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Nautical Almanac (Selected Stars)

2024

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**Star Maps**  
**The Nautical Almanac 2024 (Selected Stars)**  
**Polaris Tables 2024**

Revision V0.6 - Nov 2018

Warning and Terms of Usage:

The following pages have been generated by a computer program. Complex computer programs usually have bugs and may produce wrong data. The data in this Nautical Almanac is believed to be accurate but no warranty is given for its correctness.

Use this Nautical Almanac only for training and exercising!

Compiled by Erik De Man (mail2erik@siranah.de) on Wed Nov 8 14:17:33 2023

## Introduction

This Nautical Almanac contains the Ephemerides of the "First Point of Aries" and sixty selected stars. It is designed for determination of Position (geographical Latitude and Longitude) from astronomical observations (Altitude of Celestial Objects).

The data compiled in this Nautical Almanac is based on calculations done with the software package "NOVAS" from the U.S. Naval Observatory (<http://aa.usno.navy.mil/AA/software>). The fundamental star data was originally obtained from the "Bright Star Catalogue" (5th revised edition of 1991). However, this data has recently been updated from other star catalogues. The complete star data as used in this Almanac is shown on the next page.

### Values for "deltaT"

For the astrodynamical calculations, the following values for "delta T" (the difference between terrestrial time realized by atomic clocks and UT defined by the irregular rotation of the Earth) have been used:

Jan : 69.2 s	Apr : 69.2 s	Jul : 69.2 s	Oct : 69.1 s
Feb : 69.2 s	May : 69.2 s	Aug : 69.2 s	Nov : 69.1 s
Mar : 69.2 s	Jun : 69.2 s	Sep : 69.1 s	Dec : 69.1 s

### Interpolation of the integral-hour GHA values

This Nautical Almanac uses a slightly different approach for the interpolation of the integral-hour values of Greenwich Hour Angle, compared to the techniques used in most commercially available Almanacs.

For more information please refer to the following web site: "<http://www.siranah.de/>"

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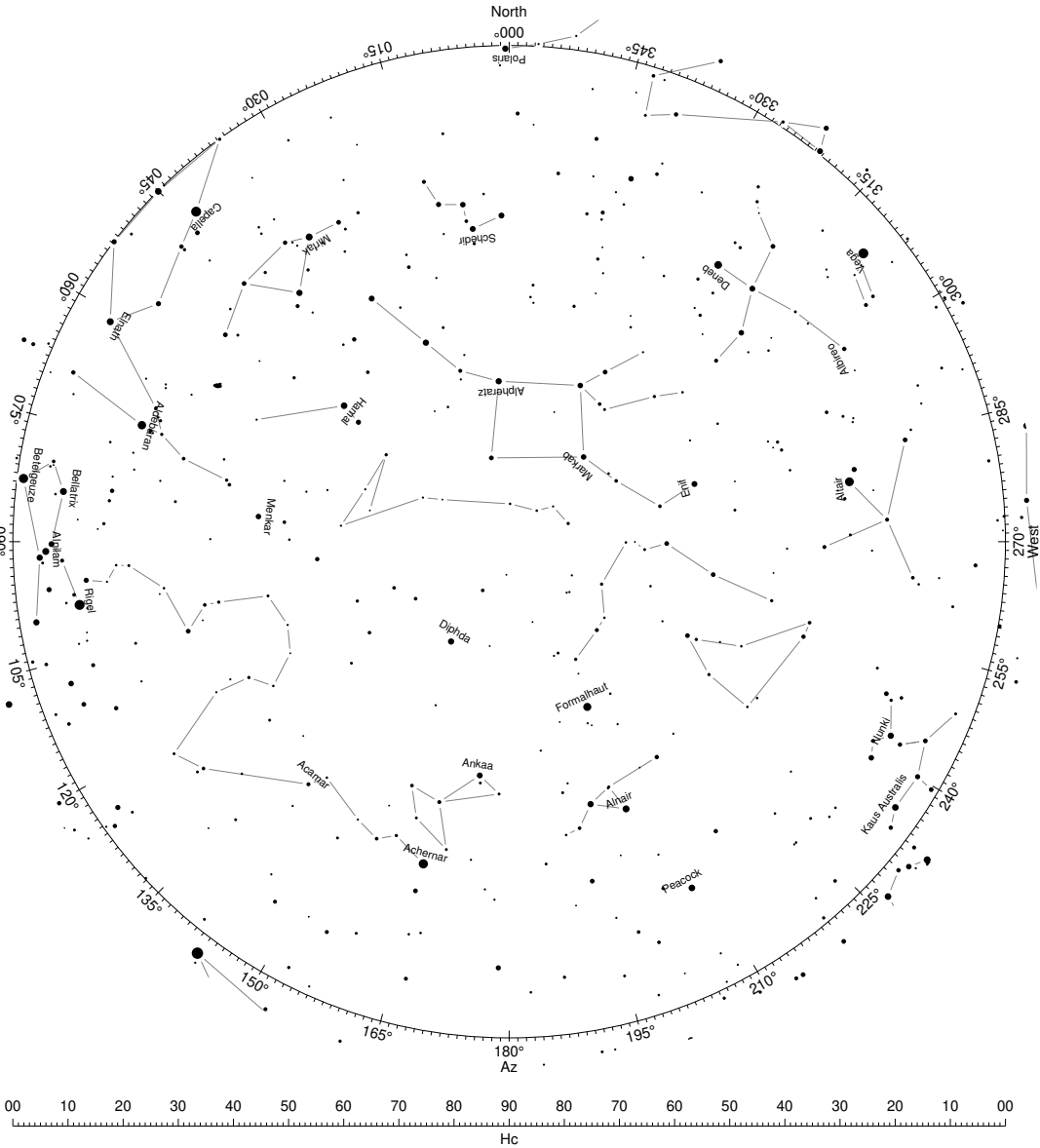
The following table shows the fundamental star data as used in this Almanac. The data refers to Equinox J2000 / Epoch J2000.0.

Star Name	RA			Dec	mu_RA ["/yr]	mu_Dec ["/yr]	prllx ["]	rad.vel. [km/s]	
	h	m	s						°
Alpheratz	00	08	23.3	N 29	05.4	0.135680	-0.162950	0.034	-11
Ankaa	00	26	17.0	S 42	18.4	0.233050	-0.356300	0.039	75
Schedir	00	40	30.4	N 56	32.2	0.050360	-0.032170	0.014	-4
Diphda	00	43	35.4	S 17	59.2	0.232550	0.031990	0.034	13
Achernar	01	37	42.8	S 57	14.2	0.088020	-0.038240	0.023	16
Hamal	02	07	10.4	N 23	27.7	0.190730	-0.145770	0.049	-14
Polaris	02	31	49.1	N 89	15.8	0.044480	-0.011850	0.008	-17
Acamar	02	58	15.7	S 40	18.3	-0.044600	-0.019000	0.028	12
Menkar	03	02	16.8	N 04	05.4	-0.010410	-0.076850	0.013	-26
Mirfak	03	24	19.4	N 49	51.7	0.024110	-0.026010	0.005	-2
Aldebaran	04	35	55.2	N 16	30.6	0.063000	-0.190000	0.050	54
Capella	05	16	41.4	N 45	59.9	0.075520	-0.427110	0.077	29
Rigel	05	14	32.3	S 08	12.1	0.001870	-0.000560	0.004	21
Bellatrix	05	25	07.9	N 06	21.0	-0.008750	-0.013280	0.013	18
Elnath	05	26	17.5	N 28	36.5	0.023280	-0.174220	0.025	9
Alnilam	05	36	12.8	S 01	12.1	0.001490	-0.001060	0.002	26
Betelgeuze	05	55	10.3	N 07	24.4	0.024950	0.009560	0.005	22
Canopus	06	23	57.1	S 52	41.7	0.019990	0.023670	0.010	21
Sirius	06	45	08.9	S 16	43.0	-0.546050	-1.223140	0.379	-8
Adhara	06	58	37.6	S 28	58.3	0.002600	0.002290	0.008	27
Castor	07	34	36.0	N 31	53.3	-0.206330	-0.148180	0.066	5
Procyon	07	39	18.1	N 05	13.5	-0.716570	-1.034580	0.286	-3
Pollux	07	45	19.4	N 28	01.6	-0.625690	-0.045950	0.097	3
Avior	08	22	30.8	S 59	30.6	-0.025340	0.022720	0.005	2
Suhail	09	07	59.8	S 43	25.9	-0.023210	0.014280	0.006	18
Miaplacidus	09	13	12.0	S 69	43.0	-0.157660	0.108910	0.029	-5
Alphard	09	27	35.2	S 08	39.5	-0.014500	0.033250	0.018	-4
Regulus	10	08	22.3	N 11	58.0	0.249000	0.002000	0.042	6
Dubhe	11	03	43.7	N 61	45.0	-0.136460	-0.035250	0.026	-9
Denebola	11	49	03.6	N 14	34.3	-0.499020	-0.113780	0.090	0
Gienah	12	15	48.4	S 17	32.5	-0.161000	0.023000	0.020	-4
Acrux	12	26	35.9	S 63	05.9	-0.035370	-0.014730	0.010	-11
Gacrux	12	31	09.9	S 57	06.8	0.027940	-0.264330	0.037	21
Alioth	12	54	01.6	N 55	57.6	0.112000	-0.009000	0.040	-9
Spica	13	25	11.6	S 11	09.7	-0.042500	-0.031730	0.012	1
Alkaid	13	47	32.4	N 49	18.8	-0.122000	-0.015600	0.032	-11
Hadar	14	03	49.4	S 60	22.4	-0.033960	-0.025060	0.009	6
Menkent	14	06	41.3	S 36	22.1	-0.519290	-0.517870	0.053	1
Arcturus	14	15	39.7	N 19	10.9	-1.093450	-1.999400	0.089	5
Rigel Kentaurus	14	39	36.5	S 60	50.0	-3.678190	0.481840	0.747	-22
Zubenelgenubi	14	50	52.8	S 16	02.5	-0.106000	-0.067000	0.058	-10
Kocab	14	50	42.3	N 74	09.3	-0.032290	0.011910	0.026	17
Alphecca	15	34	41.3	N 26	42.9	0.120380	-0.089440	0.044	2
Antares	16	29	24.0	S 26	25.9	-0.010160	-0.023210	0.005	-3
Atria	16	48	39.9	S 69	01.7	0.017850	-0.032920	0.008	-3
Sabik	17	10	22.7	S 15	43.5	0.041160	0.097650	0.039	-2
Shaula	17	33	36.5	S 37	06.2	-0.008900	-0.029950	0.005	-3
Rasalhague	17	34	56.1	N 12	33.6	0.110080	-0.222610	0.070	13
Etamin	17	56	36.4	N 51	29.3	-0.008480	-0.022790	0.021	-28
Kaus Australis	18	24	10.3	S 34	23.1	-0.039420	-0.124200	0.023	-15
Vega	18	36	56.3	N 38	47.0	0.201030	0.287470	0.129	-14
Nunki	18	55	15.9	S 26	17.8	0.015140	-0.053430	0.014	-11
Albireo	19	30	43.3	N 27	57.6	0.005000	0.006000	0.009	-24
Altair	19	50	47.0	N 08	52.1	0.536870	0.385570	0.194	-26
Peacock	20	25	38.9	S 56	44.1	0.007710	-0.086150	0.018	2
Deneb	20	41	25.9	N 45	16.8	0.001990	0.001950	0.002	-5
Enif	21	44	11.2	N 09	52.5	0.030020	-0.001380	0.005	3
Alnair	22	08	14.0	S 46	57.7	0.128000	-0.148000	0.032	11
Formalhaut	22	57	39.0	S 29	37.3	0.329220	-0.164220	0.131	7
Markab	23	04	45.6	N 15	12.3	0.060400	-0.041300	0.024	-4

The following table lists the traditional star names as used in this Almanac with the corresponding scientific names (Bayer designation) as used in astronomical star constellation maps.

Star Name	Bayer designation	Apparent Magnitude
Alpheratz	Alpha Andromedae	2.06
Ankaa	Alpha Phoenicis	2.39
Schedir	Alpha Cassiopeiae	2.23
Diphda	Beta Ceti	2.04
Achernar	Alpha Eridani	0.46
Hamal	Alpha Arietis	2.00
Polaris	Alpha Ursae Minoris	2.02
Acamar	Theta Eridani	3.24
Menkar	Alpha Ceti	2.53
Mirfak	Alpha Persei	1.79
Aldebaran	Alpha Tauri	0.85
Capella	Alpha Aurigae	0.08
Rigel	Beta Orionis	0.12
Bellatrix	Gamma Orionis	1.64
Elnath	Beta Tauri	1.65
Alnilam	Epsilon Orionis	1.70
Betelgeuze	Alpha Orionis	0.50
Canopus	Alpha Carinae	-0.72
Sirius	Alpha Canis Majoris	-1.46
Adhara	Epsilon Canis Majoris	1.50
Castor	Alpha Geminorum	2.88
Procyon	Alpha Canis Minoris	0.38
Pollux	Beta Geminorum	1.14
Avior	Epsilon Carinae	1.86
Suhail	Lambda Velorum	2.21
Miaplacidus	Beta Carinae	1.68
Alphard	Alpha Hydrae	1.98
Regulus	Alpha Leonis	1.35
Dubhe	Alpha Ursae Majoris	1.79
Denebola	Beta Leonis	2.14
Gienah	Gamma Corvi	2.59
Acrux	Alpha Crucis	1.33
Gacrux	Gamma Crucis	1.63
Alioth	Epsilon Ursae Majoris	1.77
Spica	Alpha Virginis	0.98
Alkaid	Eta Ursae Majoris	1.86
Hadar	Beta Centauri	0.61
Menkent	Theta Centauri	2.06
Arcturus	Alpha Bootis	-0.04
Rigel Kentaurus	Alpha Centauri	-0.01
Zubenelgenubi	Alpha-2 Librae	2.75
Kocab	Beta Ursae Minoris	2.08
Alphecca	Alpha Coronae Borealis	2.23
Antares	Alpha Scorpii	0.96
Atria	Alpha Trianguli Australis	1.92
Sabik	Eta Ophiuchi	2.43
Shaula	Lambda Scorpii	1.63
Rasalhague	Alpha Ophiuchi	2.08
Etamin	Gamma Draconis	2.23
Kaus Australis	Epsilon Sagittarii	1.85
Vega	Alpha Lyrae	0.03
Nunki	Sigma Sagittarii	2.02
Albireo	Beta Cygni	3.08
Altair	Alpha Aquilae	0.77
Peacock	Alpha Pavonis	1.94
Deneb	Alpha Cygni	1.25
Enif	Epsilon Pegasi	2.39
Alnair	Alpha Gruis	1.74
Formalhaut	Alpha Piscis Austrini	1.16
Markab	Alpha Pegasi	2.49

# Horizontal-Coordinate-System Map of bright Stars - Part I



## Position of the Stars on the local hemisphere

The following pages show different maps of the brightest stars on the night sky (down to magnitude 4.5) as well as some of the standard constellations. On each of the maps, the stars used in this Almanac are labeled with their traditional names.

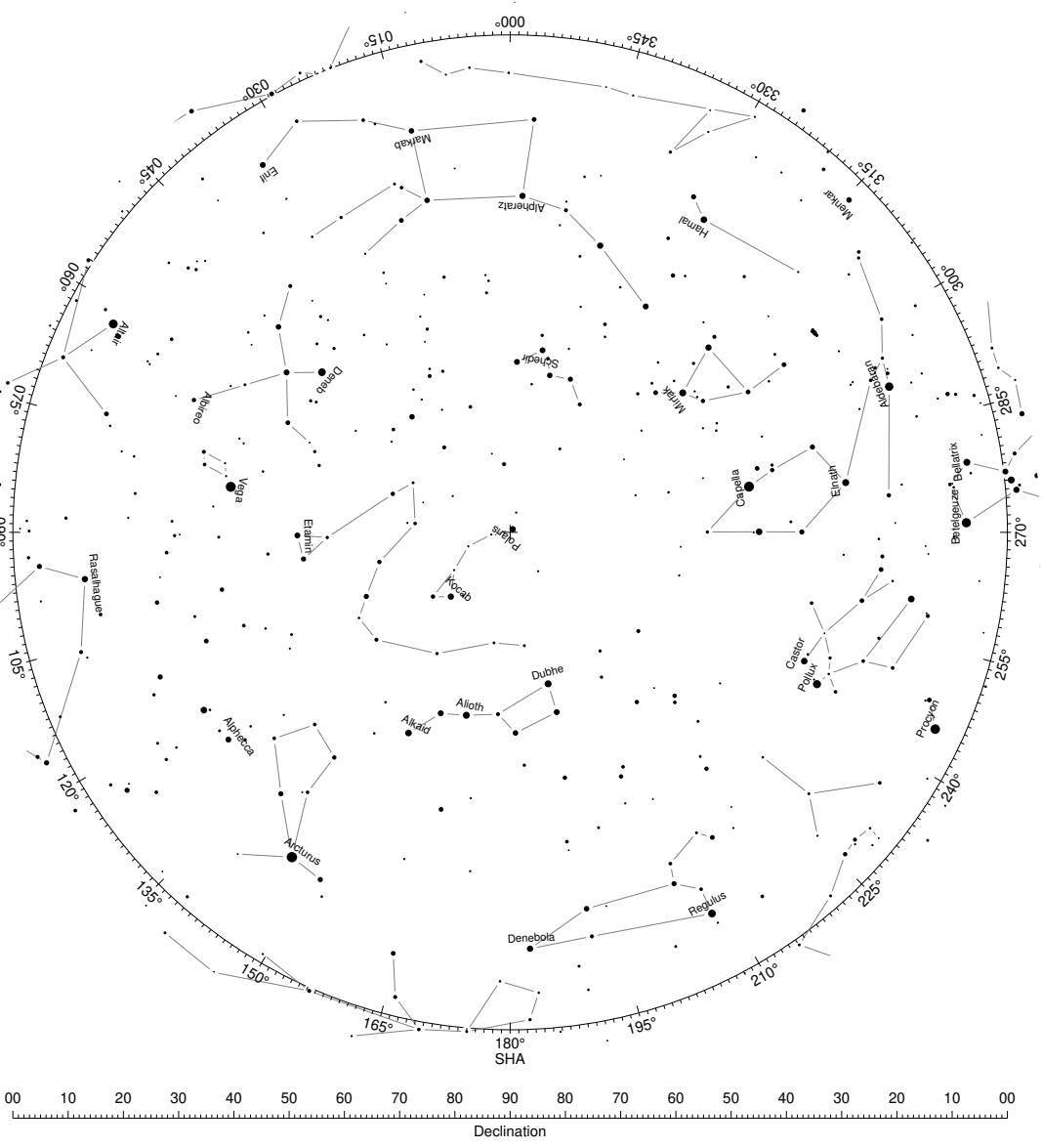
The first two maps are stereographic maps of the stars of the northern- and southern hemisphere, respectively. These maps are centered on the celestial poles and may be used for observations at locations in high northern- or southern latitudes.

The following eight maps show the star constellations on the local hemisphere for locations on the Equator. These maps can be used for observations at locations in lower latitudes.

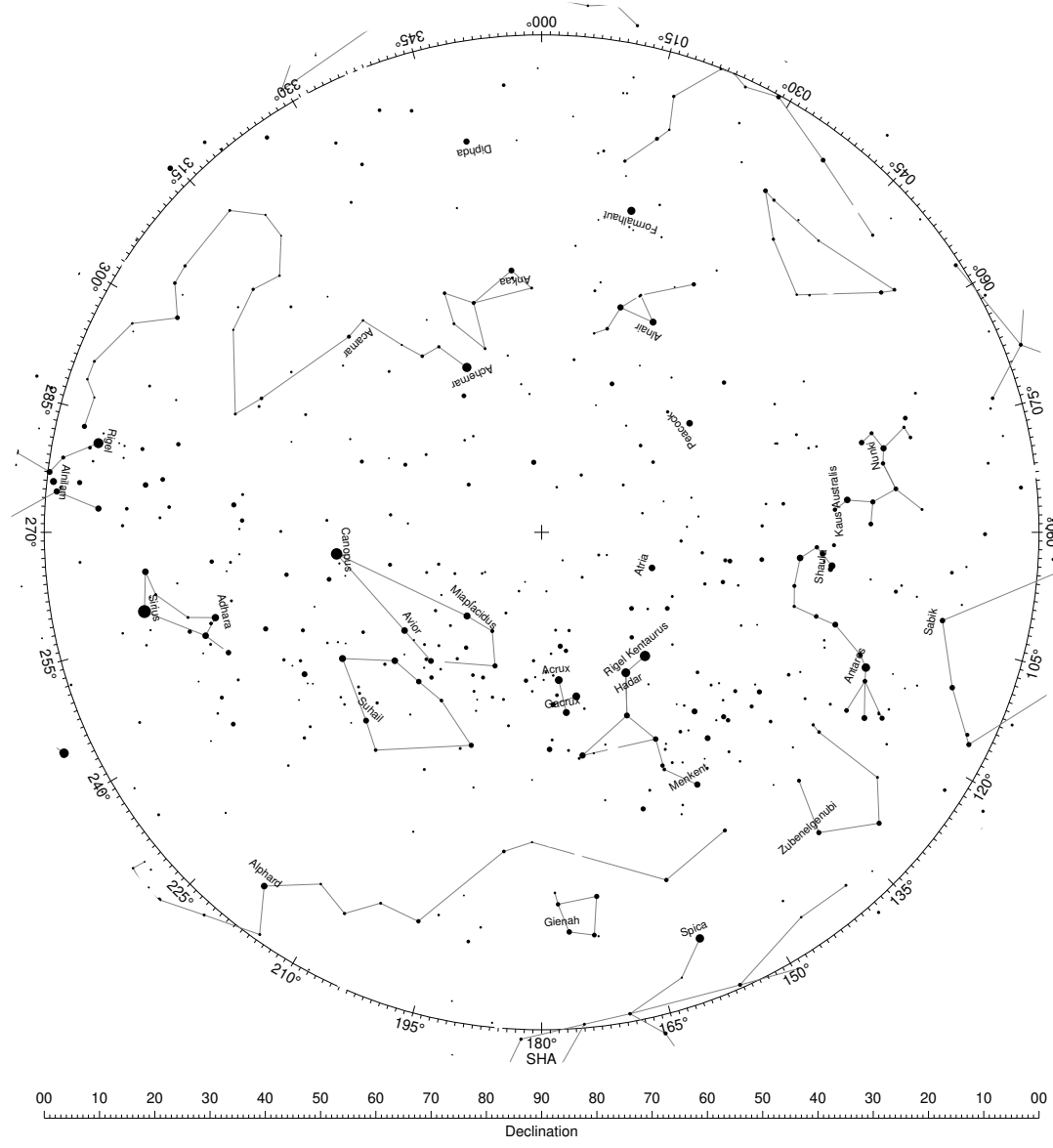
The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.

Each of these maps is valid for a location on the equator at a specific time of the day.

### Map of bright Stars of the Northern Celestial Sphere



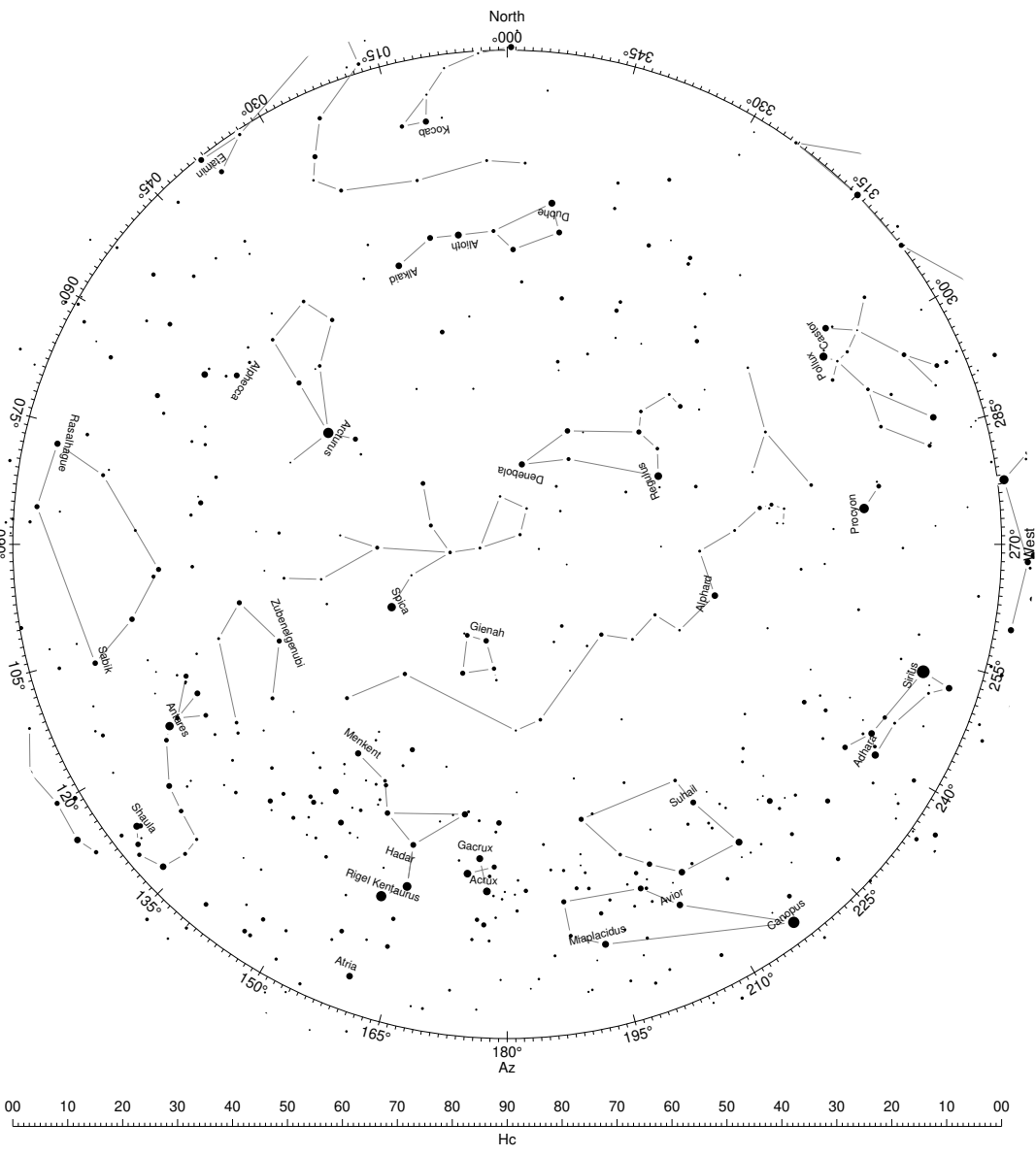
### Map of bright Stars of the Southern Celestial Sphere



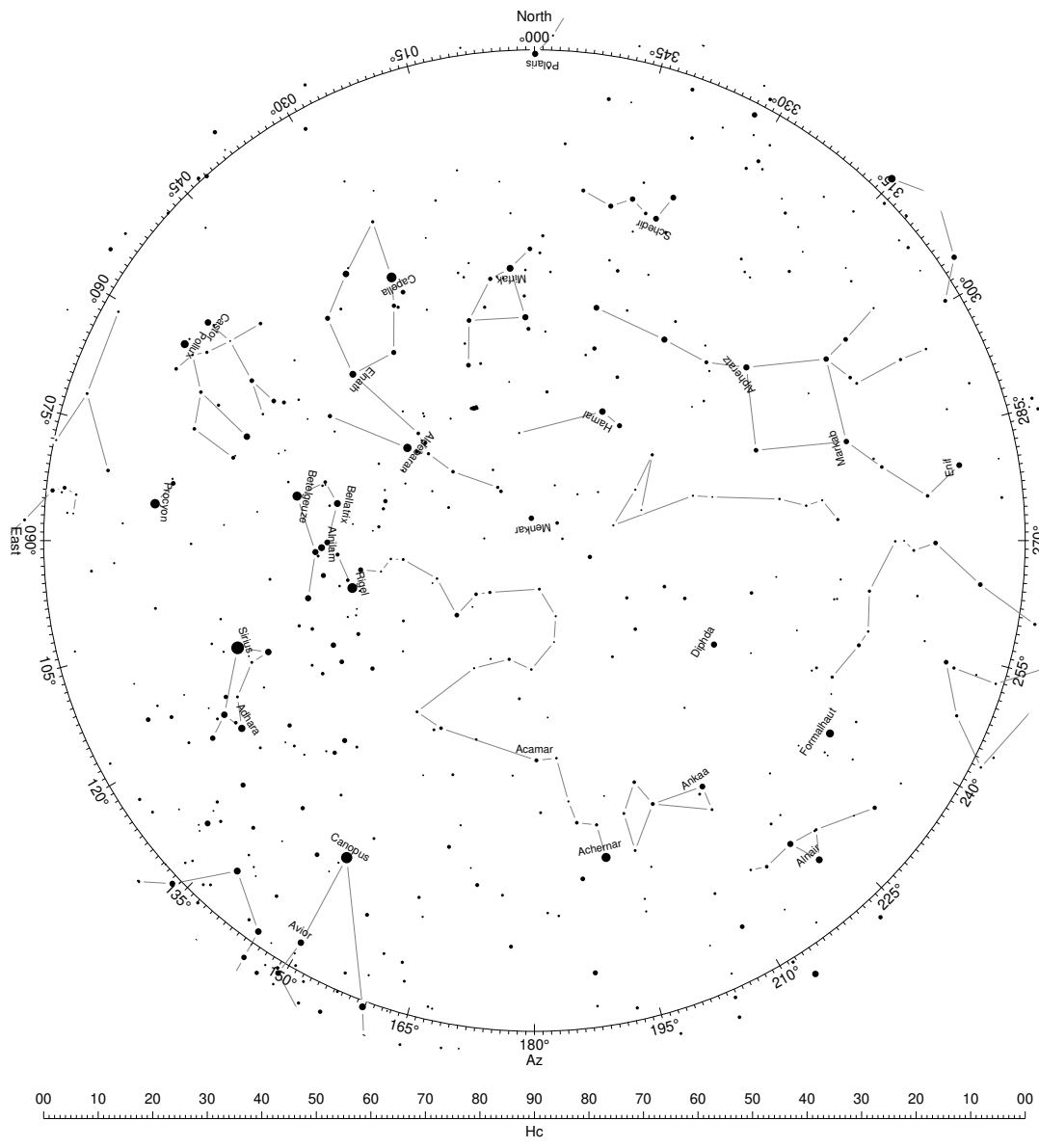
The map is centered on the celestial north pole and shows the brightest stars (up to magnitude 4.5) of the northern celestial hemisphere. The circle of constant declination is shown at 00° (Celestial Equator). The Sidereal Hour Angle of a specific star can be directly read from the SHA scale plotted on the Celestial Equator, while, the Declination can be determined by transferring the distance from the star to the center of the map onto the separate Declination scale. The Sidereal Hour Angle is zero for the "First-Point-of-Aries" and increases westward.

The map is centered on the celestial south pole and shows the brightest stars (up to magnitude 4.5) of the southern celestial hemisphere. The circle of constant declination is shown at 00° (Celestial Equator). The Sidereal Hour Angle of a specific star can be directly read from the SHA scale plotted on the Celestial Equator, while, the Declination can be determined by transferring the distance from the star to the center of the map onto the separate Declination scale. The Sidereal Hour Angle is zero for the "First-Point-of-Aries" and increases westward.

**Horizontal-Coordinate-System Map of bright Stars - Part V**



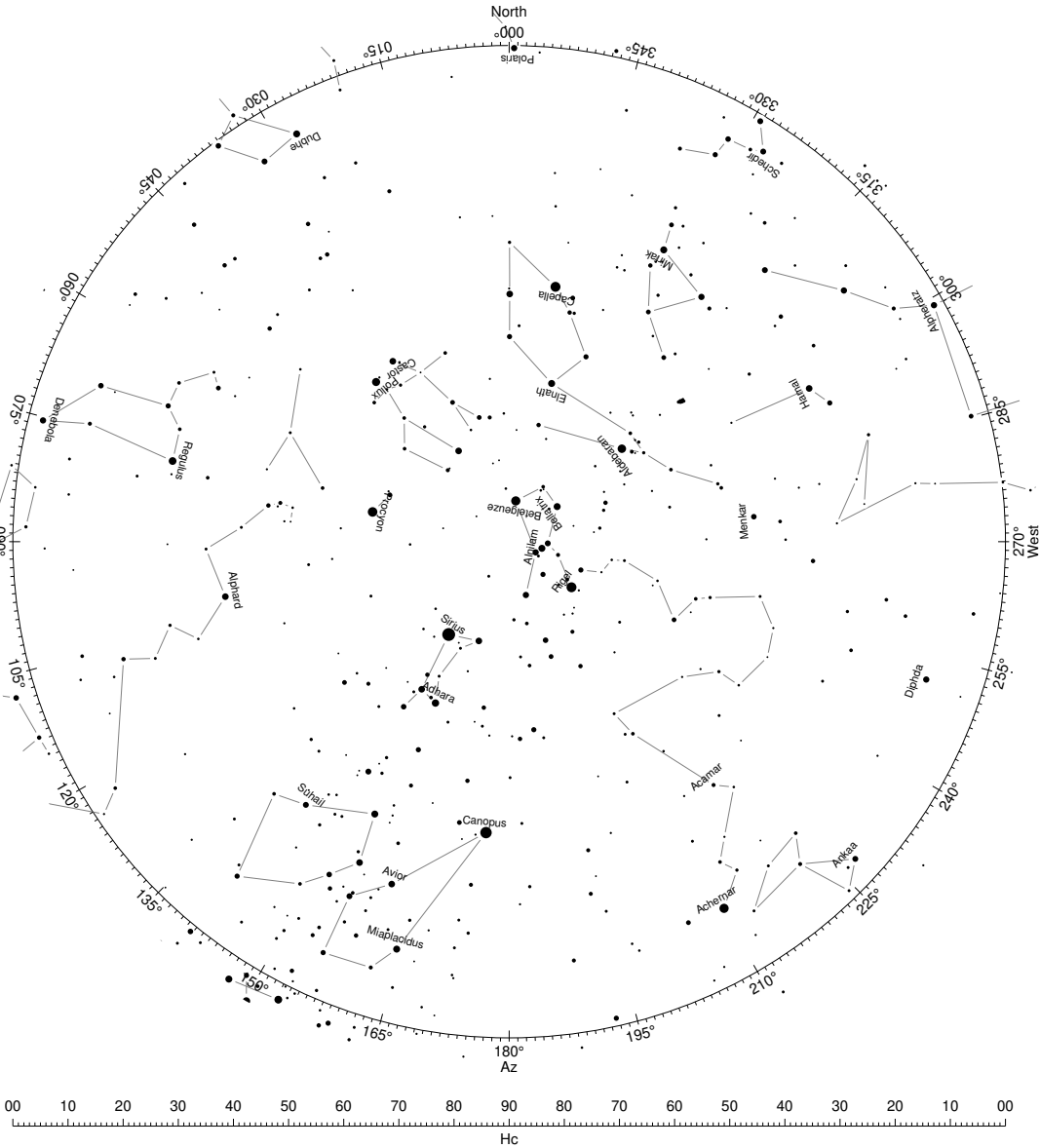
**Horizontal-Coordinate-System Map of bright Stars - Part II**



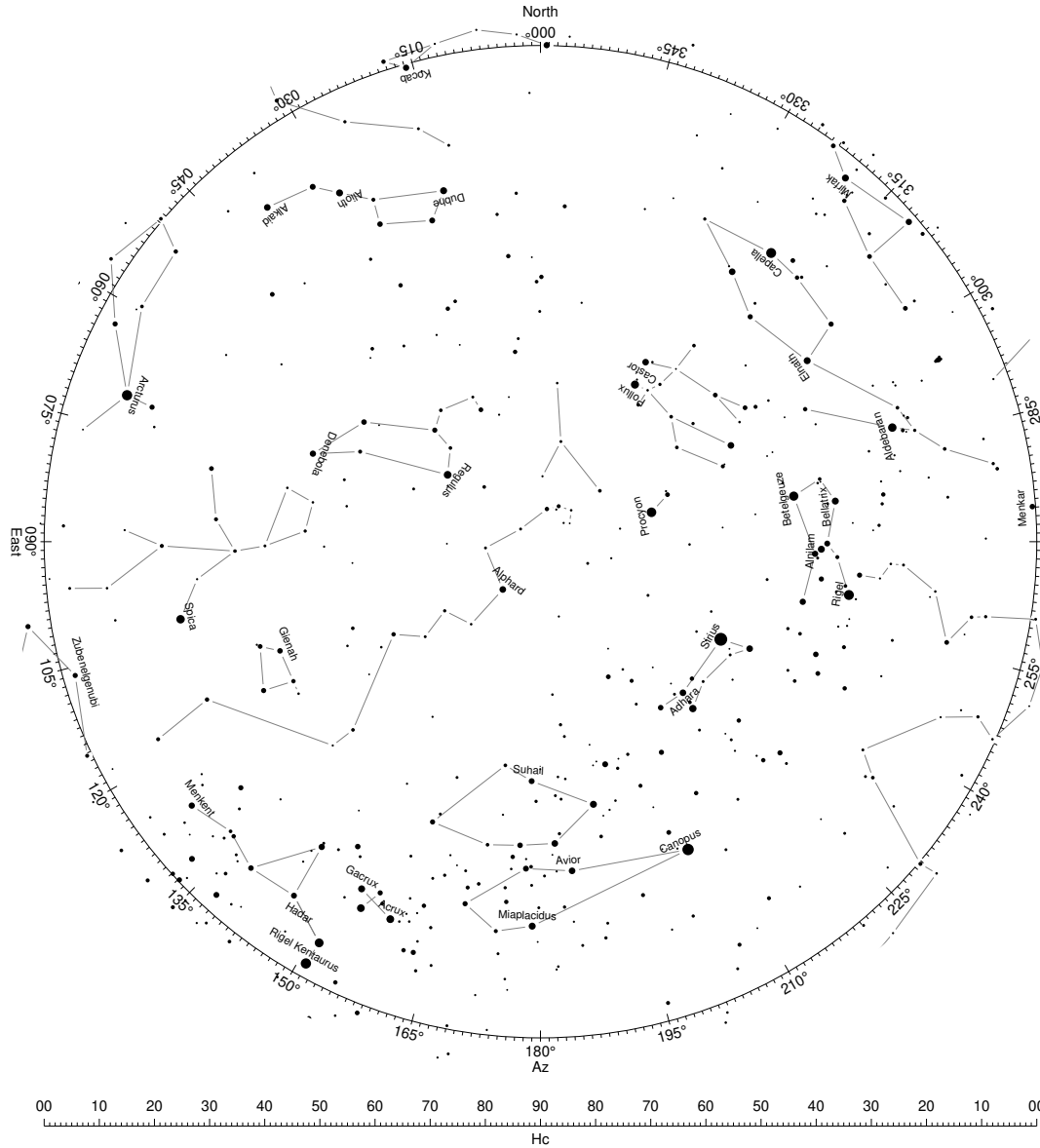
The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.  
 Each of these maps is valid for a location on the equator at a specific time of the day.

The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.  
 Each of these maps is valid for a location on the equator at a specific time of the day.

### Horizontal-Coordinate-System Map of bright Stars - Part III



### Horizontal-Coordinate-System Map of bright Stars - Part IV



The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.

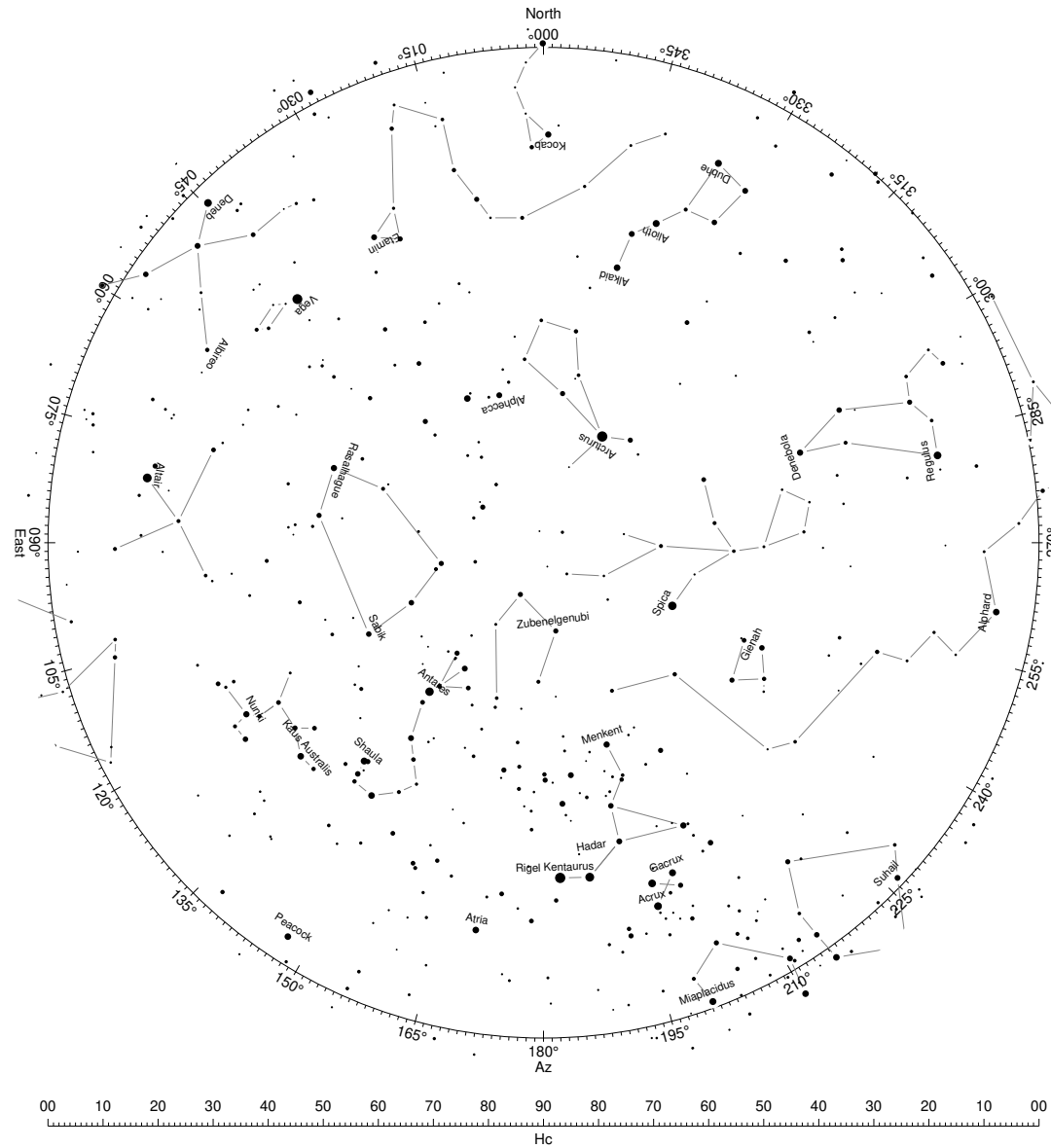
Each of these maps is valid for a location on the equator at a specific time of the day.

The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.

Each of these maps is valid for a location on the equator at a specific time of the day.



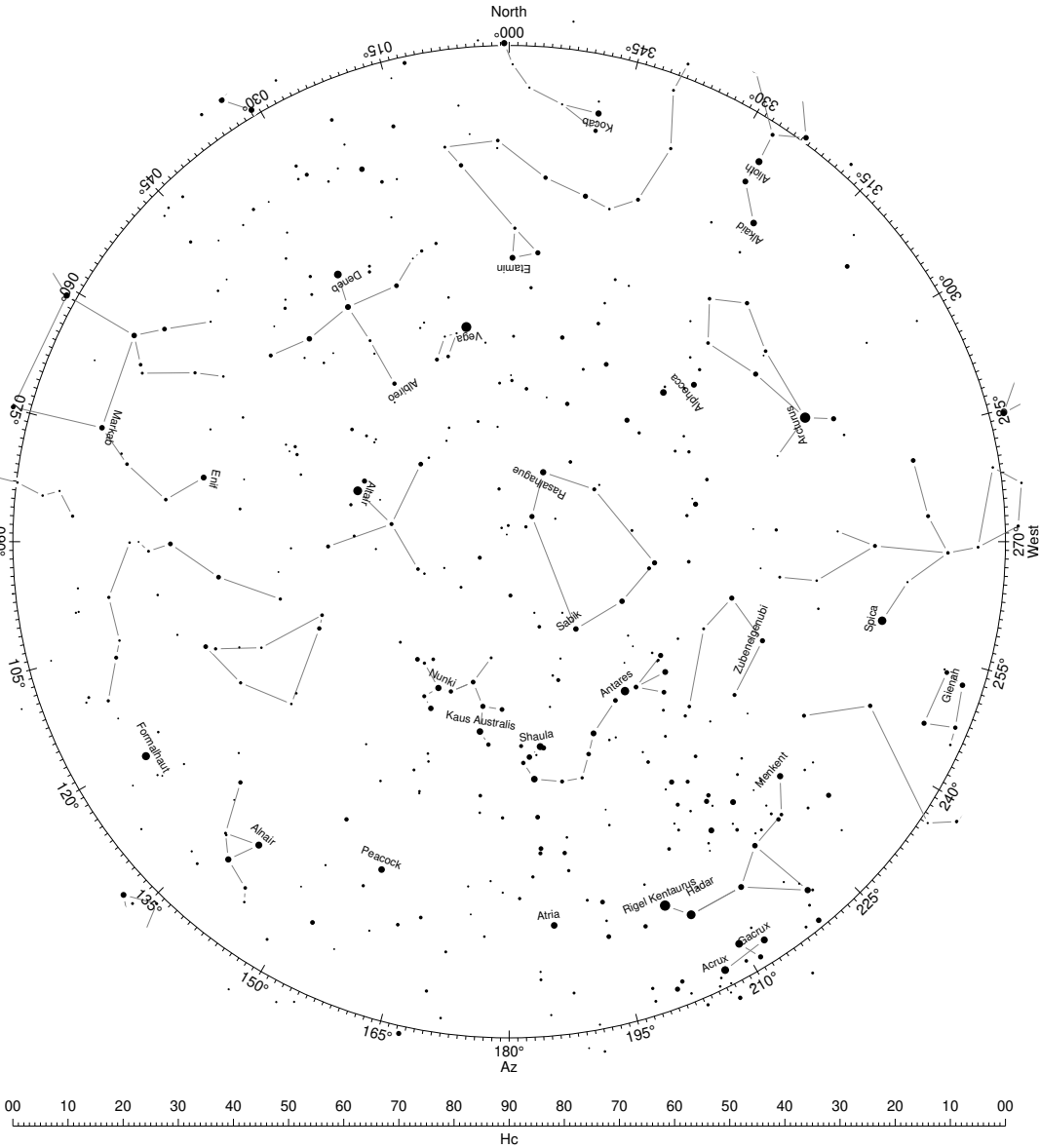
# Horizontal-Coordinate-System Map of bright Stars - Part VI



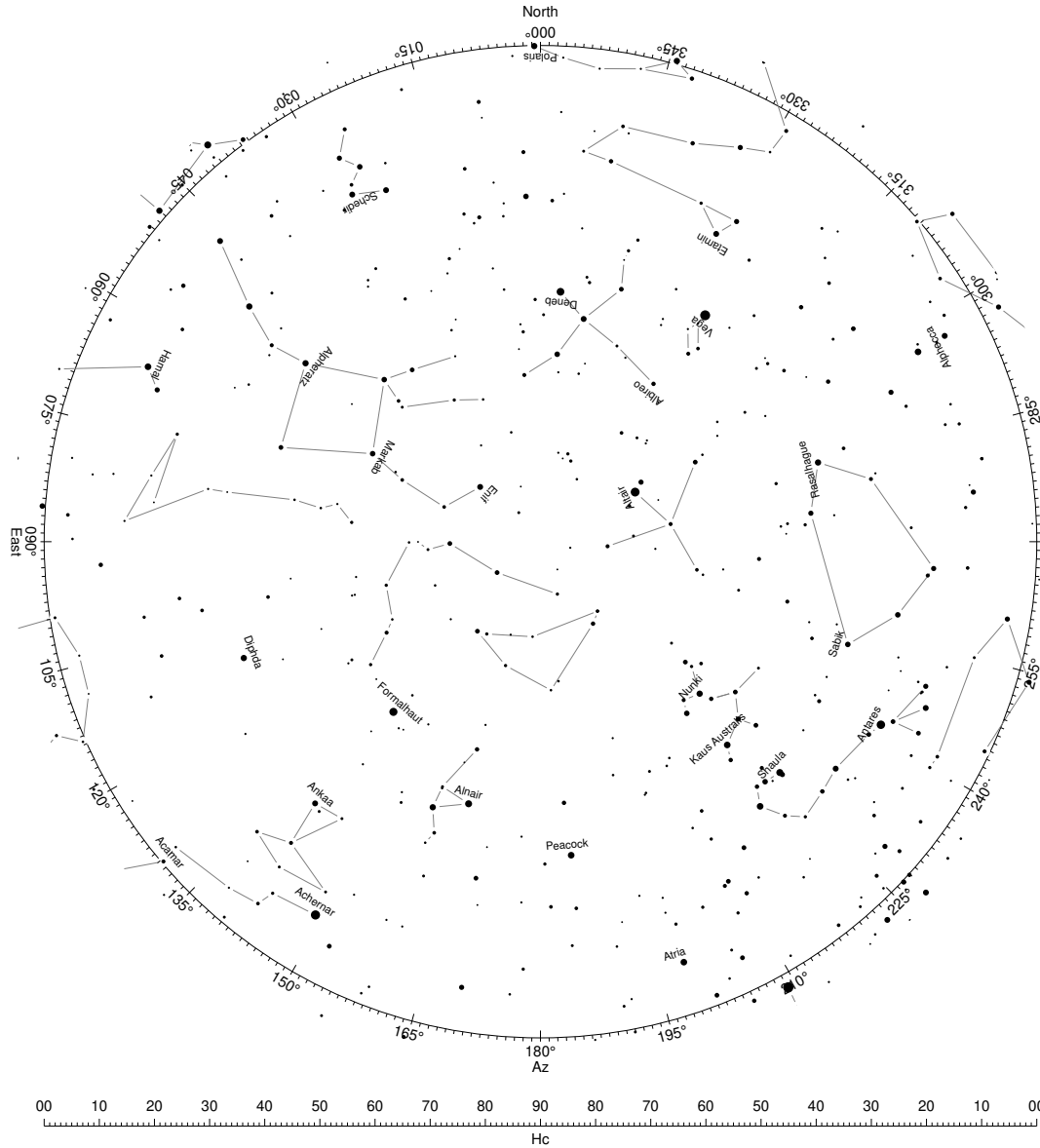
The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible.

Each of these maps is valid for a location on the equator at a specific time of the day.

### Horizontal-Coordinate-System Map of bright Stars - Part VII



### Horizontal-Coordinate-System Map of bright Stars - Part VIII



The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible. Each of these maps is valid for a location on the equator at a specific time of the day.

The Horizontal-Coordinate-System map shows the brightest stars (up to magnitude 4.5) of the local hemisphere for a location on the Equator. The stars are plotted with their Altitude (Hc) and Azimuth (Az) coordinates. The Azimuth scale is plotted on the circle of 0°-Altitude (local horizon). The Azimuth is the approximate compass direction in which the star is visible. Each of these maps is valid for a location on the equator at a specific time of the day.

2024 - First Point of Aries / Selected Stars

	day 11 of 366 <i>January 11</i>		day 12 of 366 <i>January 12</i>		day 13 of 366 <i>January 13</i>		day 14 of 366 <i>January 14</i>		day 15 of 366 <i>January 15</i>		
UT	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	UT
00	110 00.5	+02.4	110 59.6	+02.5	111 58.8	+02.4	112 57.9	+02.5	113 57.0	+02.5	00
01	125 02.9	+02.5	126 02.1	+02.4	127 01.2	+02.5	128 00.4	+02.4	128 59.5	+02.5	01
02	140 05.4	+02.5	141 04.5	+02.5	142 03.7	+02.4	143 02.8	+02.5	144 02.0	+02.4	02
03	155 07.9	+02.4	156 07.0	+02.5	157 06.1	+02.5	158 05.3	+02.4	159 04.4	+02.5	03
04	170 10.3	+02.5	171 09.5	+02.4	172 08.6	+02.5	173 07.7	+02.5	174 06.9	+02.5	04
05	185 12.8	+02.5	186 11.9	+02.5	187 11.1	+02.4	188 10.2	+02.5	189 09.4	+02.4	05
06	200 15.3	+02.4	201 14.4	+02.5	202 13.5	+02.5	203 12.7	+02.4	204 11.8	+02.5	06
07	215 17.7	+02.5	216 16.9	+02.4	217 16.0	+02.5	218 15.1	+02.5	219 14.3	+02.4	07
08	230 20.2	+02.4	231 19.3	+02.5	232 18.5	+02.4	233 17.6	+02.5	234 16.7	+02.5	08
09	245 22.6	+02.5	246 21.8	+02.5	247 20.9	+02.5	248 20.1	+02.4	249 19.2	+02.5	09
10	260 25.1	+02.5	261 24.3	+02.4	262 23.4	+02.5	263 22.5	+02.5	264 21.7	+02.4	10
11	275 27.6	+02.4	276 26.7	+02.5	277 25.9	+02.4	278 25.0	+02.5	279 24.1	+02.5	11
12	290 30.0	+02.5	291 29.2	+02.4	292 28.3	+02.5	293 27.5	+02.4	294 26.6	+02.5	12
13	305 32.5	+02.5	306 31.6	+02.5	307 30.8	+02.5	308 29.9	+02.5	309 29.1	+02.4	13
14	320 35.0	+02.4	321 34.1	+02.5	322 33.3	+02.4	323 32.4	+02.5	324 31.5	+02.5	14
15	335 37.4	+02.5	336 36.6	+02.4	337 35.7	+02.5	338 34.9	+02.4	339 34.0	+02.5	15
16	350 39.9	+02.5	351 39.0	+02.5	352 38.2	+02.4	353 37.3	+02.5	354 36.5	+02.4	16
17	5 42.4	+02.4	6 41.5	+02.5	7 40.6	+02.5	8 39.8	+02.4	9 38.9	+02.5	17
18	20 44.8	+02.5	21 44.0	+02.4	22 43.1	+02.5	23 42.2	+02.5	24 41.4	+02.4	18
19	35 47.3	+02.5	36 46.4	+02.5	37 45.6	+02.4	38 44.7	+02.5	39 43.8	+02.5	19
20	50 49.8	+02.4	51 48.9	+02.5	52 48.0	+02.5	53 47.2	+02.4	54 46.3	+02.5	20
21	65 52.2	+02.5	66 51.4	+02.4	67 50.5	+02.5	68 49.6	+02.5	69 48.8	+02.4	21
22	80 54.7	+02.4	81 53.8	+02.5	82 53.0	+02.4	83 52.1	+02.5	84 51.2	+02.5	22
23	95 57.1	+02.5	96 56.3	+02.5	97 55.4	+02.5	98 54.6	+02.4	99 53.7	+02.5	23

## Nautical Almanac for selected Stars

The following pages contain the celestial coordinates of the "First Point of Aries" and a set of selected stars. Each page compiles the almanac data for five successive days of the year. For this time span, the recorded star data consisting of Siderial Hour Angle (SHA) and Declination (Dec) is valid. The time used in this Almanac is Universal Time (UT).

The GHA of a specific star is obtained from the GHA of the "First Point of Aries" and the star's SHA by the following relationship:  $GHA_{star} = GHA_{Aries} + SHA_{star}$

**NOTICE:**

This Nautical Almanac uses a slightly different approach for the interpolation of the integral-hour values of Greenwich Hour Angle and Declination, compared to the techniques used in most commercially available Almanacs.

For more information please refer to the following web site: "<http://www.siranah.de/>"

**Abbreviations used in the Almanac tables:**

- UT Universal Time
- GHA Greenwich Hour Angle ° [degrees]
- ddGHA the increment of the GHA value for the next hour of time, additional to the "linear" increment of 15°/h ' [minutes of arc]
- SHA Siderial Hour Angle ° [degrees]
- Dec Declination ° [degrees]

	SHA	Dec		SHA	Dec
	° ,	° ,		° ,	° ,
Alpheratz	357 35.8	N 29 13.5	Gienah	175 44.3	S 17 40.4
Ankaa	353 08.2	S 42 10.7	Acrux	173 00.9	S 63 13.6
Schedir	349 32.1	N 56 40.4	Gacrux	171 52.5	S 57 14.5
Diphda	348 48.2	S 17 51.5	Alioth	166 13.7	N 55 49.5
Achernar	335 20.8	S 57 07.2	Spica	158 23.2	S 11 17.1
Hamal	327 52.1	N 23 34.7	Alkaid	152 52.7	N 49 11.3
Polaris	314 13.2	N 89 22.2	Hadar	148 37.3	S 60 29.0
Acamar	315 12.2	S 40 12.7	Menkent	147 58.4	S 36 28.8
Menkar	314 06.8	N 04 11.0	Arcturus	145 48.4	N 19 04.1
Mirfak	308 29.2	N 49 57.0	Rigel Kentaurus	139 38.9	S 60 56.0
Aldebaran	290 40.3	N 16 33.5	Zubenelgenubi	136 57.0	S 16 08.4
Capella	280 22.7	N 46 01.6	Kocab	137 20.2	N 74 03.1
Rigel	281 04.4	S 08 10.5	Alphecca	126 04.7	N 26 37.9
Bellatrix	278 23.4	N 06 22.3	Antares	112 17.2	S 26 29.0
Elnath	278 02.6	N 28 37.8	Atria	107 12.6	S 69 04.0
Alnilam	275 38.3	S 01 11.2	Sabik	102 04.0	S 15 45.3
Betelgeuze	270 52.7	N 07 24.7	Shaula	96 11.9	S 37 07.2
Canopus	263 52.2	S 52 42.5	Rasalhague	95 59.7	N 12 32.5
Sirius	258 26.4	S 16 44.5	Etamin	90 43.1	N 51 29.0
Adhara	255 06.1	S 29 00.3	Kaus Australis	83 34.0	S 34 22.3
Castor	245 57.6	N 31 50.1	Vega	80 34.3	N 38 48.1
Procyon	244 51.1	N 05 10.2	Nunki	75 49.2	S 26 16.0
Pollux	243 17.6	N 27 58.1	Albireo	67 05.1	N 28 00.5
Avior	234 14.4	S 59 35.1	Altair	62 01.3	N 08 55.7
Suhail	222 46.5	S 43 31.6	Peacock	53 07.6	S 56 39.6
Miaplacidus	221 37.4	S 69 48.8	Deneb	49 26.8	N 45 22.0
Alphard	217 48.3	S 08 45.8	Enif	33 39.9	N 09 59.1
Regulus	207 35.0	N 11 50.9	Alnair	27 34.4	S 46 50.9
Dubhe	193 41.5	N 61 37.0	Formalhaut	15 15.8	S 29 29.8
Denebola	182 25.5	N 14 26.2	Markab	13 30.9	N 15 20.1

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for days 31-36 of 2024, listing star names, GHA, ddGHA, and UT values.

Table with columns for days 16-23 of 2024, listing star names, GHA, ddGHA, and UT values.

Table with columns for SHA and Dec, listing star names and their coordinates.

Table with columns for SHA and Dec, listing star names and their coordinates.

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2024 - First Point of Aries / Selected Stars

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Table with columns for UT, day 91 of 366 (March 31), day 92 of 366 (April 1), day 93 of 366 (April 2), day 94 of 366 (April 3), day 95 of 366 (April 4), and UT. Rows list stars with their GHA, ddGHA, and UT values.

Table with columns for UT, day 76 of 366 (March 16), day 77 of 366 (March 17), day 78 of 366 (March 18), day 79 of 366 (March 19), day 80 of 366 (March 20), and UT. Rows list stars with their GHA, ddGHA, and UT values.

Table with columns for star names and their SHA and Dec coordinates. Lists stars like Alpheratz, Ankaa, Schedir, etc., with their corresponding SHA and Dec values.

Table with columns for star names and their SHA and Dec coordinates. Lists stars like Alpheratz, Ankaa, Schedir, etc., with their corresponding SHA and Dec values.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for UT, day 151 of 366 (May 30), day 152 of 366 (May 31), day 153 of 366 (June 1), day 154 of 366 (June 2), day 155 of 366 (June 3), and UT. Rows 00-23 show star positions and changes in Right Ascension (GHA) and Declination (ddGHA).

Table with columns for UT, day 136 of 366 (May 15), day 137 of 366 (May 16), day 138 of 366 (May 17), day 139 of 366 (May 18), day 140 of 366 (May 19), and UT. Rows 00-23 show star positions and changes in Right Ascension (GHA) and Declination (ddGHA).

Table mapping star names to SHA and Dec coordinates. Stars listed include Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, Polaris, Acamar, Menkar, Mirfak, Aldebaran, Capella, Rigel, Bellatrix, Elnath, Alnilam, Betelgeuze, Canopus, Sirius, Adhara, Castor, Procyon, Pollux, Avior, Suhail, Miaplacidus, Alphard, Regulus, Dubhe, and Denebola.

Table mapping star names to SHA and Dec coordinates. Stars listed include Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, Polaris, Acamar, Menkar, Mirfak, Aldebaran, Capella, Rigel, Bellatrix, Elnath, Alnilam, Betelgeuze, Canopus, Sirius, Adhara, Castor, Procyon, Pollux, Avior, Suhail, Miaplacidus, Alphard, Regulus, Dubhe, and Denebola.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with 7 columns: UT, day 171 of 366, day 172 of 366, day 173 of 366, day 174 of 366, day 175 of 366, UT. Rows 00-23 showing star data for GHA and ddGHA.

Table with 7 columns: UT, day 156 of 366, day 157 of 366, day 158 of 366, day 159 of 366, day 160 of 366, UT. Rows 00-23 showing star data for GHA and ddGHA.

Table with 4 columns: Star Name, SHA, Dec, Star Name, SHA, Dec. Lists stars like Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, etc.

Table with 4 columns: Star Name, SHA, Dec, Star Name, SHA, Dec. Lists stars like Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, etc.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for days 191-195 of 366, UT, GHA, ddGHA, and star names. Rows include stars like Alpheratz, Ankaa, Schedir, etc.

Table with columns for days 176-180 of 366, UT, GHA, ddGHA, and star names. Rows include stars like Alpheratz, Ankaa, Schedir, etc.

Table with columns for SHA and Dec, listing star names and their coordinates. Includes stars like Gienah, Acrux, Gacrux, etc.

Table with columns for SHA and Dec, listing star names and their coordinates. Includes stars like Gienah, Acrux, Gacrux, etc.

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2024 - First Point of Aries / Selected Stars

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Table with columns for UT, day 211 of 366 (July 29), day 212 of 366 (July 30), day 213 of 366 (July 31), day 214 of 366 (August 1), day 215 of 366 (August 2), and UT. Rows list stars with GHA and ddGHA values.

Table with columns for UT, day 196 of 366 (July 14), day 197 of 366 (July 15), day 198 of 366 (July 16), day 199 of 366 (July 17), day 200 of 366 (July 18), and UT. Rows list stars with GHA and ddGHA values.

Table with columns for SHA and Dec. Rows list stars with their SHA and Dec coordinates.

Table with columns for SHA and Dec. Rows list stars with their SHA and Dec coordinates.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for date (September 27 to October 23) and UT, containing magnitude and position data for various stars.

Table with columns for date (September 12 to September 23) and UT, containing magnitude and position data for various stars.

Table with columns for star name and SHA/Dec coordinates, listing stars like Alpheratz, Ankaa, Schedir, etc.

Table with columns for star name and SHA/Dec coordinates, listing stars like Alpheratz, Ankaa, Schedir, etc.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with 7 columns: UT, day 261 of 366 (September 17), day 262 of 366 (September 18), day 263 of 366 (September 19), day 264 of 366 (September 20), day 265 of 366 (September 21), UT. Each day column contains GHA and ddGHA values for stars 00 through 23.

Table with 7 columns: UT, day 266 of 366 (September 22), day 267 of 366 (September 23), day 268 of 366 (September 24), day 269 of 366 (September 25), day 270 of 366 (September 26), UT. Each day column contains GHA and ddGHA values for stars 00 through 23.

Table with 4 columns: Star Name, SHA (right ascension), Dec (declination), and a secondary Dec (right ascension). Lists stars such as Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, Polaris, Acamar, Menkar, etc.

Table with 4 columns: Star Name, SHA (right ascension), Dec (declination), and a secondary Dec (right ascension). Lists stars such as Alpheratz, Ankaa, Schedir, Diphda, Achernar, Hamal, Polaris, Acamar, Menkar, etc.

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2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for days 311-315 of 366 (November 6-10), UT, and star data (GHA, ddGHA).

Table with columns for days 296-300 of 366 (October 22-26), UT, and star data (GHA, ddGHA).

Table with columns for SHA, Dec, and star names (Alpheratz, Ankaa, Schedir, etc.).

Table with columns for SHA, Dec, and star names (Alpheratz, Ankaa, Schedir, etc.).

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2024 - First Point of Aries / Selected Stars

Table with columns for UT, date, GHA, ddGHA, and UT. Rows list star data for days 331 to 335 of November.

Table with columns for star names and their coordinates in SHA and Dec.

2024 - First Point of Aries / Selected Stars

Table with columns for UT, date, GHA, ddGHA, and UT. Rows list star data for days 316 to 320 of November.

Table with columns for star names and their coordinates in SHA and Dec.

2024 - First Point of Aries / Selected Stars

2024 - First Point of Aries / Selected Stars

Table with columns for UT, day 321 of 366 (November 16), day 322 of 366 (November 17), day 323 of 366 (November 18), day 324 of 366 (November 19), day 325 of 366 (November 20), and UT. Each entry includes Right Ascension (GHA) and Declination (ddGHA) values.

Table with columns for UT, day 326 of 366 (November 21), day 327 of 366 (November 22), day 328 of 366 (November 23), day 329 of 366 (November 24), day 330 of 366 (November 25), and UT. Each entry includes Right Ascension (GHA) and Declination (ddGHA) values.

Table listing star names with their corresponding SHA and Dec coordinates, arranged in two columns.

Table listing star names with their corresponding SHA and Dec coordinates, arranged in two columns.

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2024 - First Point of Aries / Selected Stars

	day 356 of 366 <b>December 21</b>		day 357 of 366 <b>December 22</b>		day 358 of 366 <b>December 23</b>		day 359 of 366 <b>December 24</b>		day 360 of 366 <b>December 25</b>		
UT	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	GHA	ddGHA	UT
00	90	03.4 +02.5	91	02.6 +02.4	92	01.7 +02.5	93	00.9 +02.4	93	60.0 +02.5	00
01	105	05.9 +02.5	106	05.0 +02.5	107	04.2 +02.4	108	03.3 +02.5	109	02.5 +02.4	01
02	120	08.4 +02.4	121	07.5 +02.5	122	06.6 +02.5	123	05.8 +02.4	124	04.9 +02.5	02
03	135	10.8 +02.5	136	10.0 +02.4	137	09.1 +02.5	138	08.2 +02.5	139	07.4 +02.4	03
04	150	13.3 +02.5	151	12.4 +02.5	152	11.6 +02.4	153	10.7 +02.5	154	09.8 +02.5	04
05	165	15.8 +02.4	166	14.9 +02.5	167	14.0 +02.5	168	13.2 +02.4	169	12.3 +02.5	05
06	180	18.2 +02.5	181	17.4 +02.4	182	16.5 +02.5	183	15.6 +02.5	184	14.8 +02.4	06
07	195	20.7 +02.5	196	19.8 +02.5	197	19.0 +02.4	198	18.1 +02.5	199	17.2 +02.5	07
08	210	23.2 +02.4	211	22.3 +02.5	212	21.4 +02.5	213	20.6 +02.4	214	19.7 +02.5	08
09	225	25.6 +02.5	226	24.8 +02.4	227	23.9 +02.5	228	23.0 +02.5	229	22.2 +02.4	09
10	240	28.1 +02.4	241	27.2 +02.5	242	26.4 +02.4	243	25.5 +02.5	244	24.6 +02.5	10
11	255	30.5 +02.5	256	29.7 +02.4	257	28.8 +02.5	258	28.0 +02.4	259	27.1 +02.5	11
12	270	33.0 +02.5	271	32.1 +02.5	272	31.3 +02.4	273	30.4 +02.5	274	29.6 +02.4	12
13	285	35.5 +02.4	286	34.6 +02.5	287	33.7 +02.5	288	32.9 +02.5	289	32.0 +02.5	13
14	300	37.9 +02.5	301	37.1 +02.4	302	36.2 +02.5	303	35.4 +02.4	304	34.5 +02.5	14
15	315	40.4 +02.5	316	39.5 +02.5	317	38.7 +02.4	318	37.8 +02.5	319	37.0 +02.4	15
16	330	42.9 +02.4	331	42.0 +02.5	332	41.1 +02.5	333	40.3 +02.4	334	39.4 +02.5	16
17	345	45.3 +02.5	346	44.5 +02.4	347	43.6 +02.5	348	42.7 +02.5	349	41.9 +02.4	17
18	0	47.8 +02.5	1	46.9 +02.5	2	46.1 +02.4	3	45.2 +02.5	4	44.3 +02.5	18
19	15	50.3 +02.4	16	49.4 +02.5	17	48.5 +02.5	18	47.7 +02.4	19	46.8 +02.5	19
20	30	52.7 +02.5	31	51.9 +02.4	32	51.0 +02.5	33	50.1 +02.5	34	49.3 +02.4	20
21	45	55.2 +02.5	46	54.3 +02.5	47	53.5 +02.4	48	52.6 +02.5	49	51.7 +02.5	21
22	60	57.7 +02.4	61	56.8 +02.5	62	55.9 +02.5	63	55.1 +02.4	64	54.2 +02.5	22
23	76	00.1 +02.5	76	59.3 +02.4	77	58.4 +02.5	78	57.5 +02.5	79	56.7 +02.4	23

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	SHA	Dec		SHA	Dec
	°	'		°	'
Alpheratz	357	34.9	N 29	13.9	
Ankaa	353	07.2	S 42	10.3	
Schedir	349	31.0	N 56	40.8	
Diphda	348	47.4	S 17	51.1	
Achernar	335	20.0	S 57	06.8	
Hamal	327	51.1	N 23	35.0	
Polaris	313	42.0	N 89	22.4	
Acamar	315	11.4	S 40	12.4	
Menkar	314	05.9	N 04	11.3	
Mirfak	308	27.9	N 49	57.2	
Aldebaran	290	39.4	N 16	33.7	
Capella	280	21.5	N 46	01.6	
Rigel	281	03.6	S 08	10.3	
Bellatrix	278	22.6	N 06	22.4	
Elnath	278	01.5	N 28	37.8	
Alnilam	275	37.4	S 01	11.1	
Betelgeuze	270	51.8	N 07	24.7	
Canopus	263	51.9	S 52	42.4	
Sirius	258	25.7	S 16	44.5	
Adhara	255	05.5	S 29	00.3	
Castor	245	56.7	N 31	50.0	
Procyon	244	50.3	N 05	10.1	
Pollux	243	16.6	N 27	57.9	
Avior	234	14.2	S 59	35.2	
Suhail	222	46.0	S 43	31.8	
Miaplacidus	221	37.5	S 69	48.9	
Alphard	217	47.6	S 08	46.0	
Regulus	207	34.2	N 11	50.7	
Dubhe	193	40.8	N 61	36.7	
Denebola	182	24.8	N 14	25.9	
Gienah	175	43.6	S 17	40.7	
Acrux	173	00.3	S 63	13.9	
Gacrux	171	51.9	S 57	14.8	
Alioth	166	13.2	N 55	49.2	
Spica	158	22.5	S 11	17.4	
Alkaid	152	52.2	N 49	11.1	
Hadar	148	36.4	S 60	29.3	
Menkent	147	57.6	S 36	29.1	
Arcturus	145	47.7	N 19	03.8	
Rigel Kentaurus	139	37.9	S 60	56.3	
Zubenelgenubi	136	56.3	S 16	08.6	
Kocab	137	20.6	N 74	02.9	
Alphecca	126	04.1	N 26	37.7	
Antares	112	16.4	S 26	29.2	
Atria	107	11.1	S 69	04.2	
Sabik	102	03.2	S 15	45.4	
Shaula	96	10.9	S 37	07.3	
Rasalhague	95	59.0	N 12	32.6	
Etamin	90	42.7	N 51	29.1	
Kaus Australis	83	33.0	S 34	22.3	
Vega	80	33.8	N 38	48.3	
Nunki	75	48.2	S 26	16.0	
Albireo	67	04.5	N 28	00.7	
Altair	62	00.5	N 08	55.9	
Peacock	53	06.3	S 56	39.4	
Deneb	49	26.2	N 45	22.3	
Enif	33	39.0	N 09	59.4	
Alnair	27	33.3	S 46	50.6	
Formalhaut	15	14.8	S 29	29.5	
Markab	13	30.1	N 15	20.5	





**Polaris (Pole Star) Tables, 2024**  
For determining Latitude from Sextant Altitude and for Azimuth

LHA ARIES	120° - 129°	130° - 139°	140° - 149°	150° - 159°	160° - 169°	170° - 179°	180° - 189°	190° - 199°	200° - 209°	210° - 219°	220° - 229°	230° - 239°
	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0
<b>0</b>	0 48.7	0 55.2	1 01.8	1 08.4	1 14.6	1 20.4	1 25.5	1 29.8	1 33.2	1 35.5	1 36.8	1 36.9
<b>1</b>	0 49.4	0 55.9	1 02.5	1 09.0	1 15.2	1 20.9	1 26.0	1 30.2	1 33.5	1 35.7	1 36.8	1 36.8
<b>2</b>	0 50.0	0 56.5	1 03.2	1 09.6	1 15.8	1 21.5	1 26.4	1 30.6	1 33.8	1 35.9	1 36.9	1 36.7
<b>3</b>	0 50.6	0 57.2	1 03.8	1 10.3	1 16.4	1 22.0	1 26.9	1 30.9	1 34.0	1 36.0	1 36.9	1 36.7
<b>4</b>	0 51.3	0 57.9	1 04.5	1 10.9	1 17.0	1 22.5	1 27.3	1 31.3	1 34.3	1 36.2	1 36.9	1 36.6
<b>5</b>	0 51.9	0 58.5	1 05.1	1 11.5	1 17.6	1 23.0	1 27.8	1 31.6	1 34.5	1 36.3	1 37.0	1 36.5
<b>6</b>	0 52.6	0 59.2	1 05.8	1 12.2	1 18.1	1 23.5	1 28.2	1 32.0	1 34.7	1 36.4	1 37.0	1 36.4
<b>7</b>	0 53.2	0 59.9	1 06.4	1 12.8	1 18.7	1 24.0	1 28.6	1 32.3	1 35.0	1 36.5	1 37.0	1 36.2
<b>8</b>	0 53.9	1 00.5	1 07.1	1 13.4	1 19.3	1 24.5	1 29.0	1 32.6	1 35.2	1 36.6	1 36.9	1 36.1
<b>9</b>	0 54.6	1 01.2	1 07.7	1 14.0	1 19.8	1 25.0	1 29.4	1 32.9	1 35.4	1 36.7	1 36.9	1 35.9
<b>Lat.</b>	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1
<b>10</b>	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.5
<b>20</b>	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.5
<b>30</b>	0.9	1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5
<b>40</b>	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.6	0.5
<b>45</b>	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.6	0.5
<b>50</b>	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.6	0.5
<b>55</b>	1.1	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5
<b>60</b>	1.2	1.2	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.6	0.5
<b>62</b>	1.2	1.2	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.6	0.5
<b>64</b>	1.2	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.6	0.5
<b>66</b>	1.3	1.3	1.3	1.2	1.2	1.1	0.9	0.8	0.7	0.6	0.6	0.5
<b>68</b>	1.3	1.3	1.3	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.6	0.5
<b>70</b>	1.4	1.4	1.4	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.6	0.5
<b>Month</b>	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2
<b>Jan</b>	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
<b>Feb</b>	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>Mar</b>	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
<b>Apr</b>	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3
<b>May</b>	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.4	0.4
<b>Jun</b>	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.5
<b>Jul</b>	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
<b>Aug</b>	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
<b>Sep</b>	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.8
<b>Oct</b>	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7
<b>Nov</b>	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6
<b>Dec</b>	0.0	0.0	-0.0	-0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4
<b>Lat.</b>	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo
<b>10</b>	359.4	359.4	359.4	359.4	359.4	359.5	359.6	359.7	359.8	359.9	360.0	0.1
<b>20</b>	359.3	359.3	359.3	359.4	359.4	359.5	359.6	359.7	359.8	359.9	360.0	0.1
<b>30</b>	359.3	359.3	359.3	359.3	359.4	359.4	359.5	359.6	359.7	359.9	360.0	0.1
<b>40</b>	359.2	359.2	359.2	359.2	359.3	359.4	359.5	359.6	359.7	359.8	360.0	0.1
<b>45</b>	359.1	359.1	359.1	359.2	359.2	359.3	359.4	359.5	359.7	359.8	360.0	0.1
<b>50</b>	359.0	359.0	359.0	359.1	359.1	359.2	359.4	359.5	359.7	359.8	360.0	0.2
<b>55</b>	358.9	358.9	358.9	359.0	359.0	359.2	359.3	359.4	359.6	359.8	360.0	0.2
<b>60</b>	358.8	358.7	358.8	358.8	358.9	359.0	359.2	359.4	359.6	359.8	360.0	0.2
<b>62</b>	358.7	358.7	358.7	358.7	358.8	359.0	359.1	359.3	359.5	359.8	360.0	0.2
<b>64</b>	358.6	358.6	358.6	358.6	358.8	358.9	359.1	359.3	359.5	359.7	360.0	0.2
<b>66</b>	358.5	358.4	358.5	358.5	358.7	358.8	359.0	359.2	359.5	359.7	360.0	0.2
<b>68</b>	358.3	358.3	358.3	358.4	358.5	358.7	358.9	359.2	359.4	359.7	360.0	0.3
<b>70</b>	358.2	358.2	358.2	358.3	358.4	358.6	358.8	359.1	359.4	359.7	360.0	0.3

Latitude = Apparent Altitude (corrected for refraction and dip) - 1° + a0 + a1 + a2

To determine Latitude, the table is entered with LHA Aries, which is obtained by addition of the observer's Longitude and the GHA Aries from the daily pages of this Almanac. The value of LHA Aries determines which column of the Polaris Tables to be used. Each column refers to a range of 10° of LHA. The value a0 is taken with mental interpolation (taking into account the fractional part of LHA Aries), from the upper table with the units of LHA Aries in degrees as argument. The values of a1 and a2 are taken, without interpolation, from the second and third table with arguments Latitude and Month respectively. The correction terms a0, a1 and a2 are always positive. The final table gives the Azimuth of Polaris.

## Polaris (Pole Star) Tables, 2024

For determining Latitude from Sextant Altitude and for Azimuth

LHA ARIES	000° - 009°	010° - 019°	020° - 029°	030° - 039°	040° - 049°	050° - 059°	060° - 069°	070° - 079°	080° - 089°	090° - 099°	100° - 109°	110° - 119°
	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0
<b>0</b>	0 32.5	0 28.2	0 24.8	0 22.5	0 21.2	0 21.1	0 22.2	0 24.4	0 27.6	0 31.8	0 36.8	0 42.5
<b>1</b>	0 32.0	0 27.8	0 24.5	0 22.3	0 21.2	0 21.2	0 22.4	0 24.7	0 28.0	0 32.3	0 37.4	0 43.1
<b>2</b>	0 31.6	0 27.4	0 24.2	0 22.1	0 21.1	0 21.3	0 22.6	0 25.0	0 28.4	0 32.8	0 37.9	0 43.7
<b>3</b>	0 31.1	0 27.1	0 24.0	0 22.0	0 21.1	0 21.3	0 22.8	0 25.3	0 28.8	0 33.2	0 38.5	0 44.3
<b>4</b>	0 30.7	0 26.7	0 23.7	0 21.8	0 21.1	0 21.4	0 23.0	0 25.6	0 29.2	0 33.7	0 39.0	0 45.0
<b>5</b>	0 30.2	0 26.4	0 23.5	0 21.7	0 21.0	0 21.5	0 23.2	0 25.9	0 29.6	0 34.2	0 39.6	0 45.6
<b>6</b>	0 29.8	0 26.0	0 23.3	0 21.6	0 21.0	0 21.6	0 23.4	0 26.2	0 30.0	0 34.7	0 40.2	0 46.2
<b>7</b>	0 29.4	0 25.7	0 23.0	0 21.5	0 21.0	0 21.8	0 23.6	0 26.6	0 30.5	0 35.3	0 40.8	0 46.8
<b>8</b>	0 29.0	0 25.4	0 22.8	0 21.4	0 21.1	0 21.9	0 23.9	0 26.9	0 30.9	0 35.8	0 41.3	0 47.4
<b>9</b>	0 28.6	0 25.1	0 22.6	0 21.3	0 21.1	0 22.1	0 24.1	0 27.3	0 31.4	0 36.3	0 41.9	0 48.1
<b>Lat.</b>	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1
<b>10</b>	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8
<b>20</b>	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9
<b>30</b>	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9
<b>40</b>	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9
<b>45</b>	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.9	1.0
<b>50</b>	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0
<b>55</b>	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1
<b>60</b>	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1
<b>62</b>	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.1	1.1
<b>64</b>	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2
<b>66</b>	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2
<b>68</b>	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.3
<b>70</b>	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.8	0.9	1.1	1.2	1.3
<b>Month</b>	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2
<b>Jan</b>	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3
<b>Feb</b>	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5
<b>Mar</b>	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
<b>Apr</b>	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7
<b>May</b>	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8
<b>Jun</b>	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8
<b>Jul</b>	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6
<b>Aug</b>	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5
<b>Sep</b>	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
<b>Oct</b>	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
<b>Nov</b>	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1
<b>Dec</b>	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.2	0.1	0.1
<b>Lat.</b>	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo
<b>10</b>	0.4	0.3	0.2	0.1	0.0	359.9	359.8	359.7	359.6	359.5	359.4	359.4
<b>20</b>	0.4	0.3	0.2	0.1	0.0	359.9	359.8	359.7	359.6	359.5	359.4	359.4
<b>30</b>	0.5	0.4	0.3	0.1	0.0	359.9	359.8	359.6	359.5	359.4	359.4	359.3
<b>40</b>	0.5	0.4	0.3	0.2	0.0	359.9	359.7	359.6	359.5	359.4	359.3	359.2
<b>45</b>	0.6	0.5	0.3	0.2	0.0	359.9	359.7	359.6	359.4	359.3	359.2	359.2
<b>50</b>	0.6	0.5	0.4	0.2	0.0	359.8	359.7	359.5	359.4	359.2	359.1	359.1
<b>55</b>	0.7	0.6	0.4	0.2	0.0	359.8	359.6	359.5	359.3	359.2	359.0	359.0
<b>60</b>	0.8	0.7	0.5	0.2	0.0	359.8	359.6	359.4	359.2	359.0	358.9	358.8
<b>62</b>	0.9	0.7	0.5	0.3	0.0	359.8	359.5	359.3	359.1	359.0	358.8	358.7
<b>64</b>	1.0	0.8	0.5	0.3	0.0	359.8	359.5	359.3	359.1	358.9	358.7	358.6
<b>66</b>	1.0	0.8	0.6	0.3	0.0	359.7	359.5	359.2	359.0	358.8	358.6	358.5
<b>68</b>	1.1	0.9	0.6	0.3	0.0	359.7	359.4	359.2	358.9	358.7	358.5	358.4
<b>70</b>	1.2	1.0	0.7	0.4	0.0	359.7	359.4	359.1	358.8	358.6	358.4	358.3

Latitude = Apparent Altitude (corrected for refraction and dip) - 1° + a0 + a1 + a2

To determine Latitude, the table is entered with LHA Aries, which is obtained by addition of the observer's Longitude and the GHA Aries from the daily pages of this Almanac. The value of LHA Aries determines which column of the Polaris Tables to be used. Each column refers to a range of 10° of LHA. The value a0 is taken with mental interpolation (taking into account the fractional part of LHA Aries), from the upper table with the units of LHA Aries in degrees as argument. The values of a1 and a2 are taken, without interpolation, from the second and third table with arguments Latitude and Month respectively. The correction terms a0, a1 and a2 are always positive. The final table gives the Azimuth of Polaris.

**Polaris (Pole Star) Tables, 2024**  
For determining Latitude from Sextant Altitude and for Azimuth

LHA ARIES	240° - 249°	250° - 259°	260° - 269°	270° - 279°	280° - 289°	290° - 299°	300° - 309°	310° - 319°	320° - 329°	330° - 339°	340° - 349°	350° - 359°
	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0	a0
<b>0</b>	1 35.8	1 33.6	1 30.4	1 26.2	1 21.2	1 15.5	1 09.3	1 02.8	0 56.2	0 49.6	0 43.4	0 37.6
<b>1</b>	1 35.6	1 33.3	1 30.0	1 25.7	1 20.6	1 14.9	1 08.6	1 02.1	0 55.5	0 49.0	0 42.8	0 37.1
<b>2</b>	1 35.4	1 33.0	1 29.6	1 25.2	1 20.1	1 14.3	1 08.0	1 01.5	0 54.8	0 48.4	0 42.2	0 36.5
<b>3</b>	1 35.2	1 32.7	1 29.2	1 24.8	1 19.5	1 13.7	1 07.4	1 00.8	0 54.2	0 47.7	0 41.6	0 36.0
<b>4</b>	1 35.0	1 32.4	1 28.8	1 24.3	1 19.0	1 13.0	1 06.7	1 00.1	0 53.5	0 47.1	0 41.0	0 35.5
<b>5</b>	1 34.8	1 32.1	1 28.4	1 23.8	1 18.4	1 12.4	1 06.1	0 59.5	0 52.9	0 46.5	0 40.4	0 35.0
<b>6</b>	1 34.6	1 31.8	1 28.0	1 23.3	1 17.8	1 11.8	1 05.4	0 58.8	0 52.2	0 45.8	0 39.9	0 34.5
<b>7</b>	1 34.4	1 31.4	1 27.5	1 22.7	1 17.2	1 11.2	1 04.8	0 58.1	0 51.6	0 45.2	0 39.3	0 34.0
<b>8</b>	1 34.1	1 31.1	1 27.1	1 22.2	1 16.7	1 10.6	1 04.1	0 57.5	0 50.9	0 44.6	0 38.7	0 33.5
<b>9</b>	1 33.9	1 30.7	1 26.6	1 21.7	1 16.1	1 09.9	1 03.4	0 56.8	0 50.3	0 44.0	0 38.2	0 33.0
<b>Lat.</b>	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1	a1
<b>10</b>	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>20</b>	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3
<b>30</b>	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
<b>40</b>	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
<b>45</b>	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3
<b>50</b>	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
<b>55</b>	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
<b>60</b>	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
<b>62</b>	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.5
<b>64</b>	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5
<b>66</b>	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5
<b>68</b>	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.5
<b>70</b>	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6
<b>Month</b>	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2	a2
<b>Jan</b>	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<b>Feb</b>	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6
<b>Mar</b>	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.5
<b>Apr</b>	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4
<b>May</b>	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
<b>Jun</b>	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Jul</b>	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1
<b>Aug</b>	0.7	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2
<b>Sep</b>	0.8	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3
<b>Oct</b>	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5
<b>Nov</b>	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7
<b>Dec</b>	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9
<b>Lat.</b>	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo	Zo
<b>10</b>	0.2	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5
<b>20</b>	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5
<b>30</b>	0.2	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.6
<b>40</b>	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6
<b>45</b>	0.3	0.4	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.7
<b>50</b>	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.0	0.9	0.9	0.8
<b>55</b>	0.4	0.5	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.0	1.0	0.9
<b>60</b>	0.4	0.6	0.8	0.9	1.1	1.2	1.2	1.3	1.3	1.2	1.1	1.0
<b>62</b>	0.4	0.6	0.8	1.0	1.1	1.3	1.3	1.3	1.3	1.3	1.2	1.1
<b>64</b>	0.5	0.7	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.3	1.1
<b>66</b>	0.5	0.7	1.0	1.2	1.3	1.4	1.5	1.6	1.5	1.5	1.4	1.2
<b>68</b>	0.5	0.8	1.0	1.3	1.4	1.6	1.7	1.7	1.7	1.6	1.5	1.3
<b>70</b>	0.6	0.9	1.1	1.4	1.6	1.7	1.8	1.8	1.8	1.8	1.6	1.5

Latitude = Apparent Altitude (corrected for refraction and dip) - 1° + a0 + a1 + a2

To determine Latitude, the table is entered with LHA Aries, which is obtained by addition of the observer's Longitude and the GHA Aries from the daily pages of this Almanac. The value of LHA Aries determines which column of the Polaris Tables to be used. Each column refers to a range of 10° of LHA. The value a0 is taken with mental interpolation (taking into account the fractional part of LHA Aries), from the upper table with the units of LHA Aries in degrees as argument. The values of a1 and a2 are taken, without interpolation, from the second and third table with arguments Latitude and Month respectively. The correction terms a0, a1 and a2 are always positive. The final table gives the Azimuth of Polaris.

