PHY 3106, Fall 2017, Homework #6
due Thursday, Oct. 26, at 9:30 am (beginning of class)

1.) Find the smallest wavelength that can be seen in emission spectra from double ionized lithium, Li^{++}.

2.) Doubly ionized lithium, Li^{++}, is a hydrogen-like atom. Find the energies of the first 3 excited states and the ground state.

3.) A hydrogen atom in the ground state absorbs a photon, which raises the electron up to an $n=3$ state. Assuming a lifetime for the excited state of 10^{-10} s (typical for atomic excitations), calculate the number of electron revolutions around the proton while in the excited state before it drops back down to the ground state. [Hint: Use eqn. 4.24]

4.) The Lyman series has $n_f=1$. Find the longest and shortest wavelengths in the Lyman series for hydrogen. Write what each wavelength corresponds to in terms of electron transitions.