Nombre de alumno: Noel De Jesús López Albores

Nombre del profesor: Pedro Alberto García

Nombre del trabajo: Sistemas de fuerzas concurrentes (EJERCICIOS)

Materia: Resistencia de la materiales de construcción

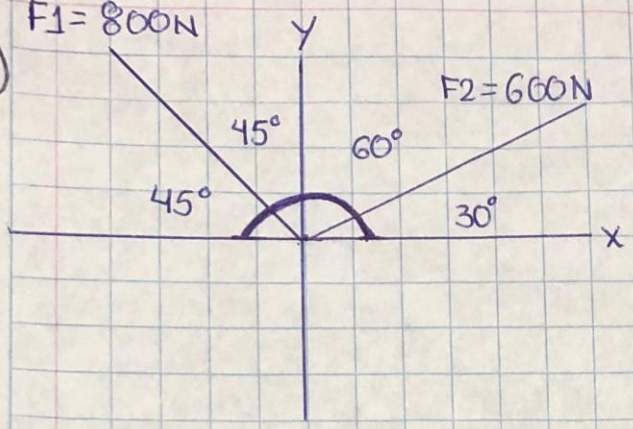
Grado: 4° cuatrimestre

Grupo: "A"

Comitán de Domínguez Chiapas a 24 de septiembre de 2021.

Hallar Fe y Dirección

① F1 = 800N



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

$F2x = 600N \cdot \cos 30° = 519.615$

$\operatorname{Sen}\phi = \frac{CO}{H} \rightarrow \operatorname{Sen} 30° = \frac{F2y}{600N}$

$F2y = 600N \cdot \operatorname{Sen} 30° = 300$

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

$F1x = 800N \cdot \cos 135° = -565.685$

$\operatorname{Sen}\phi = \frac{CO}{H} \rightarrow \operatorname{Sen} 135° = \frac{F1y}{800N}$

$F1y = 800N \cdot \operatorname{Sen} 135° = 565.685$

$Fex = \Sigma Fx = 519.615N + (-565.685N) = -46.07N$

$\Sigma Fy = 300N + (565.625N) = 865.685N$

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

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

$\alpha = -86.95$

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

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

$Fe = 866.910N$

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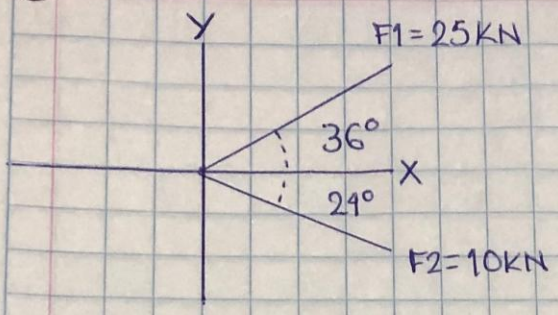
②



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

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

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

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

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

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

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

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

$\tan\alpha = \frac{CO}{CA} \rightarrow \alpha = \tan^{-1}\frac{CO}{CA} = \alpha = \tan^{-1}\frac{10.628KN}{29.36KN} =$

$\alpha = \underline{19.899}$

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

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

$Fc = \underline{31.224}$

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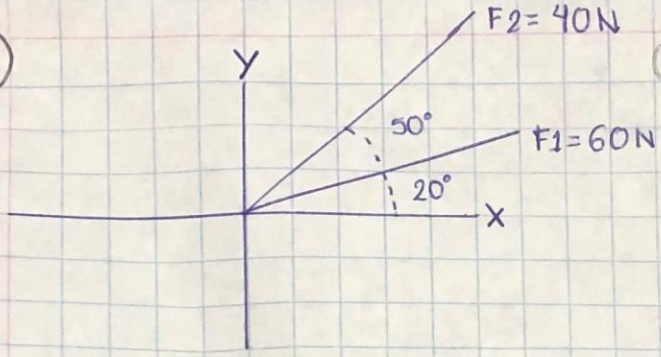
Resistencias de Materiales de Construcción.

③



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

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

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

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

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

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

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

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

$FRx = \Sigma Fx = 56.382 + (13.681) = \underline{70.063\,N}$

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

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

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

$\alpha = \underline{39.672}$

$\phi = 180° - 39.672$

$\phi = 140.328°$

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

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

$FR = \underline{91.025N}$

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