

your name(s) _____

Physics 321 Quiz #8 - Friday, April 13 2018

Work in groups of 3 or less.

Consider a mass m that moves according to the following potential,

$$V(x, y, z) = \frac{k}{2}(x + y)^2.$$

Which of the following quantities are conserved? (Momentum is \vec{p} , angular momentum is \vec{L} and the energy is E)

Circle the conserved quantities.

- a) p_x
- b) p_y
- c) p_z ✓
- d) $p_x + p_y$
- e) $p_x - p_y$ ✓
- f) $p_x + p_z$
- g) $p_x - p_z$
- h) $p_y + p_z$
- i) $p_y - p_z$
- j) L_x
- k) L_y
- l) L_z
- m) $L_x + L_y$ ✓
- n) $L_x - L_y$
- o) $L_x + L_z$
- p) $L_x - L_z$
- q) $L_y + L_z$
- r) $L_y - L_z$
- s) E ✓
- t) $|\vec{p}|$
- u) $|\vec{L}|$