Physics 107: Astronomy, Written HW 3. Due Fri Oct 25 at beginning of class

Write up neatly on a separate sheet(s) of paper solutions for the following problems.

Complete solutions use complete sentences; explain all reasoning; show all steps for any calculations.

1) In the context of Ch 5, explain why we have to observe stars and other astronomical objects from above Earth's atmosphere in order to fully learn about their properties.
2) Below is part of a spectrum (flux vs. wavelength) of a star taken with the Hubble Space Telescope.
    a. At about what wavelength is the most light emitted by the star? Explain how you arrived at your answer and also mark/label clearly on the graph where your answer lies. (Note: the horizontal scale is in Angstroms 10 angstroms = 1 nanometer).
    b. Using Wein's law, determine the temperature of this star.
    c. If this star is the same size as our sun, calculate the star's luminosity.
    d. If the star is 5.0×10^{12} m away from Earth, calculate the intensity of its light as it hits the earth.
    e. Compare the answer to 2.d. to the intensity of our Sun's light as it hits the earth.