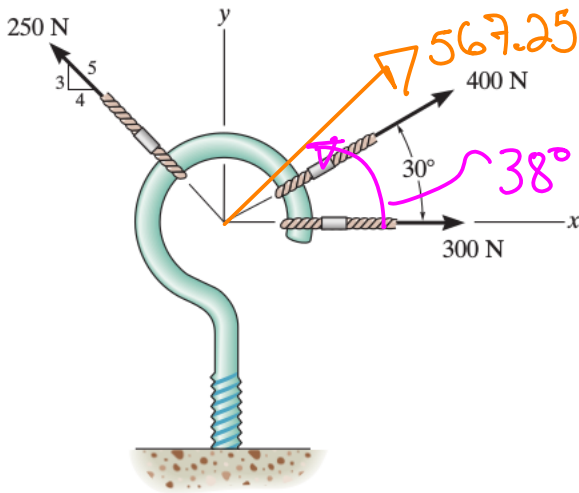


	X	Y
$F_1$	0	300
$F_2$	$-450 \cos 45^\circ$	$450 \sin 45^\circ$
$F_3$	$\frac{3}{5}(600)$	$\frac{4}{5}(600)$
	<hr/>	<hr/>
	41.8	1098

$$|F| = \sqrt{41.8^2 + 1098^2} = 1099$$

$$\left. \begin{aligned} \tan^{-1} \left( \frac{1098}{41.8} \right) &= 87.81^\circ \\ \tan^{-1} \left( \frac{41.8}{1098} \right) &= 2.19^\circ \end{aligned} \right\} 90^\circ$$

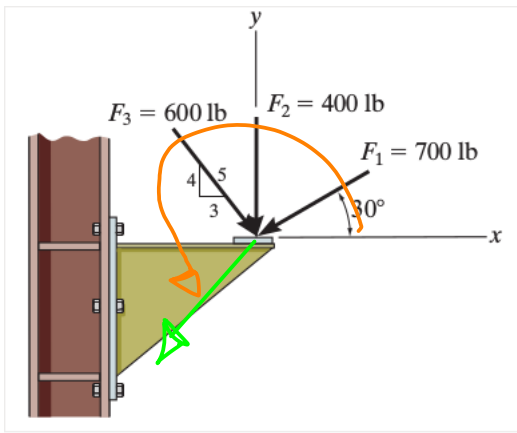


$$\Sigma F_y = 400 \sin 30^\circ + \frac{3}{5}(250) = \underline{350 \text{ N} \uparrow}$$

$$\Sigma F_x = 300 + 400 \cos 30^\circ - \frac{4}{5}(250) = \underline{446.4 \text{ N} \rightarrow}$$

$$F_R = \sqrt{350^2 + 446.4^2} = 567.25 \text{ N}$$

$$\theta = \tan^{-1} \left( \frac{350}{446.4} \right) = 38^\circ$$



$$\Sigma F_x = -700 \cos 30^\circ + 600 \left(\frac{3}{5}\right)$$

$$= -246.21 \text{ lb} \rightarrow$$

$$= \underline{246.21 \text{ lb} \leftarrow}$$

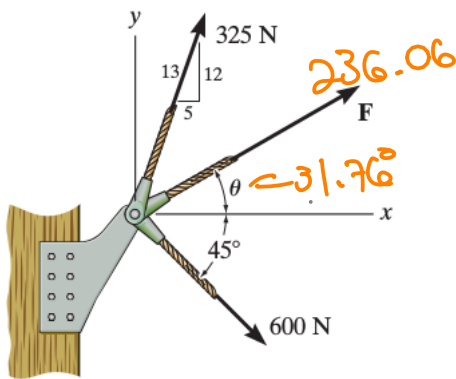
$$\Sigma F_y = -700 \sin 30^\circ - 400 - 600 \left(\frac{4}{5}\right)$$

$$= 1230 \text{ lb} \downarrow$$

$$F_R = \sqrt{246.21^2 + 1230^2} = 1254 \text{ lb}$$

$$\theta = \tan^{-1} \left( \frac{-1230}{-246.21} \right) = 78.68^\circ$$

$$\phi = 180 + 78.68 = \underline{\underline{258.68^\circ}}$$



Si la fuerza resultante actuante en la ménsula debe de ser de 750 N a lo largo del eje X positivo, determine la magnitud de F y su dirección theta.

$$(A) \Sigma F_x = 600 \cos 45 + \frac{5}{13}(325) + F \cos \theta$$

$$\checkmark = 750$$

$$(B) \Sigma F_y = -600 \sin 45 + \frac{12}{13}(325) + F \sin \theta$$

$$\checkmark = 0$$

$$\text{De } \alpha \rightarrow 424.26 + 125 - 750 = -F \cos \theta$$

$$f200.74 = f F \cos \theta$$

$$F = 200.74 / \cos \theta$$

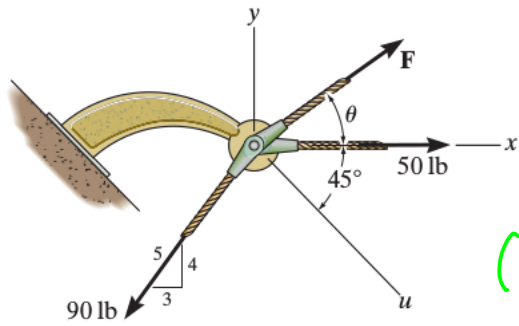
$$\text{En } \beta \rightarrow -424.26 + 300 + \frac{200.74 \sin \theta}{\cos \theta} = 0$$

$$\tan \theta = 124.26$$

$$200.74$$

$$\theta = \underline{\underline{31.75^\circ}}$$

$$F = \frac{200.74}{\cos(31.75)} = 236.06$$



Si la magnitud de la fuerza resultante que actúa en la ménsula es de 80 lb dirigida a lo largo del eje U, determine la magnitud de F y su dirección theta.

$$(a) \sum F_x = 80 \cos 45^\circ = -\frac{3}{5}(90) + 50 + F \cos \theta$$

$$(b) \sum F_y = -80 \sin 45^\circ = -\frac{4}{5}(90) + F \sin \theta$$

De a →

$$56.56 + 54 - 50 = F \cos \theta$$

$$\frac{60.56}{\cos \theta} = F$$

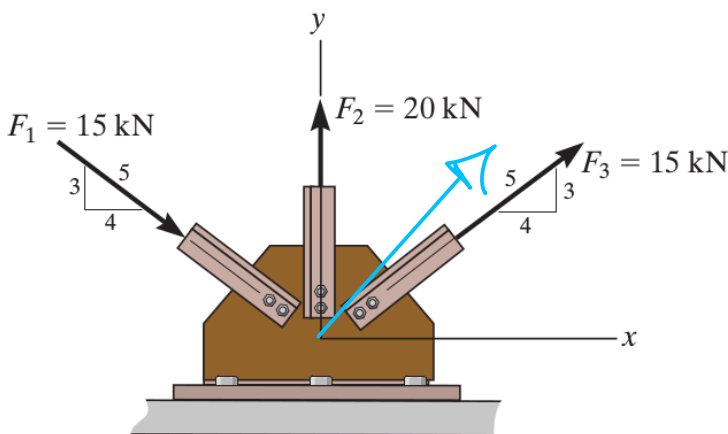
En b

$$-56.56 + 72 = \frac{60.56 \sin \theta}{\cos \theta}$$

$$\frac{-56.56 + 72}{60.56} = \tan \theta$$

$$\theta = \underline{14.30^\circ}$$

$$F = \frac{60.56}{\cos 14.30^\circ} = \underline{62.5 \text{ lb}}$$



$$\sum F_x = 15 \left(\frac{4}{5}\right) + 15 \left(\frac{4}{5}\right) = 24$$

$$\sum F_y = -15 \left(\frac{3}{5}\right) + 20 + 15 \left(\frac{3}{5}\right) = 20$$

$$F_R = \sqrt{24^2 + 20^2} = 31.24 \text{ kN}$$

$$\tan^{-1}\left(\frac{20}{24}\right) \Rightarrow \theta = \underline{39.8^\circ}$$