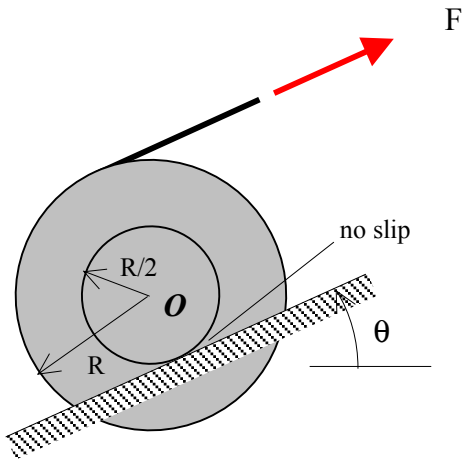
**Homework H.5.H**

**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 $\theta = 30°$.