UDS

PASIÓN POR EDUCAR

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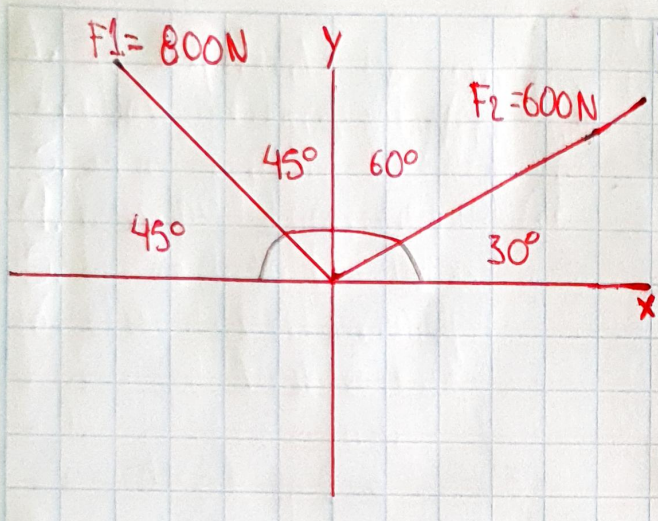
Nombre del trabajo: SISTEMAS DE FUERZAS CONCURRENTES.

Materia: RESISTENCIA DE MATERIALES DE CONSTRUCCION.

Grado: 4°.

Grupo: "A".



Hallar FR y Dirección

$\cos\phi = \frac{CA}{H} \rightarrow \cos 30° = \frac{F2x}{600N}$

$F_{2x} = 600N \cdot \cos 30° = \underline{519.615}$ //

$\text{Sen}\,\phi = \frac{CO}{h} \rightarrow \text{Sen}\,30° = \frac{F2y}{600N}$

$F_{2y} = 600N \cdot \text{Sen}\,30° = \underline{300}$ //

$\cos\phi = \frac{CA}{H} \rightarrow \cos 135° = \frac{F1x}{800N}$

$F1x = 800N \cdot \cos 135° = \underline{-565.685}$ //

$\text{Sen}\,\phi = \frac{CO}{h} \rightarrow \text{Sen}\,135° = \frac{F1y}{800N}$

$F1y = 800N \cdot \text{Sen}\,135° = \underline{565.685}$ //

$F_{ex} = \Sigma Fx = 519.615N + (-565.685N) = \underline{-46.07}$ // N

$\Sigma Fy = 300N + (565.625N) = \underline{865.685N}$ //

$\text{Tan}\,\alpha = \frac{CO}{CA} = \alpha = \text{Tan}^{-1}\frac{CO}{CA}$

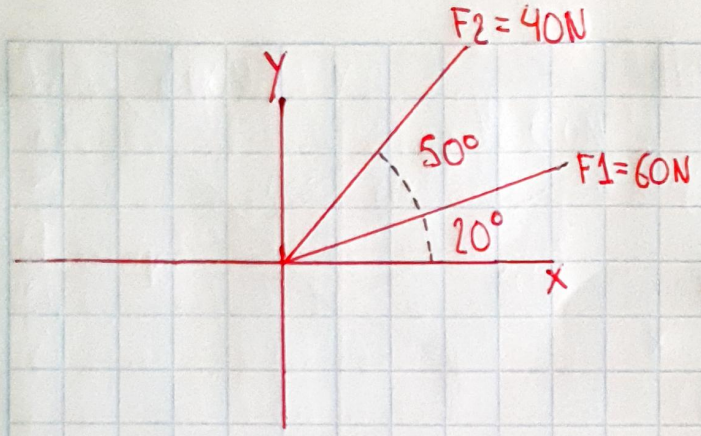
$\alpha = \text{Tan}^{-1}\frac{865.685}{-46.07}$

$\alpha = \underline{-86.95}$ //

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

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

$F_e = \underline{866.910N}$ //



$\cos\phi = \frac{CA}{H} \rightarrow \cos 20° = \frac{F1x}{60N}$

$F1x = 60N \cdot \cos 20° = 56.382$ //

$\text{Sen}\,\phi \frac{CO}{H} \rightarrow \text{Sen}\,20° = \frac{F1y}{60N}$

$F1y = 60N \cdot \text{Sen}\,20° = 20.521$ //

$\cos\phi = \frac{CA}{H} \rightarrow \cos 70° = \frac{F2x}{40N}$

$F2x = 40N \cdot \cos 70° = 13.681$ //

$\text{Sen}\,\phi = \frac{CO}{H} \rightarrow \text{Sen}\,70° = \frac{F2y}{40N}$

$F2y = 40N \cdot \text{Sen}\,70° = 37.588$ //

$FRx = \Sigma Fx = 56.382 + (13.681) = 70.063N$ //

$\Sigma Fy = 20.521 + (37.588) = 58.109N$ //

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

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

$\alpha = 39.672$ //

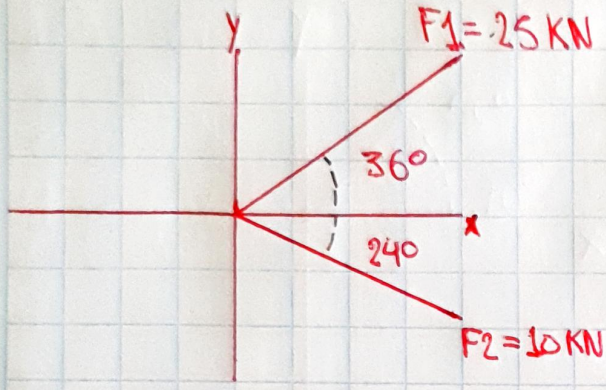
$\phi = 180° - 39.672$

$\phi = 140.328°$

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

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

$FR = 91.025N$ //



$\cos\phi = \frac{CA}{H} = \cos 36° = \frac{F1x}{25\,KN}$

$F1x = 25\,KN \cdot \cos 36° = \underline{20.225\,KN}$ //

$\text{Sen}\,\phi = \frac{CO}{H} = \text{Sen}\,36° = \frac{F1y}{25\,KN}$

$F1y = 25\,KN \cdot \text{Sen}\,36° = \underline{14.695\,KN}$ //

$F2x = 10\,KN \cdot \cos 336° = \underline{9.135\,KN}$ //

$F2y = 10k \cdot \text{Sen}\,336° = \underline{-4.067\,KN}$ //

$F_R x = \Sigma Fx = 20.225 + (9.135\,KN) = \underline{29.36\,KN}$ //

$\Sigma Py = 14.695\,KN + (-4.067) = \underline{10.628\,KN}$ //

$\tan\alpha = \frac{CO}{CA} \Rightarrow \alpha = \tan^{-1}\frac{CO}{CA} = \alpha = \tan^{-1}\frac{10.628KN}{29.36KN} = \alpha = \underline{19.899}$ //

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

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

$F_R = \underline{31.224}$ //