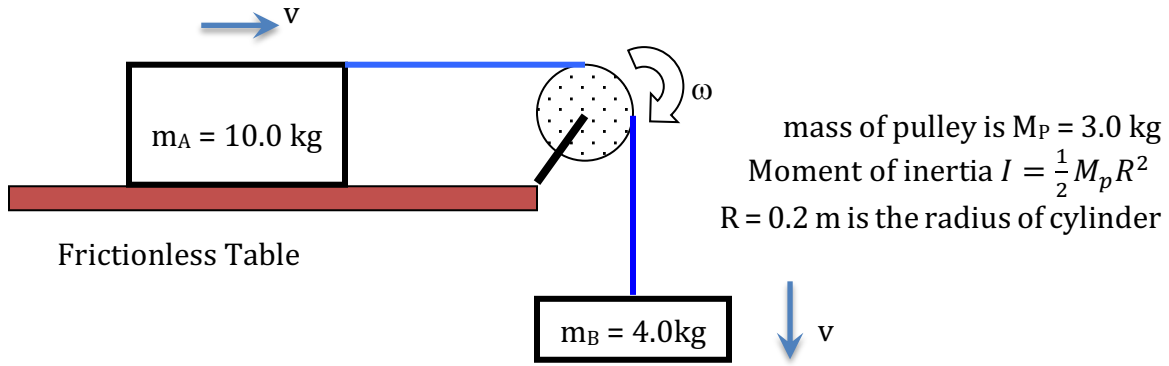


**PHYS 1211. F2018. Quiz 5, November 23, 2018**

In figure below, box A and B are connected by a rope-cylindrical pulley system. Box A is released from **rest**. When Box A is released, box B begin to fall, and the **friction** between the rope and pulley **rotates** the **cylindrical pulley, without slipping**. The pulley rotates **clockwise** with an angular velocity,  $\omega$ . The data are shown in the figure. The ideal (no mass) rope is in **blue**.



- A) Use conservation of mechanical energy to find the **speed** of box A, after Box B has fallen 0.4 m. **ANSWER:**  $v$  is between  $1.0 \frac{\text{m}}{\text{s}}$  to  $1.6 \frac{\text{m}}{\text{s}}$
- B) Calculate the angular speed,  $\omega$ , after box B has fallen 0.4 m.
- C) Using the answer of part A, calculate the linear acceleration of box A. Calculate the angular acceleration,  $\alpha$ , of the cylinder.