

### HW #3

1. a particle moves in a central force field given by the potential

$$V(r) = -k \frac{e^{-ar}}{r}, \quad \text{where } k > 0 \text{ and}$$

$a > 0$  are constants. Write down the EoM for this system. Use 1D plots to discuss the nature of the motion qualitatively. Are circular orbits possible? If yes, derive an equation for  $r_0$ , the radius of the circular orbit.

2. Goldstein Ch. 3, Ex. 3.11

3. Goldstein Ch. 3, Ex. 3.14

4. Goldstein Ch. 3, Ex. 3.20 a, b