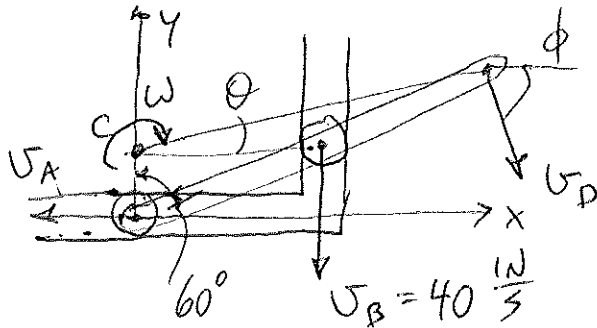


PROB. 15-84



a) FIND  $\omega$

$$U_B = \sqrt{c_B} \omega,$$

$$\omega = \frac{U_B}{\sqrt{c_B}}$$

$$\sqrt{c_B} = 15.9 \text{ IN} \cdot 60^\circ = 12.99 \text{ IN}$$

$$\omega = \frac{(40 \frac{\text{IN}}{\text{s}})}{(12.99 \text{ IN})} = 3.079 \frac{\text{RAD}}{\text{s}}$$

b) FIND  $U_D = \sqrt{c_D} \omega$

$$x_c = 0, \quad y_c = 15 \cdot \cos 60^\circ = 7.5 \text{ IN}$$

$$x_D = 30 \cdot \sin 60^\circ = 25.98 \text{ IN}, \quad y_D = 30 \cdot \cos 60^\circ = 15 \text{ IN}$$

$$\sqrt{c_D} = \sqrt{(25.98)^2 + (15 - 7.5)^2} = 27.04 \text{ IN}$$

$$\theta = \text{TAN}^{-1}\left(\frac{7.5}{25.98}\right) = 16.10^\circ$$

$$\phi = 90 - 16.1 = 73.9^\circ$$

$$U_D = (27.04 \text{ IN}) \left( 3.079 \frac{\text{RAD}}{\text{s}} \right) = 83.26 \frac{\text{IN}}{\text{s}} \quad \nabla 73.9^\circ$$