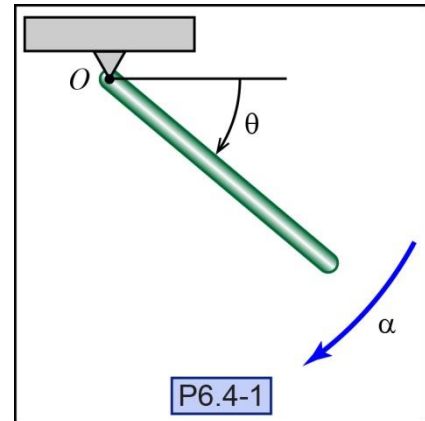P6.4-1)^{fe} A 10-kg uniform slender rod of length 0.8 m is released from rest at an angle of $\theta = 40°$. Determine the angular acceleration of the rod at $\theta = 40°$ and $\theta = 90°$.
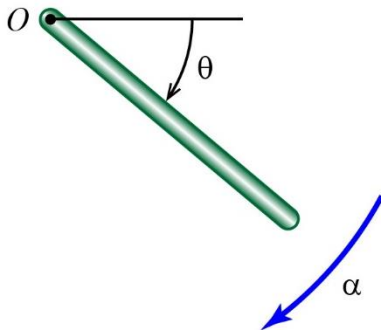
Given:

P6.4-1

Find:

Solution:

Free-body diagram

Mass Moment of Inertia

Calculate the rod's mass moment of inertia about point O.

$I_O =$ _____

Equation of Motion

Derive the rod's equation of motion in <u>variable form</u>.

Eq.M: _____

Solve for the angular acceleration.

$\alpha_{\theta = 90} =$ _____

$\alpha_{\theta = 40} = 14.1$ rad/s^2