Assignment-1

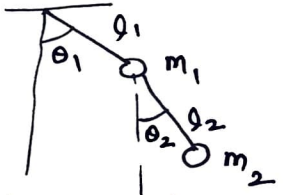
09.09.2020

Q.1. A particle of mass M is projected with initial velocity 'u' at an angle 'θ' with the horizontal. Use lagrange's EOM to describe the motion of the projectile.

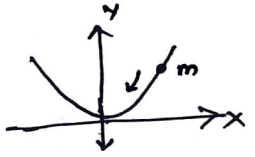
Q.2. A particle of mass, m, moves in 1-D such that it has the lagrangian,

$$L = \frac{m^2 \dot{x}^4}{12} + m\dot{x}^2 V(x) - [V(x)]^2$$. Find EOM.

Q.3. A double pendulum consists of two point masses, m, attached by massless springs of length, l, as shown, Derive the lagrange's EOM.



Q.4. A particle of mass, m, slides under gravity without friction along the parabolic path $y = ax^2$ as shown. Here, a is a constant. Write lagrange's EOM.



Q.5. Find lagrangian and lagrange's EOM for a bead sliding on a uniformly rotating wire in a force free space.