29:50 Stars, Galaxies, and the Universe
Instructor: Spangler
Homework Assignment # 5
September 28, 2010

Note: Corresponding quiz on ICON must be completed by 8AM, Monday, October 4

1. The bright star Spica in the constellation of Virgo has a photospheric temperature of 20,000K (the latest estimate, which is a little bit lower than in the figure in the lecture notes). At what wavelength is Spica brightest?
   (a) 755 nanometers (nm)
   (b) 43 nm
   (c) 500 nm
   (d) 145 nm
   (e) 1237 nm

2. In what part of the electromagnetic spectrum is Spica brightest?
   (a) gamma rays
   (b) ultraviolet light
   (c) visible light
   (d) infrared radiation
   (e) radio waves

3. The bright star Arcturus is a spectral class K0 giant. With this information, you know that it is
   (a) closer to us than the Sun
   (b) cooler than the Sun
   (c) more massive than the Sun
   (d) younger than the Sun

4. Below are listed 5 of the brightest stars in the sky (brightest apparent magnitudes). Which one is the hottest, i.e. has the highest photospheric temperature? **Hint:** You will have to use material in the textbook to answer this one.
   (a) Spica
   (b) Betelgeuse
   (c) Arcturus
   (d) Capella
   (e) Antares

5. At what distance from the center of the Sun (given in terms of percent of a solar radius) is the density of the gas in the solar interior equal to that of gold?

Think that for smaller radii (closer to the center) the density is higher still. The numbers below are approximate values.
(a) 0.5 %
(b) 2.0 %
(c) 27 %
(d) 82 %
(e) 0.00025 %