Assignment 3

Please type your responses into a word document, and submit that on UNM Learn. Be sure to number your responses 1, 2(a), etc. so I know which question you're answering, and **show your work** for all questions. If you get stuck, post a question on the forums. Chances are you're not the only one!

1. *(15 points) You're looking for sites for observatories in the following wavelength bands. What are the main criteria of excellence for each?*

   (a) *Visible.*

   (b) *Infrared.*

   (c) *Radio.*

2. *(15 points) Where are you on Earth in each of the following?*

   (a) *The stars rise and set perpendicular to the horizon.*

   (b) *The stars circle the sky parallel to the horizon.*

   (c) *The celestial equator passes through the zenith.*

   (d) *In the course of a year, all stars are visible.*

   (e) *The Sun rises on March 21 and doesn't set until September 21 (ideally).*

3. *(9 points) What is the phase of the Moon if it*

   (a) *rises at 3:00 pm?*

   (b) *is highest in the sky at sunrise?*

   (c) *sets at 10:00 am?*

4. *(10 points) Your pupil is typically 3 mm wide, but can expand to 7 mm in darkness. How many times more light can it gather in darkness?*

5. *(15 points) People are often bothered in in discovering that reflecting telescopes have a reflecting mirror.*

   (a) *(10 points) In a Cassegrain focus, what fraction of light do you lose if the primary mirror is 8 m in diameter and the secondary 1 m?*

   (b) *Explain why this might be worth the reflecting telescope design.*