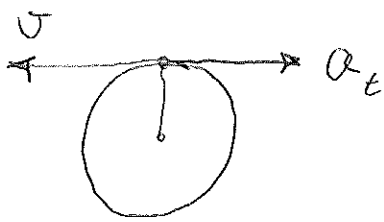


PROB. 15-21



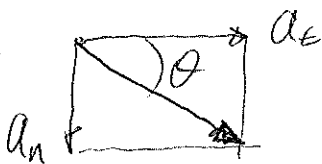
$$r_B = 6 \text{ in}, \quad v_B = 15 \frac{\text{in}}{\text{s}}, \quad a_E = 9 \frac{\text{in}}{\text{s}^2}$$

$$v = r\omega, \quad \omega = \frac{v}{r} = \frac{(15 \frac{\text{in}}{\text{s}})}{(6 \text{ in})} = 2.5 \frac{\text{RAD}}{\text{s}}$$

$$a_E = r\alpha, \quad \alpha = \frac{a_E}{r} = \frac{(9 \frac{\text{in}}{\text{s}^2})}{(6 \text{ in})} = 1.5 \frac{\text{RAD}}{\text{s}^2}$$

$$a_n = v\omega^2 = (6 \text{ in}) \left( 2.5 \frac{\text{RAD}}{\text{s}} \right)^2 = 37.5 \frac{\text{in}}{\text{s}^2}$$

$$a_B = \sqrt{a_E^2 + a_n^2} = \sqrt{(9)^2 + (37.5)^2} = 38.56 \frac{\text{in}}{\text{s}^2}$$



$$\theta = \text{TAN}^{-1} \left( \frac{a_n}{a_E} \right) = \text{TAN}^{-1} \left( \frac{37.5}{9} \right) = 76.50^\circ$$