

Celestial Geometry Worksheet

Based on the provided information, solve the following celestial geometry problems.

Longitude: 118° W

Latitude: 34° N

1. What is the altitude (in degrees) of the pole star from the northern horizon? __34°__
2. What is the pole star's declination? __90°__
3. What is the declination circle at zenith? 34° N dec
4. What is the name of the declination circle 90° south of the pole star? Celestial equator
5. What is the declination of a star that just touches the southern horizon on the meridian (*i.e.*, it just rises just enough in the south to be seen but never gets off the horizon)? -56° or 56° S dec
6. What is the declination of a star that just touches the northern horizon in the lower meridian (*i.e.*, a circumpolar star that never quite sets)? +56° or 56° N dec
7. What is the northern-most latitude in the northern hemisphere where the sun can be seen directly overhead at noon? 23.5° N lat
8. Why is the latitude from question 6 known as the Tropic of Cancer?
 At the summer solstice, the Sun was in the constellation cancer at the time that the Tropic of Cancer line was defined. The Sun is currently between the horns of Taurus and the foot of Castor (in Gemini) when it is on the Tropic of Cancer. The Tropic of Capricorn is the analogous situation during the winter solstice.
9. What is the southern-most latitude in the northern hemisphere where, for at least one day in the winter, the sun will not rise? 66.5° N lat.
10. Where is the pole star if you are standing directly at the north terrestrial pole? overhead