The intense yellow light emitted from a sodium street lamp has a wavelength of $\lambda = 590$ nm. The light is emitted when an electron moves from a 3$p$ to a 3$s$ orbital. What is the energy of (a) one photon and (b) one mole of photons of this light?

(a) Answer: 
(b) Answer: 

Sketch the shape of a 3$s$ and a 3$p$ orbital and label any spherical nodes that may be present.

3$s$ orbital

3$p$ orbital

What does a node represent?