Homework 5

1 (1/27, 30 mins) Write a program that includes functions that convert between wavelength, frequency, and energy, and between F_λ (in ergs/cm^2/s/Å) and F_ν (in ergs/cm^2/s/Hz). All of these functions should exist in a single file in Python (preferred), IDL, C, C++, or Fortran file. Use the routines to determine frequency and energy at 5500 Å as well as the conversion factor between F_λ and F_ν at 3000 Å, 5500 Å, and 8000 Å.

Using

$$F_\nu = -F_\lambda \frac{\lambda^2}{c}$$
$$\frac{F_\nu}{F_\lambda} = \frac{-\lambda^2}{c}$$

the conversion factor is $\frac{-\lambda^2}{c}$. This produces a conversion factor of -3.002$\times 10^{-20}$ for $\lambda = 3000$ Å, -1.009$\times 10^{-19}$ for $\lambda = 5500$ Å, and -2.135$\times 10^{-19}$ for $\lambda = 8000$ Å.