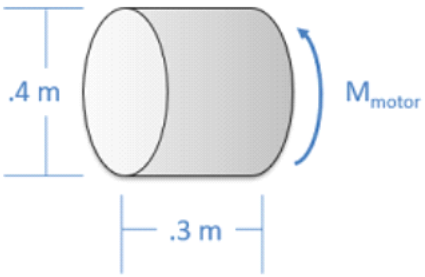
Problem 2

The drum in a washing machine can be approximated as a cylinder .4 meters in diameter and .3 meters in height with a uniformly distributed mass of 35 kilograms when full. If we wish to achieve an acceleration of 15 rad/s^2, what torque must the motor exert at the center of the drum?



$$M = I\alpha$$

$$M = \frac{1}{2} m r^2 \left(15 \text{ rad/s}^2\right)$$

35 kg .2 m

$$\boxed{M = 10.5 \text{ N m}}$$