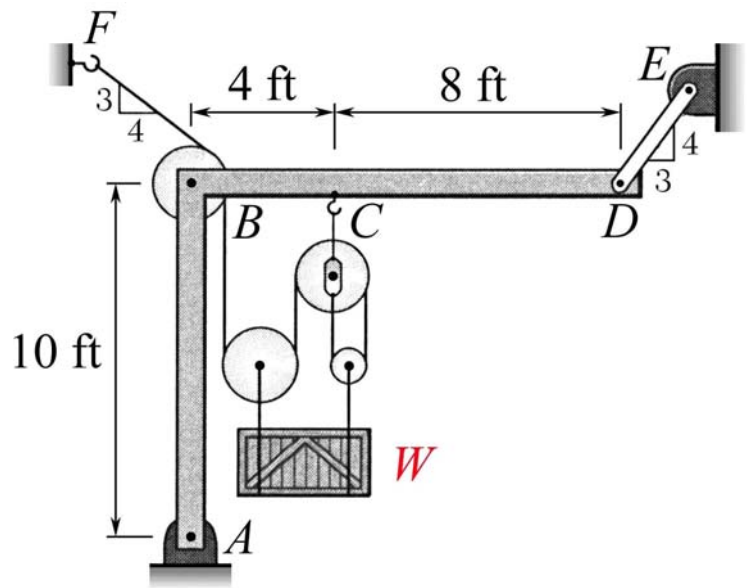


MEEG 2003 Quiz #5.m12

A crate of weight $W = 360$ lb is supported as shown. Determine (a) the tension F_1 in the cable attached to the hook at F , (b) the tension F_2 in the cable attached to the hook at C , (c) the tension F_{DE} in the link DE , (d) the reaction force \mathbf{A} at the support A .



FBD for crate and the two pulleys directly above it ①

$$F_1 = 90 \text{ lb} \quad \text{①}$$

FBD for the pulley directly below C ①

$$F_2 = 270 \text{ lb} \quad \text{①}$$

FBD for the pulley at B ①

The pin at B exerts $\mathbf{B} = 72\mathbf{i} + 36\mathbf{j}$ lb on pulley at B . ①

FBD for the frame $ABCD$ ②

$$F_{DE} = 100 \text{ lb} \quad \text{①} \quad \mathbf{A} = 12\mathbf{i} + 226\mathbf{j} \text{ lb} \quad \text{①}$$