
Quiz 2

Name: _____ Roll No. _____

Date: 29/08/2014 Time: 25 min. Total points: 10

1. A particle moving in three dimensions is described by the following classical Hamiltonian.

$$H = \frac{p_x^2}{2} + \frac{p_y^2}{2} + \frac{p_z^2}{2} + \frac{kx^2}{2} + \frac{ky^2}{2} + \frac{kz^2}{2}$$

   For this system, can you simultaneously measure (a) x and p_x (b) x and p_y. Justify your answer. (4 points)

2. Find the expectation value of momentum for particle in 1D box ground state. (2 points)

3. Given $\hat{A}$ is a Hermitian operator and c is a constant, prove that (a) $c\hat{A}$ is a Hermitian operator when c is real and (b) $c\hat{A}$ is not Hermitian when c is imaginary. (4 points)