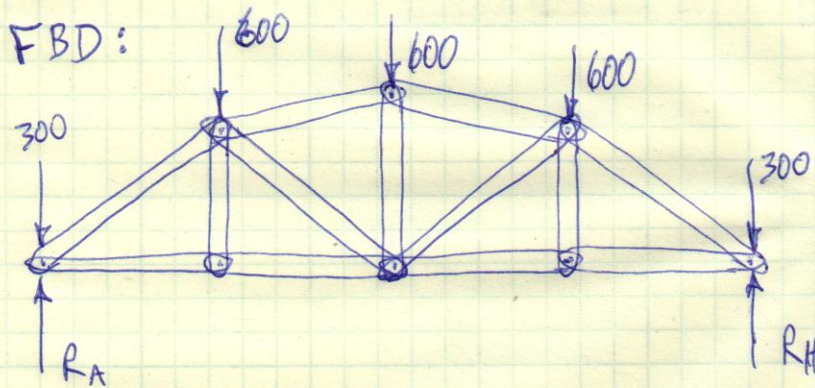
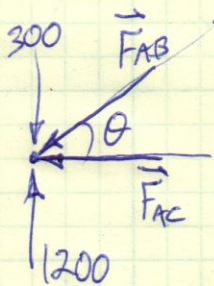


Fig. P6.10



$$R_A = R_H = \frac{1}{2}(2400) = 1200 \text{ lb}$$

POINT A:



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

$$\vec{F}_{AB} = (-F_{AB} \cos 36.87^\circ) \hat{i} + (-F_{AB} \sin 36.87^\circ) \hat{j}$$

$$\vec{F}_{AB} = (-0.8 F_{AB}) \hat{i} + (-0.6 F_{AB}) \hat{j} \text{ lb}$$

$$\sum F_y = 0: 1200 - 300 - 0.6 F_{AB} = 0$$

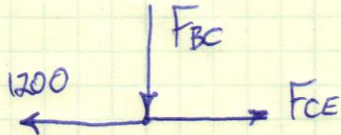
$$F_{AB} = 1500 \text{ lb } (\ominus) = F_{FH}$$

$$\sum F_x = 0: -F_{AC} - 0.8 F_{AB} = 0$$

$$F_{AC} = -0.8(1500) = -1200 \text{ LB } (\text{T}) = F_{GH}$$

POINT C:

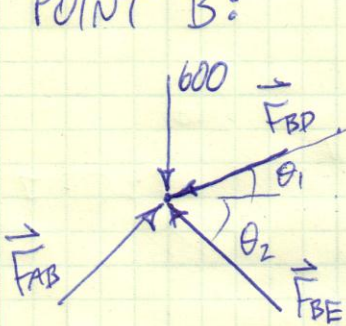
$$F_{CE} = 1200 \text{ LB } (\text{T}) = F_{EG}$$



$$F_{BC} = F_{FG} = 0$$

ZERO-FORCE MEMBERS

POINT B:



$$\theta_1 = \tan^{-1}\left(\frac{2\frac{1}{3}}{8}\right) = 16.26^\circ$$

$$\theta_2 = \tan^{-1}\left(\frac{6}{8}\right) = 36.87^\circ$$

$$\vec{F}_{AB} = [0.8(1500)\hat{i}] + [0.6(1500)\hat{j}] \text{ LB}$$

$$\vec{F}_{AB} = (1200)\hat{i} + (900)\hat{j} \text{ LB}$$

$$\vec{F}_{BD} = (-F_{BD} \cdot \cos 16.26^\circ)\hat{i} + (-F_{BD} \cdot \sin 16.26^\circ)\hat{j}$$

$$\vec{F}_{BD} = (-0.96 F_{BD})\hat{i} + (-0.28 F_{BD})\hat{j} \text{ LB}$$

$$\vec{F}_{BE} = (-F_{BE} \cdot \cos 36.87^\circ)\hat{i} + (F_{BE} \cdot \sin 36.87^\circ)\hat{j} \text{ LB}$$

$$\vec{F}_{BE} = (-0.8 F_{BE})\hat{i} + (0.6 F_{BE})\hat{j} \text{ LB}$$

$$\sum F_x = 0: 1200 - 0.96 F_{BD} - 0.8 F_{BE} = 0$$

$$F_{BE} = 1500 - 1.2 F_{BD}$$

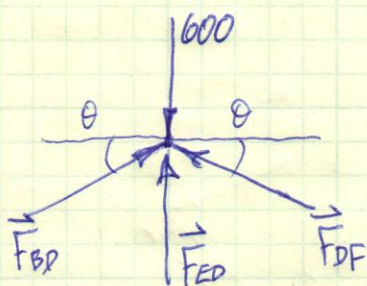
$$\Sigma F_y = 0: 900 - 600 - 0.28 F_{BD} + 0.6 F_{BE} = 0$$

$$300 - 0.28 F_{BD} + 0.6(1500 - 1.2 F_{BD}) = 0$$

$$F_{BD} = 1200 \text{ LB } (\ominus) = F_{DF}$$

$$F_{BE} = 1500 - 1.2(1200) = 60 \text{ LB } (\ominus) = F_{EF}$$

POINT D:



$$\theta = \text{TAN}^{-1}\left(\frac{2\frac{1}{2}}{8}\right) = 16.26^\circ$$

$$\vec{F}_{BD} = (1200 \cdot \cos 16.26^\circ) \hat{i} + (1200 \cdot \sin 16.26^\circ) \hat{j}$$

$$\vec{F}_{BD} = (1152) \hat{i} + (336) \hat{j} \text{ LB}$$

$$\vec{F}_{DF} = (-1152) \hat{i} + (336) \hat{j} \text{ LB}$$

$$\Sigma F_y = 0: -600 + 336 + 336 + F_{ED} = 0$$

$$F_{ED} = -72 \text{ LB } (\oplus)$$