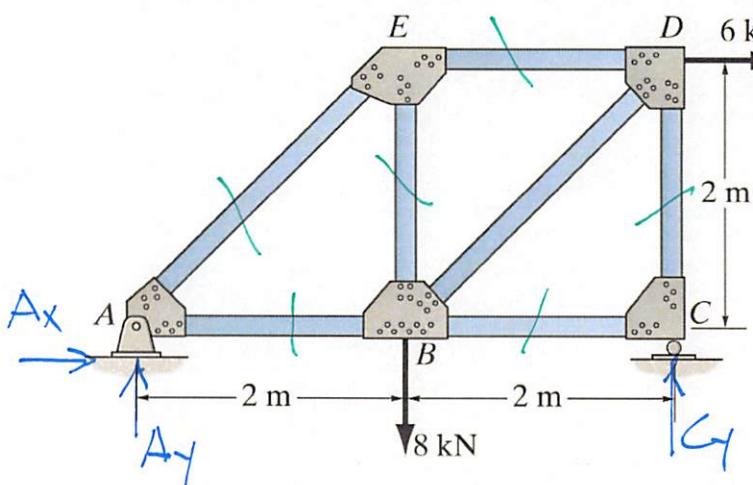


Example 3b-4. Determine all the forces in the following truss.

1/2



$$r = 3 \quad b = 7 \quad j = 5$$

$$\textcircled{+} \sum M_A = 0 = -8\text{ kN}(2\text{ m}) - 6\text{ kN}(2\text{ m}) + C_y(4\text{ m})$$

$$\underline{C_y = 7\text{ kN}}$$

$$+\uparrow \sum F_y = 0 = A_y + C_y - 8\text{ kN}$$

$$\underline{A_y = 1\text{ kN}}$$

$$+\rightarrow \sum F_x = 0 = A_x + 6\text{ kN}$$

$$\underline{A_x = -6\text{ kN}}$$

JOINT C

$$\begin{aligned} & \uparrow F_{CD} + \uparrow \sum F_y = 0 \\ & = F_{CD} + 7\text{ kN} \\ & \underline{F_{CD} = -7\text{ kN}} \end{aligned}$$

$$+\rightarrow \sum F_x = 0 = -F_{BC}$$

JOINT A

$$\begin{aligned} & 6\text{ kN} \quad \uparrow F_{AE} + \uparrow \sum F_y = 0 \\ & 1\text{ kN} \quad = \frac{1}{\sqrt{2}} F_{AE} + 1\text{ kN} \\ & \underline{F_{AE} = -1.41\text{ kN}} \end{aligned}$$

$$\begin{aligned} & +\rightarrow \sum F_x = 0 \\ & = F_{AB} + \frac{1}{\sqrt{2}} F_{AE} - 6\text{ kN} \end{aligned}$$

$$\underline{F_{AB} = 7\text{ kN}}$$

JOINT E

$$\begin{array}{c} F_{DE} \\ F_{BE} \end{array}$$

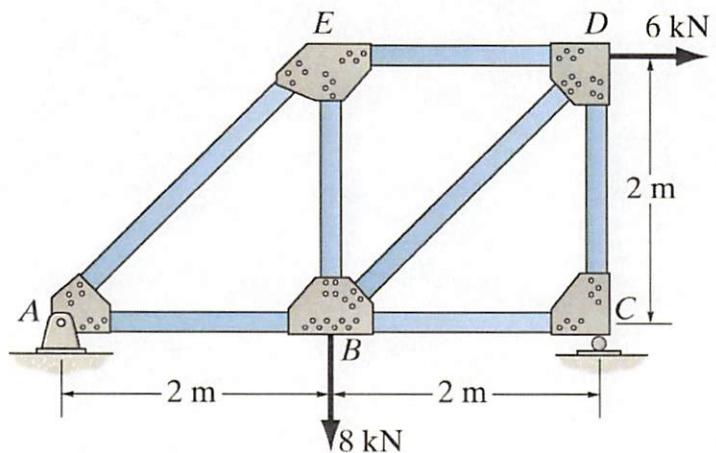
$$+\uparrow \sum F_y = 0 = -F_{BE} - \frac{1}{\sqrt{2}} F_{AE}$$

$$\underline{F_{BE} = 1\text{ kN}}$$

$$\begin{aligned} & +\rightarrow \sum F_x = 0 \\ & = F_{DE} - \frac{1}{\sqrt{2}} F_{AE} \end{aligned}$$

$$\underline{F_{DE} = -1\text{ kN}}$$

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



JOINT D

$$\begin{aligned}
 & +\uparrow \sum F_y = 0 \\
 & = -F_{CD} - \frac{1}{\sqrt{2}} F_{BD}
 \end{aligned}$$

$$\underline{\underline{F_{BD}}}$$

$$\underline{\underline{F_{BD} = 9.9 \text{ kN}}}$$