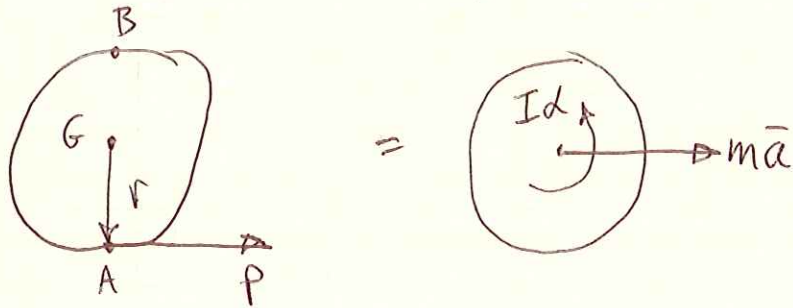


PROB. 16-51

$P = 3\text{ N}$, $m = 2.4\text{ kg}$, UNIFORM DISK, FIND a_A , a_B



$$\sum F_x = ma_x: P = m\bar{a}, \quad \bar{a} = \frac{P}{m}$$

$$\sum \vec{M}_G = \sum (\vec{M}_G)_{\text{EFF}} + J: rP = I\alpha, \quad \alpha = \frac{rP}{I}$$

$$I = \frac{1}{2}mr^2$$

$$\alpha = \frac{rP}{\frac{1}{2}mr^2} = \frac{2P}{mr}$$

$$\vec{a}_A = \bar{a} + r\alpha = \left(\frac{P}{m}\right) + r\left(\frac{2P}{mr}\right) = \frac{3P}{m} = \frac{3(3\text{ N})}{(2.4\text{ kg})}$$

$$\boxed{\vec{a}_A = 3.75 \frac{\text{m}}{\text{s}^2} \rightarrow}$$

$$\vec{a}_B = \bar{a} - r\alpha = \left(\frac{P}{m}\right) - r\left(\frac{2P}{mr}\right) = -\frac{P}{m} = -\frac{(3\text{ N})}{(2.4\text{ kg})}$$

$$\boxed{a_B = -1.25 \frac{\text{m}}{\text{s}^2} \leftarrow}$$