The following should give you a bit of a sampling of the types of test questions I may ask and serve as a review for the topics we've discussed so far this semester. On the test I will supply you with any tables of data, equations, or constants that you could need to complete the questions. For the sake of this review, I'm assuming you can use your book to look these types of things up. Also realize that the test will decidedly NOT be this long! I just wanted to toss you a nice batch of questions. You'll likely want to work these through on your own paper except where you need to draw on an image, as I didn't leave you much room...

1. I'm making a scale model of the solar system and I'm using a soccer ball for the Sun. If a soccer ball has a diameter of approximately 22 cm, how far should I place the Earth from the soccer ball to keep everything to scale?

2. My star chart tells me that Saturn should be $30^\circ\ 52'\ 31''$ above the southern horizon. What angle is this in decimal form?

3. On Figure 1, indicate where the Southern Celestial Pole is located.

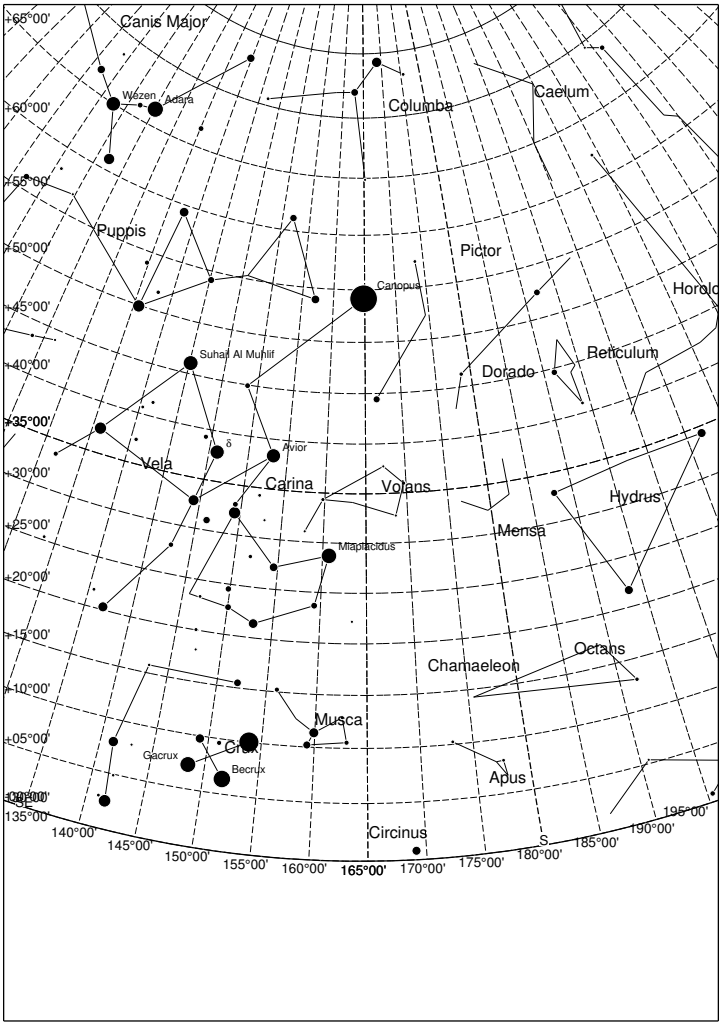

Figure 1: Draw in where the Southern Celestial Pole should be located!

4. I'm looking at the night sky from London, England (51.5 °N, 0.1 °W). Where on the below image should I look expect to see the North star? Draw it's location into Figure 2.

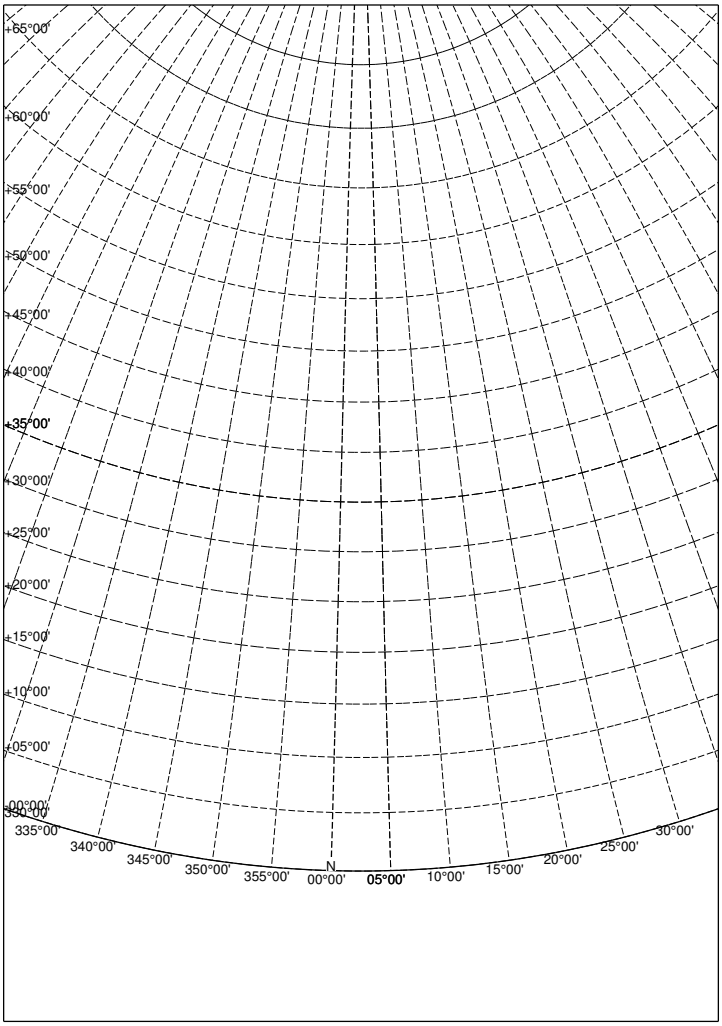

Figure 2: Draw in where you would see the North star from London, England.

5. Explain what causes the Earth's seasons and why certain areas get warmer than others as a result.

6. If the Earth, Moon, and Sun are configured as below (not to scale), what is the current lunar phase as seen by all the Earth-folk? Is it waxing? Waning? Crescent? Gibbous?

7. What must the Moon's phase be if someone is witnessing a total solar eclipse from the Earth?
8. What is planetary retrograde motion?
9. Figure 3 is a sketch of some objects orbit around the Sun. You can assume each gridline is 1 AU. Draw in where the Sun could be located.

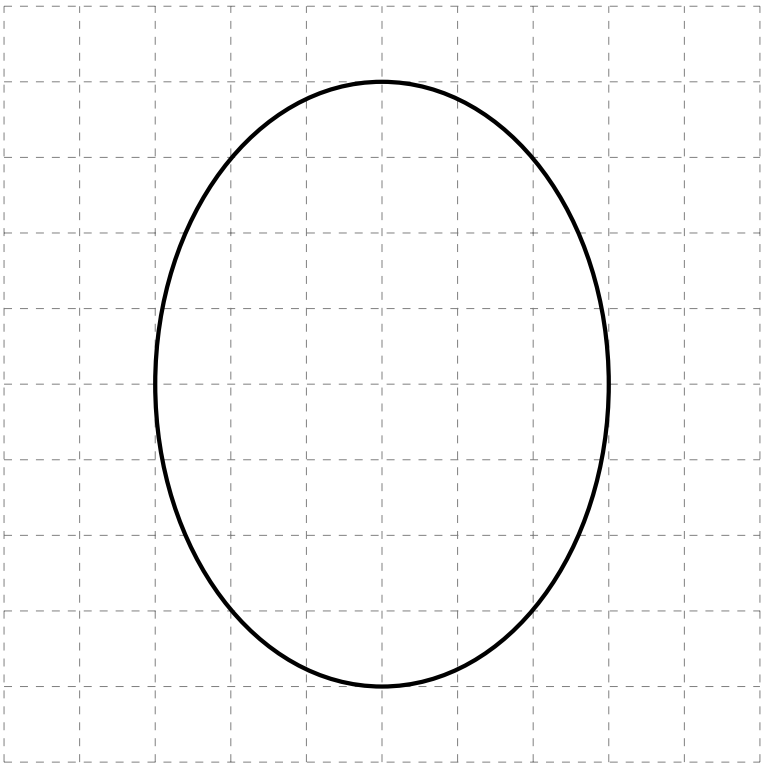

Figure 3: Sketch in where the Sun could be located!

10. Jupiter takes 11.86 yrs to complete one orbit around the Sun and has a mass 1000 times smaller than the Sun's mass. How far is Jupiter from the Sun?

11. Use Figure 4 to answer the following questions. Each gridline is 100 nm.

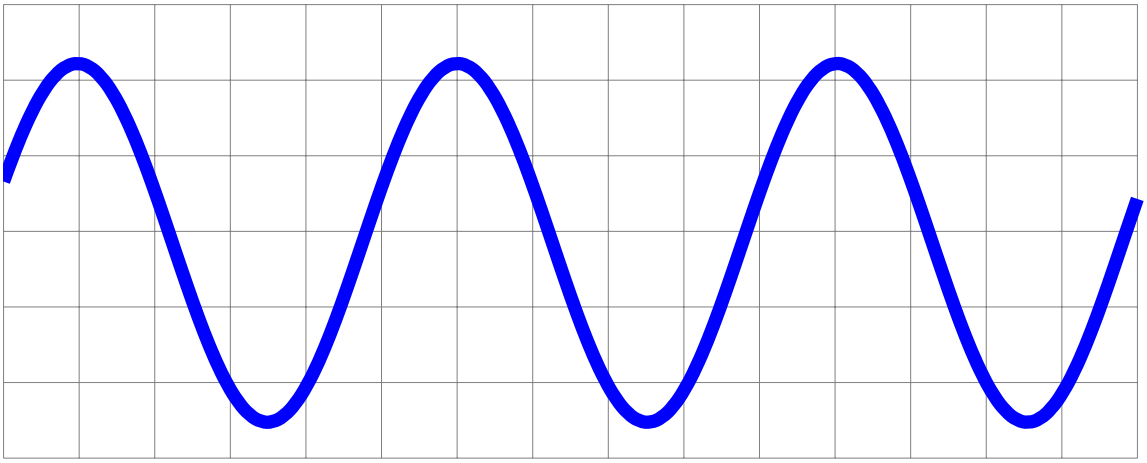

Figure 4: Some particular light wave...

(a) What is the wavelength of this light?

(b) Approximately what color of light would this correspond to?

12. Match the below spectra with what could have caused them. Your possibilies are:

A) A glowing piece of metal

B) A fluorescent lightbulb

C) A star

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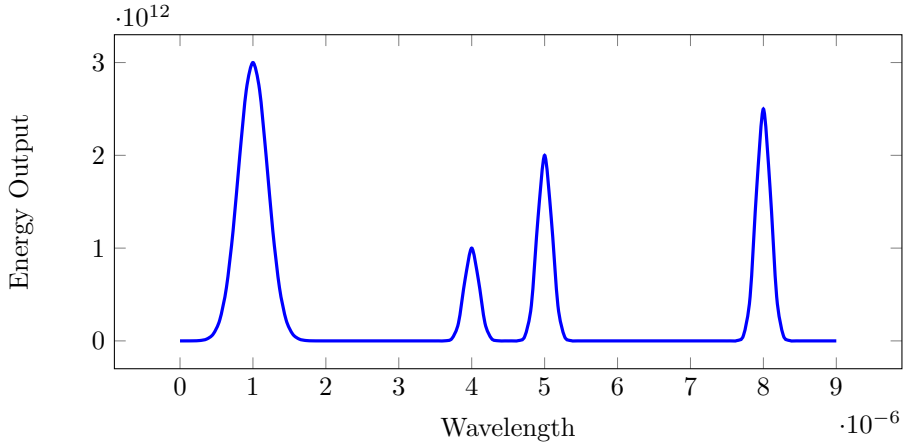

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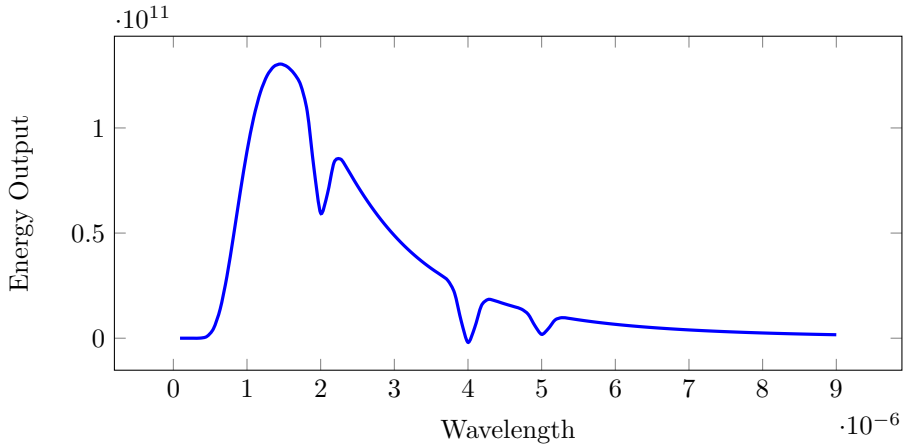

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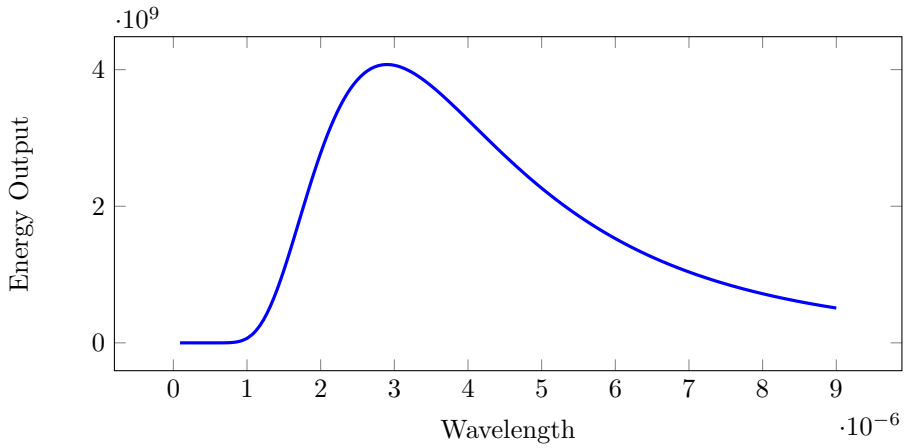
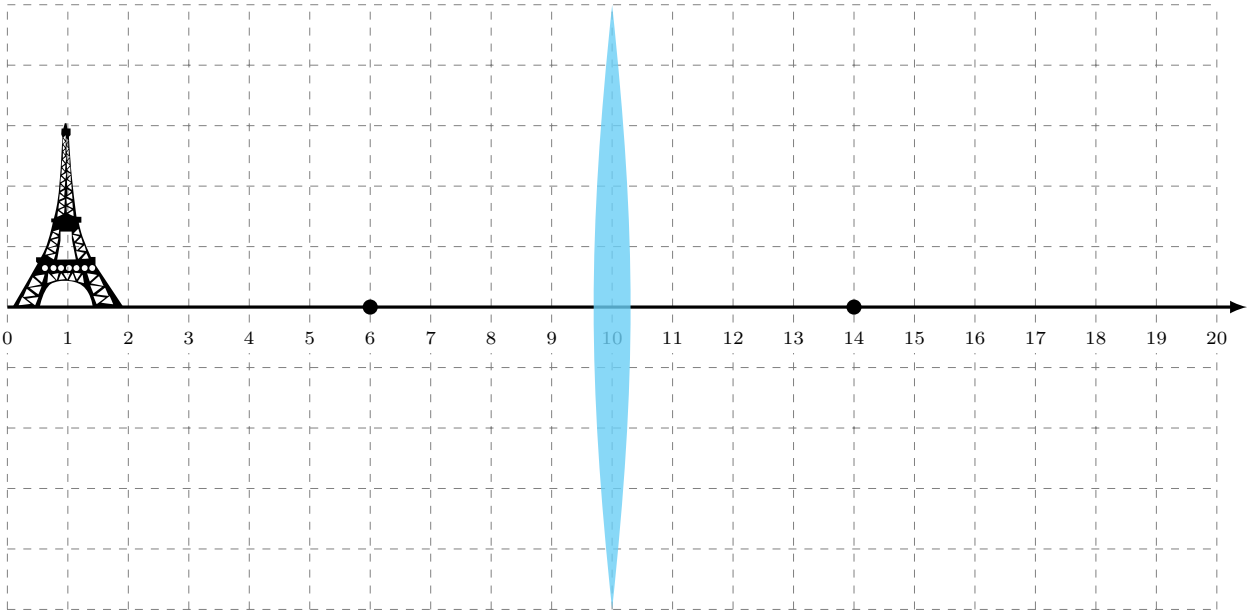
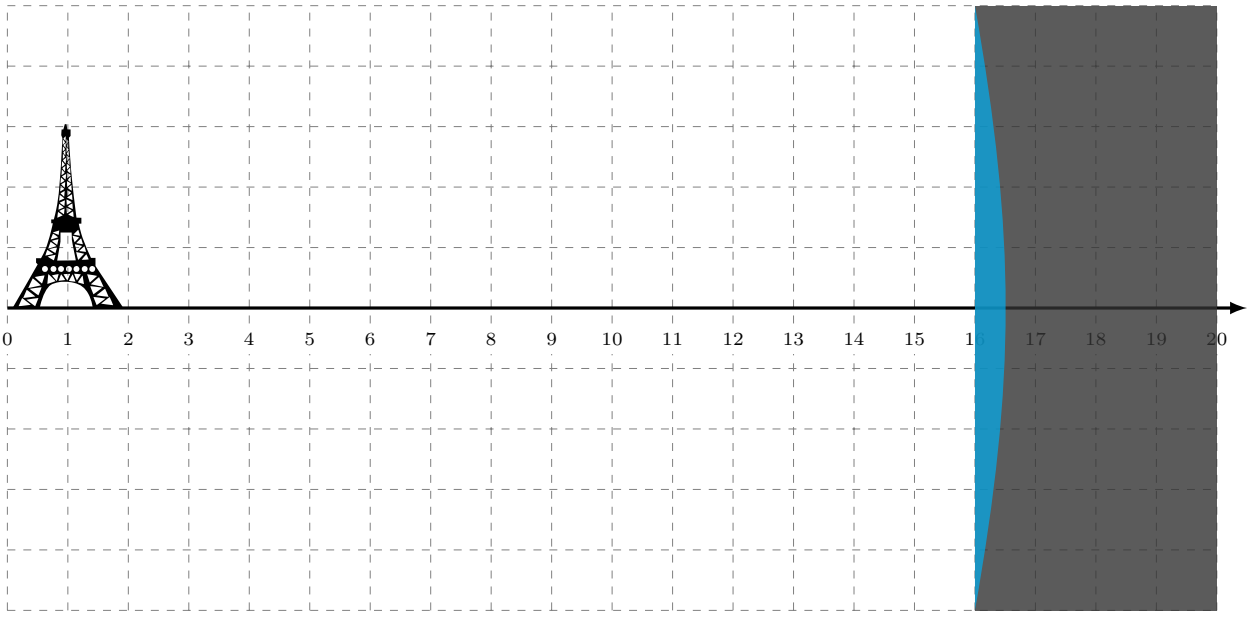


13. You are looking at the Eiffel Tower through the lens below. Given the focal points of the lens, determine the position of the sharp image of the Eiffel Tower. How large would the image of the Eiffel Tower appear?



14. You are looking at the same Eiffel Tower, but now through a reflecting mirror. You are told the mirror has a focal length of 6 units. Determine the position and size of the image of the Eiffel Tower.



15. You wish to view an object that is particularly dim and difficult to see. Which aspect of your telescope should you look to increase to help you better see this object?
    A. The aperture size
    B. The angular resolution
    C. The field of view
    D. The magnification

16. If you want to increase the magnification power of your telescope, you should:
    A. Make your telescope twice as long
    B. Get a telescope with a larger aperture
    C. Remove the secondary mirror from your telescope
    D. Swap out to a different eye-piece

17. When the VLA is in its smallest configuration, is has what properties? Here resolution refers to angular resolution (where smaller is better) and sensitivity refers to light sensitivity (where bigger is better).
    A. Excellent resolution, poor sensitivity
    B. Excellent resolution, excellent sensitivity
    C. Poor resolution, poor sensitivity
    D. Poor resolution, excellent sensitivity

18. I look through my telescope and, despite my best efforts at focusing, I see a blurry image. What is one thing that could be causing this?

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