your name(s)_



Physics 321 Quiz #11 - Friday, April. 12 2019

Work in groups of 3 or less.

1. (5 pts) Consider a mass *m* that moves according to the following potential,

$$V(x,y,z)=rac{V_0}{\sqrt{x^2+y^2+a^2}}$$

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.

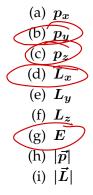
(a) p_x (b) p_y (c) \vec{p}_z (d) L_x (e) L_y (f) L_z (g) E(h) $|\vec{p}|$ (i) $|\vec{L}|$

2. (5 pts) Consider a mass *m* that moves according to the following potential,

$$V(x,y,z)=rac{V_0}{|x|+a}$$

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.



3. (5 pts) Consider a mass *m* that moves according to the following potential,

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

Name as many independently conserved quantities as you can.

$$P \times P_{y}, L_{x} + L_{y}, E_{z}, P_{z}$$