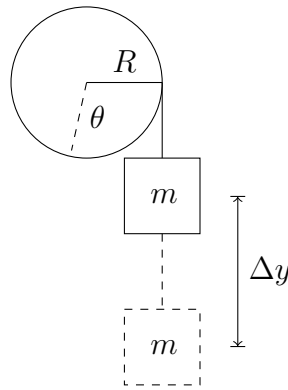


# University Physics 1A

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## Torque Experiment



Find a formula for  $I$  in terms of  $\alpha$ .

$$\begin{aligned}\Delta y &= s = R\theta & F_{net} &= ma & \tau_{net} &= I\alpha \\ -\frac{I\alpha}{R} - mg &= ma = mR\alpha \\ -\frac{I\alpha}{R} - mR\alpha &= mg \\ -\frac{I\alpha}{R} &= mg + mR\alpha \\ I &= -\frac{R}{\alpha}(mg + mR\alpha) \\ &= -\frac{mgR}{\alpha} - mR^2 \\ &= -Rm\left(\frac{g}{\alpha} + R\right)\end{aligned}$$

$$I = \frac{1}{2}M(R_1^2 + R_2^2)$$

You can find all my notes at <http://omgimanagerd.tech/notes>. If you have any questions, comments, or concerns, please contact me at [alvin@omgimanagerd.tech](mailto:alvin@omgimanagerd.tech)