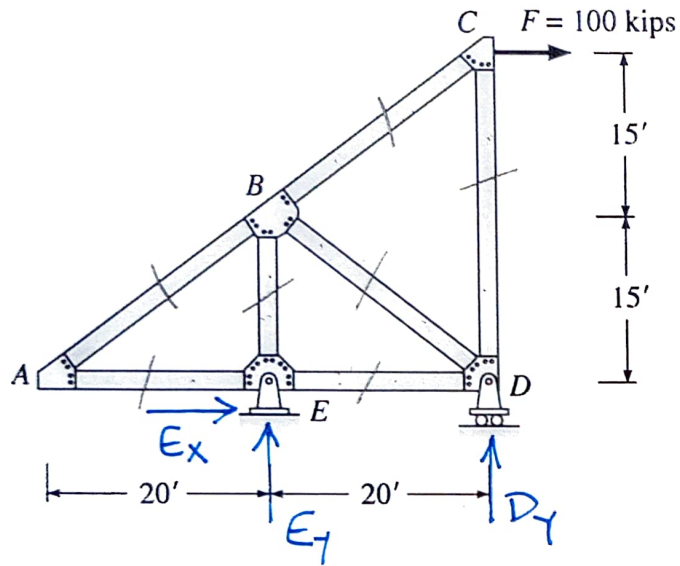


Example 3b-4. Determine all the forces in the following truss.



$$\sum M_E = 0 = -100k(30') + D_y(20')$$

$$\underline{D_y = 150k}$$

$$\uparrow \sum F_y = 0 = E_y + D_y$$

$$\underline{E_y = -150k}$$

$$\rightarrow \sum F_x = 0 = E_x + 100k$$

$$\underline{E_x = -100k}$$

CASE I ZERO-FORCE MEMBERS

$$\underline{F_{AE} = F_{AB} = 0}$$

JOINT C

$$\begin{aligned} \rightarrow \sum F_x = 0 \\ 100k = -\frac{4}{5}F_{BC} + 100k \\ F_{BC} = 125k \end{aligned}$$

$$\begin{aligned} \uparrow \sum F_y = 0 \\ = -F_{CD} - \frac{3}{5}F_{BC} \end{aligned}$$

$$\underline{F_{CD} = -75k}$$

JOINT E

$$\begin{aligned} \uparrow \sum F_y = 0 \\ 100k + F_{BE} - 150k = 0 \\ F_{BE} = 150k \end{aligned}$$

$$\begin{aligned} \rightarrow \sum F_x = 0 \\ F_{DE} - 100k = 0 \\ \underline{F_{DE} = 100k} \end{aligned}$$

JOINT D

$$\begin{aligned} \rightarrow \sum F_x = 0 \\ = -F_{DE} - \frac{4}{5}F_{BD} \\ F_{BD} = -125k \end{aligned}$$