

new technologies can enhance and disenfranchise

❖ GPT-4



write a problem for me that has three degrees of freedom, but one constraint that can be solved with Lagrangian mechanics. Don't show me how to solve it. Just show me a problem that can be solved using that approach.



Certainly! Here's a problem that involves three degrees of freedom with one constraint, suitable for analysis using Lagrangian mechanics:



Pendulum with a Sliding Bead:

Consider a pendulum of length L which is free to swing in a vertical plane. This pendulum is composed of a lightweight, inextensible rod with a frictionless hinge at its upper end, allowing it to swing freely. Attached to this rod is a small bead of mass m that can slide along the rod without any friction. The bead is not fixed and is influenced by gravity, so it can slide up and down the rod as the pendulum swings.

Given:

Thank you!

