

Polaris Project

North Star

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End of Unit 3 Assignment

This assignment consists of four parts. The first is a review with a couple of practice questions linked directly to their answers. The second is a short quiz that you take using WebCT. It will be instantly scored for you by WebCT; you only get one chance to take it, however, so be sure you are ready! The third part is an essay question. The question appears below; when you are ready to answer it, log on to WebCT and submit your essay. Finally, for each unit, you should log on to WebCT and contribute a question, an answer, or a comment to one of the posted topics. If you would like to introduce a new topic instead of contributing to an existing thread, please send your topic idea to your instructor. If you find the material in this unit challenging, you might want to start with the "discussion" part of the assignment in order to get some help with some of the ideas.

Brief summary of Unit Two:

In this unit we have covered the apparent daily motion of the sky that results from the rotation of the earth. We have then gone through a couple of useful concepts - equatorial coordinates, used to make a record of the position of an object on the sky independent of the position of the observer, and meridian diagrams, used to figure out how high a star or planet will get in a particular observer's sky.

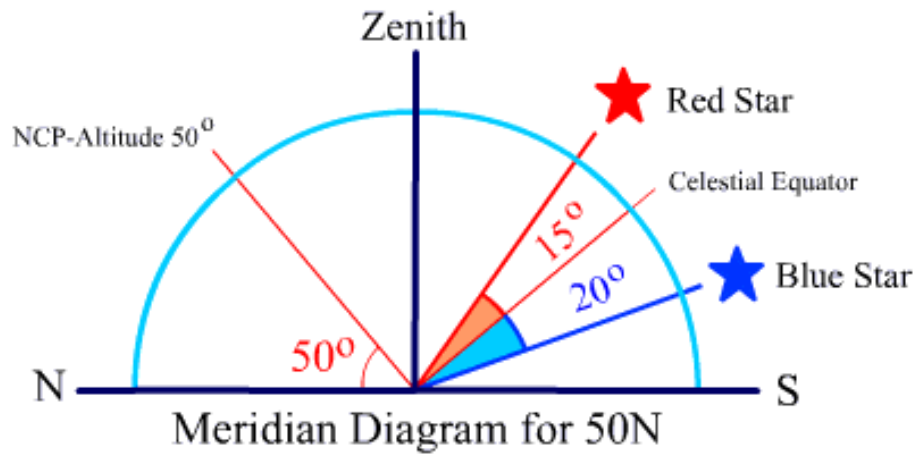
Before you go to the quiz, see how you do on these two questions. If you have trouble, you might want to review the unit, send a question to the discussion group, or seek help from the instructor.

Practice Question One

A star rises five degrees north of due east. Where will it set? What can you say about the altitude of this star when it transits the meridian?

Practice Question Two

In this meridian diagram what is the observer's latitude? Is the declination of the red star positive or negative? What is the altitude of the red star on the meridian at this latitude if its declination is 25? Is the declination of the blue star positive or negative? Can the blue star be seen by an observer at latitude 75N? Explain!



When you are ready, [WebCT](#) and take Quiz Three.

You will get instant feedback on your score on Quiz Three (and your instructor will also be informed of your score). If your score is OK, you may proceed directly to the Essay Question Two on WebCT. Otherwise, you might want to look at what you missed, ask your instructor about questions you missed, or review relevant parts of the unit.

Essay Question

On one day this winter you notice that the Sun is rising 30 degrees S of E. Is this an observation that could be made by an observer living near the Earth's equator? Why/ why not? Can you conclude that the Sun will transit the meridian at $(90 - \text{latitude}) + 30$ degrees, or not? Explain!

When you are ready to answer this question, go to [WebCT](#) to write your answer.

Alternative to the Essay Question

Observe a sunrise and determine how far north, south, and east it rose. On the same day, or as close to it as is possible, measure the altitude of the sun at noon. (One way is to use a stick of known length held vertically. Determine the length of its shadow and draw the resulting triangle on a piece of paper. You can then measure the angle. If you have trig tables, you can use $(\text{stick height} / \text{shadow length}) = \text{tangent}(\text{altitude})$.)

Don't forget to contribute to the discussion on [WebCT](#) on one of the topics in this unit!

Discussion.

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