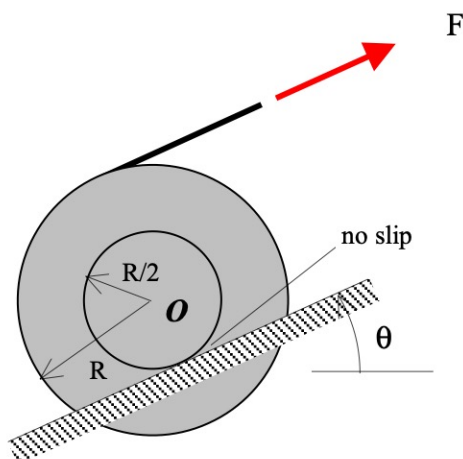


Homework H5.H

Given: The compound wheel shown below rolls without slipping up the incline on its hubs and is pulled by a constant force F applied to a cord wrapped around its outer rim. The wheel starts from rest, has a mass of m , and has a radius of gyration about its center of mass O of k_O . Assume that the cable does not slip on the wheel.

Find: Determine the angular velocity of the wheel after its center O has moved a distance of d up the incline.



Use the following parameters in your analysis: $m = 40$ kg, $R = 0.2$ m, $d = 2$ m, $F = 100$ N, $k_O = 0.15$ m, and $\theta = 30^\circ$.