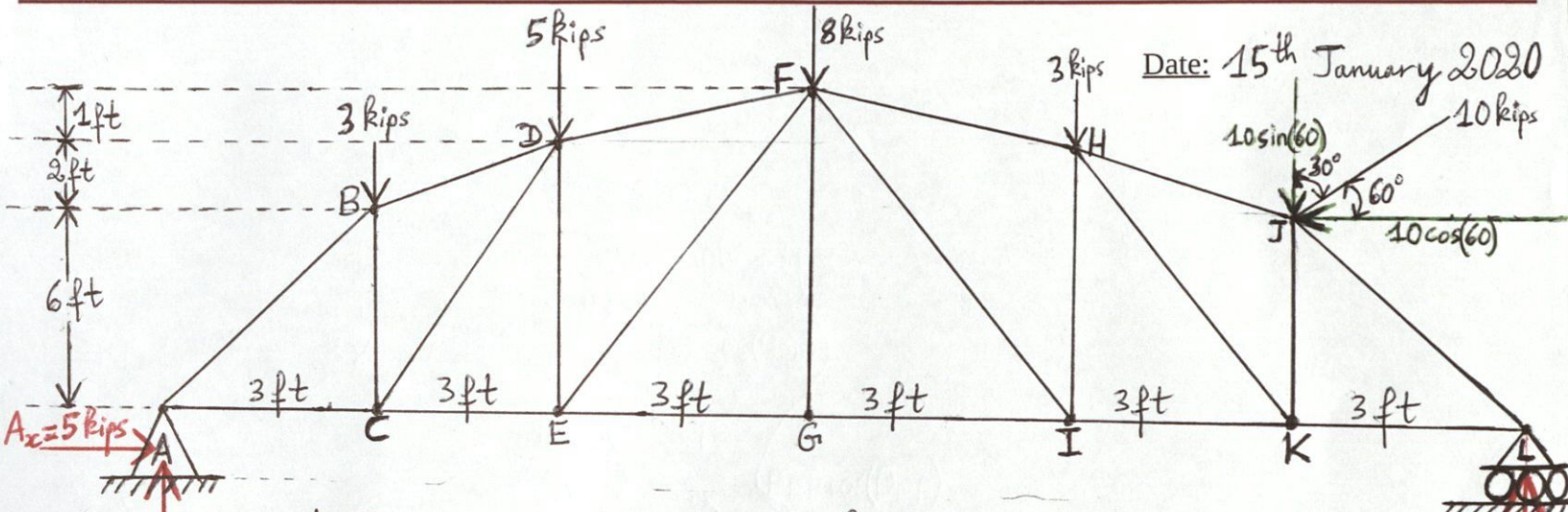




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Date: 15<sup>th</sup> January 2020



$$\pm \sum F_x = 0; A_x = 10 \cos(60) = 5 \text{ kips}$$

$$+ \sum M_A = 0; (-3k)(3ft) + (-5k)(6ft) + (-8k)(9ft) + (-3k)(12ft) + (10 \cos(60))(6ft) + (-10 \sin(60))(15ft) + (L_y)(18ft) = 0$$

$$L_y = 13.71687836 \text{ kips} = 13.7 \text{ kips}$$

$$+ \sum F_y = 0; A_y + L_y = [3 + 5 + 8 + 3 + 10 \sin(60)] \text{ kips}$$

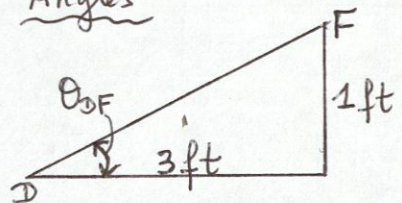
$$A_y = 27.66025404 - L_y$$

$$= 27.66025404 - 13.71687836$$

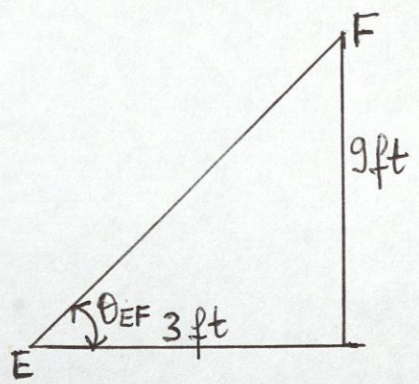
$$= 13.94337568 \text{ kips}$$

$$A_y = 13.9 \text{ kips}$$

Angles



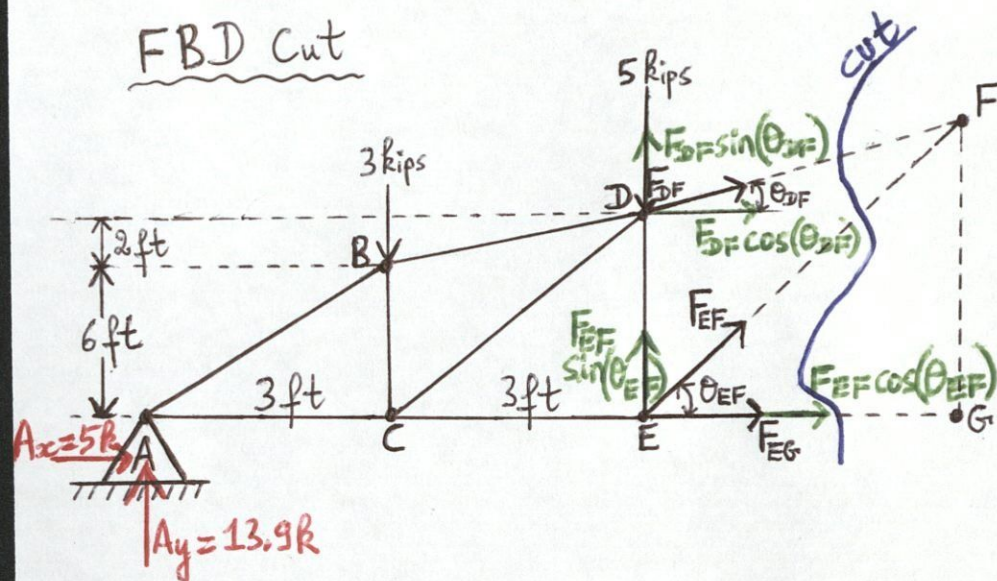
$$\Rightarrow \tan(\theta_{DF}) = \frac{1ft}{3ft} \Rightarrow \theta_{DF} = \tan^{-1}\left(\frac{1}{3}\right) = 18.43494882^\circ$$



$$\Rightarrow \tan(\theta_{EF}) = \frac{9ft}{3ft} \Rightarrow \theta_{EF} = \tan^{-1}\left(\frac{9}{3}\right) = 71.56505118^\circ$$

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FBD Cut



$$+\circlearrowleft \sum M_E = 0; [-F_{DF} \cos(\theta_{DF})] (8 \text{ ft}) + (3 \text{ k})(3 \text{ ft}) + (-13.9 \text{ k})(6 \text{ ft}) = 0$$

$$F_{DF} = -9.837352232 \text{ kips} = 9.84 \text{ kips (C)}$$

$$+\uparrow \sum F_y = 0; (A_y) - (3 \text{ k}) - (5 \text{ k}) + [F_{DF} \sin(\theta_{DF})] + [F_{EF} \sin(\theta_{EF})] = 0$$

$$(13.9 \text{ k}) - (3 \text{ k}) - (5 \text{ k}) + [-9.837 \sin(18.4)] + [F_{EF} \sin(71.56)] = 0$$

$$F_{EF} = -2.985750636 \text{ kips} = 2.99 \text{ kips (C)}$$

$$+\rightarrow \sum F_x = 0; (A_x) + [F_{DF} \cos(\theta_{DF})] + [F_{EF} \cos(\theta_{EF})] + (F_{EG}) = 0$$

$$(5 \text{ k}) + [(-9.837 \cos(18.4))] + [(-2.986 \cos(71.565))] + (F_{EG}) = 0$$

$$F_{EG} = 5.276709013 \text{ kips} = 5.28 \text{ kips (T)}$$