

# Solution

How does the angular part of the wave function depend on the principal quantum number,  $n$ ?

- a. The number of “lobes” increases as  $n$  increases.
- b. As  $n$  increases, the wave function becomes more concentrated in the  $xy$  plane.
- c. No dependence.

The principal quantum number describes the radial motion, not the angular motion.  $R_{n\ell}(r)$  depends on  $n$ , but  $Y_{\ell m}(\theta, \phi)$  does not.