APPARENT PLACES OF STARS, 2025

NORTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH

EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 907 = Hipparcos Star No. 11767 = α Ursae Minoris (Polaris)

Day	January		February		March		April		May		June	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	03^h04^m	$+89°22'$	03^h03^m	$+89°22'$	03^h02^m	$+89°22'$	03^h02^m	$+89°22'$	03^h02^m	$+89°22'$	03^h02^m	$+89°22'$
1	63.497	26.543	69.702	31.449	76.436	30.528	32.989	24.164	20.741	15.417	40.924	06.841
2	61.893	26.830	67.581	31.465	74.573	30.354	32.440	23.891	21.031	15.165	41.814	06.615
3	60.166	27.095	65.623	31.461	72.922	30.167	31.875	23.642	21.188	14.916	42.726	06.372
4	58.386	27.329	63.837	31.449	71.456	29.984	31.223	23.412	21.237	14.659	43.709	06.112
5	56.635	27.531	62.187	31.445	70.107	29.818	30.449	23.189	21.225	14.386	44.799	05.841
6	54.987	27.706	60.608	31.457	68.786	29.673	29.558	22.962	21.208	14.094	46.017	05.566
7	53.483	27.867	59.018	31.488	67.416	29.546	28.579	22.721	21.238	13.782	47.368	05.293
8	52.126	28.025	57.346	31.535	65.940	29.431	27.558	22.462	21.359	13.455	48.841	05.030
9	50.876	28.195	55.541	31.591	64.338	29.318	26.548	22.181	21.602	13.116	50.413	04.783
10	49.661	28.384	53.587	31.645	62.616	29.195	25.598	21.878	21.985	12.773	52.048	04.556
11	48.395	28.595	51.496	31.686	60.807	29.056	24.751	21.558	22.508	12.432	53.701	04.352
12	47.003	28.822	49.309	31.705	58.958	28.894	24.034	21.225	23.155	12.100	55.325	04.169
13	45.441	29.055	47.080	31.698	57.124	28.706	23.459	20.886	23.899	11.784	56.882	04.005
14	43.702	29.282	44.863	31.665	55.354	28.495	23.023	20.550	24.699	11.488	58.344	03.852
15	41.814	29.493	42.708	31.607	53.688	28.264	22.705	20.222	25.511	11.211	59.705	03.701
16	39.828	29.680	40.647	31.530	52.149	28.020	22.473	19.908	26.290	10.953	60.988	03.542
17	37.802	29.840	38.700	31.440	50.744	27.770	22.286	19.611	27.003	10.710	62.236	03.367
18	35.788	29.974	36.865	31.346	49.464	27.522	22.100	19.331	27.628	10.473	63.517	03.173
19	33.829	30.086	35.131	31.254	48.284	27.281	21.874	19.066	28.165	10.234	64.903	02.959
20	31.950	30.182	33.471	31.169	47.170	27.052	21.574	18.811	28.642	09.983	66.459	02.732
21	30.165	30.269	31.847	31.096	46.080	26.838	21.184	18.558	29.111	09.712	68.220	02.506
22	28.470	30.354	30.215	31.038	44.971	26.639	20.709	18.298	29.645	09.419	70.176	02.293
23	26.847	30.443	28.525	30.993	43.799	26.452	20.185	18.019	30.326	09.104	72.266	02.109
24	25.266	30.543	26.731	30.956	42.531	26.269	19.682	17.713	31.219	08.777	74.394	01.960
25	23.683	30.656	24.807	30.918	41.155	26.083	19.289	17.380	32.345	08.455	76.459	01.844
26	22.046	30.785	22.754	30.867	39.690	25.879	19.093	17.024	33.666	08.153	78.389	01.751
27	20.302	30.925	20.616	30.789	38.194	25.649	19.143	16.661	35.088	07.884	80.160	01.666
28	18.412	31.069	18.477	30.677	36.758	25.385	19.425	16.308	36.500	07.649	81.796	01.576
29	16.362	31.204	16.436	30.528	35.481	25.090	19.857	15.981	37.810	07.440	83.350	01.471
30	14.179	31.319			34.433	24.776	20.329	15.686	38.973	07.245	84.888	01.348
31	11.930	31.402			33.621	24.463	20.741	15.417	39.997	07.049	86.469	01.208
32	09.702	31.449			32.989	24.164			40.924	06.841		
	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$
	91.66	91.66	91.74	91.73	91.59	91.59	91.27	91.26	90.91	90.90	90.61	90.60

Mean R.A. $03^h05^m10^s.998$ Double lower transit May 7 Mean Dec. $+89°22'10''.295$

APPARENT PLACES OF STARS, 2025

NORTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH

EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 907 = Hipparcos Star No. 11767 = α Ursae Minoris (Polaris)

Day	July		August		September		October		November		December	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	03^h03^m	$+89°21'$	03^h04^m	$+89°21'$	03^h05^m	$+89°22'$	03^h06^m	$+89°22'$	03^h07^m	$+89°22'$	03^h06^m	$+89°22'$
1	26.469	61.208	29.768	59.630	36.905	02.925	32.311	10.269	07.926	20.770	73.659	31.936
2	28.135	61.056	32.088	59.627	39.141	03.131	33.790	10.615	08.318	21.125	73.512	32.232
3	29.913	60.897	34.474	59.643	41.285	03.357	35.126	10.960	08.758	21.456	73.495	32.545
4	31.814	60.740	36.888	59.681	43.304	03.597	36.342	11.293	09.326	21.768	73.515	32.887
5	33.831	60.591	39.288	59.743	45.182	03.843	37.496	11.607	10.067	22.075	73.453	33.260
6	35.944	60.457	41.627	59.829	46.930	04.084	38.668	11.895	10.968	22.395	73.209	33.656
7	38.122	60.343	43.867	59.933	48.593	04.308	39.947	12.162	11.948 12.892	22.743 23.124	72.736	34.059
8	40.325	60.252	45.980	60.048	50.244	04.510	41.392	12.420	13.694	23.534	72.046	34.452
9	42.505	60.186	47.964	60.163	51.970	04.689	43.011	12.684	14.290	23.959	71.196	34.825
10	44.618	60.141	49.848	60.268	53.841	04.854	44.748	12.971	14.672	24.386	70.256	35.170
11	46.630	60.111	51.692	60.355	55.886	05.019	46.506	13.290	14.873	24.801	69.293	35.489
12	48.525	60.088	53.573	60.420	58.081	05.199	48.183	13.641	14.950	25.196	68.359	35.786
13	50.316	60.060	55.565	60.467	60.358	05.406	49.703	14.015	14.965	25.569	67.484	36.068
14	52.042	60.019	57.720	60.506	62.626	05.645	51.031	14.401	14.975	25.920	66.682	36.341
15	53.767	59.959	60.046	60.552	64.802	05.914	52.175	14.786	15.023	26.255	65.949	36.614
16	55.566	59.879	62.508	60.617	66.827	06.204	53.171	15.159	15.134	26.579	65.264	36.892
17	57.503	59.785	65.038	60.712	68.678	06.504	54.073	15.515	15.317	26.900	64.598	37.181
18	59.618	59.688	67.549	60.839	70.367	06.801	54.938	15.852	15.563	27.226	63.913	37.483
19	61.912	59.601	69.964	60.996	71.932	07.087	55.819	16.171	15.849	27.561	63.165	37.800
20	64.343	59.538	72.230	61.172	73.431	07.357	56.753	16.477	16.139	27.911	62.316	38.128
21	66.835	59.507	74.331	61.355	74.920	07.607	57.763	16.777	16.394	28.278	61.336	38.463
22	69.295	59.509	76.286	61.534	76.450	07.843	58.852	17.079	16.572	28.661	60.209	38.798
23	71.644	59.540	78.144	61.698	78.056	08.069	60.004	17.388	16.636	29.057	58.939	39.124
24	73.837	59.586	79.967	61.845	79.751	08.294	61.191	17.713	16.562	29.460	57.552	39.433
25	75.871	59.634	81.814	61.975	81.532	08.524	62.377	18.055	16.337	29.864	56.093	39.718
26	77.785	59.673	83.731	62.093	83.377	08.766	63.519	18.416	15.972	30.260	54.624	39.977
27	79.639	59.695	85.742	62.204	85.254	09.027	64.579	18.796	15.494	30.640	53.211	40.210
28	81.496	59.699	87.853	62.318	87.127	09.307	65.522	19.190	14.955	30.998	51.914	40.424
29	83.412	59.688	90.055	62.442	88.952	09.610	66.325	19.593	14.423	31.331	50.766	40.630
30	85.421	59.668	92.321	62.582	90.691	09.932	66.981	19.996	13.970	31.640	49.763	40.842
31	87.540	59.646	94.617	62.742	92.311	10.269	67.502	20.392	13.659	31.936	48.850	41.073
32	89.768	59.630	96.905	62.925			67.926	20.770			47.931	41.332
	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$
	90.46	90.46	90.49	90.49	90.72	90.71	91.07	91.07	91.54	91.53	91.96	91.95

Mean R.A. $03^h05^m10^s.998$ Double lower transit May 7 Mean Dec. $+89°22'10''.295$

APPARENT PLACES OF STARS, 2025

NORTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH

EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1644 = Hipparcos Star No. 72573 = Grb 2196 UMi

Day	January		February		March		April		May		June	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	14^h48^m	$+82°23'$	14^h48^m	$+82°23'$	14^h48^m	$+82°23'$	14^h49^m	$+82°24'$	14^h48^m	$+82°24'$	14^h48^m	$+82°24'$
1	47.030	63.927	51.986	58.950	56.610	59.989	00.278	06.593	61.355	15.626	59.750	24.636
2	47.183	63.631	52.170	58.927	56.766	60.163	00.331	06.886	61.338	15.891	59.676	24.876
3	47.343	63.355	52.341	58.930	56.907	60.356	00.384	07.154	61.330	16.147	59.595	25.134
4	47.506	63.106	52.501	58.945	57.035	60.550	00.444	07.399	61.329 61.330	16.408 16.682	59.506	25.405
5	47.667	62.890	52.651	58.958	57.155	60.732	00.513	07.634	61.331	16.974	59.407	25.683
6	47.820	62.703	52.797	58.958	57.273	60.894	00.589	07.868	61.326	17.286	59.299	25.960
7	47.962	62.536	52.944	58.940	57.395	61.036	00.670	08.112	61.314	17.616	59.182	26.230
8	48.095	62.377	53.098	58.904	57.525	61.164	00.752	08.373	61.292	17.959	59.060	26.487
9	48.221	62.210	53.261	58.856	57.663	61.286	00.832	08.656	61.260	18.308	58.933	26.724
10	48.346	62.028	53.434	58.806	57.809	61.413	00.906	08.960	61.218	18.658	58.807	26.939
11	48.475	61.824	53.615	58.766	57.959	61.555	00.972	09.284	61.168	19.001	58.683	27.132
12	48.614	61.602	53.802	58.744	58.111	61.718	01.028	09.623	61.111	19.330	58.564	27.304
13	48.765	61.370	53.991	58.748	58.260	61.905	01.073	09.969	61.052	19.641	58.452	27.463
14	48.928	61.139	54.177	58.779	58.403	62.118	01.109	10.316	60.992	19.932	58.346	27.616
15	49.101	60.922	54.357	58.835	58.537	62.351	01.137	10.657	60.935	20.203	58.245	27.773
16	49.279	60.726	54.530	58.913	58.662	62.601	01.159	10.986	60.883	20.458	58.145	27.942
17	49.458	60.558	54.695	59.006	58.778	62.859	01.180	11.299	60.837	20.704	58.042	28.129
18	49.636	60.416	54.851	59.106	58.885	63.118	01.201	11.595	60.796	20.948	57.931	28.336
19	49.808	60.298	55.001	59.207	58.985	63.372	01.225	11.875	60.758	21.199	57.807	28.559
20	49.975	60.199	55.147	59.303	59.082	63.615	01.254	12.142	60.720	21.467	57.669	28.787
21	50.134	60.111	55.291	59.388	59.177	63.845	01.288	12.405	60.676	21.757	57.518	29.006
22	50.289	60.028	55.437	59.460	59.275	64.059	01.328	12.671	60.621	22.070	57.359	29.202
23	50.439	59.943	55.587	59.518	59.377	64.261	01.370	12.951	60.551	22.398	57.197	29.364
24	50.587	59.851	55.745	59.566	59.486	64.454	01.409	13.254	60.465	22.728	57.041	29.491
25	50.737	59.745	55.911	59.611	59.601	64.649	01.439	13.585	60.366	23.044	56.894	29.590
26	50.891	59.625	56.085	59.665	59.721	64.854	01.456	13.941	60.261	23.332	56.758	29.676
27	51.053	59.493	56.263	59.740	59.842	65.083	01.455	14.311	60.156	23.584	56.631	29.761
28	51.226	59.353	56.440	59.846	59.958	65.343	01.438	14.677	60.059	23.806	56.508	29.858
29	51.409	59.218	56.610	59.989	60.062	65.636	01.411	15.024	59.971	24.009	56.385	29.972
30	51.600	59.098			60.149	65.953	01.381	15.340	59.893	24.207	56.258	30.104
31	51.794	59.007			60.220	66.278	01.355	15.626	59.821	24.414	56.123	30.250
32	51.986	58.950			60.278	66.593			59.750	24.636		
	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$
	7.56	7.49	7.56	7.49	7.56	7.50	7.56	7.50	7.57	7.50	7.57	7.50

Mean R.A. $14^h48^m47^s.635$ Double lower transit November 2 Mean Dec. $+82°24'19''.880$

APPARENT PLACES OF STARS, 2025

NORTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH

EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1644 = Hipparcos Star No. 72573 = Grb 2196 UMi

Day	July		August		September		October		November		December	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	14^h48^m	$+82°24'$	14^h48^m	$+82°24'$	14^h48^m	$+82°24'$	14^h48^m	$+82°24'$	14^h48^m	$+82°23'$	14^h48^m	$+82°23'$
1	56.123	30.250	51.116	31.553	45.944	27.722	41.898	19.738	39.683	68.622	39.992	57.323
2	55.980	30.405	50.930	31.535	45.784	27.487	41.805	19.373	39.665	68.264	40.032	57.017
3	55.827	30.561	50.744	31.495	45.633	27.235	41.720	19.016	39.640	67.928	40.065	56.699
4	55.667	30.711	50.560	31.432	45.493	26.974	41.639	18.675	39.604	67.602	40.097	56.357
5	55.501	30.848	50.381	31.344	45.360	26.714	41.557	18.357	39.558	67.269	40.136	55.983
6	55.332	30.966	50.210	31.236	45.233	26.467	41.467	18.063	39.508	66.914	40.189	55.582
7	55.162	31.062	50.048	31.114	45.106	26.239	41.365	17.783	39.461	66.526	40.258	55.169
8	54.994	31.134	49.894	30.987	44.974	26.034	41.253	17.502	39.427	66.108	40.342	54.760
9	54.832	31.182	49.747	30.866	44.831	25.847	41.134	17.204	39.407	65.668	40.436	54.370
10	54.677	31.213	49.602	30.761	44.677	25.666	41.014	16.876	39.403	65.223	40.536	54.005
11	54.530	31.234	49.453	30.676	44.512	25.475	40.902	16.516	39.411	64.786	40.636	53.669
12	54.390	31.255	49.296	30.611	44.343	25.260	40.802	16.128	39.428	64.366	40.732	53.356
13	54.253	31.285	49.127	30.557	44.177	25.014	40.716	15.725	39.447	63.969	40.825	53.062
14	54.115	31.333	48.947	30.502	44.018	24.737	40.643	15.318	39.466	63.595	40.912	52.779
15	53.971	31.400	48.757	30.432	43.870	24.435	40.580	14.920	39.482	63.239	40.995	52.499
16	53.817	31.483	48.565	30.336	43.735	24.119	40.523	14.538	39.493	62.896	41.075	52.216
17	53.650	31.574	48.375	30.207	43.612	23.801	40.468	14.175	39.500	62.559	41.156	51.924
18	53.472	31.660	48.192	30.047	43.496	23.492	40.411	13.830	39.503	62.220	41.240	51.619
19	53.284	31.726	48.021	29.863	43.384	23.198	40.349	13.501	39.505	61.874	41.330	51.301
20	53.094	31.763	47.862	29.668	43.272	22.922	40.283	13.180	39.509	61.514	41.427	50.971
21	52.906	31.766	47.712	29.472	43.156	22.663	40.211	12.860	39.516	61.138	41.535	50.632
22	52.727	31.738	47.568	29.288	43.035	22.415	40.137	12.534	39.531	60.746	41.653	50.292
23	52.559	31.689	47.425	29.120	42.907	22.172	40.061	12.196	39.555	60.340	41.781	49.958
24	52.402	31.632	47.280	28.970	42.774	21.925	39.987	11.840	39.590	59.925	41.916	49.639
25	52.253	31.581	47.128	28.834	42.638	21.668	39.919	11.466	39.635	59.508	42.054	49.341
26	52.106	31.544	46.970	28.706	42.501	21.395	39.857	11.074	39.690	59.096	42.193	49.069
27	51.958	31.525	46.805	28.579	42.366	21.102	39.805	10.665	39.752	58.697	42.328	48.823
28	51.805	31.522	46.634	28.444	42.236	20.787	39.764	10.247	39.817	58.319	42.454	48.599
29	51.644	31.531	46.459	28.294	42.114	20.453	39.733	09.825	39.882	57.965	42.571	48.388
30	51.475	31.544	46.284	28.126	42.001	20.101	39.712	09.408	39.942	57.635	42.680	48.177
31	51.298	31.554	46.112	27.936	41.898	19.738	39.696	09.004	39.992	57.323	42.783	47.951
32	51.116	31.553	45.944	27.722			39.683	08.622			42.889	47.700
	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$	$\sec(\delta)$	$\tan(\delta)$
	7.57	7.50	7.57	7.50	7.57	7.50	7.57	7.50	7.56	7.50	7.56	7.49

Mean R.A. $14^h48^m47^s.635$ Double lower transit November 2 Mean Dec. $+82°24'19''.880$