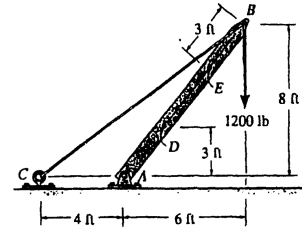


1-6 The beam  $AB$  is pin supported at  $A$  and supported by a cable  $BC$ . Determine the resultant internal loadings acting on the cross section at point  $D$ .

$$\theta = \tan^{-1}\left(\frac{6}{8}\right) = 36.87^\circ$$

$$\phi = \tan^{-1}\left(\frac{10}{8}\right) - 36.87^\circ = 14.47^\circ$$



Member  $AB$  :

$$\curvearrowright + \Sigma M_A = 0; \quad F_{BC} \sin 14.47^\circ(10) - 1200(6) = 0$$

$$F_{BC} = 2881.46 \text{ lb}$$

Segment  $BD$  :

$$\rightarrow \Sigma F_x = 0; \quad -N_D - 2881.46 \cos 14.47^\circ - 1200 \cos 36.87^\circ = 0$$

$$N_D = -3750 \text{ lb} = -3.75 \text{ kip} \quad \text{Ans}$$

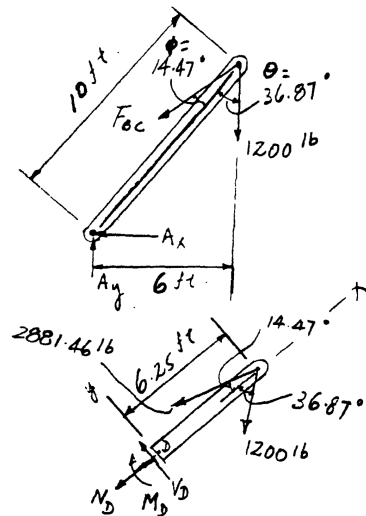
$$\uparrow \Sigma F_y = 0; \quad V_D + 2881.46 \sin 14.47^\circ - 1200 \sin 36.87^\circ = 0$$

$$V_D = 0 \quad \text{Ans}$$

$$\curvearrowright + \Sigma M_D = 0; \quad 2881.46 \sin 14.47^\circ(6.25) - 1200 \sin 36.87^\circ(6.25) - M_D = 0$$

$$M_D = 0 \quad \text{Ans}$$

Notice that member  $AB$  is the two-force member ; therefore the shear force and moment are zero.



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