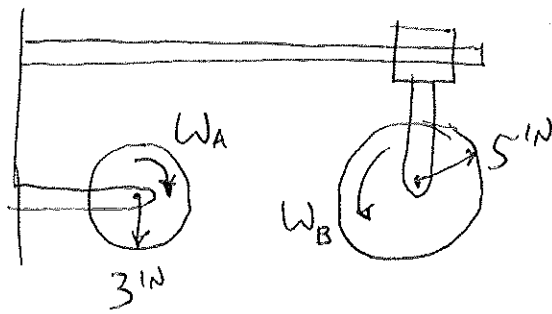


PROB. 15-32



$$\omega_{B,0} = 0$$

$$\omega_{A,0} = \left(450 \frac{\text{REV}}{\text{MIN}}\right) \left(\frac{2\pi}{60}\right) = 47.12 \frac{\text{RAD}}{\text{S}}$$

$$t = 6^{\text{S}}, \quad \alpha_A = \text{CONSTANT}$$

$$\alpha_B = \text{CONSTANT}$$

$$\omega_{A,F} = \left(140 \frac{\text{REV}}{\text{MIN}}\right) \left(\frac{2\pi}{60}\right) = 14.66 \frac{\text{RAD}}{\text{S}}$$

FIND α_A AND α_B

FOR DISK A, $\omega = \omega_0 + \alpha t$

$$\alpha_A = \frac{\omega_{A,F} - \omega_{A,0}}{t} = \frac{(14.66) - (47.12) \frac{\text{RAD}}{\text{S}}}{(6^{\text{S}})} = -5.410 \frac{\text{RAD}}{\text{S}^2}$$

FOR DISK B, $v = r\omega = r_A \omega_A = r_B \omega_B$

$$\omega_{B,F} = \left(\frac{r_A}{r_B}\right) \cdot \omega_{A,F} = \left(\frac{3^{\text{IN}}}{5^{\text{IN}}}\right) \left(14.66 \frac{\text{RAD}}{\text{S}}\right) = 8.796 \frac{\text{RAD}}{\text{S}}$$

$$\omega = \omega_0 + \alpha t$$

$$\alpha_B = \frac{\omega_{B,F} - \omega_{B,0}}{t} = \frac{(8.796) - (0) \frac{\text{RAD}}{\text{S}}}{(6^{\text{S}})} = 1.466 \frac{\text{RAD}}{\text{S}^2}$$