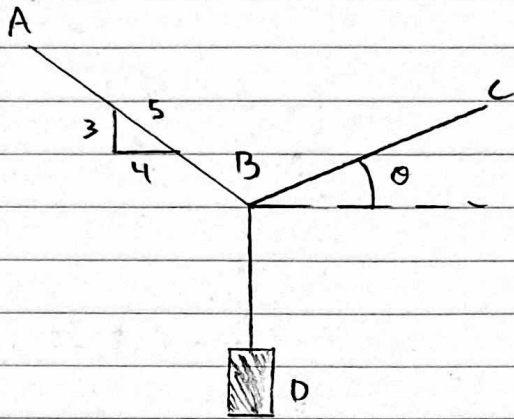


Solution: 21-S-3.3-MK-002



Given: $T_{\max} = 425 \text{ N}$
 $D = 32 \text{ kg}$

Find: θ

$$D = (32 \text{ kg})(9.81 \text{ m/s}^2) = 313.92 \text{ N}$$

$$T_{AB} = 425 \text{ N}$$

$$T_{ABx} = (425 \text{ N})\left(\frac{4}{5}\right) = 340 \text{ N}$$

$$T_{ABy} = (425 \text{ N})\left(\frac{3}{5}\right) = 255 \text{ N}$$

$$T_{BCx} = T_{ABx} = 340 \text{ N}$$

$$T_{BCy} = D - T_{ABy} = 313.92 \text{ N} - 255 \text{ N} = 58.92 \text{ N}$$

$$\theta = \tan^{-1} \left(\frac{T_{BCy}}{T_{BCx}} \right) = \tan^{-1} \left(\frac{58.92 \text{ N}}{340 \text{ N}} \right) = 9.83^\circ$$

$$\theta = 9.83^\circ$$