Assignment 4

Remember to number your answers 1a. 1b., etc. so I know which questions you're answering. Be sure to show your work and reasoning for full credit.

1. *(30 points) Showing your work,*

   (a) *Calculate the density of Jupiter and compare it to that of Earth.*

   (b) *Calculate the density of Saturn and compare it to that of water. How can this be?*

2. *(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.*

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

4. *(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.*