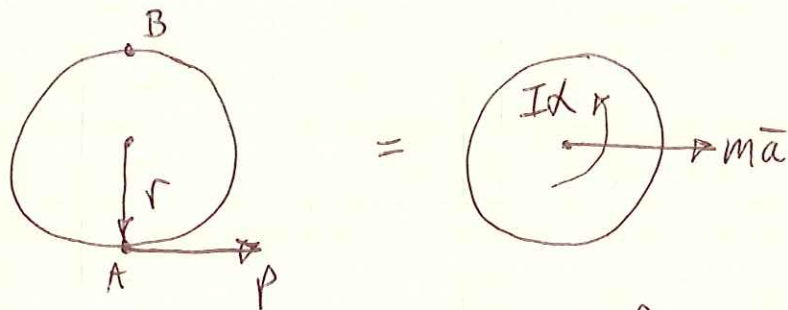


PROB. 16-50

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



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

$$\sum \vec{M}_G = \sum (\vec{M}_G)_{\text{EFF}} \quad \uparrow \curvearrowright: rP = I\alpha$$

FOR A THIN HOOP,  $I = r^2 m$

$$\alpha = \frac{rP}{I} = \frac{rP}{r^2 m} = \frac{P}{rm}$$

$$a_A = \bar{a} + r\alpha = \frac{P}{m} + r\left(\frac{P}{rm}\right) = 2\left(\frac{P}{m}\right)$$

$$a_A = 2\left(\frac{3^N}{2.4 \text{ kg}}\right) = \boxed{2.5 \frac{\text{m}}{\text{s}^2}}$$

$$a_B = \bar{a} - r\alpha = \left(\frac{P}{m}\right) - r\left(\frac{P}{rm}\right) = \boxed{0}$$