	21	1.8	21	5.3	20	4.3	7	1.0	67 9.4	127 17.9
8	21	2.0	21	5.5	20	4.5	8	1.1	68 9.6	128 18.0
9	21	2.3	21	5.8	20	4.7	9	1.3	69 9.7	129 18.2
10	21	2.5	21	6.0	20	5.0	10	1.4	70 9.9	130 18.3
11	21	2.8	21	6.3	20	5.2	11	1.5	71 10.0	131 18.4
12	21	3.0	21	6.5	20	5.5	12	1.7	72 10.1	132 18.6
13	21	3.3	21	6.8	20	5.7	13	1.8	73 10.3	133 18.7
14	21	3.5	21	7.0	20	5.9	14	2.0	74 10.4	134 18.9
15	21	3.8	21	7.3	20	6.2	15	2.1	75 10.6	135 19.0
16	21	4.0	21	7.5	20	6.4	16	2.3	76 10.7	136 19.2
17	21	4.3	21	7.8	20	6.7	17	2.4	77 10.8	137 19.3
18	21	4.5	21	8.0	20	6.9	18	2.5	78 11.0	138 19.4
19	21	4.8	21	8.3	20	7.1	19	2.7	79 11.1	139 19.6
20	21	5.0	21	8.5	20	7.4	20	2.8	80 11.3	140 19.7
21	21	5.3	21	8.8	20	7.6	21	3.0	81 11.4	141 19.9
22	21	5.5	21	9.0	20	7.8	22	3.1	82 11.5	142 20.0
23	21	5.8	21	9.3	20	8.1	23	3.2	83 11.7	143 20.1
24	21	6.0	21	9.5	20	8.3	24	3.4	84 11.8	144 20.3
25	21	6.3	21	9.8	20	8.6	25	3.5	85 12.0	145 20.4
26	21	6.5	21	10.0	20	8.8	26	3.7	86 12.1	146 20.6
27	21	6.8	21	10.3	20	9.0	27	3.8	87 12.3	147 20.7
28	21	7.0	21	10.5	20	9.3	28	3.9	88 12.4	148 20.8
29	21	7.3	21	10.8	20	9.5	29	4.1	89 12.5	149 21.0
30	21	7.5	21	11.0	20	9.8	30	4.2	90 12.7	150 21.1
31	21	7.8	21	11.3	20	10.0	31	4.4	91 12.8	151 21.3
32	21	8.0	21	11.5	20	10.2	32	4.5	92 13.0	152 21.4
33	21	8.3	21	11.8	20	10.5	33	4.6	93 13.1	153 21.5
34	21	8.5	21	12.0	20	10.7	34	4.8	94 13.2	154 21.7
35	21	8.8	21	12.3	20	11.0	35	4.9	95 13.4	155 21.8
36	21	9.0	21	12.5	20	11.2	36	5.1	96 13.5	156 22.0
37	21	9.3	21	12.8	20	11.4	37	5.2	97 13.7	157 22.1
38	21	9.5	21	13.0	20	11.7	38	5.4	98 13.8	158 22.3
39	21	9.8	21	13.3	20	11.9	39	5.5	99 13.9	159 22.4
40	21	10.0	21	13.5	20	12.1	40	5.6	100 14.1	160 22.5
41	21	10.3	21	13.8	20	12.4	41	5.8	101 14.2	161 22.7
42	21	10.5	21	14.0	20	12.6	42	5.9	102 14.4	162 22.8
43	21	10.8	21	14.3	20	12.9	43	6.1	103 14.5	163 23.0
44	21	11.0	21	14.5	20	13.1	44	6.2	104 14.6	164 23.1
45	21	11.3	21	14.8	20	13.3	45	6.3	105 14.8	165 23.2
46	21	11.5	21	15.0	20	13.6	46	6.5	106 14.9	166 23.4
47	21	11.8	21	15.3	20	13.8	47	6.6	107 15.1	167 23.5
48	21	12.0	21	15.5	20	14.1	48	6.8	108 15.2	168 23.7
49	21	12.3	21	15.8	20	14.3	49	6.9	109 15.4	169 23.8
50	21	12.5	21	16.0	20	14.5	50	7.0	110 15.5	170 23.9
51	21	12.8	21	16.3	20	14.8	51	7.2	111 15.6	171 24.1
52	21	13.0	21	16.5	20	15.0	52	7.3	112 15.8	172 24.2
53	21	13.3	21	16.8	20	15.2	53	7.5	113 15.9	173 24.4
54	21	13.5	21	17.0	20	15.5	54	7.6	114 16.1	174 24.5
55	21	13.8	21	17.3	20	15.7	55	7.7	115 16.2	175 24.6
56	21	14.0	21	17.5	20	16.0	56	7.9	116 16.3	176 24.8
57	21	14.3	21	17.8	20	16.2	57	8.0	117 16.5	177 24.9
58	21	14.5	21	18.0	20	16.4	58	8.2	118 16.6	178 25.1
59	21	14.8	21	18.3	20	16.7	59	8.3	119 16.8	179 25.2
60	21	15.0	21	18.5	20	16.9	60	8.5	120 16.9	180 25.4

## 1 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta						
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.			
	o	'	o	'	o	'	Δ	'	Δ	
0	21	15.0	21	18.5	20	16.9	0	.0	60 8.6	120 17.1
1	21	15.3	21	18.8	20	17.2	1	.1	61 8.7	121 17.2
2	21	15.5	21	19.0	20	17.4	2	.3	62 8.8	122 17.4
3	21	15.8	21	19.3	20	17.6	3	.4	63 9.0	123 17.5
4	21	16.0	21	19.5	20	17.9	4	.6	64 9.1	124 17.7
5	21	16.3	21	19.8	20	18.1	5	.7	65 9.3	125 17.8
6	21	16.5	21	20.0	20	18.3	6	.9	66 9.4	126 18.0
7	21	16.8	21	20.3	20	18.6	7	1.0	67 9.5	127 18.1
8	21	17.0	21	20.5	20	18.8	8	1.1	68 9.7	128 18.2
9	21	17.3	21	20.8	20	19.1	9	1.3	69 9.8	129 18.4
10	21	17.5	21	21.0	20	19.3	10	1.4	70 10.0	130 18.5
11	21	17.8	21	21.3	20	19.5	11	1.6	71 10.1	131 18.7
12	21	18.0	21	21.6	20	19.8	12	1.7	72 10.3	132 18.8
13	21	18.3	21	21.8	20	20.0	13	1.9	73 10.4	133 19.0
14	21	18.5	21	22.1	20	20.3	14	2.0	74 10.5	134 19.1
15	21	18.8	21	22.3	20	20.5	15	2.1	75 10.7	135 19.2
16	21	19.0	21	22.6	20	20.7	16	2.3	76 10.8	136 19.4
17	21	19.3	21	22.8	20	21.0	17	2.4	77 11.0	137 19.5
18	21	19.5	21	23.1	20	21.2	18	2.6	78 11.1	138 19.7
19	21	19.8	21	23.3	20	21.5	19	2.7	79 11.3	139 19.8
20	21	20.0	21	23.6	20	21.7	20	2.9	80 11.4	140 20.0
21	21	20.3	21	23.8	20	21.9	21	3.0	81 11.5	141 20.1
22	21	20.5	21	24.1	20	22.2	22	3.1	82 11.7	142 20.2
23	21	20.8	21	24.3	20	22.4	23	3.3	83 11.8	143 20.4
24	21	21.0	21	24.6	20	22.6	24	3.4	84 12.0	144 20.5
25	21	21.3	21	24.8	20	22.9	25	3.6	85 12.1	145 20.7
26	21	21.5	21	25.1	20	23.1	26	3.7	86 12.3	146 20.8
27	21	21.8	21	25.3	20	23.4	27	3.8	87 12.4	147 20.9
28	21	22.0	21	25.6	20	23.6	28	4.0	88 12.5	148 21.1
29	21	22.3	21	25.8	20	23.8	29	4.1	89 12.7	149 21.2
30	21	22.5	21	26.1	20	24.1	30	4.3	90 12.8	150 21.4
31	21	22.8	21	26.3	20	24.3	31	4.4	91 13.0	151 21.5
32	21	23.0	21	26.6	20	24.6	32	4.6	92 13.1	152 21.7
33	21	23.3	21	26.8	20	24.8	33	4.7	93 13.3	153 21.8
34	21	23.5	21	27.1	20	25.0	34	4.8	94 13.4	154 21.9
35	21	23.8	21	27.3	20	25.3	35	5.0	95 13.5	155 22.1
36	21	24.0	21	27.6	20	25.5	36	5.1	96 13.7	156 22.2
37	21	24.3	21	27.8	20	25.7	37	5.3	97 13.8	157 22.4
38	21	24.5	21	28.1	20	26.0	38	5.4	98 14.0	158 22.5
39	21	24.8	21	28.3	20	26.2	39	5.6	99 14.1	159 22.7
40	21	25.0	21	28.6	20	26.5	40	5.7	100 14.3	160 22.8
41	21	25.3	21	28.8	20	26.7	41	5.8	101 14.4	161 22.9
42	21	25.5	21	29.1	20	26.9	42	6.0	102 14.5	162 23.1
43	21	25.8	21	29.3	20	27.2	43	6.1	103 14.7	163 23.2
44	21	26.0	21	29.6	20	27.4	44	6.3	104 14.8	164 23.4
45	21	26.3	21	29.8	20	27.7	45	6.4	105 15.0	165 23.5
46	21	26.5	21	30.1	20	27.9	46	6.6	106 15.1	166 23.7
47	21	26.8	21	30.3	20	28.1	47	6.7	107 15.2	167 23.8
48	21	27.0	21	30.6	20	28.4	48	6.8	108 15.4	168 23.9
49	21	27.3	21	30.8	20	28.6	49	7.0	109 15.5	169 24.1
50	21	27.5	21	31.1	20	28.8	50	7.1	110 15.7	170 24.2
51	21	27.8	21	31.3	20	29.1	51	7.3	111 15.8	171 24.4
52	21	28.0	21	31.6	20	29.3	52	7.4	112 16.0	172 24.5
53	21	28.3	21	31.8	20	29.6	53	7.6	113 16.1	173 24.7
54	21	28.5	21	32.1	20	29.8	54	7.7	114 16.2	174 24.8
55	21	28.8	21	32.3	20	30.0	55	7.8	115 16.4	175 24.9
56	21	29.0	21	32.6	20	30.3	56	8.0	116 16.5	176 25.1
57	21	29.3	21	32.8	20	30.5	57	8.1	117 16.7	177 25.2
58	21	29.5	21	33.1						

1 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	21	30.0	21	33.6	20	31.2	0 .0	60 8.7	120 17.3
1	21	30.3	21	33.8	20	31.5	1 .1	61 8.8	121 17.4
2	21	30.5	21	34.1	20	31.7	2 .3	62 8.9	122 17.6
3	21	30.8	21	34.3	20	31.9	3 .4	63 9.1	123 17.7
4	21	31.0	21	34.6	20	32.2	4 .6	64 9.2	124 17.9
5	21	31.3	21	34.8	20	32.4	5 .7	65 9.4	125 18.0
6	21	31.5	21	35.1	20	32.7	6 .9	66 9.5	126 18.2
7	21	31.8	21	35.3	20	32.9	7 1.0	67 9.7	127 18.3
8	21	32.0	21	35.6	20	33.1	8 1.2	68 9.8	128 18.5
9	21	32.3	21	35.8	20	33.4	9 1.3	69 9.9	129 18.6
10	21	32.5	21	36.1	20	33.6	10 1.4	70 10.1	130 18.7
11	21	32.8	21	36.3	20	33.9	11 1.6	71 10.2	131 18.9
12	21	33.0	21	36.6	20	34.1	12 1.7	72 10.4	132 19.0
13	21	33.3	21	36.8	20	34.3	13 1.9	73 10.5	133 19.2
14	21	33.5	21	37.1	20	34.6	14 2.0	74 10.7	134 19.3
15	21	33.8	21	37.3	20	34.8	15 2.2	75 10.8	135 19.5
16	21	34.0	21	37.6	20	35.1	16 2.3	76 11.0	136 19.6
17	21	34.3	21	37.8	20	35.3	17 2.5	77 11.1	137 19.8
18	21	34.5	21	38.1	20	35.5	18 2.6	78 11.2	138 19.9
19	21	34.8	21	38.3	20	35.8	19 2.7	79 11.4	139 20.0
20	21	35.0	21	38.6	20	36.0	20 2.9	80 11.5	140 20.2
21	21	35.3	21	38.8	20	36.2	21 3.0	81 11.7	141 20.3
22	21	35.5	21	39.1	20	36.5	22 3.2	82 11.8	142 20.5
23	21	35.8	21	39.3	20	36.7	23 3.3	83 12.0	143 20.6
24	21	36.0	21	39.6	20	37.0	24 3.5	84 12.1	144 20.8
25	21	36.3	21	39.9	20	37.2	25 3.6	85 12.3	145 20.9
26	21	36.5	21	40.1	20	37.4	26 3.7	86 12.4	146 21.0
27	21	36.8	21	40.4	20	37.7	27 3.9	87 12.5	147 21.2
28	21	37.0	21	40.6	20	37.9	28 4.0	88 12.7	148 21.3
29	21	37.3	21	40.9	20	38.2	29 4.2	89 12.8	149 21.5
30	21	37.5	21	41.1	20	38.4	30 4.3	90 13.0	150 21.6
31	21	37.8	21	41.4	20	38.6	31 4.5	91 13.1	151 21.8
32	21	38.0	21	41.6	20	38.9	32 4.6	92 13.3	152 21.9
33	21	38.3	21	41.9	20	39.1	33 4.8	93 13.4	153 22.1
34	21	38.5	21	42.1	20	39.3	34 4.9	94 13.6	154 22.2
35	21	38.8	21	42.4	20	39.6	35 5.0	95 13.7	155 22.3
36	21	39.0	21	42.6	20	39.8	36 5.2	96 13.8	156 22.5
37	21	39.3	21	42.9	20	40.1	37 5.3	97 14.0	157 22.6
38	21	39.5	21	43.1	20	40.3	38 5.5	98 14.1	158 22.8
39	21	39.8	21	43.4	20	40.5	39 5.6	99 14.3	159 22.9
40	21	40.0	21	43.6	20	40.8	40 5.8	100 14.4	160 23.1
41	21	40.3	21	43.9	20	41.0	41 5.9	101 14.6	161 23.2
42	21	40.5	21	44.1	20	41.3	42 6.1	102 14.7	162 23.4
43	21	40.8	21	44.4	20	41.5	43 6.2	103 14.8	163 23.5
44	21	41.0	21	44.6	20	41.7	44 6.3	104 15.0	164 23.6
45	21	41.3	21	44.9	20	42.0	45 6.5	105 15.1	165 23.8
46	21	41.5	21	45.1	20	42.2	46 6.6	106 15.3	166 23.9
47	21	41.8	21	45.4	20	42.4	47 6.8	107 15.4	167 24.1
48	21	42.0	21	45.6	20	42.7	48 6.9	108 15.6	168 24.2
49	21	42.3	21	45.9	20	42.9	49 7.1	109 15.7	169 24.4
50	21	42.5	21	46.1	20	43.2	50 7.2	110 15.9	170 24.5
51	21	42.8	21	46.4	20	43.4	51 7.4	111 16.0	171 24.7
52	21	43.0	21	46.6	20	43.6	52 7.5	112 16.1	172 24.8
53	21	43.3	21	46.9	20	43.9	53 7.6	113 16.3	173 24.9
54	21	43.5	21	47.1	20	44.1	54 7.8	114 16.4	174 25.1
55	21	43.8	21	47.4	20	44.4	55 7.9	115 16.6	175 25.2
56	21	44.0	21	47.6	20	44.6	56 8.1	116 16.7	176 25.4
57	21	44.3	21	47.9	20	44.8	57 8.2	117 16.9	177 25.5
58	21	44.5	21	48.1	20	45.1	58 8.4	118 17.0	178 25.7
59	21	44.8	21	48.4	20	45.3	59 8.5	119 17.2	179 25.8
60	21	45.0	21	48.6	20	45.6	60 8.7	120 17.3	180 26.0

1 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	21	45.0	21	48.6	20	45.6	0 .0	60 8.8	120 17.5
1	21	45.3	21	48.9	20	45.8	1 .1	61 8.9	121 17.6
2	21	45.5	21	49.1	20	46.0	2 .3	62 9.0	122 17.8
3	21	45.8	21	49.4	20	46.3	3 .4	63 9.2	123 17.9
4	21	46.0	21	49.6	20	46.5	4 .6	64 9.3	124 18.1
5	21	46.3	21	49.9	20	46.7	5 .7	65 9.5	125 18.2
6	21	46.5	21	50.1	20	47.0	6 .9	66 9.6	126 18.4
7	21	46.8	21	50.4	20	47.2	7 1.0	67 9.8	127 18.5
8	21	47.0	21	50.6	20	47.5	8 1.2	68 9.9	128 18.7
9	21	47.3	21	50.9	20	47.7	9 1.3	69 10.1	129 18.8
10	21	47.5	21	51.1	20	47.9	10 1.5	70 10.2	130 19.0
11	21	47.8	21	51.4	20	48.2	11 1.6	71 10.4	131 19.1
12	21	48.0	21	51.6	20	48.4	12 1.8	72 10.5	132 19.3
13	21	48.3	21	51.9	20	48.7	13 1.9	73 10.6	133 19.4
14	21	48.5	21	52.1	20	48.9	14 2.0	74 10.8	134 19.5
15	21	48.8	21	52.4	20	49.1	15 2.2	75 10.9	135 19.7
16	21	49.0	21	52.6	20	49.4	16 2.3	76 11.1	136 19.8
17	21	49.3	21	52.9	20	49.6	17 2.5	77 11.2	137 20.0
18	21	49.5	21	53.1	20	49.8	18 2.6	78 11.4	138 20.1
19	21	49.8	21	53.4	20	50.1	19 2.8	79 11.5	139 20.3
20	21	50.0	21	53.6	20	50.3	20 2.9	80 11.7	140 20.4
21	21	50.3	21	53.9	20	50.6	21 3.1	81 11.8	141 20.6
22	21	50.5	21	54.1	20	50.8	22 3.2	82 12.0	142 20.7
23	21	50.8	21	54.4	20	51.0	23 3.4	83 12.1	143 20.9
24	21	51.0	21	54.6	20	51.3	24 3.5	84 12.3	144 21.0
25	21	51.3	21	54.9	20	51.5	25 3.6	85 12.4	145 21.1
26	21	51.5	21	55.1	20	51.8	26 3.8	86 12.5	146 21.3
27	21	51.8	21	55.4	20	52.0	27 3.9	87 12.7	147 21.4
28	21	52.0	21	55.6	20	52.2	28 4.1	88 12.8	148 21.6
29	21	52.3	21	55.9	20	52.5	29 4.2	89 13.0	149 21.7
30	21	52.5	21	56.1	20	52.7	30 4.4	90 13.1	150 21.9
31	21	52.8	21	56.4	20	52.9	31 4.5	91 13.3	151 22.0
32	21	53.0	21	56.6	20	53.2	32 4.7	92 13.4	152 22.2
33	21	53.3	21	56.9	20	53.4	33 4.8	93 13.6	153 22.3
34	21	53.5	21	57.1	20	53.7	34 5.0	94 13.7	154 22.5
35	21	53.8	21	57.4	20	53.9	35 5.1	95 13.9	155 22.6
36	21	54.0	21	57.7	20	54.1	36 5.3	96 14.0	156 22.8
37	21	54.3	21	57.9	20	54.4	37 5.4	97 14.1	157 22.9
38	21	54.5	21	58.2	20	54.6	38 5.5	98 14.3	158 23.0
39	21	54.8	21	58.4	20	54.9	39 5.7	99 14.4	159 23.2
40	21	55.0	21	58.7	20	55.1	40 5.8	100 14.6	160 23.3
41	21	55.3	21	58.9	20	55.3	41 6.0	101 14.7	161 23.5
42	21	55.5	21	59.2	20	55.6	42 6.1	102 14.9	162 23.6
43	21	55.8	21	59.4	20	55.8	43 6.3	103 15.0	163 23.8
44	21	56.0	21	59.7	20	56.0	44 6.4	104 15.2	164 23.9
45	21	56.3	21	59.9	20	56.3	45 6.6	105 15.3	165 24.1
46	21	56.5	22	.2	20	56.5	46 6.7	106 15.5	166 24.2
47	21	56.8	22	.4	20	56.8	47 6.9	107 15.6	167 24.4
48	21	57.0	22	.7	20	57.0	48 7.0	108 15.8	168 24.5
49	21	57.3	22	.9	20	57.2	49 7.1	109 15.9	169 24.6
50	21	57.5	22	1.2	20	57.5	50 7.3	110 16.0	170 24.8
51	21	57.8	22	1.4	20	57.7	51 7.4	111 16.2	171 24.9
52	21	58.0	22	1.7	20	58.0	52 7.6	112 16.3	172 25.1
53	21	58.3	22	1.9	20	58.2	53 7.7	113 16.5	173 25.2
54	21	58.5	22	2.2	20	58.4	54 7.9	114 16.6	174 25.4
55	21	58.8	22	2.4	20	58.7	55 8.0	115 16.8	175 25.5
56	21	59.0	22	2.7	20	58.9	56 8.2	116 16.9	176 25.7
57	21	59.3	22	2.9	20	59.2	57 8.3	117 17.1	177 25.8
58	21	59.5	22	3.2	20	59.4	58 8.5	118 17.2	178 26.0
59	21	59.8	22	3.4	20	59.6	59 8.6	119 17.4	179 26.1
60	22	.0	22	3.7	20	59.9	60 8.8	120 17.5	180 26.3

1 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
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 1.0	67 9.9	127 18.7
8	22	2.0	22	5.7	21	1.8	8 1.2	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

1 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
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 1.0	67 10.0	127 18.9
8	22	17.0	22	20.7	21	16.1	8 1.2	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	55 8.2	115 17.2	175 26.1
56	22	29.0	22	32.7	21	27.5	56 8.4	116 17.3	176 26.3
57	22	29.3	22	33.0	21	27.8	57 8.5	117 17.5	177 26.4
58	22	29.5	22	33.2	21	28.0	58 8.7	118 17.6	178 26.6
59	22	29.8	22	33.5	21	28.3	59 8.8	119 17.8	179 26.7
60	22	30.0	22	33.8	21	28.5	60 9.0	120 17.9	180 26.9

## 1 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /		'		'		'
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

## 1 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ	popr.	Δ	popr.	Δ	popr.
	° /	° /	° /		'		'		'
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 48.1	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 55.5	53	8.1	113	17.2	173	26.4
54	22 58.5	23 2.3	21 55.7	54	8.2	114	17.4	174	26.5
55	22 58.8	23 2.6	21 55.9	55	8.4	115	17.5	175	26.7
56	22 59.0	23 2.8	21 56.2	56	8.5	116	17.7	176	26.8
57	22 59.3	23 3.1	21 56.4	57	8.7	117	17.8	177	27.0
58	22 59.5	23 3.3	21 56.7	58	8.8	118	18.0	178	27.1
59	22 59.8	23 3.6	21 56.9	59	9.0	119	18.1	179	27.3
60	23 .0	23 3.8	21 57.1	60	9.2	120	18.3	180	27.5



1 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		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

1 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		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				

1 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	23	30.0	23	33.9	22	25.8	0 .0	60 9.5	120 18.9
1	23	30.3	23	34.2	22	26.0	1 .2	61 9.6	121 19.1
2	23	30.5	23	34.4	22	26.2	2 .3	62 9.8	122 19.2
3	23	30.8	23	34.7	22	26.5	3 .5	63 9.9	123 19.4
4	23	31.0	23	34.9	22	26.7	4 .6	64 10.1	124 19.5
5	23	31.3	23	35.2	22	27.0	5 .8	65 10.2	125 19.7
6	23	31.5	23	35.4	22	27.2	6 .9	66 10.4	126 19.8
7	23	31.8	23	35.7	22	27.4	7 1.1	67 10.6	127 20.0
8	23	32.0	23	35.9	22	27.7	8 1.3	68 10.7	128 20.2
9	23	32.3	23	36.2	22	27.9	9 1.4	69 10.9	129 20.3
10	23	32.5	23	36.4	22	28.2	10 1.6	70 11.0	130 20.5
11	23	32.8	23	36.7	22	28.4	11 1.7	71 11.2	131 20.6
12	23	33.0	23	36.9	22	28.6	12 1.9	72 11.3	132 20.8
13	23	33.3	23	37.2	22	28.9	13 2.0	73 11.5	133 20.9
14	23	33.5	23	37.4	22	29.1	14 2.2	74 11.7	134 21.1
15	23	33.8	23	37.7	22	29.3	15 2.4	75 11.8	135 21.3
16	23	34.0	23	37.9	22	29.6	16 2.5	76 12.0	136 21.4
17	23	34.3	23	38.2	22	29.8	17 2.7	77 12.1	137 21.6
18	23	34.5	23	38.4	22	30.1	18 2.8	78 12.3	138 21.7
19	23	34.8	23	38.7	22	30.3	19 3.0	79 12.4	139 21.9
20	23	35.0	23	38.9	22	30.5	20 3.2	80 12.6	140 22.1
21	23	35.3	23	39.2	22	30.8	21 3.3	81 12.8	141 22.2
22	23	35.5	23	39.4	22	31.0	22 3.5	82 12.9	142 22.4
23	23	35.8	23	39.7	22	31.3	23 3.6	83 13.1	143 22.5
24	23	36.0	23	39.9	22	31.5	24 3.8	84 13.2	144 22.7
25	23	36.3	23	40.2	22	31.7	25 3.9	85 13.4	145 22.8
26	23	36.5	23	40.4	22	32.0	26 4.1	86 13.5	146 23.0
27	23	36.8	23	40.7	22	32.2	27 4.3	87 13.7	147 23.2
28	23	37.0	23	40.9	22	32.4	28 4.4	88 13.9	148 23.3
29	23	37.3	23	41.2	22	32.7	29 4.6	89 14.0	149 23.5
30	23	37.5	23	41.4	22	32.9	30 4.7	90 14.2	150 23.6
31	23	37.8	23	41.7	22	33.2	31 4.9	91 14.3	151 23.8
32	23	38.0	23	41.9	22	33.4	32 5.0	92 14.5	152 23.9
33	23	38.3	23	42.2	22	33.6	33 5.2	93 14.6	153 24.1
34	23	38.5	23	42.4	22	33.9	34 5.4	94 14.8	154 24.3
35	23	38.8	23	42.7	22	34.1	35 5.5	95 15.0	155 24.4
36	23	39.0	23	42.9	22	34.4	36 5.7	96 15.1	156 24.6
37	23	39.3	23	43.2	22	34.6	37 5.8	97 15.3	157 24.7
38	23	39.5	23	43.4	22	34.8	38 6.0	98 15.4	158 24.9
39	23	39.8	23	43.7	22	35.1	39 6.1	99 15.6	159 25.0
40	23	40.0	23	43.9	22	35.3	40 6.3	100 15.8	160 25.2
41	23	40.3	23	44.2	22	35.5	41 6.5	101 15.9	161 25.4
42	23	40.5	23	44.4	22	35.8	42 6.6	102 16.1	162 25.5
43	23	40.8	23	44.7	22	36.0	43 6.8	103 16.2	163 25.7
44	23	41.0	23	44.9	22	36.3	44 6.9	104 16.4	164 25.8
45	23	41.3	23	45.2	22	36.5	45 7.1	105 16.5	165 26.0
46	23	41.5	23	45.4	22	36.7	46 7.2	106 16.7	166 26.1
47	23	41.8	23	45.7	22	37.0	47 7.4	107 16.9	167 26.3
48	23	42.0	23	46.0	22	37.2	48 7.6	108 17.0	168 26.5
49	23	42.3	23	46.2	22	37.5	49 7.7	109 17.2	169 26.6
50	23	42.5	23	46.5	22	37.7	50 7.9	110 17.3	170 26.8
51	23	42.8	23	46.7	22	37.9	51 8.0	111 17.5	171 26.9
52	23	43.0	23	47.0	22	38.2	52 8.2	112 17.6	172 27.1
53	23	43.3	23	47.2	22	38.4	53 8.3	113 17.8	173 27.2
54	23	43.5	23	47.5	22	38.7	54 8.5	114 18.0	174 27.4
55	23	43.8	23	47.7	22	38.9	55 8.7	115 18.1	175 27.6
56	23	44.0	23	48.0	22	39.1	56 8.8	116 18.3	176 27.7
57	23	44.3	23	48.2	22	39.4	57 9.0	117 18.4	177 27.9
58	23	44.5	23	48.5	22	39.6	58 9.1	118 18.6	178 28.0
59	23	44.8	23	48.7	22	39.8	59 9.3	119 18.7	179 28.2
60	23	45.0	23	49.0	22	40.1	60 9.5	120 18.9	180 28.4

1 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	23	45.0	23	49.0	22	40.1	0 .0	60 9.6	120 19.1
1	23	45.3	23	49.2	22	40.3	1 .2	61 9.7	121 19.3
2	23	45.5	23	49.5	22	40.6	2 .3	62 9.9	122 19.4
3	23	45.8	23	49.7	22	40.8	3 .5	63 10.0	123 19.6
4	23	46.0	23	50.0	22	41.0	4 .6	64 10.2	124 19.7
5	23	46.3	23	50.2	22	41.3	5 .8	65 10.3	125 19.9
6	23	46.5	23	50.5	22	41.5	6 1.0	66 10.5	126 20.1
7	23	46.8	23	50.7	22	41.8	7 1.1	67 10.7	127 20.2
8	23	47.0	23	51.0	22	42.0	8 1.3	68 10.8	128 20.4
9	23	47.3	23	51.2	22	42.2	9 1.4	69 11.0	129 20.5
10	23	47.5	23	51.5	22	42.5	10 1.6	70 11.1	130 20.7
11	23	47.8	23	51.7	22	42.7	11 1.8	71 11.3	131 20.9
12	23	48.0	23	52.0	22	42.9	12 1.9	72 11.5	132 21.0
13	23	48.3	23	52.2	22	43.2	13 2.1	73 11.6	133 21.2
14	23	48.5	23	52.5	22	43.4	14 2.2	74 11.8	134 21.3
15	23	48.8	23	52.7	22	43.7	15 2.4	75 11.9	135 21.5
16	23	49.0	23	53.0	22	43.9	16 2.5	76 12.1	136 21.6
17	23	49.3	23	53.2	22	44.1	17 2.7	77 12.3	137 21.8
18	23	49.5	23	53.5	22	44.4	18 2.9	78 12.4	138 22.0
19	23	49.8	23	53.7	22	44.6	19 3.0	79 12.6	139 22.1
20	23	50.0	23	54.0	22	44.9	20 3.2	80 12.7	140 22.3
21	23	50.3	23	54.2	22	45.1	21 3.3	81 12.9	141 22.4
22	23	50.5	23	54.5	22	45.3	22 3.5	82 13.1	142 22.6
23	23	50.8	23	54.7	22	45.6	23 3.7	83 13.2	143 22.8
24	23	51.0	23	55.0	22	45.8	24 3.8	84 13.4	144 22.9
25	23	51.3	23	55.2	22	46.0	25 4.0	85 13.5	145 23.1
26	23	51.5	23	55.5	22	46.3	26 4.1	86 13.7	146 23.2
27	23	51.8	23	55.7	22	46.5	27 4.3	87 13.8	147 23.4
28	23	52.0	23	56.0	22	46.8	28 4.5	88 14.0	148 23.6
29	23	52.3	23	56.2	22	47.0	29 4.6	89 14.2	149 23.7
30	23	52.5	23	56.5	22	47.2	30 4.8	90 14.3	150 23.9
31	23	52.8	23	56.7	22	47.5	31 4.9	91 14.5	151 24.0
32	23	53.0	23	57.0	22	47.7	32 5.1	92 14.6	152 24.2
33	23	53.3	23	57.2	22	48.0	33 5.3	93 14.8	153 24.4
34	23	53.5	23	57.5	22	48.2	34 5.4	94 15.0	154 24.5
35	23	53.8	23	57.7	22	48.4	35 5.6	95 15.1	155 24.7
36	23	54.0	23	58.0	22	48.7	36 5.7	96 15.3	156 24.8
37	23	54.3	23	58.2	22	48.9	37 5.9	97 15.4	157 25.0
38	23	54.5	23	58.5	22	49.2	38 6.0	98 15.6	158 25.1
39	23	54.8	23	58.7	22	49.4	39 6.2	99 15.8	159 25.3
40	23	55.0	23	59.0	22	49.6	40 6.4	100 15.9	160 25.5
41	23	55.3	23	59.2	22	49.9	41 6.5	101 16.1	161 25.6
42	23	55.5	23	59.5	22	50.1	42 6.7	102 16.2	162 25.8
43	23	55.8	23	59.7	22	50.3	43 6.8	103 16.4	163 25.9
44	23	56.0	23	60.0	22	50.6	44 7.0	104 16.6	164 26.1
45	23	56.3	24	.2	22	50.8	45 7.2	105 16.7	165 26.3
46	23	56.5	24	.5	22	51.1	46 7.3	106 16.9	166 26.4
47	23	56.8	24	.7	22	51.3	47 7.5	107 17.0	167 26.6
48	23	57.0	24	1.0	22	51.5	48 7.6	108 17.2	168 26.7
49	23	57.3	24	1.2	22	51.8	49 7.8	109 17.3	169 26.9
50	23	57.5	24	1.5	22	52.0	50 8.0	110 17.5	170 27.1
51	23	57.8	24	1.7	22	52.3	51 8.1	111 17.7	171 27.2
52	23	58.0	24	2.0	22	52.5	52 8.3	112 17.8	172 27.4
53	23	58.3	24	2.2	22	52.7	53 8.4	113 18.0	173 27.5
54	23	58.5	24	2.5	22	53.0	54 8.6	114 18.1	174 27.7
55	23	58.8	24	2.7	22	53.2	55 8.8	115 18.3	175 27.9
56	23	59.0	24	3.0	22	53.4	56 8.9	116 18.5	176 28.0
57	23	59.3	24	3.2	22	53.7	57 9.1	117 18.6	177 28.2
58	23	59.5	24	3.5	22	53.9	58 9.2	118 18.8	178 28.3
59	23	59.8	24	3.7	22	54.2	59 9.4	119 18.9	179 28.5
60	24	.0	24	4.0	22	54.4	60 9.6	120 19.1	180 28.7

1 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	24	.0	24	4.0	22	54.4	0	.0	60	9.7	120	19.3
1	24	.3	24	4.3	22	54.6	1	.2	61	9.8	121	19.5
2	24	.5	24	4.5	22	54.9	2	.3	62	10.0	122	19.6
3	24	.8	24	4.8	22	55.1	3	.5	63	10.1	123	19.8
4	24	1.0	24	5.0	22	55.4	4	.6	64	10.3	124	19.9
5	24	1.3	24	5.3	22	55.6	5	.8	65	10.5	125	20.1
6	24	1.5	24	5.5	22	55.8	6	1.0	66	10.6	126	20.3
7	24	1.8	24	5.8	22	56.1	7	1.1	67	10.8	127	20.4
8	24	2.0	24	6.0	22	56.3	8	1.3	68	10.9	128	20.6
9	24	2.3	24	6.3	22	56.5	9	1.4	69	11.1	129	20.7
10	24	2.5	24	6.5	22	56.8	10	1.6	70	11.3	130	20.9
11	24	2.8	24	6.8	22	57.0	11	1.8	71	11.4	131	21.1
12	24	3.0	24	7.0	22	57.3	12	1.9	72	11.6	132	21.2
13	24	3.3	24	7.3	22	57.5	13	2.1	73	11.7	133	21.4
14	24	3.5	24	7.5	22	57.7	14	2.3	74	11.9	134	21.6
15	24	3.8	24	7.8	22	58.0	15	2.4	75	12.1	135	21.7
16	24	4.0	24	8.0	22	58.2	16	2.6	76	12.2	136	21.9
17	24	4.3	24	8.3	22	58.5	17	2.7	77	12.4	137	22.0
18	24	4.5	24	8.5	22	58.7	18	2.9	78	12.5	138	22.2
19	24	4.8	24	8.8	22	58.9	19	3.1	79	12.7	139	22.4
20	24	5.0	24	9.0	22	59.2	20	3.2	80	12.9	140	22.5
21	24	5.3	24	9.3	22	59.4	21	3.4	81	13.0	141	22.7
22	24	5.5	24	9.5	22	59.6	22	3.5	82	13.2	142	22.8
23	24	5.8	24	9.8	22	59.9	23	3.7	83	13.3	143	23.0
24	24	6.0	24	10.0	23	.1	24	3.9	84	13.5	144	23.2
25	24	6.3	24	10.3	23	.4	25	4.0	85	13.7	145	23.3
26	24	6.5	24	10.5	23	.6	26	4.2	86	13.8	146	23.5
27	24	6.8	24	10.8	23	.8	27	4.3	87	14.0	147	23.6
28	24	7.0	24	11.0	23	1.1	28	4.5	88	14.2	148	23.8
29	24	7.3	24	11.3	23	1.3	29	4.7	89	14.3	149	24.0
30	24	7.5	24	11.5	23	1.6	30	4.8	90	14.5	150	24.1
31	24	7.8	24	11.8	23	1.8	31	5.0	91	14.6	151	24.3
32	24	8.0	24	12.0	23	2.0	32	5.1	92	14.8	152	24.4
33	24	8.3	24	12.3	23	2.3	33	5.3	93	15.0	153	24.6
34	24	8.5	24	12.5	23	2.5	34	5.5	94	15.1	154	24.8
35	24	8.8	24	12.8	23	2.8	35	5.6	95	15.3	155	24.9
36	24	9.0	24	13.0	23	3.0	36	5.8	96	15.4	156	25.1
37	24	9.3	24	13.3	23	3.2	37	6.0	97	15.6	157	25.3
38	24	9.5	24	13.5	23	3.5	38	6.1	98	15.8	158	25.4
39	24	9.8	24	13.8	23	3.7	39	6.3	99	15.9	159	25.6
40	24	10.0	24	14.0	23	3.9	40	6.4	100	16.1	160	25.7
41	24	10.3	24	14.3	23	4.2	41	6.6	101	16.2	161	25.9
42	24	10.5	24	14.5	23	4.4	42	6.8	102	16.4	162	26.1
43	24	10.8	24	14.8	23	4.7	43	6.9	103	16.6	163	26.2
44	24	11.0	24	15.0	23	4.9	44	7.1	104	16.7	164	26.4
45	24	11.3	24	15.3	23	5.1	45	7.2	105	16.9	165	26.5
46	24	11.5	24	15.5	23	5.4	46	7.4	106	17.0	166	26.7
47	24	11.8	24	15.8	23	5.6	47	7.6	107	17.2	167	26.9
48	24	12.0	24	16.0	23	5.9	48	7.7	108	17.4	168	27.0
49	24	12.3	24	16.3	23	6.1	49	7.9	109	17.5	169	27.2
50	24	12.5	24	16.5	23	6.3	50	8.0	110	17.7	170	27.3
51	24	12.8	24	16.8	23	6.6	51	8.2	111	17.9	171	27.5
52	24	13.0	24	17.0	23	6.8	52	8.4	112	18.0	172	27.7
53	24	13.3	24	17.3	23	7.0	53	8.5	113	18.2	173	27.8
54	24	13.5	24	17.5	23	7.3	54	8.7	114	18.3	174	28.0
55	24	13.8	24	17.8	23	7.5	55	8.8	115	18.5	175	28.1
56	24	14.0	24	18.0	23	7.8	56	9.0	116	18.7	176	28.3
57	24	14.3	24	18.3	23	8.0	57	9.2	117	18.8	177	28.5
58	24	14.5	24	18.5	23	8.2	58	9.3	118	19.0	178	28.6
59	24	14.8	24	18.8	23	8.5	59	9.5	119	19.1	179	28.8
60	24	15.0	24	19.0	23	8.7	60	9.7	120	19.3	180	29.0

1 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	24	15.0	24	19.0	23	8.7	0	.0	60	9.8	120	19.5
1	24	15.3	24	19.3	23	9.0	1	.2	61	9.9	121	19.7
2	24	15.5	24	19.5	23	9.2	2	.3	62	10.1	122	19.8
3	24	15.8	24	19.8	23	9.4	3	.5	63	10.2	123	20.0
4	24	16.0	24	20.0	23	9.7	4	.7	64	10.4	124	20.2
5	24	16.3	24	20.3	23	9.9	5	.8	65	10.6	125	20.3
6	24	16.5	24	20.5	23	10.1	6	1.0	66	10.7	126	20.5
7	24	16.8	24	20.8	23	10.4	7	1.1	67	10.9	127	20.6
8	24	17.0	24	21.0	23	10.6	8	1.3	68	11.1	128	20.8
9	24	17.3	24	21.3	23	10.9	9	1.5	69	11.2	129	21.0
10	24	17.5	24	21.5	23	11.1	10	1.6	70	11.4	130	21.1
11	24	17.8	24	21.8	23	11.3	11	1.8	71	11.5	131	21.3
12	24	18.0	24	22.1	23	11.6	12	2.0	72	11.7	132	21.5
13	24	18.3	24	22.3	23	11.8	13	2.1	73	11.9	133	21.6
14	24	18.5	24	22.6	23	12.1	14	2.3	74	12.0	134	21.8
15	24	18.8	24	22.8	23	12.3	15	2.4	75	12.2	135	21.9
16	24	19.0	24	23.1	23	12.5	16	2.6	76	12.4	136	22.1
17	24	19.3	24	23.3	23	12.8	17	2.8	77	12.5	137	22.3
18	24	19.5	24	23.6	23	13.0	18	2.9	78	12.7	138	22.4
19	24	19.8	24	23.8	23	13.3	19	3.1	79	12.8	139	22.6
20	24	20.0	24	24.1	23	13.5	20	3.3	80	13.0	140	22.8
21	24	20.3	24	24.3	23	13.7	21	3.4	81	13.2	141	22.9
22	24	20.5	24	24.6	23	14.0	22	3.6	82	13.3	142	23.1
23	24	20.8	24	24.8	23	14.2	23	3.7	83	13.5	143	23.2
24	24	21.0	24	25.1	23	14.4	24	3.9	84	13.7	144	23.4
25	24	21.3	24	25.3	23	14.7	25	4.1	85	13.8	145	23.6
26	24	21.5	24	25.6	23	14.9	26	4.2	86	14.0	146	23.7
27	24	21.8	24	25.8	23	15.2	27	4.4	87	14.1	147	23.9
28	24	22.0	24	26.1	23	15.4	28	4.6	88	14.3	148	24.1
29	24	22.3	24	26.3	23	15.6	29	4.7	89	14.5	149	24.2
30	24	22.5	24	26.6	23	15.9	30	4.9	90	14.6	150	24.4
31	24	22.8	24	26.8	23	16.1	31	5.0	91	14.8	151	24.5
32	24	23.0	24	27.1	23	16.4	32	5.2	92	15.0	152	24.7
33	24	23.3	24	27.3	23	16.6	33	5.4	93	15.1	153	24.9
34	24	23.5	24	27.6	23	16.8	34	5.5	94	15.3	154	25.0
35	24	23.8	24	27.8	23	17.1	35	5.7	95	15.4	155	25.2
36	24	24.0	24	28.1	23	17.3	36	5.9	96	15.6	156	25.4
37	24	24.3	24	28.3	23	17.5	37	6.0	97	15.8	157	25.5
38	24	24.5	24	28.6	23	17.8	38	6.2	98	15.9	158	25.7
39	24	24.8	24	28.8	23	18.0	39	6.3	99	16.1	159	25.8
40	24	25.0	24	29.1	23	18.3	40	6.5	100	16.3	160	26.0
41	24	25.3	24	29.3	23	18.5	41	6.7	101	16.4	161	26.2
42	24	25.5	24	29.6	23	18.7	42	6.8	102	16.6	162	26.3
43	24	25.8	24	29.8	23	19.0	43	7.0	103	16.7	163	26.5
44	24	26.0	24	30.1	23	19.2	44	7.2	104	16.9	164	26.7
45	24	26.3	24	30.3	23	19.5	45	7.3	105	17.1	165	26.8
46	24	26.5	24	30.6	23	19.7	46	7.5	106	17.2	166	27.0
47	24	26.8	24	30.8	23	19.9	47	7.6	107	17.4	167	27.1
48	24	27.0	24	31.1	23	20.2	48	7.8	108	17.6	168	27.3
49	24	27.3	24	31.3	23	20.4	49	8.				

1 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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

1 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
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
54	24 58.5	25 2.7	23 50.2	54 9.0	114 18.9	174 28.9
55	24 58.8	25 2.9	23 50.5	55 9.1	115 19.1	175 29.0
56	24 59.0	25 3.2	23 50.7	56 9.3	116 19.2	176 29.2
57	24 59.3	25 3.4	23 51.0	57 9.5	117 19.4	177 29.4
58	24 59.5	25 3.7	23 51.2	58 9.6	118 19.6	178 29.5
59	24 59.8	25 3.9	23 51.4	59 9.8	119 19.7	179 29.7
60	25 .0	25 4.2	23 51.7	60 10.0	120 19.9	180 29.9

## 1 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	.0	25	4.2	23	51.7	0 .0	60 10.1	120 20.1
1	25	.3	25	4.4	23	51.9	1 .2	61 10.2	121 20.3
2	25	.5	25	4.7	23	52.1	2 .3	62 10.4	122 20.4
3	25	.8	25	4.9	23	52.4	3 .5	63 10.6	123 20.6
4	25	1.0	25	5.2	23	52.6	4 .7	64 10.7	124 20.8
5	25	1.3	25	5.4	23	52.9	5 .8	65 10.9	125 20.9
6	25	1.5	25	5.7	23	53.1	6 1.0	66 11.1	126 21.1
7	25	1.8	25	5.9	23	53.3	7 1.2	67 11.2	127 21.3
8	25	2.0	25	6.2	23	53.6	8 1.3	68 11.4	128 21.4
9	25	2.3	25	6.4	23	53.8	9 1.5	69 11.6	129 21.6
10	25	2.5	25	6.7	23	54.1	10 1.7	70 11.7	130 21.8
11	25	2.8	25	6.9	23	54.3	11 1.8	71 11.9	131 21.9
12	25	3.0	25	7.2	23	54.5	12 2.0	72 12.1	132 22.1
13	25	3.3	25	7.4	23	54.8	13 2.2	73 12.2	133 22.3
14	25	3.5	25	7.7	23	55.0	14 2.3	74 12.4	134 22.4
15	25	3.8	25	7.9	23	55.2	15 2.5	75 12.6	135 22.6
16	25	4.0	25	8.2	23	55.5	16 2.7	76 12.7	136 22.8
17	25	4.3	25	8.4	23	55.7	17 2.8	77 12.9	137 22.9
18	25	4.5	25	8.7	23	56.0	18 3.0	78 13.1	138 23.1
19	25	4.8	25	8.9	23	56.2	19 3.2	79 13.2	139 23.3
20	25	5.0	25	9.2	23	56.4	20 3.4	80 13.4	140 23.5
21	25	5.3	25	9.4	23	56.7	21 3.5	81 13.6	141 23.6
22	25	5.5	25	9.7	23	56.9	22 3.7	82 13.7	142 23.8
23	25	5.8	25	9.9	23	57.2	23 3.9	83 13.9	143 24.0
24	25	6.0	25	10.2	23	57.4	24 4.0	84 14.1	144 24.1
25	25	6.3	25	10.4	23	57.6	25 4.2	85 14.2	145 24.3
26	25	6.5	25	10.7	23	57.9	26 4.4	86 14.4	146 24.5
27	25	6.8	25	10.9	23	58.1	27 4.5	87 14.6	147 24.6
28	25	7.0	25	11.2	23	58.3	28 4.7	88 14.7	148 24.8
29	25	7.3	25	11.4	23	58.6	29 4.9	89 14.9	149 25.0
30	25	7.5	25	11.7	23	58.8	30 5.0	90 15.1	150 25.1
31	25	7.8	25	11.9	23	59.1	31 5.2	91 15.2	151 25.3
32	25	8.0	25	12.2	23	59.3	32 5.4	92 15.4	152 25.5
33	25	8.3	25	12.4	23	59.5	33 5.5	93 15.6	153 25.6
34	25	8.5	25	12.7	23	59.8	34 5.7	94 15.7	154 25.8
35	25	8.8	25	12.9	24	.0	35 5.9	95 15.9	155 26.0
36	25	9.0	25	13.2	24	.3	36 6.0	96 16.1	156 26.1
37	25	9.3	25	13.4	24	.5	37 6.2	97 16.2	157 26.3
38	25	9.5	25	13.7	24	.7	38 6.4	98 16.4	158 26.5
39	25	9.8	25	13.9	24	1.0	39 6.5	99 16.6	159 26.6
40	25	10.0	25	14.2	24	1.2	40 6.7	100 16.8	160 26.8
41	25	10.3	25	14.4	24	1.4	41 6.9	101 16.9	161 27.0
42	25	10.5	25	14.7	24	1.7	42 7.0	102 17.1	162 27.1
43	25	10.8	25	14.9	24	1.9	43 7.2	103 17.3	163 27.3
44	25	11.0	25	15.2	24	2.2	44 7.4	104 17.4	164 27.5
45	25	11.3	25	15.4	24	2.4	45 7.5	105 17.6	165 27.6
46	25	11.5	25	15.7	24	2.6	46 7.7	106 17.8	166 27.8
47	25	11.8	25	15.9	24	2.9	47 7.9	107 17.9	167 28.0
48	25	12.0	25	16.2	24	3.1	48 8.0	108 18.1	168 28.1
49	25	12.3	25	16.5	24	3.4	49 8.2	109 18.3	169 28.3
50	25	12.5	25	16.7	24	3.6	50 8.4	110 18.4	170 28.5
51	25	12.8	25	17.0	24	3.8	51 8.5	111 18.6	171 28.6
52	25	13.0	25	17.2	24	4.1	52 8.7	112 18.8	172 28.8
53	25	13.3	25	17.5	24	4.3	53 8.9	113 18.9	173 29.0
54	25	13.5	25	17.7	24	4.6	54 9.0	114 19.1	174 29.1
55	25	13.8	25	18.0	24	4.8	55 9.2	115 19.3	175 29.3
56	25	14.0	25	18.2	24	5.0	56 9.4	116 19.4	176 29.5
57	25	14.3	25	18.5	24	5.3	57 9.5	117 19.6	177 29.6
58	25	14.5	25	18.7	24	5.5	58 9.7	118 19.8	178 29.8
59	25	14.8	25	19.0	24	5.7	59 9.9	119 19.9	179 30.0
60	25	15.0	25	19.2	24	6.0	60 10.1	120 20.1	180 30.2

## 1 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	15.0	25	19.2	24	6.0	0 .0	60 10.2	120 20.3
1	25	15.3	25	19.5	24	6.2	1 .2	61 10.3	121 20.5
2	25	15.5	25	19.7	24	6.5	2 .3	62 10.5	122 20.6
3	25	15.8	25	20.0	24	6.7	3 .5	63 10.7	123 20.8
4	25	16.0	25	20.2	24	6.9	4 .7	64 10.8	124 21.0
5	25	16.3	25	20.5	24	7.2	5 .8	65 11.0	125 21.1
6	25	16.5	25	20.7	24	7.4	6 1.0	66 11.2	126 21.3
7	25	16.8	25	21.0	24	7.7	7 1.2	67 11.3	127 21.5
8	25	17.0	25	21.2	24	7.9	8 1.4	68 11.5	128 21.7
9	25	17.3	25	21.5	24	8.1	9 1.5	69 11.7	129 21.8
10	25	17.5	25	21.7	24	8.4	10 1.7	70 11.8	130 22.0
11	25	17.8	25	22.0	24	8.6	11 1.9	71 12.0	131 22.2
12	25	18.0	25	22.2	24	8.8	12 2.0	72 12.2	132 22.3
13	25	18.3	25	22.5	24	9.1	13 2.2	73 12.3	133 22.5
14	25	18.5	25	22.7	24	9.3	14 2.4	74 12.5	134 22.7
15	25	18.8	25	23.0	24	9.6	15 2.5	75 12.7	135 22.8
16	25	19.0	25	23.2	24	9.8	16 2.7	76 12.9	136 23.0
17	25	19.3	25	23.5	24	10.0	17 2.9	77 13.0	137 23.2
18	25	19.5	25	23.7	24	10.3	18 3.0	78 13.2	138 23.3
19	25	19.8	25	24.0	24	10.5	19 3.2	79 13.4	139 23.5
20	25	20.0	25	24.2	24	10.8	20 3.4	80 13.5	140 23.7
21	25	20.3	25	24.5	24	11.0	21 3.6	81 13.7	141 23.9
22	25	20.5	25	24.7	24	11.2	22 3.7	82 13.9	142 24.0
23	25	20.8	25	25.0	24	11.5	23 3.9	83 14.0	143 24.2
24	25	21.0	25	25.2	24	11.7	24 4.1	84 14.2	144 24.4
25	25	21.3	25	25.5	24	11.9	25 4.2	85 14.4	145 24.5
26	25	21.5	25	25.7	24	12.2	26 4.4	86 14.5	146 24.7
27	25	21.8	25	26.0	24	12.4	27 4.6	87 14.7	147 24.9
28	25	22.0	25	26.2	24	12.7	28 4.7	88 14.9	148 25.0
29	25	22.3	25	26.5	24	12.9	29 4.9	89 15.1	149 25.2
30	25	22.5	25	26.7	24	13.1	30 5.1	90 15.2	150 25.4
31	25	22.8	25	27.0	24	13.4	31 5.2	91 15.4	151 25.5
32	25	23.0	25	27.2	24	13.6	32 5.4	92 15.6	152 25.7
33	25	23.3	25	27.5	24	13.9	33 5.6	93 15.7	153 25.9
34	25	23.5	25	27.7	24	14.1	34 5.8	94 15.9	154 26.1
35	25	23.8	25	28.0	24	14.3	35 5.9	95 16.1	155 26.2
36	25	24.0	25	28.2	24	14.6	36 6.1	96 16.2	156 26.4
37	25	24.3	25	28.5	24	14.8	37 6.3	97 16.4	157 26.6
38	25	24.5	25	28.7	24	15.1	38 6.4	98 16.6	158 26.7
39	25	24.8	25	29.0	24	15.3	39 6.6	99 16.7	159 26.9
40	25	25.0	25	29.2	24	15.5	40 6.8	100 16.9	160 27.1
41	25	25.3	25	29.5	24	15.8	41 6.9	101 17.1	161 27.2
42	25	25.5	25	29.7	24	16.0	42 7.1	102 17.3	162 27.4
43	25	25.8	25	30.0	24	16.2	43 7.3	103 17.4	163 27.6
44	25	26.0	25	30.2	24	16.5	44 7.4	104 17.6	164 27.7
45	25	26.3	25	30.5	24	16.7	45 7.6	105 17.8	165 27.9
46	25	26.5	25	30.7	24	17.0	46 7.8	106 17.9	166 28.1
47	25	26.8	25	31.0	24	17.2	47 8.0	107 18.1	167 28.3
48	25	27.0	25	31.2	24	17.4	48 8.1	108 18.3	168 28.4
49	25	27.3	25	31.5	24	17.7	49 8.3	109 18.4	169 28.6
50	25	27.5	25	31.7	24	17.9	50 8.5	110 18.6	170 28.8
51	25	27.8	25	32.0	24	18.2	51 8.6	111 18.8	171 28.9
52	25	28.0	25	32.2	24	18.4	52 8.8	112 18.9	172 29.1
53	25	28.3	25	32.5	24	18.6	53 9.0	113 19.1	173 29.3
54	25	28.5	25	32.7	24	18.9	54 9.1	114 19.3	174 29.4
55	25	28.8	25	33.0	24	19.1	55 9.3	115 19.5	175 29.6
56	25	29.0	25	33.2	24	19.3	56 9.5	116 19.6	176 29.8
57	25	29.3	25	33.5	24	19.6	57 9.6	117 19.8	177 29.9
58	25	29.5	25	33.7	24	19.8	58 9.8	118 20.0	178 30.1
59	25	29.8	25	34.0	24	20.1	59 10.0	119 20.1	179 30.3
60	25	30.0	25	34.3	24	20.3	60 10.2	120 20.3	180 30.5

1 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	25 30.0	25 34.3	24 20.3	0 .0	60 10.3	120 20.5
1	25 30.3	25 34.5	24 20.5	1 .2	61 10.4	121 20.7
2	25 30.5	25 34.8	24 20.8	2 .3	62 10.6	122 20.8
3	25 30.8	25 35.0	24 21.0	3 .5	63 10.8	123 21.0
4	25 31.0	25 35.3	24 21.3	4 .7	64 10.9	124 21.2
5	25 31.3	25 35.5	24 21.5	5 .9	65 11.1	125 21.4
6	25 31.5	25 35.8	24 21.7	6 1.0	66 11.3	126 21.5
7	25 31.8	25 36.0	24 22.0	7 1.2	67 11.4	127 21.7
8	25 32.0	25 36.3	24 22.2	8 1.4	68 11.6	128 21.9
9	25 32.3	25 36.5	24 22.4	9 1.5	69 11.8	129 22.0
10	25 32.5	25 36.8	24 22.7	10 1.7	70 12.0	130 22.2
11	25 32.8	25 37.0	24 22.9	11 1.9	71 12.1	131 22.4
12	25 33.0	25 37.3	24 23.2	12 2.1	72 12.3	132 22.6
13	25 33.3	25 37.5	24 23.4	13 2.2	73 12.5	133 22.7
14	25 33.5	25 37.8	24 23.6	14 2.4	74 12.6	134 22.9
15	25 33.8	25 38.0	24 23.9	15 2.6	75 12.8	135 23.1
16	25 34.0	25 38.3	24 24.1	16 2.7	76 13.0	136 23.2
17	25 34.3	25 38.5	24 24.4	17 2.9	77 13.2	137 23.4
18	25 34.5	25 38.8	24 24.6	18 3.1	78 13.3	138 23.6
19	25 34.8	25 39.0	24 24.8	19 3.2	79 13.5	139 23.7
20	25 35.0	25 39.3	24 25.1	20 3.4	80 13.7	140 23.9
21	25 35.3	25 39.5	24 25.3	21 3.6	81 13.8	141 24.1
22	25 35.5	25 39.8	24 25.5	22 3.8	82 14.0	142 24.3
23	25 35.8	25 40.0	24 25.8	23 3.9	83 14.2	143 24.4
24	25 36.0	25 40.3	24 26.0	24 4.1	84 14.4	144 24.6
25	25 36.3	25 40.5	24 26.3	25 4.3	85 14.5	145 24.8
26	25 36.5	25 40.8	24 26.5	26 4.4	86 14.7	146 24.9
27	25 36.8	25 41.0	24 26.7	27 4.6	87 14.9	147 25.1
28	25 37.0	25 41.3	24 27.0	28 4.8	88 15.0	148 25.3
29	25 37.3	25 41.5	24 27.2	29 5.0	89 15.2	149 25.5
30	25 37.5	25 41.8	24 27.5	30 5.1	90 15.4	150 25.6
31	25 37.8	25 42.0	24 27.7	31 5.3	91 15.5	151 25.8
32	25 38.0	25 42.3	24 27.9	32 5.5	92 15.7	152 26.0
33	25 38.3	25 42.5	24 28.2	33 5.6	93 15.9	153 26.1
34	25 38.5	25 42.8	24 28.4	34 5.8	94 16.1	154 26.3
35	25 38.8	25 43.0	24 28.7	35 6.0	95 16.2	155 26.5
36	25 39.0	25 43.3	24 28.9	36 6.2	96 16.4	156 26.7
37	25 39.3	25 43.5	24 29.1	37 6.3	97 16.6	157 26.8
38	25 39.5	25 43.8	24 29.4	38 6.5	98 16.7	158 27.0
39	25 39.8	25 44.0	24 29.6	39 6.7	99 16.9	159 27.2
40	25 40.0	25 44.3	24 29.8	40 6.8	100 17.1	160 27.3
41	25 40.3	25 44.5	24 30.1	41 7.0	101 17.3	161 27.5
42	25 40.5	25 44.8	24 30.3	42 7.2	102 17.4	162 27.7
43	25 40.8	25 45.0	24 30.6	43 7.3	103 17.6	163 27.8
44	25 41.0	25 45.3	24 30.8	44 7.5	104 17.8	164 28.0
45	25 41.3	25 45.5	24 31.0	45 7.7	105 17.9	165 28.2
46	25 41.5	25 45.8	24 31.3	46 7.9	106 18.1	166 28.4
47	25 41.8	25 46.0	24 31.5	47 8.0	107 18.3	167 28.5
48	25 42.0	25 46.3	24 31.8	48 8.2	108 18.5	168 28.7
49	25 42.3	25 46.5	24 32.0	49 8.4	109 18.6	169 28.9
50	25 42.5	25 46.8	24 32.2	50 8.5	110 18.8	170 29.0
51	25 42.8	25 47.0	24 32.5	51 8.7	111 19.0	171 29.2
52	25 43.0	25 47.3	24 32.7	52 8.9	112 19.1	172 29.4
53	25 43.3	25 47.5	24 32.9	53 9.1	113 19.3	173 29.6
54	25 43.5	25 47.8	24 33.2	54 9.2	114 19.5	174 29.7
55	25 43.8	25 48.0	24 33.4	55 9.4	115 19.6	175 29.9
56	25 44.0	25 48.3	24 33.7	56 9.6	116 19.8	176 30.1
57	25 44.3	25 48.5	24 33.9	57 9.7	117 20.0	177 30.2
58	25 44.5	25 48.8	24 34.1	58 9.9	118 20.2	178 30.4
59	25 44.8	25 49.0	24 34.4	59 10.1	119 20.3	179 30.6
60	25 45.0	25 49.3	24 34.6	60 10.3	120 20.5	180 30.8

1 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	25 45.0	25 49.3	24 34.6	0 .0	60 10.4	120 20.7
1	25 45.3	25 49.5	24 34.9	1 .2	61 10.5	121 20.9
2	25 45.5	25 49.8	24 35.1	2 .3	62 10.7	122 21.0
3	25 45.8	25 50.0	24 35.3	3 .5	63 10.9	123 21.2
4	25 46.0	25 50.3	24 35.6	4 .7	64 11.0	124 21.4
5	25 46.3	25 50.5	24 35.8	5 .9	65 11.2	125 21.6
6	25 46.5	25 50.8	24 36.0	6 1.0	66 11.4	126 21.7
7	25 46.8	25 51.0	24 36.3	7 1.2	67 11.6	127 21.9
8	25 47.0	25 51.3	24 36.5	8 1.4	68 11.7	128 22.1
9	25 47.3	25 51.5	24 36.8	9 1.6	69 11.9	129 22.3
10	25 47.5	25 51.8	24 37.0	10 1.7	70 12.1	130 22.4
11	25 47.8	25 52.0	24 37.2	11 1.9	71 12.2	131 22.6
12	25 48.0	25 52.3	24 37.5	12 2.1	72 12.4	132 22.8
13	25 48.3	25 52.6	24 37.7	13 2.2	73 12.6	133 22.9
14	25 48.5	25 52.8	24 38.0	14 2.4	74 12.8	134 23.1
15	25 48.8	25 53.1	24 38.2	15 2.6	75 12.9	135 23.3
16	25 49.0	25 53.3	24 38.4	16 2.8	76 13.1	136 23.5
17	25 49.3	25 53.6	24 38.7	17 2.9	77 13.3	137 23.6
18	25 49.5	25 53.8	24 38.9	18 3.1	78 13.5	138 23.8
19	25 49.8	25 54.1	24 39.2	19 3.3	79 13.6	139 24.0
20	25 50.0	25 54.3	24 39.4	20 3.5	80 13.8	140 24.2
21	25 50.3	25 54.6	24 39.6	21 3.6	81 14.0	141 24.3
22	25 50.5	25 54.8	24 39.9	22 3.8	82 14.1	142 24.5
23	25 50.8	25 55.1	24 40.1	23 4.0	83 14.3	143 24.7
24	25 51.0	25 55.3	24 40.3	24 4.1	84 14.5	144 24.8
25	25 51.3	25 55.6	24 40.6	25 4.3	85 14.7	145 25.0
26	25 51.5	25 55.8	24 40.8	26 4.5	86 14.8	146 25.2
27	25 51.8	25 56.1	24 41.1	27 4.7	87 15.0	147 25.4
28	25 52.0	25 56.3	24 41.3	28 4.8	88 15.2	148 25.5
29	25 52.3	25 56.6	24 41.5	29 5.0	89 15.4	149 25.7
30	25 52.5	25 56.8	24 41.8	30 5.2	90 15.5	150 25.9
31	25 52.8	25 57.1	24 42.0	31 5.3	91 15.7	151 26.0
32	25 53.0	25 57.3	24 42.3	32 5.5	92 15.9	152 26.2
33	25 53.3	25 57.6	24 42.5	33 5.7	93 16.0	153 26.4
34	25 53.5	25 57.8	24 42.7	34 5.9	94 16.2	154 26.6
35	25 53.8	25 58.1	24 43.0	35 6.0	95 16.4	155 26.7
36	25 54.0	25 58.3	24 43.2	36 6.2	96 16.6	156 26.9
37	25 54.3	25 58.6	24 43.4	37 6.4	97 16.7	157 27.1
38	25 54.5	25 58.8	24 43.7	38 6.6	98 16.9	158 27.3
39	25 54.8	25 59.1	24 43.9	39 6.7	99 17.1	159 27.4
40	25 55.0	25 59.3	24 44.2	40 6.9	100 17.3	160 27.6
41	25 55.3	25 59.6	24 44.4	41 7.1	101 17.4	161 27.8
42	25 55.5	25 59.8	24 44.6	42 7.2	102 17.6	162 27.9
43	25 55.8	26 .1	24 44.9	43 7.4	103 17.8	163 28.1
44	25 56.0	26 .3	24 45.1	44 7.6	104 17.9	164 28.3
45	25 56.3	26 .6	24 45.4	45 7.8	105 18.1	165 28.5
46	25 56.5	26 .8	24 45.6	46 7.9	106 18.3	166 28.6
47	25 56.8	26 1.1	24 45.8	47 8.1	107 18.5	167 28.8
48	25 57.0	26 1.3	24 46.1	48 8.3	108 18.6	168 29.0
49	25 57.3	26 1.6	24 46.3	49 8.5	109 18.8	169 29.2
50	25 57.5	26 1.8	24 46.5	50 8.6	110 19.0	170 29.3
51	25 57.8	26 2.1	24 46.8	51 8.8	111 19.1	171 29.5
52	25 58.0	26 2.3	24 47.0	52 9.0	112 19.3	172 29.7
53	25 58.3	26 2.6	24 47.3	53 9.1	113 19.5	173 29.8
54	25 58.5	26 2.8	24 47.5	54 9.3	114 19.7	174 30.0
55	25 58.8	26 3.1	24 47.7	55 9.5	115 19.8	175 30.2
56	25 59.0	26 3.3	24 48.0	56 9.7	116 20.0	176 30.4
57	25 59.3	26 3.6	24 48.2	57 9.8	117 20.2	177 30.5
58	25 59.5	26 3.8	24 48.5	58 10.0	118 20.4	178 30.7
59	25 59.8	26 4.1	24 48.7	59 10.2	119 20.5	179 30.9
60	26 .0	26 4.3	24 48.9	60 10.4	120 20.7	180 31.1

1 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	.0	26	4.3	24	48.9	0 .0	60 10.5	120 20.9
1	26	.3	26	4.6	24	49.2	1 .2	61 10.6	121 21.1
2	26	.5	26	4.8	24	49.4	2 .3	62 10.8	122 21.2
3	26	.8	26	5.1	24	49.6	3 .5	63 11.0	123 21.4
4	26	1.0	26	5.3	24	49.9	4 .7	64 11.1	124 21.6
5	26	1.3	26	5.6	24	50.1	5 .9	65 11.3	125 21.8
6	26	1.5	26	5.8	24	50.4	6 1.0	66 11.5	126 21.9
7	26	1.8	26	6.1	24	50.6	7 1.2	67 11.7	127 22.1
8	26	2.0	26	6.3	24	50.8	8 1.4	68 11.8	128 22.3
9	26	2.3	26	6.6	24	51.1	9 1.6	69 12.0	129 22.5
10	26	2.5	26	6.8	24	51.3	10 1.7	70 12.2	130 22.6
11	26	2.8	26	7.1	24	51.6	11 1.9	71 12.4	131 22.8
12	26	3.0	26	7.3	24	51.8	12 2.1	72 12.5	132 23.0
13	26	3.3	26	7.6	24	52.0	13 2.3	73 12.7	133 23.2
14	26	3.5	26	7.8	24	52.3	14 2.4	74 12.9	134 23.3
15	26	3.8	26	8.1	24	52.5	15 2.6	75 13.1	135 23.5
16	26	4.0	26	8.3	24	52.8	16 2.8	76 13.2	136 23.7
17	26	4.3	26	8.6	24	53.0	17 3.0	77 13.4	137 23.9
18	26	4.5	26	8.8	24	53.2	18 3.1	78 13.6	138 24.0
19	26	4.8	26	9.1	24	53.5	19 3.3	79 13.8	139 24.2
20	26	5.0	26	9.3	24	53.7	20 3.5	80 13.9	140 24.4
21	26	5.3	26	9.6	24	53.9	21 3.7	81 14.1	141 24.6
22	26	5.5	26	9.8	24	54.2	22 3.8	82 14.3	142 24.7
23	26	5.8	26	10.1	24	54.4	23 4.0	83 14.5	143 24.9
24	26	6.0	26	10.4	24	54.7	24 4.2	84 14.6	144 25.1
25	26	6.3	26	10.6	24	54.9	25 4.4	85 14.8	145 25.3
26	26	6.5	26	10.9	24	55.1	26 4.5	86 15.0	146 25.4
27	26	6.8	26	11.1	24	55.4	27 4.7	87 15.2	147 25.6
28	26	7.0	26	11.4	24	55.6	28 4.9	88 15.3	148 25.8
29	26	7.3	26	11.6	24	55.9	29 5.1	89 15.5	149 26.0
30	26	7.5	26	11.9	24	56.1	30 5.2	90 15.7	150 26.1
31	26	7.8	26	12.1	24	56.3	31 5.4	91 15.8	151 26.3
32	26	8.0	26	12.4	24	56.6	32 5.6	92 16.0	152 26.5
33	26	8.3	26	12.6	24	56.8	33 5.7	93 16.2	153 26.6
34	26	8.5	26	12.9	24	57.0	34 5.9	94 16.4	154 26.8
35	26	8.8	26	13.1	24	57.3	35 6.1	95 16.5	155 27.0
36	26	9.0	26	13.4	24	57.5	36 6.3	96 16.7	156 27.2
37	26	9.3	26	13.6	24	57.8	37 6.4	97 16.9	157 27.3
38	26	9.5	26	13.9	24	58.0	38 6.6	98 17.1	158 27.5
39	26	9.8	26	14.1	24	58.2	39 6.8	99 17.2	159 27.7
40	26	10.0	26	14.4	24	58.5	40 7.0	100 17.4	160 27.9
41	26	10.3	26	14.6	24	58.7	41 7.1	101 17.6	161 28.0
42	26	10.5	26	14.9	24	59.0	42 7.3	102 17.8	162 28.2
43	26	10.8	26	15.1	24	59.2	43 7.5	103 17.9	163 28.4
44	26	11.0	26	15.4	24	59.4	44 7.7	104 18.1	164 28.6
45	26	11.3	26	15.6	24	59.7	45 7.8	105 18.3	165 28.7
46	26	11.5	26	15.9	24	59.9	46 8.0	106 18.5	166 28.9
47	26	11.8	26	16.1	25	.1	47 8.2	107 18.6	167 29.1
48	26	12.0	26	16.4	25	.4	48 8.4	108 18.8	168 29.3
49	26	12.3	26	16.6	25	.6	49 8.5	109 19.0	169 29.4
50	26	12.5	26	16.9	25	.9	50 8.7	110 19.2	170 29.6
51	26	12.8	26	17.1	25	1.1	51 8.9	111 19.3	171 29.8
52	26	13.0	26	17.4	25	1.3	52 9.1	112 19.5	172 30.0
53	26	13.3	26	17.6	25	1.6	53 9.2	113 19.7	173 30.1
54	26	13.5	26	17.9	25	1.8	54 9.4	114 19.9	174 30.3
55	26	13.8	26	18.1	25	2.1	55 9.6	115 20.0	175 30.5
56	26	14.0	26	18.4	25	2.3	56 9.8	116 20.2	176 30.7
57	26	14.3	26	18.6	25	2.5	57 9.9	117 20.4	177 30.8
58	26	14.5	26	18.9	25	2.8	58 10.1	118 20.6	178 31.0
59	26	14.8	26	19.1	25	3.0	59 10.3	119 20.7	179 31.2
60	26	15.0	26	19.4	25	3.3	60 10.5	120 20.9	180 31.4

1 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	26	15.0	26	19.4	25	3.3	0 .0	60 10.6	120 21.1
1	26	15.3	26	19.6	25	3.5	1 .2	61 10.7	121 21.3
2	26	15.5	26	19.9	25	3.7	2 .4	62 10.9	122 21.5
3	26	15.8	26	20.1	25	4.0	3 .5	63 11.1	123 21.6
4	26	16.0	26	20.4	25	4.2	4 .7	64 11.3	124 21.8
5	26	16.3	26	20.6	25	4.4	5 .9	65 11.4	125 22.0
6	26	16.5	26	20.9	25	4.7	6 1.1	66 11.6	126 22.2
7	26	16.8	26	21.1	25	4.9	7 1.2	67 11.8	127 22.3
8	26	17.0	26	21.4	25	5.2	8 1.4	68 12.0	128 22.5
9	26	17.3	26	21.6	25	5.4	9 1.6	69 12.1	129 22.7
10	26	17.5	26	21.9	25	5.6	10 1.8	70 12.3	130 22.9
11	26	17.8	26	22.1	25	5.9	11 1.9	71 12.5	131 23.0
12	26	18.0	26	22.4	25	6.1	12 2.1	72 12.7	132 23.2
13	26	18.3	26	22.6	25	6.4	13 2.3	73 12.8	133 23.4
14	26	18.5	26	22.9	25	6.6	14 2.5	74 13.0	134 23.6
15	26	18.8	26	23.1	25	6.8	15 2.6	75 13.2	135 23.7
16	26	19.0	26	23.4	25	7.1	16 2.8	76 13.4	136 23.9
17	26	19.3	26	23.6	25	7.3	17 3.0	77 13.5	137 24.1
18	26	19.5	26	23.9	25	7.5	18 3.2	78 13.7	138 24.3
19	26	19.8	26	24.1	25	7.8	19 3.3	79 13.9	139 24.4
20	26	20.0	26	24.4	25	8.0	20 3.5	80 14.1	140 24.6
21	26	20.3	26	24.6	25	8.3	21 3.7	81 14.2	141 24.8
22	26	20.5	26	24.9	25	8.5	22 3.9	82 14.4	142 25.0
23	26	20.8	26	25.1	25	8.7	23 4.0	83 14.6	143 25.1
24	26	21.0	26	25.4	25	9.0	24 4.2	84 14.8	144 25.3
25	26	21.3	26	25.6	25	9.2	25 4.4	85 14.9	145 25.5
26	26	21.5	26	25.9	25	9.5	26 4.6	86 15.1	146 25.7
27	26	21.8	26	26.1	25	9.7	27 4.7	87 15.3	147 25.8
28	26	22.0	26	26.4	25	9.9	28 4.9	88 15.5	148 26.0
29	26	22.3	26	26.6	25	10.2	29 5.1	89 15.6	149 26.2
30	26	22.5	26	26.9	25	10.4	30 5.3	90 15.8	150 26.4
31	26	22.8	26	27.1	25	10.6	31 5.5	91 16.0	151 26.6
32	26	23.0	26	27.4	25	10.9	32 5.6	92 16.2	152 26.7
33	26	23.3	26	27.6	25	11.1	33 5.8	93 16.4	153 26.9
34	26	23.5	26	27.9	25	11.4	34 6.0	94 16.5	154 27.1
35	26	23.8	26	28.1	25	11.6	35 6.2	95 16.7	155 27.3
36	26	24.0	26	28.4	25	11.8	36 6.3	96 16.9	156 27.4
37	26	24.3	26	28.7	25	12.1	37 6.5	97 17.1	157 27.6
38	26	24.5	26	28.9	25	12.3	38 6.7	98 17.2	158 27.8
39	26	24.8	26	29.2	25	12.6	39 6.9	99 17.4	159 28.0
40	26	25.0	26	29.4	25	12.8	40 7.0	100 17.6	160 28.1
41	26	25.3	26	29.7	25	13.0	41 7.2	101 17.8	161 28.3
42	26	25.5	26	29.9	25	13.3	42 7.4	102 17.9	162 28.5
43	26	25.8	26	30.2	25	13.5	43 7.6	103 18.1	163 28.7
44	26	26.0	26	30.4	25	13.7	44 7.7	104 18.3	164 28.8
45	26	26.3	26	30.7	25	14.0	45 7.9	105 18.5	165 29.0
46	26	26.5	26	30.9	25	14.2	46 8.1	106 18.6	166 29.2
47	26	26.8	26	31.2	25	14.5	47 8.3	107 18.8	167 29.4
48	26	27.0	26	31.4	25	14.7	48 8.4	108 19.0	168 29.5
49	26	27.3	26	31.7	25	14.9	49 8.6	109 19.2	169 29.7
50	26	27.5	26	31.9	25	15.2	50 8.8	110 19.3	170 29.9
51	26	27.8	26	32.2	25	15.4	51 9.0	111 19.5	171 30.1
52	26	28.0	26	32.4	25	15.7	52 9.1	112 19.7	172 30.2
53	26	28.3	26	32.7	25	15.9	53 9.3	113 19.9	173 30.4
54	26	28.5	26	32.9	25	16.1	54 9.5	114 20.0	174 30.6
55	26	28.8	26	33.2	25	16.4	55 9.7	115 20.2	175 30.8
56	26	29.0	26	33.4	25	16.6	56 9.8	116 20.4	176 30.9
57	26	29.3	26	33.7	25	16.9	57 10.0	117 20.6	177 31.1
58	26	29.5	26	33.9	25	17.1	58 10.2	118 20.7	178 31.3
59	26	29.8	26	34.2	25	17.3	59 10.4	119 20.9	179 31.5
60	26	30.0	26	34.4	25	17.6	60 10.6	120 21.1	180 31.7

1 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	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

1 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	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
54	26	58.5	27	3.0	25	44.8	54 9.7	114 20.4	174 31.2
55	26	58.8	27	3.2	25	45.0	55 9.9	115 20.6	175 31.4
56	26	59.0	27	3.5	25	45.2	56 10.0	116 20.8	176 31.5
57	26	59.3	27	3.7	25	45.5	57 10.2	117 21.0	177 31.7
58	26	59.5	27	4.0	25	45.7	58 10.4	118 21.1	178 31.9
59	26	59.8	27	4.2	25	46.0	59 10.6	119 21.3	179 32.1
60	27	.0	27	4.5	25	46.2	60 10.8	120 21.5	180 32.3



1 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	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

1 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	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	28.8	27	33.3	26	13.6	55 10.0	115 21.0	175 31.9
56	27	29.0	27	33.6	26	13.9	56 10.2	116 21.2	176 32.1
57	27	29.3	27	33.8	26	14.1	57 10.4	117 21.4	177 32.3
58	27	29.5	27	34.1	26	14.4	58 10.6	118 21.5	178 32.5
59	27	29.8	27	34.3	26	14.6	59 10.8	119 21.7	179 32.7
60	27	30.0	27	34.6	26	14.8	60 11.0	120 21.9	180 32.9

## 1 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 30.0	27 34.6	26 14.8	0 .0	60 11.1	120 22.1
1	27 30.3	27 34.8	26 15.1	1 .2	61 11.2	121 22.3
2	27 30.5	27 35.1	26 15.3	2 .4	62 11.4	122 22.5
3	27 30.8	27 35.3	26 15.5	3 .6	63 11.6	123 22.7
4	27 31.0	27 35.6	26 15.8	4 .7	64 11.8	124 22.8
5	27 31.3	27 35.8	26 16.0	5 .9	65 12.0	125 23.0
6	27 31.5	27 36.1	26 16.3	6 1.1	66 12.2	126 23.2
7	27 31.8	27 36.3	26 16.5	7 1.3	67 12.3	127 23.4
8	27 32.0	27 36.6	26 16.7	8 1.5	68 12.5	128 23.6
9	27 32.3	27 36.8	26 17.0	9 1.7	69 12.7	129 23.8
10	27 32.5	27 37.1	26 17.2	10 1.8	70 12.9	130 23.9
11	27 32.8	27 37.3	26 17.5	11 2.0	71 13.1	131 24.1
12	27 33.0	27 37.6	26 17.7	12 2.2	72 13.3	132 24.3
13	27 33.3	27 37.8	26 17.9	13 2.4	73 13.4	133 24.5
14	27 33.5	27 38.1	26 18.2	14 2.6	74 13.6	134 24.7
15	27 33.8	27 38.3	26 18.4	15 2.8	75 13.8	135 24.9
16	27 34.0	27 38.6	26 18.7	16 2.9	76 14.0	136 25.0
17	27 34.3	27 38.8	26 18.9	17 3.1	77 14.2	137 25.2
18	27 34.5	27 39.1	26 19.1	18 3.3	78 14.4	138 25.4
19	27 34.8	27 39.3	26 19.4	19 3.5	79 14.5	139 25.6
20	27 35.0	27 39.6	26 19.6	20 3.7	80 14.7	140 25.8
21	27 35.3	27 39.8	26 19.8	21 3.9	81 14.9	141 26.0
22	27 35.5	27 40.1	26 20.1	22 4.1	82 15.1	142 26.2
23	27 35.8	27 40.3	26 20.3	23 4.2	83 15.3	143 26.3
24	27 36.0	27 40.6	26 20.6	24 4.4	84 15.5	144 26.5
25	27 36.3	27 40.9	26 20.8	25 4.6	85 15.7	145 26.7
26	27 36.5	27 41.1	26 21.0	26 4.8	86 15.8	146 26.9
27	27 36.8	27 41.4	26 21.3	27 5.0	87 16.0	147 27.1
28	27 37.0	27 41.6	26 21.5	28 5.2	88 16.2	148 27.3
29	27 37.3	27 41.9	26 21.8	29 5.3	89 16.4	149 27.4
30	27 37.5	27 42.1	26 22.0	30 5.5	90 16.6	150 27.6
31	27 37.8	27 42.4	26 22.2	31 5.7	91 16.8	151 27.8
32	27 38.0	27 42.6	26 22.5	32 5.9	92 16.9	152 28.0
33	27 38.3	27 42.9	26 22.7	33 6.1	93 17.1	153 28.2
34	27 38.5	27 43.1	26 22.9	34 6.3	94 17.3	154 28.4
35	27 38.8	27 43.4	26 23.2	35 6.4	95 17.5	155 28.5
36	27 39.0	27 43.6	26 23.4	36 6.6	96 17.7	156 28.7
37	27 39.3	27 43.9	26 23.7	37 6.8	97 17.9	157 28.9
38	27 39.5	27 44.1	26 23.9	38 7.0	98 18.0	158 29.1
39	27 39.8	27 44.4	26 24.1	39 7.2	99 18.2	159 29.3
40	27 40.0	27 44.6	26 24.4	40 7.4	100 18.4	160 29.5
41	27 40.3	27 44.9	26 24.6	41 7.6	101 18.6	161 29.7
42	27 40.5	27 45.1	26 24.9	42 7.7	102 18.8	162 29.8
43	27 40.8	27 45.4	26 25.1	43 7.9	103 19.0	163 30.0
44	27 41.0	27 45.6	26 25.3	44 8.1	104 19.2	164 30.2
45	27 41.3	27 45.9	26 25.6	45 8.3	105 19.3	165 30.4
46	27 41.5	27 46.1	26 25.8	46 8.5	106 19.5	166 30.6
47	27 41.8	27 46.4	26 26.0	47 8.7	107 19.7	167 30.8
48	27 42.0	27 46.6	26 26.3	48 8.8	108 19.9	168 30.9
49	27 42.3	27 46.9	26 26.5	49 9.0	109 20.1	169 31.1
50	27 42.5	27 47.1	26 26.8	50 9.2	110 20.3	170 31.3
51	27 42.8	27 47.4	26 27.0	51 9.4	111 20.4	171 31.5
52	27 43.0	27 47.6	26 27.2	52 9.6	112 20.6	172 31.7
53	27 43.3	27 47.9	26 27.5	53 9.8	113 20.8	173 31.9
54	27 43.5	27 48.1	26 27.7	54 9.9	114 21.0	174 32.0
55	27 43.8	27 48.4	26 28.0	55 10.1	115 21.2	175 32.2
56	27 44.0	27 48.6	26 28.2	56 10.3	116 21.4	176 32.4
57	27 44.3	27 48.9	26 28.4	57 10.5	117 21.5	177 32.6
58	27 44.5	27 49.1	26 28.7	58 10.7	118 21.7	178 32.8
59	27 44.8	27 49.4	26 28.9	59 10.9	119 21.9	179 33.0
60	27 45.0	27 49.6	26 29.2	60 11.1	120 22.1	180 33.2

## 1 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 45.0	27 49.6	26 29.2	0 .0	60 11.2	120 22.3
1	27 45.3	27 49.9	26 29.4	1 .2	61 11.3	121 22.5
2	27 45.5	27 50.1	26 29.6	2 .4	62 11.5	122 22.7
3	27 45.8	27 50.4	26 29.9	3 .6	63 11.7	123 22.9
4	27 46.0	27 50.6	26 30.1	4 .7	64 11.9	124 23.0
5	27 46.3	27 50.9	26 30.3	5 .9	65 12.1	125 23.2
6	27 46.5	27 51.1	26 30.6	6 1.1	66 12.3	126 23.4
7	27 46.8	27 51.4	26 30.8	7 1.3	67 12.5	127 23.6
8	27 47.0	27 51.6	26 31.1	8 1.5	68 12.6	128 23.8
9	27 47.3	27 51.9	26 31.3	9 1.7	69 12.8	129 24.0
10	27 47.5	27 52.1	26 31.5	10 1.9	70 13.0	130 24.2
11	27 47.8	27 52.4	26 31.8	11 2.0	71 13.2	131 24.3
12	27 48.0	27 52.6	26 32.0	12 2.2	72 13.4	132 24.5
13	27 48.3	27 52.9	26 32.3	13 2.4	73 13.6	133 24.7
14	27 48.5	27 53.1	26 32.5	14 2.6	74 13.8	134 24.9
15	27 48.8	27 53.4	26 32.7	15 2.8	75 13.9	135 25.1
16	27 49.0	27 53.6	26 33.0	16 3.0	76 14.1	136 25.3
17	27 49.3	27 53.9	26 33.2	17 3.2	77 14.3	137 25.5
18	27 49.5	27 54.1	26 33.4	18 3.3	78 14.5	138 25.6
19	27 49.8	27 54.4	26 33.7	19 3.5	79 14.7	139 25.8
20	27 50.0	27 54.6	26 33.9	20 3.7	80 14.9	140 26.0
21	27 50.3	27 54.9	26 34.2	21 3.9	81 15.1	141 26.2
22	27 50.5	27 55.1	26 34.4	22 4.1	82 15.2	142 26.4
23	27 50.8	27 55.4	26 34.6	23 4.3	83 15.4	143 26.6
24	27 51.0	27 55.6	26 34.9	24 4.5	84 15.6	144 26.8
25	27 51.3	27 55.9	26 35.1	25 4.6	85 15.8	145 26.9
26	27 51.5	27 56.1	26 35.4	26 4.8	86 16.0	146 27.1
27	27 51.8	27 56.4	26 35.6	27 5.0	87 16.2	147 27.3
28	27 52.0	27 56.6	26 35.8	28 5.2	88 16.4	148 27.5
29	27 52.3	27 56.9	26 36.1	29 5.4	89 16.5	149 27.7
30	27 52.5	27 57.1	26 36.3	30 5.6	90 16.7	150 27.9
31	27 52.8	27 57.4	26 36.5	31 5.8	91 16.9	151 28.1
32	27 53.0	27 57.6	26 36.8	32 5.9	92 17.1	152 28.2
33	27 53.3	27 57.9	26 37.0	33 6.1	93 17.3	153 28.4
34	27 53.5	27 58.1	26 37.3	34 6.3	94 17.5	154 28.6
35	27 53.8	27 58.4	26 37.5	35 6.5	95 17.7	155 28.8
36	27 54.0	27 58.7	26 37.7	36 6.7	96 17.8	156 29.0
37	27 54.3	27 58.9	26 38.0	37 6.9	97 18.0	157 29.2
38	27 54.5	27 59.2	26 38.2	38 7.1	98 18.2	158 29.4
39	27 54.8	27 59.4	26 38.5	39 7.2	99 18.4	159 29.5
40	27 55.0	27 59.7	26 38.7	40 7.4	100 18.6	160 29.7
41	27 55.3	27 59.9	26 38.9	41 7.6	101 18.8	161 29.9
42	27 55.5	28 .2	26 39.2	42 7.8	102 19.0	162 30.1
43	27 55.8	28 .4	26 39.4	43 8.0	103 19.1	163 30.3
44	27 56.0	28 .7	26 39.6	44 8.2	104 19.3	164 30.5
45	27 56.3	28 .9	26 39.9	45 8.4	105 19.5	165 30.7
46	27 56.5	28 1.2	26 40.1	46 8.5	106 19.7	166 30.8
47	27 56.8	28 1.4	26 40.4	47 8.7	107 19.9	167 31.0
48	27 57.0	28 1.7	26 40.6	48 8.9	108 20.1	168 31.2
49	27 57.3	28 1.9	26 40.8	49 9.1	109 20.3	169 31.4
50	27 57.5	28 2.2	26 41.1	50 9.3	110 20.4	170 31.6
51	27 57.8	28 2.4	26 41.3	51 9.5	111 20.6	171 31.8
52	27 58.0	28 2.7	26 41.6	52 9.7	112 20.8	172 32.0
53	27 58.3	28 2.9	26 41.8	53 9.8	113 21.0	173 32.1
54	27 58.5	28 3.2	26 42.0	54 10.0	114 21.2	174 32.3
55	27 58.8	28 3.4	26 42.3	55 10.2	115 21.4	175 32.5
56	27 59.0	28 3.7	26 42.5	56 10.4	116 21.6	176 32.7
57	27 59.3	28 3.9	26 42.8	57 10.6	117 21.7	177 32.9
58	27 59.5	28 4.2	26 43.0	58 10.8	118 21.9	178 33.1
59	27 59.8	28 4.4	26 43.2	59 11.0	119 22.1	179 33.3
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, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
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 27.2
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 30.2
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 33.2
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, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	28	15.0	28	19.7	26	57.8	0 .0	60 11.4	120 22.7
1	28	15.3	28	20.0	26	58.0	1 .2	61 11.5	121 22.9
2	28	15.5	28	20.2	26	58.3	2 .4	62 11.7	122 23.1
3	28	15.8	28	20.5	26	58.5	3 .6	63 11.9	123 23.3
4	28	16.0	28	20.7	26	58.7	4 .8	64 12.1	124 23.5
5	28	16.3	28	21.0	26	59.0	5 .9	65 12.3	125 23.6
6	28	16.5	28	21.2	26	59.2	6 1.1	66 12.5	126 23.8
7	28	16.8	28	21.5	26	59.5	7 1.3	67 12.7	127 24.0
8	28	17.0	28	21.7	26	59.7	8 1.5	68 12.9	128 24.2
9	28	17.3	28	22.0	26	59.9	9 1.7	69 13.1	129 24.4
10	28	17.5	28	22.2	27	.2	10 1.9	70 13.2	130 24.6
11	28	17.8	28	22.5	27	.4	11 2.1	71 13.4	131 24.8
12	28	18.0	28	22.7	27	.6	12 2.3	72 13.6	132 25.0
13	28	18.3	28	23.0	27	.9	13 2.5	73 13.8	133 25.2
14	28	18.5	28	23.2	27	1.1	14 2.6	74 14.0	134 25.3
15	28	18.8	28	23.5	27	1.4	15 2.8	75 14.2	135 25.5
16	28	19.0	28	23.7	27	1.6	16 3.0	76 14.4	136 25.7
17	28	19.3	28	24.0	27	1.8	17 3.2	77 14.6	137 25.9
18	28	19.5	28	24.2	27	2.1	18 3.4	78 14.8	138 26.1
19	28	19.8	28	24.5	27	2.3	19 3.6	79 14.9	139 26.3
20	28	20.0	28	24.7	27	2.6	20 3.8	80 15.1	140 26.5
21	28	20.3	28	25.0	27	2.8	21 4.0	81 15.3	141 26.7
22	28	20.5	28	25.2	27	3.0	22 4.2	82 15.5	142 26.9
23	28	20.8	28	25.5	27	3.3	23 4.4	83 15.7	143 27.1
24	28	21.0	28	25.7	27	3.5	24 4.5	84 15.9	144 27.2
25	28	21.3	28	26.0	27	3.7	25 4.7	85 16.1	145 27.4
26	28	21.5	28	26.2	27	4.0	26 4.9	86 16.3	146 27.6
27	28	21.8	28	26.5	27	4.2	27 5.1	87 16.5	147 27.8
28	28	22.0	28	26.7	27	4.5	28 5.3	88 16.6	148 28.0
29	28	22.3	28	27.0	27	4.7	29 5.5	89 16.8	149 28.2
30	28	22.5	28	27.2	27	4.9	30 5.7	90 17.0	150 28.4
31	28	22.8	28	27.5	27	5.2	31 5.9	91 17.2	151 28.6
32	28	23.0	28	27.7	27	5.4	32 6.1	92 17.4	152 28.8
33	28	23.3	28	28.0	27	5.7	33 6.2	93 17.6	153 28.9
34	28	23.5	28	28.2	27	5.9	34 6.4	94 17.8	154 29.1
35	28	23.8	28	28.5	27	6.1	35 6.6	95 18.0	155 29.3
36	28	24.0	28	28.7	27	6.4	36 6.8	96 18.2	156 29.5
37	28	24.3	28	29.0	27	6.6	37 7.0	97 18.3	157 29.7
38	28	24.5	28	29.2	27	6.9	38 7.2	98 18.5	158 29.9
39	28	24.8	28	29.5	27	7.1	39 7.4	99 18.7	159 30.1
40	28	25.0	28	29.7	27	7.3	40 7.6	100 18.9	160 30.3
41	28	25.3	28	30.0	27	7.6	41 7.8	101 19.1	161 30.5
42	28	25.5	28	30.2	27	7.8	42 7.9	102 19.3	162 30.6
43	28	25.8	28	30.5	27	8.0	43 8.1	103 19.5	163 30.8
44	28	26.0	28	30.7	27	8.3	44 8.3	104 19.7	164 31.0
45	28	26.3	28	31.0	27	8.5	45 8.5	105 19.9	165 31.2
46	28	26.5	28	31.2	27	8.8	46 8.7	106 20.1	166 31.4
47	28	26.8	28	31.5	27	9.0	47 8.9	107 20.2	167 31.6
48	28	27.0	28	31.7	27	9.2	48 9.1	108 20.4	168 31.8
49	28	27.3	28	32.0	27	9.5	49 9.3	109 20.6	169 32.0
50	28	27.5	28	32.2	27	9.7	50 9.5	110 20.8	170 32.2
51	28	27.8	28	32.5	27	10.0	51 9.6	111 21.0	171 32.3
52	28	28.0	28	32.7	27	10.2	52 9.8	112 21.2	172 32.5
53	28	28.3	28	33.0	27	10.4	53 10.0	113 21.4	173 32.7
54	28	28.5	28	33.2	27	10.7	54 10.2	114 21.6	174 32.9
55	28	28.8	28	33.5	27	10.9	55 10.4	115 21.8	175 33.1
56	28	29.0	28	33.7	27	11.1	56 10.6	116 21.9	176 33.3
57	28	29.3	28	34.0	27	11.4	57 10.8	117 22.1	177 33.5
58	28	29.5	28	34.2	27	11.6	58 11.0	118 22.3	178 33.7
59	28	29.8	28	34.5	27	11.9	59 11.2	119 22.5	179 33.9
60	28	30.0	28	34.8	27	12.1	60 11.4	120 22.7	180 34.1

1 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 30.0	28 34.8	27 12.1	0 .0	60 11.5	120 22.9
1	28 30.3	28 35.0	27 12.3	1 .2	61 11.6	121 23.1
2	28 30.5	28 35.3	27 12.6	2 .4	62 11.8	122 23.3
3	28 30.8	28 35.5	27 12.8	3 .6	63 12.0	123 23.5
4	28 31.0	28 35.8	27 13.1	4 .8	64 12.2	124 23.7
5	28 31.3	28 36.0	27 13.3	5 1.0	65 12.4	125 23.9
6	28 31.5	28 36.3	27 13.5	6 1.1	66 12.6	126 24.0
7	28 31.8	28 36.5	27 13.8	7 1.3	67 12.8	127 24.2
8	28 32.0	28 36.8	27 14.0	8 1.5	68 13.0	128 24.4
9	28 32.3	28 37.0	27 14.2	9 1.7	69 13.2	129 24.6
10	28 32.5	28 37.3	27 14.5	10 1.9	70 13.4	130 24.8
11	28 32.8	28 37.5	27 14.7	11 2.1	71 13.5	131 25.0
12	28 33.0	28 37.8	27 15.0	12 2.3	72 13.7	132 25.2
13	28 33.3	28 38.0	27 15.2	13 2.5	73 13.9	133 25.4
14	28 33.5	28 38.3	27 15.4	14 2.7	74 14.1	134 25.6
15	28 33.8	28 38.5	27 15.7	15 2.9	75 14.3	135 25.8
16	28 34.0	28 38.8	27 15.9	16 3.1	76 14.5	136 26.0
17	28 34.3	28 39.0	27 16.2	17 3.2	77 14.7	137 26.1
18	28 34.5	28 39.3	27 16.4	18 3.4	78 14.9	138 26.3
19	28 34.8	28 39.5	27 16.6	19 3.6	79 15.1	139 26.5
20	28 35.0	28 39.8	27 16.9	20 3.8	80 15.3	140 26.7
21	28 35.3	28 40.0	27 17.1	21 4.0	81 15.5	141 26.9
22	28 35.5	28 40.3	27 17.3	22 4.2	82 15.6	142 27.1
23	28 35.8	28 40.5	27 17.6	23 4.4	83 15.8	143 27.3
24	28 36.0	28 40.8	27 17.8	24 4.6	84 16.0	144 27.5
25	28 36.3	28 41.0	27 18.1	25 4.8	85 16.2	145 27.7
26	28 36.5	28 41.3	27 18.3	26 5.0	86 16.4	146 27.9
27	28 36.8	28 41.5	27 18.5	27 5.2	87 16.6	147 28.1
28	28 37.0	28 41.8	27 18.8	28 5.3	88 16.8	148 28.2
29	28 37.3	28 42.0	27 19.0	29 5.5	89 17.0	149 28.4
30	28 37.5	28 42.3	27 19.3	30 5.7	90 17.2	150 28.6
31	28 37.8	28 42.5	27 19.5	31 5.9	91 17.4	151 28.8
32	28 38.0	28 42.8	27 19.7	32 6.1	92 17.6	152 29.0
33	28 38.3	28 43.0	27 20.0	33 6.3	93 17.7	153 29.2
34	28 38.5	28 43.3	27 20.2	34 6.5	94 17.9	154 29.4
35	28 38.8	28 43.5	27 20.5	35 6.7	95 18.1	155 29.6
36	28 39.0	28 43.8	27 20.7	36 6.9	96 18.3	156 29.8
37	28 39.3	28 44.0	27 20.9	37 7.1	97 18.5	157 30.0
38	28 39.5	28 44.3	27 21.2	38 7.3	98 18.7	158 30.2
39	28 39.8	28 44.5	27 21.4	39 7.4	99 18.9	159 30.3
40	28 40.0	28 44.8	27 21.6	40 7.6	100 19.1	160 30.5
41	28 40.3	28 45.0	27 21.9	41 7.8	101 19.3	161 30.7
42	28 40.5	28 45.3	27 22.1	42 8.0	102 19.5	162 30.9
43	28 40.8	28 45.5	27 22.4	43 8.2	103 19.7	163 31.1
44	28 41.0	28 45.8	27 22.6	44 8.4	104 19.8	164 31.3
45	28 41.3	28 46.0	27 22.8	45 8.6	105 20.0	165 31.5
46	28 41.5	28 46.3	27 23.1	46 8.8	106 20.2	166 31.7
47	28 41.8	28 46.5	27 23.3	47 9.0	107 20.4	167 31.9
48	28 42.0	28 46.8	27 23.6	48 9.2	108 20.6	168 32.1
49	28 42.3	28 47.0	27 23.8	49 9.4	109 20.8	169 32.3
50	28 42.5	28 47.3	27 24.0	50 9.5	110 21.0	170 32.4
51	28 42.8	28 47.5	27 24.3	51 9.7	111 21.2	171 32.6
52	28 43.0	28 47.8	27 24.5	52 9.9	112 21.4	172 32.8
53	28 43.3	28 48.0	27 24.7	53 10.1	113 21.6	173 33.0
54	28 43.5	28 48.3	27 25.0	54 10.3	114 21.8	174 33.2
55	28 43.8	28 48.5	27 25.2	55 10.5	115 21.9	175 33.4
56	28 44.0	28 48.8	27 25.5	56 10.7	116 22.1	176 33.6
57	28 44.3	28 49.0	27 25.7	57 10.9	117 22.3	177 33.8
58	28 44.5	28 49.3	27 25.9	58 11.1	118 22.5	178 34.0
59	28 44.8	28 49.5	27 26.2	59 11.3	119 22.7	179 34.2
60	28 45.0	28 49.8	27 26.4	60 11.5	120 22.9	180 34.4

1 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 45.0	28 49.8	27 26.4	0 .0	60 11.6	120 23.1
1	28 45.3	28 50.0	27 26.7	1 .2	61 11.7	121 23.3
2	28 45.5	28 50.3	27 26.9	2 .4	62 11.9	122 23.5
3	28 45.8	28 50.5	27 27.1	3 .6	63 12.1	123 23.7
4	28 46.0	28 50.8	27 27.4	4 .8	64 12.3	124 23.9
5	28 46.3	28 51.0	27 27.6	5 1.0	65 12.5	125 24.1
6	28 46.5	28 51.3	27 27.8	6 1.2	66 12.7	126 24.3
7	28 46.8	28 51.5	27 28.1	7 1.3	67 12.9	127 24.4
8	28 47.0	28 51.8	27 28.3	8 1.5	68 13.1	128 24.6
9	28 47.3	28 52.0	27 28.6	9 1.7	69 13.3	129 24.8
10	28 47.5	28 52.3	27 28.8	10 1.9	70 13.5	130 25.0
11	28 47.8	28 52.5	27 29.0	11 2.1	71 13.7	131 25.2
12	28 48.0	28 52.8	27 29.3	12 2.3	72 13.9	132 25.4
13	28 48.3	28 53.1	27 29.5	13 2.5	73 14.1	133 25.6
14	28 48.5	28 53.3	27 29.8	14 2.7	74 14.2	134 25.8
15	28 48.8	28 53.6	27 30.0	15 2.9	75 14.4	135 26.0
16	28 49.0	28 53.8	27 30.2	16 3.1	76 14.6	136 26.2
17	28 49.3	28 54.1	27 30.5	17 3.3	77 14.8	137 26.4
18	28 49.5	28 54.3	27 30.7	18 3.5	78 15.0	138 26.6
19	28 49.8	28 54.6	27 31.0	19 3.7	79 15.2	139 26.8
20	28 50.0	28 54.8	27 31.2	20 3.9	80 15.4	140 27.0
21	28 50.3	28 55.1	27 31.4	21 4.0	81 15.6	141 27.1
22	28 50.5	28 55.3	27 31.7	22 4.2	82 15.8	142 27.3
23	28 50.8	28 55.6	27 31.9	23 4.4	83 16.0	143 27.5
24	28 51.0	28 55.8	27 32.1	24 4.6	84 16.2	144 27.7
25	28 51.3	28 56.1	27 32.4	25 4.8	85 16.4	145 27.9
26	28 51.5	28 56.3	27 32.6	26 5.0	86 16.6	146 28.1
27	28 51.8	28 56.6	27 32.9	27 5.2	87 16.7	147 28.3
28	28 52.0	28 56.8	27 33.1	28 5.4	88 16.9	148 28.5
29	28 52.3	28 57.1	27 33.3	29 5.6	89 17.1	149 28.7
30	28 52.5	28 57.3	27 33.6	30 5.8	90 17.3	150 28.9
31	28 52.8	28 57.6	27 33.8	31 6.0	91 17.5	151 29.1
32	28 53.0	28 57.8	27 34.1	32 6.2	92 17.7	152 29.3
33	28 53.3	28 58.1	27 34.3	33 6.4	93 17.9	153 29.5
34	28 53.5	28 58.3	27 34.5	34 6.5	94 18.1	154 29.6
35	28 53.8	28 58.6	27 34.8	35 6.7	95 18.3	155 29.8
36	28 54.0	28 58.8	27 35.0	36 6.9	96 18.5	156 30.0
37	28 54.3	28 59.1	27 35.2	37 7.1	97 18.7	157 30.2
38	28 54.5	28 59.3	27 35.5	38 7.3	98 18.9	158 30.4
39	28 54.8	28 59.6	27 35.7	39 7.5	99 19.1	159 30.6
40	28 55.0	28 59.8	27 36.0	40 7.7	100 19.3	160 30.8
41	28 55.3	29 .1	27 36.2	41 7.9	101 19.4	161 31.0
42	28 55.5	29 .3	27 36.4	42 8.1	102 19.6	162 31.2
43	28 55.8	29 .6	27 36.7	43 8.3	103 19.8	163 31.4
44	28 56.0	29 .8	27 36.9	44 8.5	104 20.0	164 31.6
45	28 56.3	29 1.1	27 37.2	45 8.7	105 20.2	165 31.8
46	28 56.5	29 1.3	27 37.4	46 8.9	106 20.4	166 32.0
47	28 56.8	29 1.6	27 37.6	47 9.0	107 20.6	167 32.1
48	28 57.0	29 1.8	27 37.9	48 9.2	108 20.8	168 32.3
49	28 57.3	29 2.1	27 38.1	49 9.4	109 21.0	169 32.5
50	28 57.5	29 2.3	27 38.3	50 9.6	110 21.2	170 32.7
51	28 57.8	29 2.6	27 38.6	51 9.8	111 21.4	171 32.9
52	28 58.0	29 2.8	27 38.8	52 10.0	112 21.6	172 33.1
53	28 58.3	29 3.1	27 39.1	53 10.2	113 21.8	173 33.3
54	28 58.5	29 3.3	27 39.3	54 10.4	114 21.9	174 33.5
55	28 58.8	29 3.6	27 39.5	55 10.6	115 22.1	175 33.7
56	28 59.0	29 3.8	27 39.8	56 10.8	116 22.3	176 33.9
57	28 59.3	29 4.1	27 40.0	57 11.0	117 22.5	177 34.1
58	28 59.5	29 4.3	27 40.3	58 11.2	118 22.7	178 34.3
59	28 59.8	29 4.6	27 40.5	59 11.4	119 22.9	179 34.5
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, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	.0	29	4.8	27	40.7	0 .0	60 11.7	120 23.3
1	29	.3	29	5.1	27	41.0	1 .2	61 11.8	121 23.5
2	29	.5	29	5.3	27	41.2	2 .4	62 12.0	122 23.7
3	29	.8	29	5.6	27	41.4	3 .6	63 12.2	123 23.9
4	29	1.0	29	5.8	27	41.7	4 .8	64 12.4	124 24.1
5	29	1.3	29	6.1	27	41.9	5 1.0	65 12.6	125 24.3
6	29	1.5	29	6.3	27	42.2	6 1.2	66 12.8	126 24.5
7	29	1.8	29	6.6	27	42.4	7 1.4	67 13.0	127 24.7
8	29	2.0	29	6.8	27	42.6	8 1.6	68 13.2	128 24.9
9	29	2.3	29	7.1	27	42.9	9 1.7	69 13.4	129 25.0
10	29	2.5	29	7.3	27	43.1	10 1.9	70 13.6	130 25.2
11	29	2.8	29	7.6	27	43.4	11 2.1	71 13.8	131 25.4
12	29	3.0	29	7.8	27	43.6	12 2.3	72 14.0	132 25.6
13	29	3.3	29	8.1	27	43.8	13 2.5	73 14.2	133 25.8
14	29	3.5	29	8.3	27	44.1	14 2.7	74 14.4	134 26.0
15	29	3.8	29	8.6	27	44.3	15 2.9	75 14.6	135 26.2
16	29	4.0	29	8.8	27	44.6	16 3.1	76 14.8	136 26.4
17	29	4.3	29	9.1	27	44.8	17 3.3	77 15.0	137 26.6
18	29	4.5	29	9.3	27	45.0	18 3.5	78 15.1	138 26.8
19	29	4.8	29	9.6	27	45.3	19 3.7	79 15.3	139 27.0
20	29	5.0	29	9.8	27	45.5	20 3.9	80 15.5	140 27.2
21	29	5.3	29	10.1	27	45.7	21 4.1	81 15.7	141 27.4
22	29	5.5	29	10.3	27	46.0	22 4.3	82 15.9	142 27.6
23	29	5.8	29	10.6	27	46.2	23 4.5	83 16.1	143 27.8
24	29	6.0	29	10.9	27	46.5	24 4.7	84 16.3	144 28.0
25	29	6.3	29	11.1	27	46.7	25 4.9	85 16.5	145 28.2
26	29	6.5	29	11.4	27	46.9	26 5.0	86 16.7	146 28.3
27	29	6.8	29	11.6	27	47.2	27 5.2	87 16.9	147 28.5
28	29	7.0	29	11.9	27	47.4	28 5.4	88 17.1	148 28.7
29	29	7.3	29	12.1	27	47.7	29 5.6	89 17.3	149 28.9
30	29	7.5	29	12.4	27	47.9	30 5.8	90 17.5	150 29.1
31	29	7.8	29	12.6	27	48.1	31 6.0	91 17.7	151 29.3
32	29	8.0	29	12.9	27	48.4	32 6.2	92 17.9	152 29.5
33	29	8.3	29	13.1	27	48.6	33 6.4	93 18.1	153 29.7
34	29	8.5	29	13.4	27	48.8	34 6.6	94 18.3	154 29.9
35	29	8.8	29	13.6	27	49.1	35 6.8	95 18.4	155 30.1
36	29	9.0	29	13.9	27	49.3	36 7.0	96 18.6	156 30.3
37	29	9.3	29	14.1	27	49.6	37 7.2	97 18.8	157 30.5
38	29	9.5	29	14.4	27	49.8	38 7.4	98 19.0	158 30.7
39	29	9.8	29	14.6	27	50.0	39 7.6	99 19.2	159 30.9
40	29	10.0	29	14.9	27	50.3	40 7.8	100 19.4	160 31.1
41	29	10.3	29	15.1	27	50.5	41 8.0	101 19.6	161 31.3
42	29	10.5	29	15.4	27	50.8	42 8.2	102 19.8	162 31.5
43	29	10.8	29	15.6	27	51.0	43 8.3	103 20.0	163 31.6
44	29	11.0	29	15.9	27	51.2	44 8.5	104 20.2	164 31.8
45	29	11.3	29	16.1	27	51.5	45 8.7	105 20.4	165 32.0
46	29	11.5	29	16.4	27	51.7	46 8.9	106 20.6	166 32.2
47	29	11.8	29	16.6	27	51.9	47 9.1	107 20.8	167 32.4
48	29	12.0	29	16.9	27	52.2	48 9.3	108 21.0	168 32.6
49	29	12.3	29	17.1	27	52.4	49 9.5	109 21.2	169 32.8
50	29	12.5	29	17.4	27	52.7	50 9.7	110 21.4	170 33.0
51	29	12.8	29	17.6	27	52.9	51 9.9	111 21.6	171 33.2
52	29	13.0	29	17.9	27	53.1	52 10.1	112 21.7	172 33.4
53	29	13.3	29	18.1	27	53.4	53 10.3	113 21.9	173 33.6
54	29	13.5	29	18.4	27	53.6	54 10.5	114 22.1	174 33.8
55	29	13.8	29	18.6	27	53.9	55 10.7	115 22.3	175 34.0
56	29	14.0	29	18.9	27	54.1	56 10.9	116 22.5	176 34.2
57	29	14.3	29	19.1	27	54.3	57 11.1	117 22.7	177 34.4
58	29	14.5	29	19.4	27	54.6	58 11.3	118 22.9	178 34.6
59	29	14.8	29	19.6	27	54.8	59 11.5	119 23.1	179 34.8
60	29	15.0	29	19.9	27	55.1	60 11.7	120 23.3	180 35.0

1 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	15.0	29	19.9	27	55.1	0 .0	60 11.8	120 23.5
1	29	15.3	29	20.1	27	55.3	1 .2	61 11.9	121 23.7
2	29	15.5	29	20.4	27	55.5	2 .4	62 12.1	122 23.9
3	29	15.8	29	20.6	27	55.8	3 .6	63 12.3	123 24.1
4	29	16.0	29	20.9	27	56.0	4 .8	64 12.5	124 24.3
5	29	16.3	29	21.1	27	56.2	5 1.0	65 12.7	125 24.5
6	29	16.5	29	21.4	27	56.5	6 1.2	66 12.9	126 24.7
7	29	16.8	29	21.6	27	56.7	7 1.4	67 13.1	127 24.9
8	29	17.0	29	21.9	27	57.0	8 1.6	68 13.3	128 25.1
9	29	17.3	29	22.1	27	57.2	9 1.8	69 13.5	129 25.3
10	29	17.5	29	22.4	27	57.4	10 2.0	70 13.7	130 25.5
11	29	17.8	29	22.6	27	57.7	11 2.2	71 13.9	131 25.7
12	29	18.0	29	22.9	27	57.9	12 2.4	72 14.1	132 25.9
13	29	18.3	29	23.1	27	58.2	13 2.5	73 14.3	133 26.0
14	29	18.5	29	23.4	27	58.4	14 2.7	74 14.5	134 26.2
15	29	18.8	29	23.6	27	58.6	15 2.9	75 14.7	135 26.4
16	29	19.0	29	23.9	27	58.9	16 3.1	76 14.9	136 26.6
17	29	19.3	29	24.1	27	59.1	17 3.3	77 15.1	137 26.8
18	29	19.5	29	24.4	27	59.3	18 3.5	78 15.3	138 27.0
19	29	19.8	29	24.6	27	59.6	19 3.7	79 15.5	139 27.2
20	29	20.0	29	24.9	27	59.8	20 3.9	80 15.7	140 27.4
21	29	20.3	29	25.1	28	.1	21 4.1	81 15.9	141 27.6
22	29	20.5	29	25.4	28	.3	22 4.3	82 16.1	142 27.8
23	29	20.8	29	25.6	28	.5	23 4.5	83 16.3	143 28.0
24	29	21.0	29	25.9	28	.8	24 4.7	84 16.5	144 28.2
25	29	21.3	29	26.1	28	1.0	25 4.9	85 16.6	145 28.4
26	29	21.5	29	26.4	28	1.3	26 5.1	86 16.8	146 28.6
27	29	21.8	29	26.6	28	1.5	27 5.3	87 17.0	147 28.8
28	29	22.0	29	26.9	28	1.7	28 5.5	88 17.2	148 29.0
29	29	22.3	29	27.1	28	2.0	29 5.7	89 17.4	149 29.2
30	29	22.5	29	27.4	28	2.2	30 5.9	90 17.6	150 29.4
31	29	22.8	29	27.6	28	2.4	31 6.1	91 17.8	151 29.6
32	29	23.0	29	27.9	28	2.7	32 6.3	92 18.0	152 29.8
33	29	23.3	29	28.1	28	2.9	33 6.5	93 18.2	153 30.0
34	29	23.5	29	28.4	28	3.2	34 6.7	94 18.4	154 30.2
35	29	23.8	29	28.6	28	3.4	35 6.9	95 18.6	155 30.4
36	29	24.0	29	28.9	28	3.6	36 7.1	96 18.8	156 30.6
37	29	24.3	29	29.2	28	3.9	37 7.2	97 19.0	157 30.7
38	29	24.5	29	29.4	28	4.1	38 7.4	98 19.2	158 30.9
39	29	24.8	29	29.7	28	4.4	39 7.6	99 19.4	159 31.1
40	29	25.0	29	29.9	28	4.6	40 7.8	100 19.6	160 31.3
41	29	25.3	29	30.2	28	4.8	41 8.0	101 19.8	161 31.5
42	29	25.5	29	30.4	28	5.1	42 8.2	102 20.0	162 31.7
43	29	25.8	29	30.7	28	5.3	43 8.4	103 20.2	163 31.9
44	29	26.0	29	30.9	28	5.5	44 8.6	104 20.4	164 32.1
45	29	26.3	29	31.2	28	5.8	45 8.8	105 20.6	165 32.3
46	29	26.5	29	31.4	28	6.0	46 9.0	106 20.8	166 32.5
47	29	26.8	29	31.7	28	6.3	47 9.2	107 21.0	167 32.7
48	29	27.0	29	31.9	28	6.5	48 9.4	108 21.2	168 32.9
49	29	27.3	29	32.2	28	6.7	49 9.6	109 21.3	169 33.1
50	29	27.5	29	32.4	28	7.0	50 9.8	110 21.5	170 33.3
51	29	27.8	29	32.7	28	7.2	51 10.0	111 21.7	171 33.5
52	29	28.0	29	32.9	28	7.5	52 10.2	112 21.9	172 33.7
53	29	28.3	29	33.2	28	7.7	53 10.4	113 22.1	173 33.9
54	29	28.5	29	33.4	28	7.9	54 10.6	114 22.3	174 34.1
55	29	28.8	29	33.7	28	8.2	55 10.8	115 22.5	175 34.3
56	29	29.0	29	33.9	28	8.4	56 11.0	116 22.7	176 34.5
57	29	29.3	29	34.2	28	8.7	57 11.2	117 22.9	177 34.7
58	29	29.5	29	34.4	28	8.9	58 11.4	118 23.1	178 34.9
59	29	29.8	29	34.7	28	9.1	59 11.6	119 23.3	179 35.1
60	29	30.0	29	34.9	28	9.4	60 11.8	120 23.5	180 35.3

1 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	30.0	29	34.9	28	9.4	0 .0	60 11.9	120 23.7
1	29	30.3	29	35.2	28	9.6	1 .2	61 12.0	121 23.9
2	29	30.5	29	35.4	28	9.8	2 .4	62 12.2	122 24.1
3	29	30.8	29	35.7	28	10.1	3 .6	63 12.4	123 24.3
4	29	31.0	29	35.9	28	10.3	4 .8	64 12.6	124 24.5
5	29	31.3	29	36.2	28	10.6	5 1.0	65 12.8	125 24.7
6	29	31.5	29	36.4	28	10.8	6 1.2	66 13.0	126 24.9
7	29	31.8	29	36.7	28	11.0	7 1.4	67 13.2	127 25.1
8	29	32.0	29	36.9	28	11.3	8 1.6	68 13.4	128 25.3
9	29	32.3	29	37.2	28	11.5	9 1.8	69 13.6	129 25.5
10	29	32.5	29	37.4	28	11.8	10 2.0	70 13.8	130 25.7
11	29	32.8	29	37.7	28	12.0	11 2.2	71 14.0	131 25.9
12	29	33.0	29	37.9	28	12.2	12 2.4	72 14.2	132 26.1
13	29	33.3	29	38.2	28	12.5	13 2.6	73 14.4	133 26.3
14	29	33.5	29	38.4	28	12.7	14 2.8	74 14.6	134 26.5
15	29	33.8	29	38.7	28	12.9	15 3.0	75 14.8	135 26.7
16	29	34.0	29	38.9	28	13.2	16 3.2	76 15.0	136 26.9
17	29	34.3	29	39.2	28	13.4	17 3.4	77 15.2	137 27.1
18	29	34.5	29	39.4	28	13.7	18 3.6	78 15.4	138 27.3
19	29	34.8	29	39.7	28	13.9	19 3.8	79 15.6	139 27.5
20	29	35.0	29	39.9	28	14.1	20 4.0	80 15.8	140 27.7
21	29	35.3	29	40.2	28	14.4	21 4.1	81 16.0	141 27.8
22	29	35.5	29	40.4	28	14.6	22 4.3	82 16.2	142 28.0
23	29	35.8	29	40.7	28	14.9	23 4.5	83 16.4	143 28.2
24	29	36.0	29	40.9	28	15.1	24 4.7	84 16.6	144 28.4
25	29	36.3	29	41.2	28	15.3	25 4.9	85 16.8	145 28.6
26	29	36.5	29	41.4	28	15.6	26 5.1	86 17.0	146 28.8
27	29	36.8	29	41.7	28	15.8	27 5.3	87 17.2	147 29.0
28	29	37.0	29	41.9	28	16.0	28 5.5	88 17.4	148 29.2
29	29	37.3	29	42.2	28	16.3	29 5.7	89 17.6	149 29.4
30	29	37.5	29	42.4	28	16.5	30 5.9	90 17.8	150 29.6
31	29	37.8	29	42.7	28	16.8	31 6.1	91 18.0	151 29.8
32	29	38.0	29	42.9	28	17.0	32 6.3	92 18.2	152 30.0
33	29	38.3	29	43.2	28	17.2	33 6.5	93 18.4	153 30.2
34	29	38.5	29	43.4	28	17.5	34 6.7	94 18.6	154 30.4
35	29	38.8	29	43.7	28	17.7	35 6.9	95 18.8	155 30.6
36	29	39.0	29	43.9	28	18.0	36 7.1	96 19.0	156 30.8
37	29	39.3	29	44.2	28	18.2	37 7.3	97 19.2	157 31.0
38	29	39.5	29	44.4	28	18.4	38 7.5	98 19.4	158 31.2
39	29	39.8	29	44.7	28	18.7	39 7.7	99 19.6	159 31.4
40	29	40.0	29	44.9	28	18.9	40 7.9	100 19.8	160 31.6
41	29	40.3	29	45.2	28	19.1	41 8.1	101 19.9	161 31.8
42	29	40.5	29	45.4	28	19.4	42 8.3	102 20.1	162 32.0
43	29	40.8	29	45.7	28	19.6	43 8.5	103 20.3	163 32.2
44	29	41.0	29	45.9	28	19.9	44 8.7	104 20.5	164 32.4
45	29	41.3	29	46.2	28	20.1	45 8.9	105 20.7	165 32.6
46	29	41.5	29	46.4	28	20.3	46 9.1	106 20.9	166 32.8
47	29	41.8	29	46.7	28	20.6	47 9.3	107 21.1	167 33.0
48	29	42.0	29	47.0	28	20.8	48 9.5	108 21.3	168 33.2
49	29	42.3	29	47.2	28	21.1	49 9.7	109 21.5	169 33.4
50	29	42.5	29	47.5	28	21.3	50 9.9	110 21.7	170 33.6
51	29	42.8	29	47.7	28	21.5	51 10.1	111 21.9	171 33.8
52	29	43.0	29	48.0	28	21.8	52 10.3	112 22.1	172 34.0
53	29	43.3	29	48.2	28	22.0	53 10.5	113 22.3	173 34.2
54	29	43.5	29	48.5	28	22.3	54 10.7	114 22.5	174 34.4
55	29	43.8	29	48.7	28	22.5	55 10.9	115 22.7	175 34.6
56	29	44.0	29	49.0	28	22.7	56 11.1	116 22.9	176 34.8
57	29	44.3	29	49.2	28	23.0	57 11.3	117 23.1	177 35.0
58	29	44.5	29	49.5	28	23.2	58 11.5	118 23.3	178 35.2
59	29	44.8	29	49.7	28	23.4	59 11.7	119 23.5	179 35.4
60	29	45.0	29	50.0	28	23.7	60 11.9	120 23.7	180 35.6

1 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	45.0	29	50.0	28	23.7	0 .0	60 12.0	120 23.9
1	29	45.3	29	50.2	28	23.9	1 .2	61 12.1	121 24.1
2	29	45.5	29	50.5	28	24.2	2 .4	62 12.3	122 24.3
3	29	45.8	29	50.7	28	24.4	3 .6	63 12.5	123 24.5
4	29	46.0	29	51.0	28	24.6	4 .8	64 12.7	124 24.7
5	29	46.3	29	51.2	28	24.9	5 1.0	65 12.9	125 24.9
6	29	46.5	29	51.5	28	25.1	6 1.2	66 13.1	126 25.1
7	29	46.8	29	51.7	28	25.4	7 1.4	67 13.3	127 25.3
8	29	47.0	29	52.0	28	25.6	8 1.6	68 13.5	128 25.5
9	29	47.3	29	52.2	28	25.8	9 1.8	69 13.7	129 25.7
10	29	47.5	29	52.5	28	26.1	10 2.0	70 13.9	130 25.9
11	29	47.8	29	52.7	28	26.3	11 2.2	71 14.1	131 26.1
12	29	48.0	29	53.0	28	26.5	12 2.4	72 14.3	132 26.3
13	29	48.3	29	53.2	28	26.8	13 2.6	73 14.5	133 26.5
14	29	48.5	29	53.5	28	27.0	14 2.8	74 14.7	134 26.7
15	29	48.8	29	53.7	28	27.3	15 3.0	75 14.9	135 26.9
16	29	49.0	29	54.0	28	27.5	16 3.2	76 15.1	136 27.1
17	29	49.3	29	54.2	28	27.7	17 3.4	77 15.3	137 27.3
18	29	49.5	29	54.5	28	28.0	18 3.6	78 15.5	138 27.5
19	29	49.8	29	54.7	28	28.2	19 3.8	79 15.7	139 27.7
20	29	50.0	29	55.0	28	28.5	20 4.0	80 15.9	140 27.9
21	29	50.3	29	55.2	28	28.7	21 4.2	81 16.1	141 28.1
22	29	50.5	29	55.5	28	28.9	22 4.4	82 16.3	142 28.3
23	29	50.8	29	55.7	28	29.2	23 4.6	83 16.5	143 28.5
24	29	51.0	29	56.0	28	29.4	24 4.8	84 16.7	144 28.7
25	29	51.3	29	56.2	28	29.6	25 5.0	85 16.9	145 28.9
26	29	51.5	29	56.5	28	29.9	26 5.2	86 17.1	146 29.1
27	29	51.8	29	56.7	28	30.1	27 5.4	87 17.3	147 29.3
28	29	52.0	29	57.0	28	30.4	28 5.6	88 17.5	148 29.5
29	29	52.3	29	57.2	28	30.6	29 5.8	89 17.7	149 29.7
30	29	52.5	29	57.5	28	30.8	30 6.0	90 17.9	150 29.9
31	29	52.8	29	57.7	28	31.1	31 6.2	91 18.1	151 30.1
32	29	53.0	29	58.0	28	31.3	32 6.4	92 18.3	152 30.3
33	29	53.3	29	58.2	28	31.6	33 6.6	93 18.5	153 30.5
34	29	53.5	29	58.5	28	31.8	34 6.8	94 18.7	154 30.7
35	29	53.8	29	58.7	28	32.0	35 7.0	95 18.9	155 30.9
36	29	54.0	29	59.0	28	32.3	36 7.2	96 19.1	156 31.1
37	29	54.3	29	59.2	28	32.5	37 7.4	97 19.3	157 31.3
38	29	54.5	29	59.5	28	32.8	38 7.6	98 19.5	158 31.5
39	29	54.8	29	59.7	28	33.0	39 7.8	99 19.7	159 31.7
40	29	55.0	29	60.0	28	33.2	40 8.0	100 19.9	160 31.9
41	29	55.3	30	.2	28	33.5	41 8.2	101 20.1	161 32.1
42	29	55.5	30	.5	28	33.7	42 8.4	102 20.3	162 32.3
43	29	55.8	30	.7	28	33.9	43 8.6	103 20.5	163 32.5
44	29	56.0	30	1.0	28	34.2	44 8.8	104 20.7	164 32.7
45	29	56.3	30	1.2	28	34.4	45 9.0	105 20.9	165 32.9
46	29	56.5	30	1.5	28	34.7	46 9.2	106 21.1	166 33.1
47	29	56.8	30	1.7	28	34.9	47 9.4	107 21.3	167 33.3
48	29	57.0	30	2.0	28	35.1	48 9.6	108 21.5	168 33.5
49	29	57.3	30	2.2	28	35.4	49 9.8	109 21.7	169 33.7
50	29	57.5	30	2.5	28	35.6	50 10.0	110 21.9	170 33.9
51	29	57.8	30	2.7	28	35.9	51 10.2	111 22.1	171 34.1
52	29	58.0	30	3.0	28	36.1	52 10.4	112 22.3	172 34.3
53	29	58.3	30	3.2	28	36.3	53 10.6	113 22.5	173 34.5
54	29	58.5	30	3.5	28	36.6	54 10.8	114 22.7	174 34.7
55	29	58.8	30	3.7	28	36.8	55 11.0	115 22.9	175 34.9
56	29	59.0	30	4.0	28	37.0	56 11.2	116 23.1	176 35.1
57	29	59.3	30	4.2	28	37.3	57 11.4	117 23.3	177 35.3
58	29	59.5	30	4.5	28	37.5	58 11.6	118 23.5	178 35.5
59	29	59.8	30	4.7	28	37.8	59 11.8	119 23.7	179 35.7
60	30	.0	30	5.0	28	38.0	60 12.0	120 23.9	180 35.9

# TABLICA ZA PRETVARANJE

## UGAONIH U VREMENSKE VREDNOSTI

## VREMENSKIH U UGAONE

UGAONIH U VREMENSKE VREDNOSTI												VREMENSKIH U UGAONE									
o	h	min	o	h	min	o	h	min	o	h	min	/'	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	0
1	0	4	61	4	4	121	8	4	181	12	4	241	16	4	301	20	4	1	0	15	1
2	0	8	62	4	8	122	8	8	182	12	8	242	16	8	302	20	8	2	0	30	2
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	45	3
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	15	4
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	30	5
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	45	6
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	15	7
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	30	8
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	45	9
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	15	10
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	30	11
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	45	12
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	15	13
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	30	14
15	1	0	75	5	0	135	9	0	195	13	0	255	17	0	315	21	0	15	1	0	15
16	1	4	76	5	4	136	9	4	196	13	4	256	17	4	316	21	4	16	1	15	16
17	1	8	77	5	8	137	9	8	197	13	8	257	17	8	317	21	8	17	1	30	17
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	45	18
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	15	19
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	30	20
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	45	21
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	15	22
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	30	23
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	45	24
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	15	25
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	30	26
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	45	27
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	15	28
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	30	29
30	2	0	90	6	0	150	10	0	210	14	0	270	18	0	330	22	0	30	2	0	30
31	2	4	91	6	4	151	10	4	211	14	4	271	18	4	331	22	4	31	2	15	31
32	2	8	92	6	8	152	10	8	212	14	8	272	18	8	332	22	8	32	2	30	32
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	45	33
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	15	34
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	30	35
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	45	36
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	15	37
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	30	38
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	45	39
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	15	40
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	30	41
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	45	42
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	15	43
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	30	44
45	3	0	105	7	0	165	11	0	225	15	0	285	19	0	345	23	0	45	3	0	45
46	3	4	106	7	4	166	11	4	226	15	4	286	19	4	346	23	4	46	3	15	46
47	3	8	107	7	8	167	11	8	227	15	8	287	19	8	347	23	8	47	3	30	47
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	45	48
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	15	49
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	30	50
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	45	51
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	15	52
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	30	53
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	45	54
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	15	55
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	30	56
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	45	57
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	15	58
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	30	59
60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	360	24	0	60	4	0	60

★ ★ ★ ★ ★

***Uputstvo***  
ZA  
*UPOTREBU NAUTIČKOG GODIŠNJAKA*





# *Zvanična*

|

## ZONSKA VREMENA

# ZVANIČNA I ZONSKA VREMENA

## ZONSKO VREME

Podela Zemlje na vremenske zone izvršena je tako da svaka vremenska zona obuhvata područje od  $15^\circ$  geografske dužine. Početna vremenska zona sa zonskim indeksom 0 ( $x = 0^h$ ) proteže se od griničkog meridijana na istok i na zapad do  $\lambda = 7.5^\circ E$  i  $\lambda = 7.5^\circ W$ , a ostale zone nadovezuju se na ove prema istoku, i to sa zonskim indeksima  $+1^h$  do  $+12^h$ , a prema zapadu one sa zonskim indeksima od  $-1^h$  do  $-12^h$ . Zone sa indeksima  $+12^h$  i  $-12^h$  predstavljaju u stvari jednu te istu zonu sa indeksom  $\pm 12^h$  koja se proteže između  $\lambda = 172.5^\circ E$  i  $\lambda = 172.5^\circ W$ , sa središnjim meridijanom  $180^\circ$  po Griniču.

Za prelaz sa zonskog na griničko vreme koristi se obrazac, gde  $x$  označava zonski indeks:

$$UT = t_x - x$$

(O pretvaranju vremena vidi primer u poglavlju 5 Uputstva za upotrebu Nautičkog godišnjaka).

## GRANICE DATUMA

Linija na čijem se prelazu vrši promena datuma zove se *datumska granica*. Ona se ne proteže tačno po meridijanu  $180^\circ$ , već zaobilazi nastanjeno kopno i ostrva, pa ide linijom koja se dobije spojnicom sledećih tačaka:

$\varphi$	$\lambda$	$\varphi$	$\lambda$
$90^\circ.0 N$	$180^\circ$	$48^\circ.0 N$	$180^\circ$
$75^\circ.0 N$	$180^\circ$	$05^\circ.0 S$	$180^\circ$
$68^\circ.0 N$	$168^\circ 58' 22'' W$ (ostrva Diomedea)	$15^\circ.0 S$	$172^\circ.5 W$
$65^\circ.5 N$	$168^\circ 58' 22'' W$ (Beringov moreuz)	$45^\circ.0 S$	$172^\circ.5 W$
$53^\circ.0 N$	$170^\circ E$	$51^\circ.0 S$	$180^\circ$
		$90^\circ.0 S$	$180^\circ$

Prilikom prelaza granice datuma, plovoći prema zapadu datum se *povećava* za jedan dan. Kada se ona prelazi plovoći prema istoku, *manjuje* se za jedan dan.

## ZVANIČNO VREME I LETNJE VREME

*Zvanično vreme*, tj. ono vreme 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 *letnje vreme* zbog racionalnog iskorišćenja dnevnog svetla. Ono se obično razlikuje od zonskog (zimskog) vremena za  $1^h$ , a načelno važi na severnoj 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 prelaz sa *zvaničnog* na *griničko* vreme koristi se obrazac

$$UT = t_{zv} - zv,$$

gde  $zv$  označava indeks zvaničnog vremena.

## HRONOLOŠKI CIKLUSI I ERE

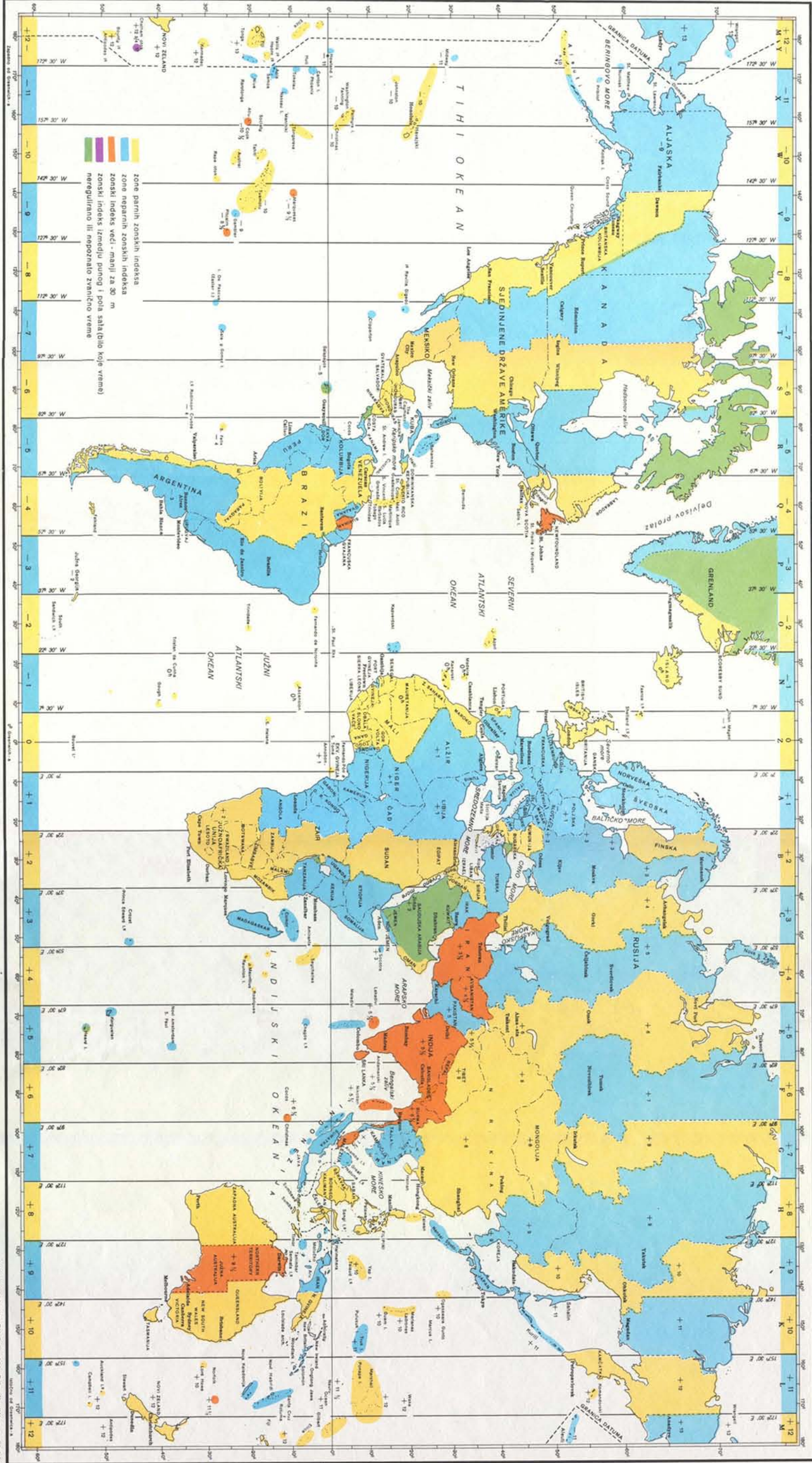
Epakta . . . . .	3	Julijanski period . . . . .	6722		
Zlatni broj (Mesečev ciklus) . . . . .	XV	Sunčev ciklus . . . . .	2		
ERA	GODINA	POČINJE	ERA	GODINA	POČINJE
Vizantijska . . . . .	7518	14. Sep.	Japanska . . . . .	2669	1. Jan.
Jevrejska . . . . .	5770	29. Sep.	Grčka (Seleukidova) . . . . .	2321	14. Sep.
Kineska (Yin) . . . . .	(4646)	26. Jan.	Indijska (Saka) . . . . .	1931	22. Mart
Rimska . . . . .	2762	14. Jan.	Dioklecijanovna . . . . .	1726	11. Sep.
Nabonasarova . . . . .	2758	21. Apr.	Islamska (Hegira) . . . . .	1430	28. Dec.

# PREGLED ZVANIČNIH VREMENA

ISTOČNO OD GREENWICH-a [+]		ZAPADNO OD GREENWICH-a [-]	
Albanija	1 00	Kina	8 00
Alžir	1 00	Kipar	2 00
Angola	1 00	Koreja	9 00
Australija:		Krit	2 00
Capital Territory	10 00	Kuvajt	3 00
New South Wales	10 00	Laos	7 00
Northern Territory	9 30	Liban	2 00
Queensland	10 00	Libija	1 00
South Australia	9 30	Madagaskar	3 00
Tasmania	10 00	Makao	8 00
Victoria	10 00	Maldivska ostrva	5 00
Western Australia	8 00	Malezija	8 00
Bahrein	3 00	Malta	1 00
Balearska ostrva	1 00	Mandžurija	9 00
Bali	7 00	Marijanska ostrva	10 00
Bangladeš	6 00	Mauricijus	4 00
Belgija	1 00	Monako	1 00
Benin (Dahomej)	1 00	Mozambik	2 00
Brunei	8 00	Namibija	2 00
Bugarska	2 00	Nemačka	1 00
Burma	6 30	Nigerija	1 00
Burundi	2 00	Norveška	1 00
Čeuta	1 00	Nova Kaledonija	11 00
Čad	1 00	Novi Zeland	12 00
Danska	1 00	Oman	4 00
Džibuti	3 00	Pakistan	5 00
Egipat	2 00	Papua, Nova Gvineja	10 00
Etiopija	3 00	Poljska	1 00
Fidži	12 00	Reunion	4 00
Filipini	8 00	Rumunija	2 00
Finska	2 00	Rusija (10 zona):	
Francuska	1 00	Novi Port	5 00
Gabon	1 00	Sahalin	11 00
Gibraltar	1 00	Sankt Petersburg	3 00
Grčka	2 00	Vladivostok	10 00
Holandija	1 00	Volograd	4 00
Hong Kong	8 00	Sao Tome i Principe	0 00
Indija	5 30	Sardinija	1 00
Indonezija:		Saudijska Arabija	3 00
Bali, Java, Sumatra	7 00	Sejšelska ostrva	4 00
Borneo, Flores, Timor	8 00	Sicilija	1 00
Irian, Molučka ostrva	9 00	Singapur	8 00
Irak	3 00	Sirija	2 00
Iran	3 30	Sokotra	3 00
Irska	0 00	Somalija	3 00
Island	0 00	Sudan	2 00
Italija	1 00	Španija	1 00
Izrael	2 00	Šri Lanka (Cejlon)	5 30
Japan	9 00	Švedska	1 00
Jemen	3 00	Tajland	7 00
Jordan	2 00	Tajvan	8 00
Jugoslavija	1 00	Tanzanija	3 00
Južnoafrička Republika	2 00	Tunis	1 00
Kamčatka	12 00	Turska	3 00
Kamerun	1 00	Uganda	3 00
Kampučija	7 00	Ujedinjeni Emirati	4 00
Katar	3 00	Velika Britanija	0 00
Kenija	3 00	Vijetnam	7 00
		Argentina	3 00
		Azorska ostrva	1 00
		Bahamska ostrva	5 00
		Barbados	4 00
		Belize	6 00
		Bermuda	4 00
		Bolivija	4 00
		Brazil:	
		Istočni deo	3 00
		Srednji deo	4 00
		Zapadni deo	5 00
		Čile	4 00
		Dominikanska Republika	4 00
		Ekvador	5 00
		Foklandska ostrva	4 00
		Galapagos	6 00
		Gambija	0 00
		Gana	0 00
		Grenada	4 00
		Gvajana (Francuska)	3 00
		Gvajana (Republika)	3 00
		Gvatemala	6 00
		Haiti	5 00
		Honduras	6 00
		Jamajka	5 00
		Kajmanska ostrva	5 00
		Kanada:	
		British Columbia	8 00
		Labrador	4 00
		New Foundland	3 30
		New Scotia	4 00
		Yucon	8 00
		Kanarska ostrva	0 00
		Kapverdska ostrva	1 00
		Kolumbija	5 00
		Kostarika	6 00
		Kuba	5 00
		Martinik	4 00
		Meksiko	6 00
		Midvej	11 00
		Nikaragva	6 00
		Panamski kanal	5 00
		Peru	5 00
		Portoriko	4 00
		SAD (6 zona):	
		Aljaska	9 00
		Atlantska obala	5 00
		Florida	5 00
		Havaji	10 00
		Meksički zaliv	6 00
		Pacifička obala	8 00
		Salvador	6 00
		Samoa	11 00
		Surinam	3 00
		Tobago	4 00
		Trinidad	4 00
		Urugvaj	3 00
		Venecuela	4 00



# KARTA ZONSKIH I Zvaničnih VREMENA



Hidrografički Institut, RM Split, 1990 - Prilog Nautičkom godišnjaku

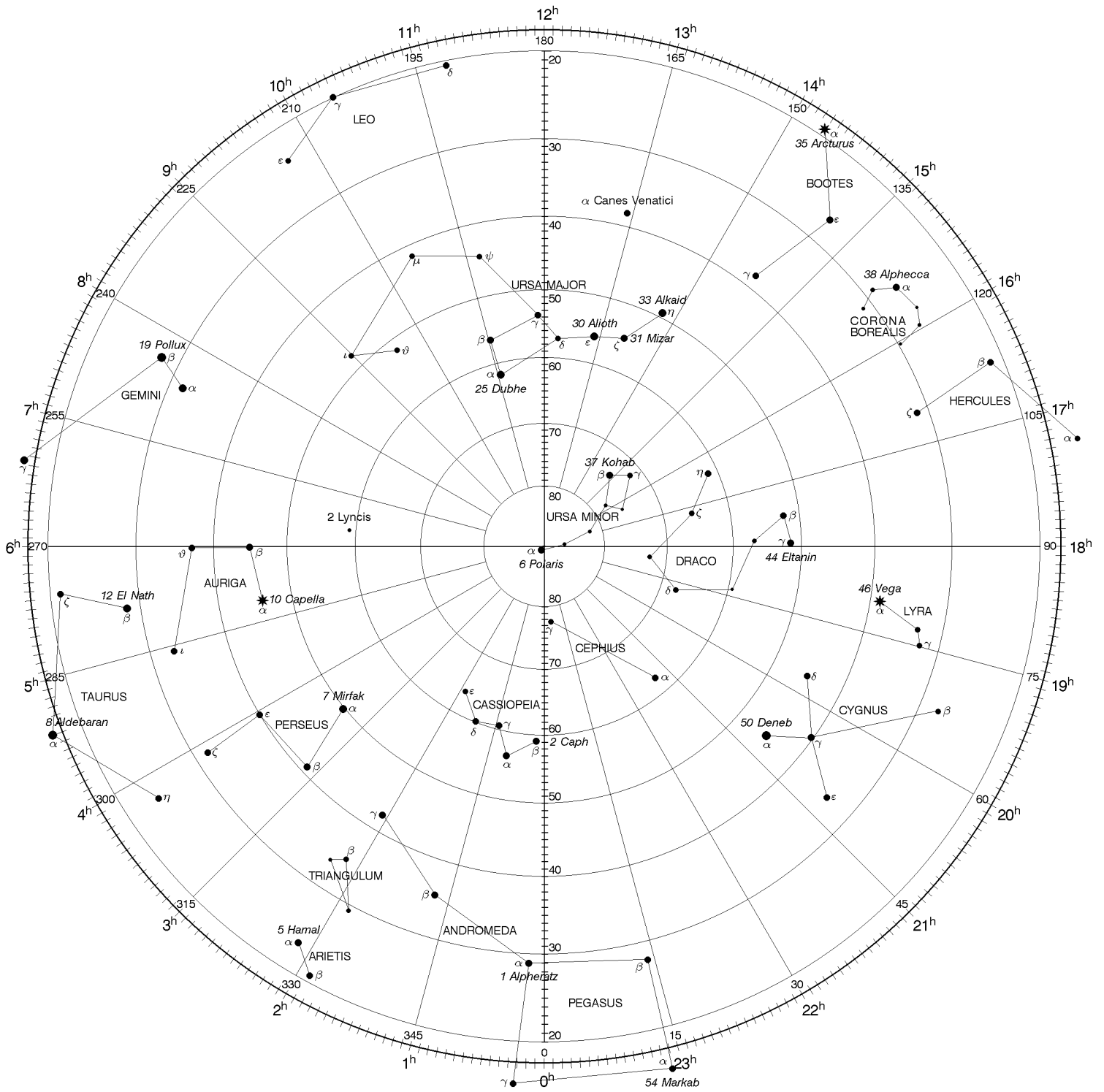


# *Karte*

ZVEZDANOG NEBA



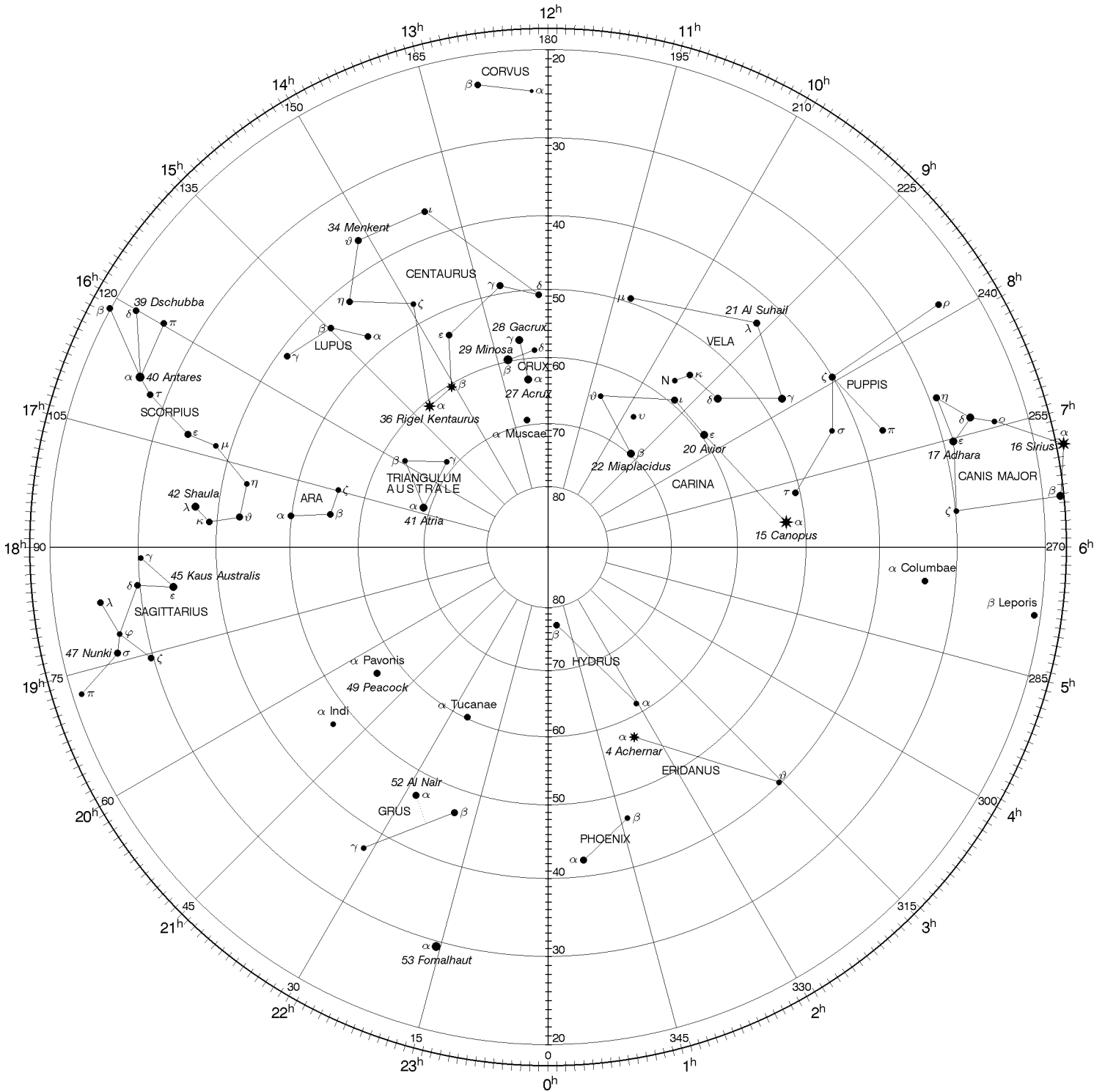
# KARTA SAZVEŽDA SEVERNOG NEBA



## VELIČINE ZVEZDA

- |                      |                      |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| * $0.0 \geq m$       | * $0.0 < m \leq 0.5$ | * $0.5 < m \leq 1.0$ | ● $1.0 < m \leq 1.5$ | ● $1.5 < m \leq 2.0$ | ● $2.0 < m \leq 2.5$ |
| ● $2.5 < m \leq 3.0$ | ● $3.0 < m \leq 3.5$ | ● $3.5 < m \leq 4.0$ | ● $4.0 < m \leq 4.5$ | ● $4.5 < m \leq 5.0$ |                      |

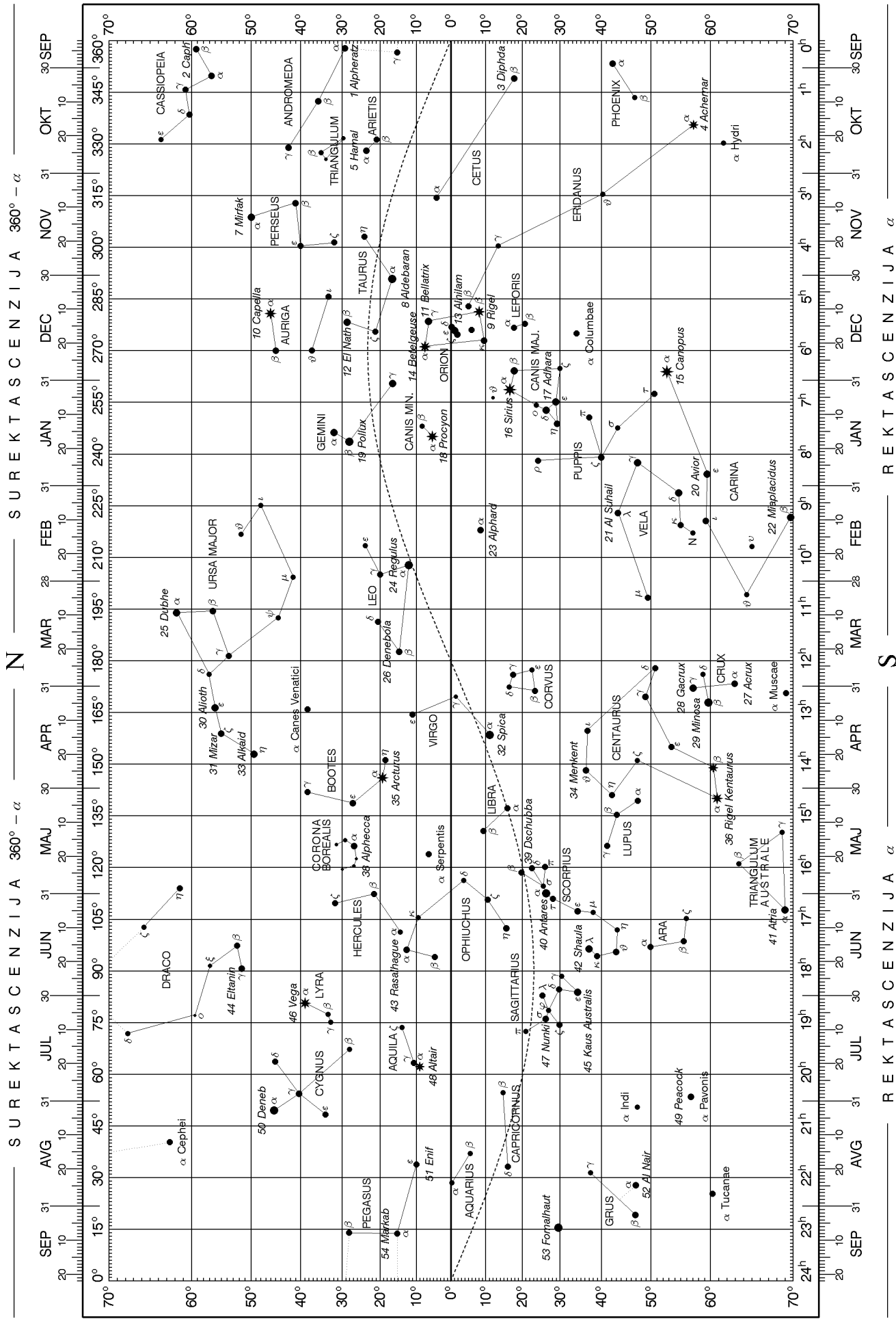
# KARTA SAZVEŽDA JUŽNOG NEBA



## 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



\* 0.0 < m ≤ 0.5    • 0.0 < m ≤ 1.0    • 1.0 < m ≤ 1.5    • 1.5 < m ≤ 2.0    • 2.0 < m ≤ 3.0    • 3.0 < m ≤ 3.5    • 3.5 < m ≤ 4.0    • 4.0 < m ≤ 4.5    • 4.5 < m ≤ 5.0