



**ALUMNO(A): ZULIBETH VAZQUEZ NORIEGA**

**DOCENTE: PEDRO ALBERTO GARCÍA**

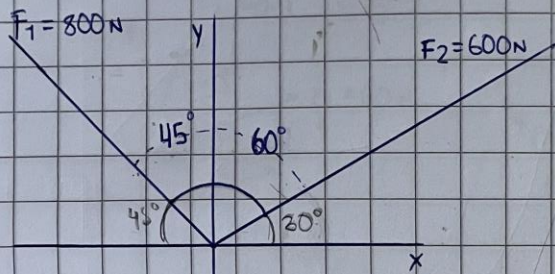
**MATERIA: RESISTENCIA DE MATERIALES DE CONSTRUCCIÓN**

**ACTIVIDAD: SISTEMA DE FUERZAS CONCURRENTES**

**CUATRIMESTRE: CUARTO**

**GRUPO: A**

**HCA. CD DE JUCHITAN DE ZARAGOZA, OAX**



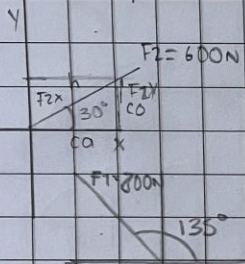
Hallar  $F_R$  y Dirección

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

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

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

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

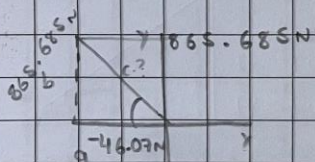


$$\cos \phi = \frac{CA}{H} \rightarrow \cos 135^\circ = \frac{F_{1x}}{800N}$$

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

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

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



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

$$F_{Ry} = 300N + (565.685N) = 865.685N$$

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

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

$$F_R = 866.910N$$

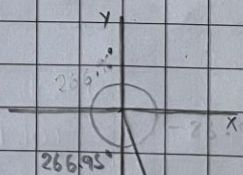
$$\tan \alpha = \frac{CO}{CA} = \alpha = \tan^{-1} \left( \frac{CO}{CA} \right)$$

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

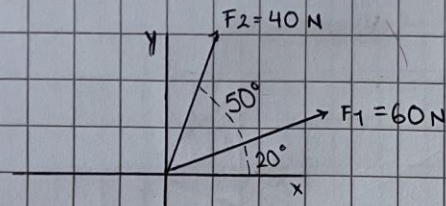
$$\alpha = -86.95^\circ$$

$$\phi = 180^\circ - (-86.95^\circ)$$

$$\phi = 266.95^\circ$$

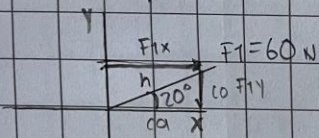


$$F_R = 866.910N$$



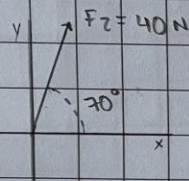
$$\cos \phi = \frac{CA}{H} \rightarrow \cos 20^\circ = \frac{F_{1x}}{60N}$$

$$F_{1x} = 60N \cdot \cos 20^\circ = 56.382$$



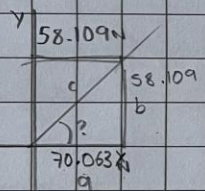
$$\sin \phi = \frac{co}{H} \rightarrow \sin 20^\circ = \frac{F_{1y}}{60N}$$

$$F_{1y} = 60N \cdot \sin 20^\circ = 20.521$$



$$\cos \phi = \frac{CA}{H} \rightarrow \cos 70^\circ = \frac{F_{2x}}{40N}$$

$$F_{2x} = 40N \cdot \cos 70^\circ = 13.681$$



$$\sin \phi = \frac{co}{H} \rightarrow \sin 70^\circ = \frac{F_{2y}}{40N}$$

$$F_{2y} = 40N \cdot \sin 70^\circ = 37.588$$

$$F_{Rx} = \sum F_x = 56.382 + (13.681) = 70.063N$$

$$F_{Ry} = 20.521 + (37.588) = 58.109N$$

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

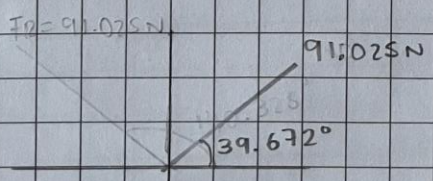
$$r = \sqrt{(70.063)^2 + (58.109)^2}$$

$$F_R = 91.025N$$

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

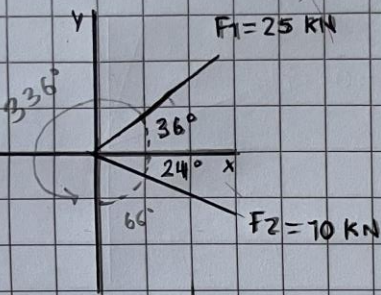
$$\alpha = \tan^{-1} \frac{58.109N}{70.063N}$$

$$\alpha = 39.672^\circ$$



$$\theta = 20^\circ - 39.672^\circ$$

$$\theta = 110.328^\circ$$

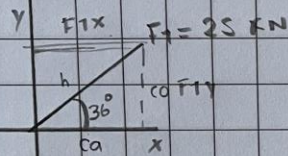


$$\cos \theta = \frac{CA}{H} = \cos 36^\circ = \frac{F_{1x}}{25 \text{ kN}}$$

$$F_{1x} = 25 \text{ kN} \cdot \cos 36^\circ = 20.225 \text{ kN}$$

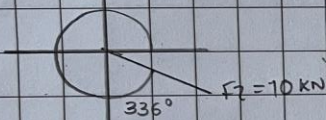
$$\sin \theta = \frac{CO}{H} = \sin 36^\circ = \frac{F_{1y}}{25 \text{ kN}}$$

$$F_{1y} = 25 \text{ kN} \cdot \sin 36^\circ = 14.695 \text{ kN}$$



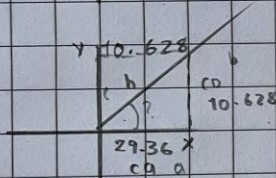
$$F_{2x} = 10 \text{ kN} \cdot \cos 336^\circ = 9.135 \text{ kN}$$

$$F_{2y} = 10 \text{ kN} \cdot \sin 336^\circ = -4.067 \text{ kN}$$



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

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



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

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

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

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

$$F_R = 31.224$$

$$\alpha = 19.899$$

