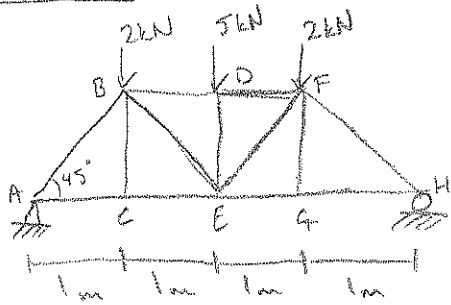
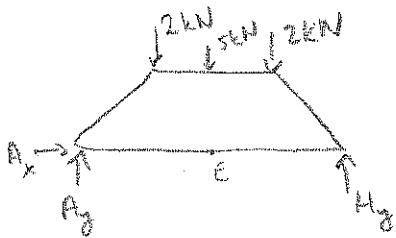


5.1.21



FBD whole system



$$\{\sum \vec{F}\} \cdot \hat{i} = A_x = 0$$

$$\sum \vec{M}_E = \vec{0} \Rightarrow A_y = H_y$$

$$\{\sum \vec{F}\} \cdot \hat{j} = A_y + H_y - 9 \text{ kN} = 0$$

$$\Rightarrow A_y = 4.5 \text{ kN} = H_y$$

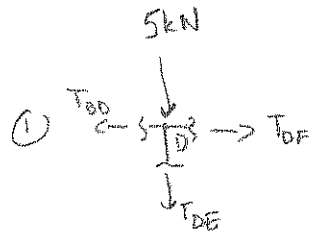
⑤ By symmetry of structure AND loading

$$T_{BD} = T_{DF} = -9 \text{ kN}$$

$$T_{BE} = T_{EF} = 6.36 \text{ kN}$$

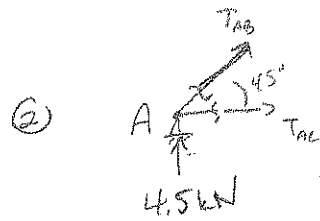
$$T_{CE} = T_{EG} = 4.5 \text{ kN}$$

$$T_{BC} = T_{FG} = 0 \text{ kN}$$



$$\{\sum \vec{F}\} \cdot \hat{j} = -T_{DE} - 5 \text{ kN} = 0$$

$$\Rightarrow T_{DE} = -5 \text{ kN}$$



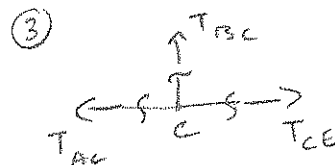
$$\{\sum \vec{F}\} \cdot \hat{j} = \frac{T_{AB}}{\sqrt{2}} + 4.5 \text{ kN} = 0$$

$$T_{AB} = -\frac{9}{\sqrt{2}} \text{ kN}$$

$$T_{AB} = -6.36 \text{ kN}$$

$$\{\sum \vec{F}\} \cdot \hat{i} = \frac{T_{AB}}{\sqrt{2}} + T_{AC} = 0$$

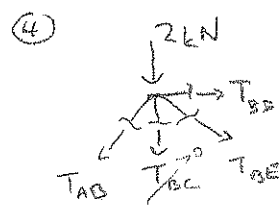
$$T_{AC} = 4.5 \text{ kN}$$



$$\{\sum \vec{F}\} \cdot \hat{j} = T_{BC} = 0$$

$$\{\sum \vec{F}\} \cdot \hat{i} = -T_{AC} + T_{CE} = 0$$

$$T_{AC} = T_{CE} = 4.5 \text{ kN}$$



$$\{\sum \vec{F}\} \cdot \hat{j} = \frac{T_{AB}}{\sqrt{2}} - \frac{T_{BD}}{\sqrt{2}} = 0$$

$$\Rightarrow -T_{AB} = T_{BD} = 6.36 \text{ kN}$$

$$= 1.91 \text{ kN}$$

$$\{\sum \vec{F}\} \cdot \hat{i} = T_{BD} + \frac{T_{DE}}{\sqrt{2}} - \frac{T_{AB}}{\sqrt{2}} = 0$$