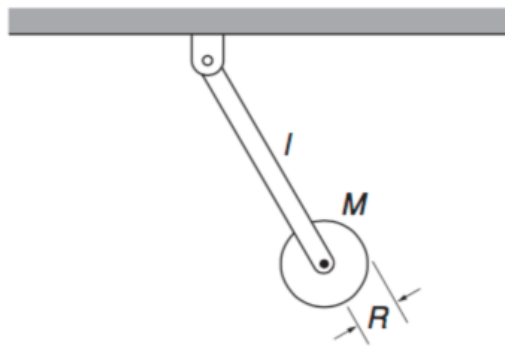


Homework 2: Rigid Body Motion

Due: Tuesday February 5th, 13:00

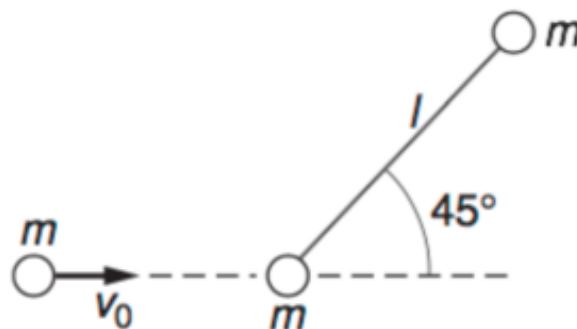
Policy: Collaboration is allowed, but every student is required to hand in his/her own version of the solutions. Please include your name and student number on the solutions.

Problem 1. (K. & K., Ex. 7.18) Find the period of a pendulum consisting



of a disk of mass M and radius R fixed to the end of a rod of length l and mass m . How does the period change if the disk is mounted to the rod by a frictionless bearing so that it is perfectly free to spin?

Problem 2. (K. & K., Ex. 7.38) A rigid massless rod of length l joins two



particles each of mass m . The rod lies on a frictionless table, and is struck by

a particle of mass m and velocity v_0 , moving as shown. After the collision, the projectile moves straight back.

Find the angular speed of the rod around its center of mass after the collision, assuming that mechanical energy is conserved.