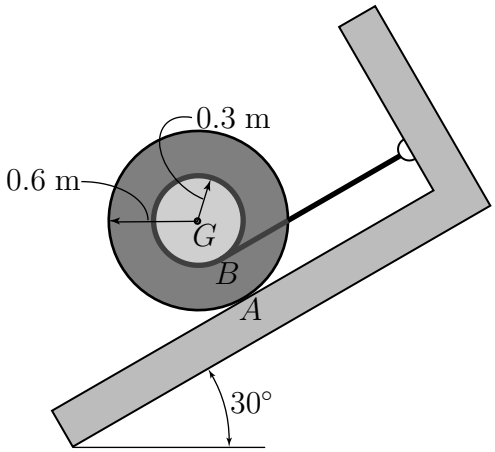
Name _____ Section _____

Problem Set 11
Due April 15, 1999

Professors Gray & Costanzo Spring 1999

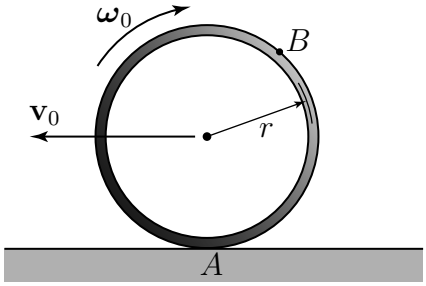
Problem 1

The spool has a mass of 75 kg and a radius of gyration $k_G = 0.380$ m. It rests on the inclined surface for which the coefficient kinetic friction is $\mu_k = 0.15$. If the spool is released from rest and slips at A, determine the initial tension in the cord and the angular acceleration of the spool.



Problem 2

By pressing down with a finger at B, a thin ring having a mass m is given an initial velocity $\mathbf{v}_0$ and a backspin ω_0 when the finger is released. If the coefficient of kinetic friction between the table and the ring is μ_k, determine the distance the ring travels forward before backspinning stops.



Problem 3

The assembly shown at the right consists of an 8 kg disk and a 10 kg bar which pin-connected to the disk. If the system is released from rest, determine the angular acceleration of the disk and the force exerted by the pin on the disk. The coefficients of static and kinetic friction between the disk and the inclined plane are $\mu_s = 0.6$ and $\mu_k = 0.4$, respectively. Neglect any friction at B.