Physics 174 28 February, 2007
Exercise 6 - Due 7 March

Name: _____

Electromagnetic Radiation

Table: _____

1. A wave has a wavelength of 2 m and a frequency of 4 Hz. How fast is it propagating?

2. An infrared photon has a wavelength 3000 times the wavelength of an x-ray photon. Which carries more energy? What is the ratio of the energies?

3. Which has a better theoretical resolution, a 1 m telescope operating at a wavelength of 5000 Å (0.5 μm), or a 10 m telescope used at a wavelength of 5 μm?

4. A 300 K blackbody (which is you), emits more energy at a wavelength of 10 μm than any other wavelength. At what wavelength would the emission of a 3000 K blackbody peak?

5. Two spherical blackbodies are heated to the same temperature, but one has three times the radius of the other. How much more luminous is the larger blackbody?