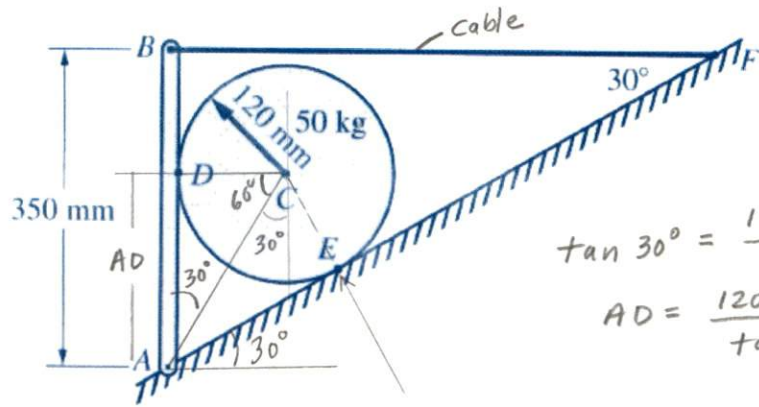


3-8

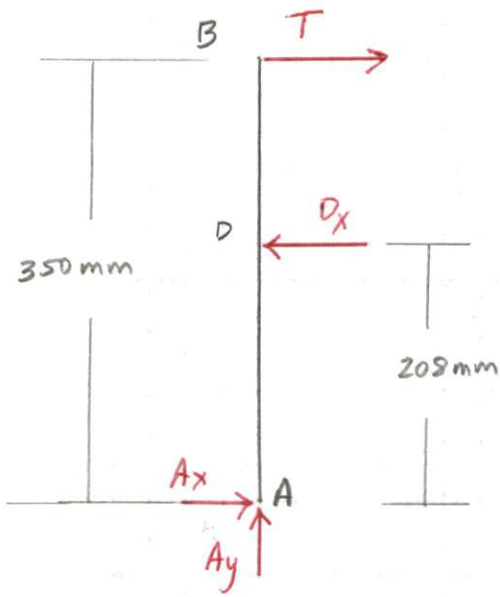
Draw separate free-body diagrams of the 50-kg homogeneous cylinder and the rod AB in Fig. P3-8. Neglect the weights of the rod and the cable and assume that all contact surfaces are smooth.

Solution.



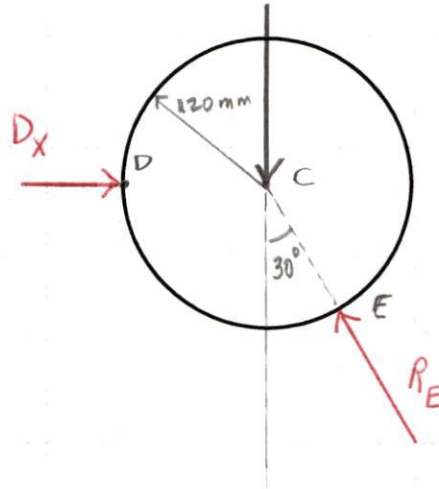
$$\tan 30^\circ = \frac{120 \text{ mm}}{AD}$$

$$AD = \frac{120 \text{ mm}}{\tan 30^\circ} = 208 \text{ mm}$$



FBD - ROD

$$W = mg = 50 \text{ Kg} (9.81 \text{ m/s}^2) = 491 \text{ N}$$



FBD - cylinder