

$$F_{1x} = 2 \cos 45^\circ$$

$$F_{2x} = -6 \cos 60^\circ$$

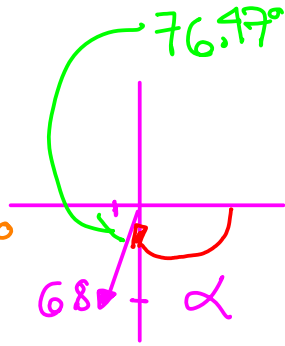
$$F_x = -1.59$$

$$F_{1y} = -2 \sin 45^\circ$$

$$F_{2y} = -6 \sin 60^\circ$$

$$F_y = -6.61$$

Degrees

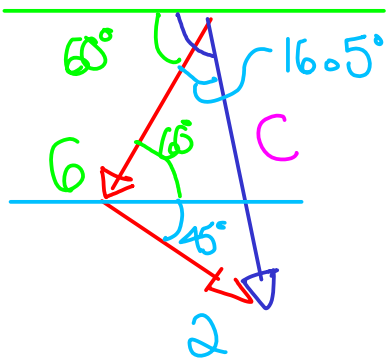


$$F_R = \sqrt{F_x^2 + F_y^2} = \sqrt{(-1.59)^2 + (-6.61)^2} = \underline{\underline{6.8 \text{ kN} *}}$$

$$\theta = \tan^{-1}\left(\frac{y}{x}\right) = \tan^{-1}\left(\frac{6.61}{1.59}\right) = \underline{\underline{76.47^\circ}}$$

$$\alpha = 180^\circ - 76.47^\circ = \underline{\underline{103.5^\circ}}$$

Ley de cosenos $\rightarrow C = \sqrt{A^2 + B^2 - 2AB \cos(c)}$



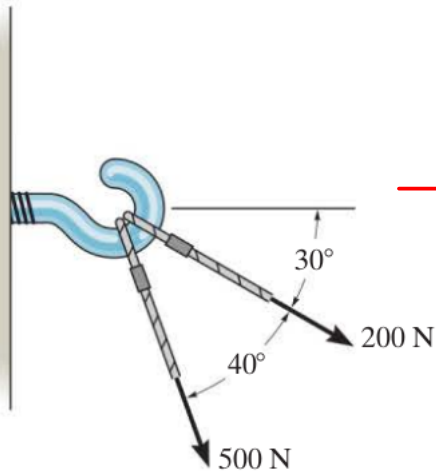
$$C = \sqrt{6^2 + 2^2 - 2(6)(2) \cos 105^\circ}$$

$$C = R = \underline{\underline{6.8 \text{ kN} *}}$$

$$\frac{A}{\sin a} = \frac{B}{\sin b} = \frac{C}{\sin c}$$

$$\frac{2}{\sin a} = \frac{6.8}{\sin 105^\circ} \rightarrow a = \underline{\underline{16.5^\circ}}$$

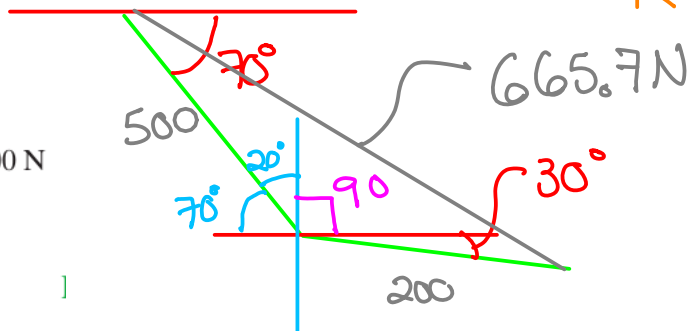
$$\alpha = 180^\circ - 60^\circ - 16.5^\circ = 103.5^\circ$$



$$F_x = 200 \cos 30^\circ + 500 \cos 70^\circ = \underline{344.22}$$

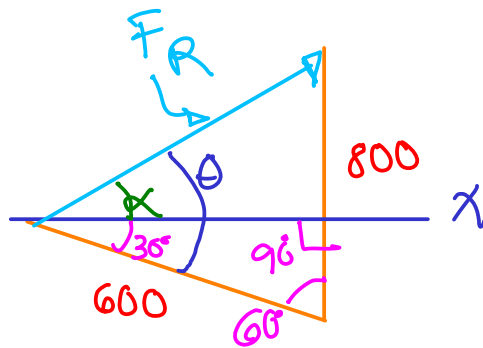
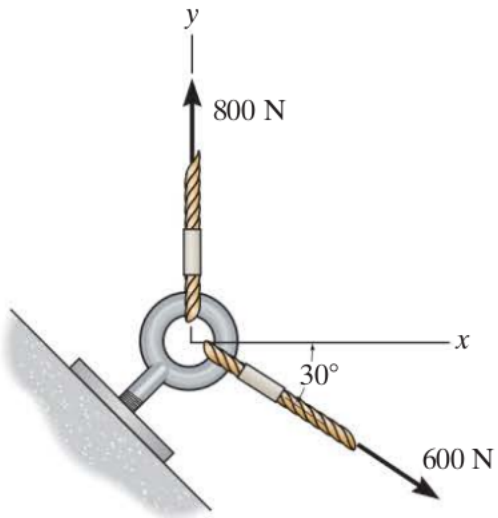
$$F_y = -200 \sin 30^\circ - 500 \sin 70^\circ = \underline{-569.85}$$

$$R = \underline{665.7}$$



$$F_R = \sqrt{500^2 + 200^2 - 2(500)(200) \cos(20^\circ + 90^\circ + 30^\circ)}$$

$$F_R = \underline{\underline{665.7 \text{ N}}}$$

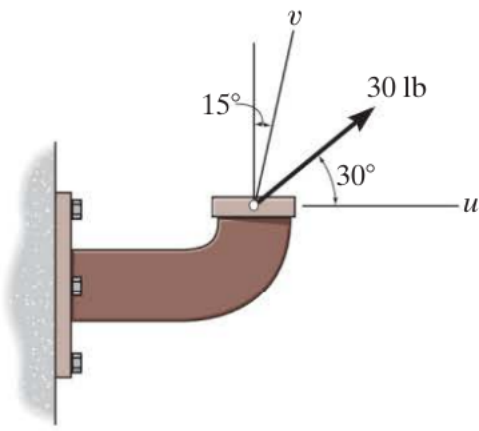


$$F_R = \sqrt{600^2 + 800^2 - 2(600)(800) \cos(60^\circ)}$$

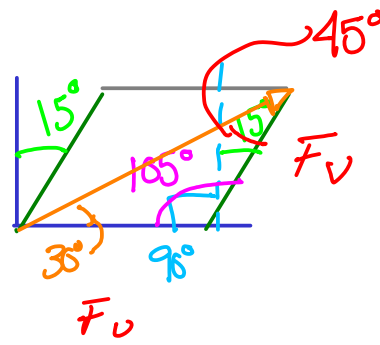
$$F_R = \underline{\underline{721.1 \text{ N}}}$$

$$\theta \Rightarrow \frac{800}{\sin \theta} = \frac{721.1}{\sin 60^\circ} \rightarrow \theta = 73.9^\circ$$

$$\alpha = 73.9 - 30 = \underline{\underline{43.9^\circ}}$$

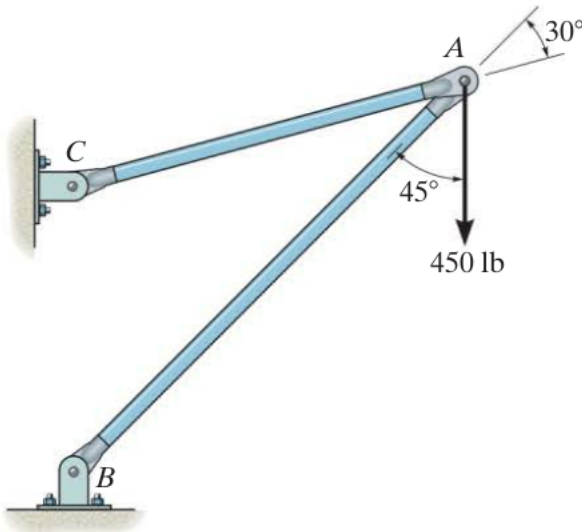


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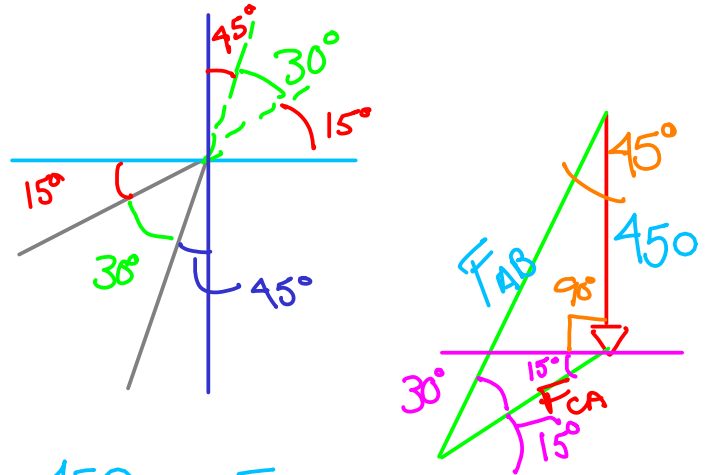


$$\frac{F_u}{\sin 45^\circ} = \frac{30}{\sin 105^\circ} \rightarrow F_u = \underline{21.96 \text{ lb}}$$

$$\frac{F_v}{\sin 30^\circ} = \frac{30}{\sin 105^\circ} \rightarrow F_v = \underline{15.53 \text{ lb}}$$

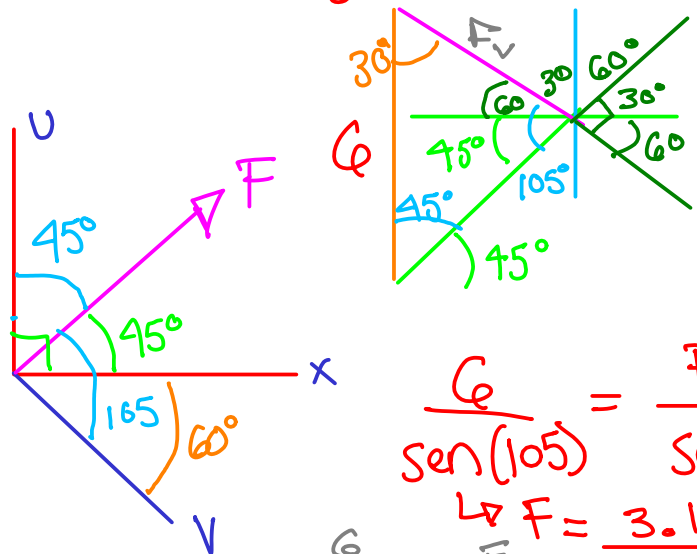
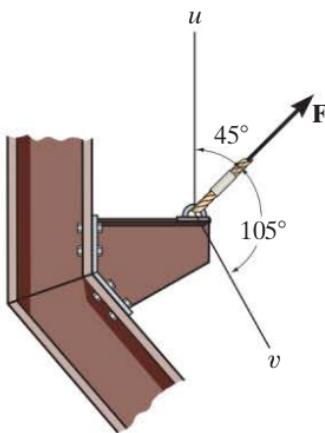


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$$\frac{450}{\sin 30^\circ} = \frac{F_{AB}}{\sin 105^\circ} \rightarrow F_{AB} = \underline{869.3}$$

$$\frac{450}{\sin 30^\circ} = \frac{F_{CA}}{\sin 45^\circ} \rightarrow F_{CA} = \underline{636.4}$$



$$\frac{6}{\sin(105^\circ)} = \frac{F}{\sin 30^\circ}$$

$$\rightarrow F = \underline{3.1}$$

$$\frac{6}{\sin 105^\circ} = \frac{F_v}{\sin 75^\circ} \rightarrow F_v = \underline{4.39}$$