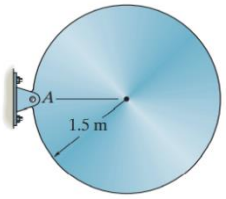
Upload a copy of your completed homework to uLearn AND turn in a physical copy in class. For full credit, you must show your work at how you arrived at the answer

1. The 80-kg disk is supported by a pin at A. If it is released from rest from the position shown, determine the initial horizontal and vertical components of reaction at the pin. Ans: Ay = 262 N



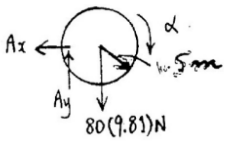
$\stackrel{+}{\leftarrow} \Sigma F_x = m(a_G)_x;$ $\quad A_x = 0$ **Ans.**

$+\uparrow \Sigma F_y = m(a_G)_y;$ $\quad A_y - 80(9.81) = -80(1.5)(\alpha)$

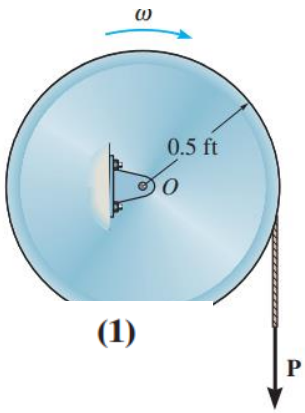
$\curvearrowleft + \Sigma M_A = I_A\alpha;$ $\quad 80(9.81)(1.5) = [\frac{3}{2}(80)(1.5)^2]\alpha$

$\alpha = 4.36 \text{ rad/s}^2$

$A_y = 262 \text{ N}$ **Ans.**



2. The drum has a weight of 80 lb and a radius of gyration 0.4ft If the cable, which is wrapped around the drum, is subjected to a vertical force P = 15 lb determine the time needed to increase the drum's angular velocity from $\omega = 5\frac{rad}{s} to\ \omega = 25\frac{rad}{s}$. Neglect the mass of the cable. Ans t = 1.06s



$\curvearrowleft + \Sigma M_O = I_O\alpha;$ $\quad 15(0.5) = [\frac{80}{32.2}(0.4)^2]\alpha$

$\alpha = 18.87 \text{ rad/s}^2$

$(\curvearrowleft +)\omega = \omega_0 + \alpha t$

$25 = 5 + 18.87\,t$

$t = 1.06 \text{ s}$ **Ans.**