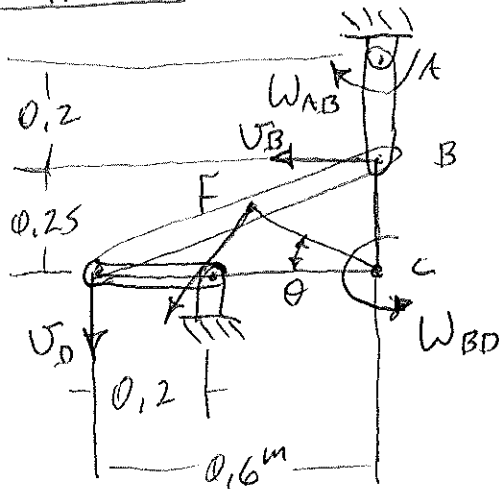


PROB. 15-82



$$W_{AB} = 15 \frac{\text{RAD}}{\text{SEC}} \text{ CW}$$

a) FIND  $W_{BD}$

$$V_B = r_{AB} W_{AB}$$

$$V_B = (0.2 \text{ m}) \left( 15 \frac{\text{RAD}}{\text{SEC}} \right)$$

$$V_B = 3 \frac{\text{m}}{\text{SEC}}$$

$$V_B = r_{BC} W_{BD}, \quad W_{BD} = \frac{V_B}{r_{BC}} = \frac{\left( 3 \frac{\text{m}}{\text{SEC}} \right)}{(0.25 \text{ m})} = \boxed{12 \frac{\text{RAD}}{\text{SEC}} \text{ CW}}$$

b) FIND VELOCITY OF MIDPOINT OF BD

$$r_{CF} = \sqrt{0.3^2 + 0.125^2} = 0.325 \text{ m}$$

$$V_F = r_{CF} W_{BD} = \left( 0.325 \text{ m} \right) \left( 12 \frac{\text{RAD}}{\text{SEC}} \right) = \boxed{3.9 \frac{\text{m}}{\text{s}} \quad \searrow 67.38^\circ}$$

$$\theta = \text{TAN}^{-1} \left( \frac{0.125}{0.3} \right) = 22.62^\circ$$