Quiz #19 (L Squared Operator)

Prob.1(3)

A quantum mechanical particle is in a state described by a spherical harmonic function having l = 2.

(a)(1) What is the square of the angular momentum for this particle?

(b)(1) What are the possible values of the magnitude of the angular momentum z-component for this particle?

(c)(1) If the z-component of the angular momentum is measured right after the measurement of the square of the angular momentum, what is the minimum possible uncertainty for these measurements?

Prob.2(2)

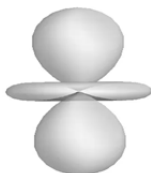Identify following spherical harmonic functions with different quantum number l with the "spectroscopic notation".

(a) l = 2

(b) l = 6

Prob.3 (2)

Identify l and m for following spherical harmonic functions.

(a)   (b)