



NOMBRE DEL ALUMNO: JULIO ALBERTO AGUILAR VERA

NOMBRE DEL PROFESOR: PEDRO ALBERTO GARCIA

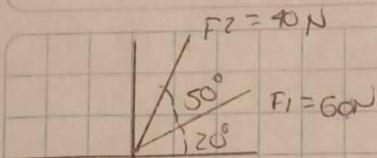
NOMBRE DEL TRABAJO: SISTEMAS DE FUERZAS CONCURRENTES

MATERIA: RESISTENCIA DE MATERIALES DE CONSTRUCCION

GRADO: CUARTO CUATRIMESTRE

GRUPO: A

COMITÁN DE DOMÍNGUEZ CHIAPAS A 24 DE SEPTIEMBRE DEL 2021

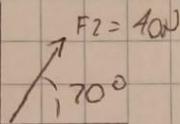


$$\cos \phi = \frac{ca}{H} \rightarrow \cos 20^\circ = \frac{F1x}{60N}$$

$$F1x = 60N \cdot \cos 20^\circ = \underline{56.382N}$$

$$\sin \phi = \frac{co}{H} \rightarrow \sin 20^\circ = \frac{F1y}{60N}$$

$$F1y = 60N \cdot \sin 20^\circ = \underline{20.521N}$$

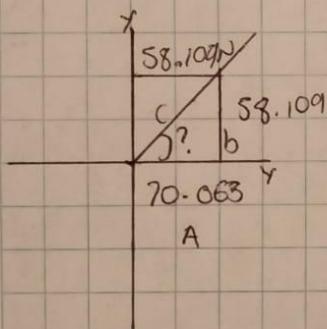


$$\cos \phi = \frac{ca}{H} \rightarrow \cos 70^\circ = \frac{F2x}{40N}$$

$$F2x = 40N \cdot \cos 70^\circ = \underline{13.681N}$$

$$\sin \phi = \frac{co}{H} \rightarrow \sin 70^\circ = \frac{F2y}{40N}$$

$$F2y = 40N \cdot \sin 70^\circ = \underline{37.588N}$$



$$F2x = \sum Fx = 56.382 + (13.681) = \underline{70.063N}$$

$$\sum Fy = 20.521 + (37.588) = \underline{58.109N}$$

$$\tan \phi = \frac{co}{ca} = \alpha = \tan^{-1} \frac{co}{ca}$$

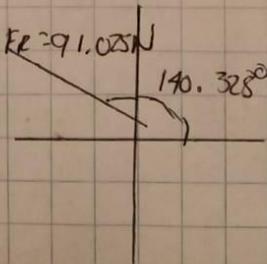
$$\alpha = \tan^{-1} \frac{58.109N}{70.063N}$$

$$\alpha = \underline{39.672^\circ}$$

$$c = \sqrt{a^2 + b^2}$$

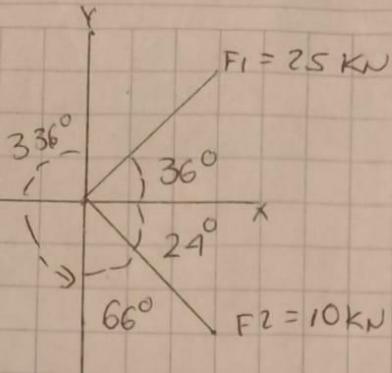
$$c = \sqrt{(70.063)^2 + (58.109)^2}$$

$$FR = \underline{91.025N}$$



$$\phi = 180^\circ - 39.672^\circ$$

$$\phi = \underline{140.328^\circ}$$

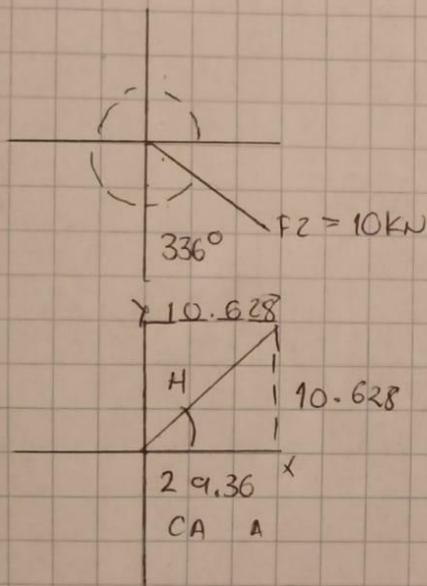


$$\cos \phi = \frac{CA}{H} = \cos 36^\circ = \frac{F1_x}{25 \text{ kN}}$$

$$F1_x = 25 \text{ kN} \cdot \cos 36^\circ = \underline{20.225 \text{ kN}}$$

$$\sin \phi = \frac{CO}{H} = \sin 36^\circ = \frac{F1_y}{25 \text{ kN}}$$

$$F1_y = 25 \text{ kN} \cdot \sin 36^\circ = \underline{14.695 \text{ kN}}$$



$$F2_x = 10 \text{ kN} \cdot \cos 336^\circ = \underline{9.135 \text{ kN}}$$

$$F2_y = 10 \text{ kN} \cdot \sin 336^\circ = \underline{-4.067 \text{ kN}}$$

$$F_{Rx} = \sum F_x = 20.225 + (9.135 \text{ kN}) = \underline{29.36 \text{ kN}}$$

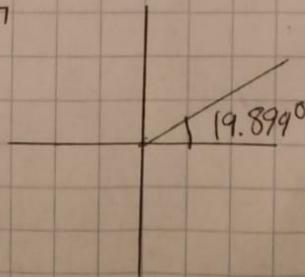
$$\sum F_y = 14.695 \text{ kN} + (-4.067) = \underline{10.628 \text{ kN}}$$

$$\tan \alpha = \frac{CO}{CA} \Rightarrow \alpha = \tan^{-1} \frac{CO}{CA}$$

$$\alpha = \tan^{-1} \frac{10.628 \text{ kN}}{29.36 \text{ kN}}$$

$$\alpha = 19.899 \text{ } \underline{19.899^\circ}$$

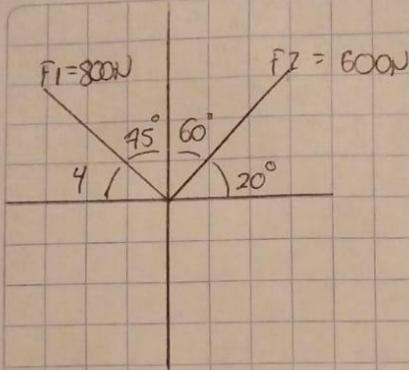
$$F_R = 31.224$$



$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{(29.36^2) + (10.628)^2}$$

$$c = \underline{31.224}$$



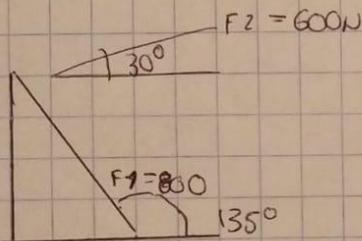
HALLAR F_R Y DIRECCIÓN

$$\cos \theta = \frac{CA}{H} \rightarrow \cos 30^\circ = \frac{F_{2x}}{600N}$$

$$F_{2x} = 600N \cdot \cos 30^\circ = \underline{519.615N}$$

$$\sin \theta = \frac{CO}{H} \rightarrow \sin 30^\circ = \frac{F_{2y}}{600N}$$

$$F_{2y} = 600N \cdot \sin 30^\circ = \underline{300N}$$

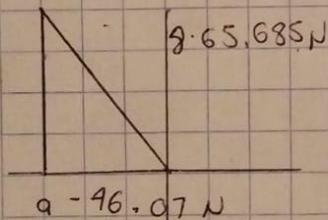


$$\cos \theta = \frac{CA}{H} \rightarrow \cos 135^\circ = \frac{F_{1x}}{800N}$$

$$F_{1x} = 800N \cdot \cos 135^\circ = \underline{-565.685N}$$

$$\sin \theta = \frac{CO}{H} \rightarrow \sin 135^\circ = \frac{F_{1y}}{800N}$$

$$F_{1y} = 800N \cdot \sin 135^\circ = \underline{565.685N}$$



$$F_{Rx} = \sum F_x = 519.615N + (-565.685N) = \underline{-46.07N}$$

$$\sum F_y = 300N + (565.685N) = \underline{865.685N}$$

$$\tan \alpha = \frac{CO}{CA} = \alpha = \tan^{-1} \frac{CO}{CA}$$

$$\alpha = \tan^{-1} \frac{865.685}{-46.07}$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{(-46.07N)^2 + (865.685)^2}$$

$$F_R = \underline{866.910N}$$

