AST 250 – Spring 2019
Homework Due: Wednesday Feb. 6th

13. The first exoplanet to be discovered around a main sequence star was a half-Jupiter mass planet orbiting very close to the star 51 Pegasi (m_V = +5.49 mag, D = 15.61 pc). **HINT: Use ratios of equations where possible to simplify the math.**

    (a)   What is the absolute visual magnitude of 51 Peg?

    (b)   How does the luminosity of 51 Peg compare to the Sun (quote as ratio to L_{sun})? Use information you derived from part (a) to calculate the luminosity.

    (c)   The spectrum of 51 Peg peaks at a wavelength of 520.3 nm. How big is 51 Peg compare to the Sun (quote as a ratio to R_{sun})? Use T = 5780 K for the Sun.

    (d)   If the planet 51 Peg b orbits at a radius of 0.053 AU on a 4.23 day orbit, how many times larger is the incident flux on the planet's atmosphere than the solar flux at the Earth?