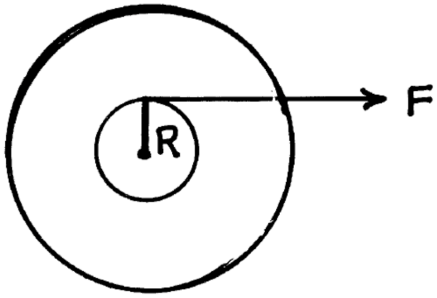
PHYS UN1601 Recitation Week 12 Worksheet

TA: Nitya Nigam

December 4, 2024

Problem 1

A wheel is attached to a fixed shaft, and the system is free to rotate without friction. To measure the moment of inertia of the wheel-shaft system, a tape of negligible mass wrapped around the shaft is pulled by a known constant force F. When a length L of tape has unwound, the system is rolling with angular speed ω_0. Find the moment of inertia of the system, I_0.



Problem 2

A thin plank of mass M and length l is pivoted at one end (see figure to the right). The plank is released at 60° from the vertical. What is the magnitude and direction of the force on the pivot when the plank is horizontal?