Assignment 2

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.

1. *(15 points) Pluto is 100 times farther from the Sun than Mercury. How much greater is the flux F of the Sun at Mercury than it is at Pluto, and what does this mean?*

2. *(10 points) Show all of your math in the following: What type of electromagnetic radiation would you observe from..*

   (a) *(5 points) A star with temperature 5800 K?*

   (b) *(5 points) A star heated to 1.0×10^6 K?*

3. *(20 points) For Hydrogen, the nth electron's energy is given by*

$$E_n = \frac{-2.18 \times 10^{-18} \ J}{n^2}$$

   where J stands for Joules, a unit of energy. So,

$$E_1 = \frac{-2.18 \times 10^{-18}}{1^2} = -2.18 \times 10^{-18} \ J$$

$$E_2 = \frac{-2.18 \times 10^{-18}}{2^2} = -5.45 \times 10^{-19} \ J$$

$$E_3 = \frac{-2.18 \times 10^{-18}}{3^2} = -2.42 \times 10^{-19} \ J$$

   (a) *(5 points) What is the fifth electron energy level of Hydrogen, E_5?*

   (b) *(5 points) An electron goes from the third energy level to the ground (first) energy level and emits light in the form of a photon. What is the frequency of this light?*

   (c) *(10 points) Light hits an electron in the ground state and excites it to the next state ($E_1 \rightarrow E_2$). What is the wavelength of this light?*