UDS

PASIÓN POR EDUCAR

Nombre de alumno: Elioenai David López Espinosa

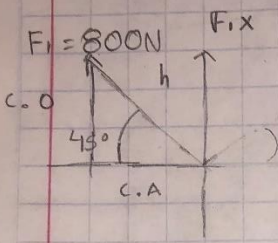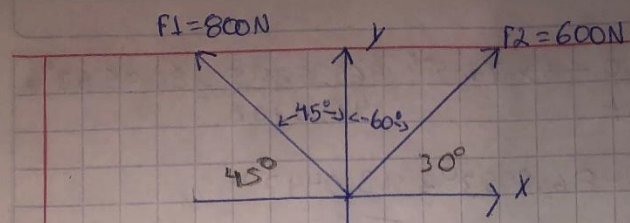**Nombre del profesor:** Pedro Alberto Garcia

Nombre del trabajo: SISTEMAS DE FUERZAS CONCURRENTES

Materia: RESISTENCIA DE MATERIALES DE CONSTRUCCION

Grado: 2do

Grupo: "A"
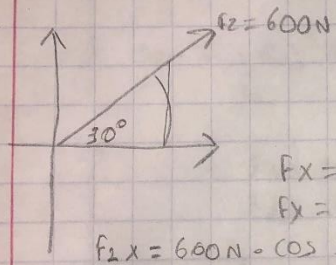
Comitán de Domínguez Chiapas a 24 de septiembre de 2021.

$f_1 = 800N$ y $f_2 = 600N$

$\angle 45°$ $\angle 60°$

$45°$ $30°$ x

$F_1 x$

$F_1 = 800N$

$\cos° = \dfrac{C.A}{h} = \dfrac{\cos 135}{ } = \dfrac{F_1 X}{800 N}$

C.O

$45°$ h

$F_1 = \cos N$ $F_1 x = 800N \cdot \cos 135° = -565.6854$

$f_1 y$

C.A

$\text{sen}° \dfrac{C.O}{h} = \dfrac{\text{sen } 135°}{ } = \dfrac{F_1 Y}{800 N} =$

$f_2 = 600N$

$f_1 y = 800N \cdot \text{sen } 135° = 565.6885 N$

$30°$

$Fx = F.\cos°$

$Fy = F.\text{sen}°$

$f_1 x = 600N \cdot \cos 30° = 519.6152 N$

$f_2 y = 600N \cdot \text{sen } 30° = 300 N$

$FR_X = \Sigma F_X = (-565.6854) + 519.6152 N = -46.0702 N$

$\Sigma FY = 565.6885 + 300 = 865.6885 N$

y

$866.9135N$ $865.6885 N$
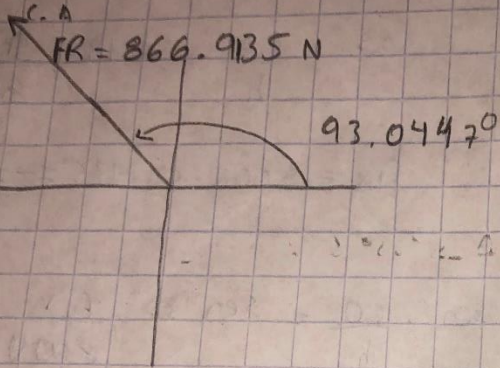
$C.O$

$865.6885N$

x
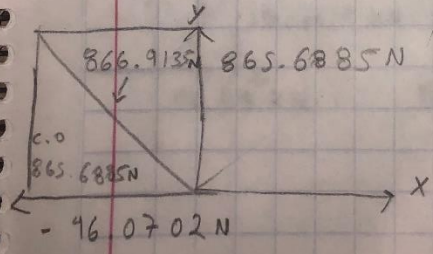
$-46.0702 N$

$c = \sqrt{a^2 + b^2} = \sqrt{(865.6885)^2 + (-46.0702)^2}$

$c = 866.9135 N$

$\text{Tan} \alpha = \dfrac{c.o}{c.A} \longrightarrow \text{Tang}^{-1} \dfrac{865.6885}{-46.0702} = 86.9553°$

$\theta = 180° - 86.9553° = 93.0447°$

c.o

h

c.A

α

c.A

FR = 866.9135 N

93.0447°

$f_1 = 25$ KN

$36°$ → X

$24°$

↓ $F_2 = 10$ KN

$f_1 = 25$ KN

$54°$

$36°$ $c.0$

$c.A$
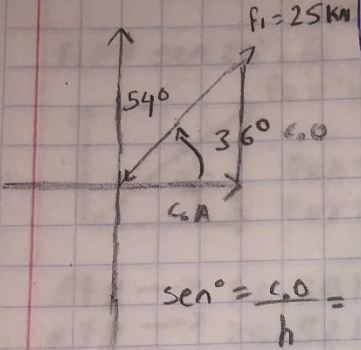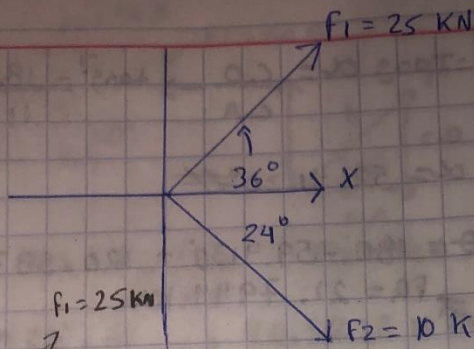
$\cos° = \dfrac{CA}{h} \Rightarrow \cos 36° = \dfrac{F_{1x}}{25KN}$ → $F_{1x} = 25KN \cdot \cos 36°$

$F_{1x} = 20.2254$ KN

$\text{sen}° = \dfrac{c.0}{h}$ = $F_{1y} = \text{sen } 36° \cdot 25$ KN → 14.6946 KN

$F_x = 10 \cdot \cos{-156°}$ → 9.1354 KN ✓

$F_y = 10 \cdot \text{sen} -156°$ → 4.0673 ✓

$24°$
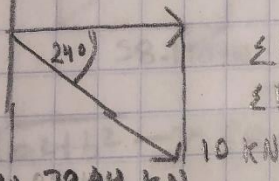
$\Sigma F_x = 20.2254 KN + (-9.1354) = 11.09$ KN

$\Sigma F_y = 14.6946 + (-4.0673) = 10.7619$ KN

↙ 10 KN

Y 21.7944 KN

18.7619 KN $c = \sqrt{(18.7619)^2 + (11.09 \text{ KN})^2}$
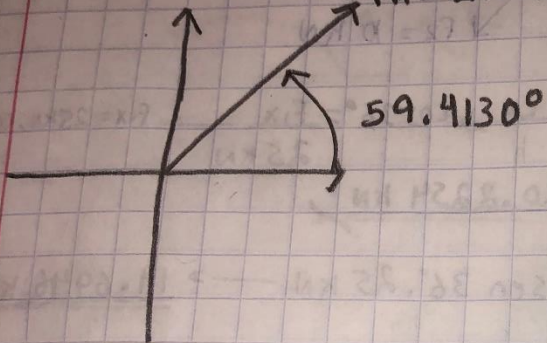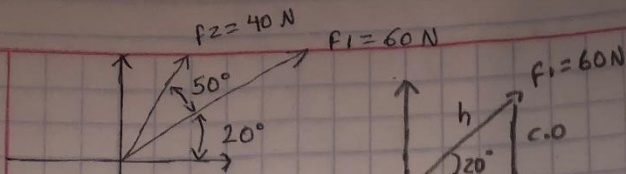
x
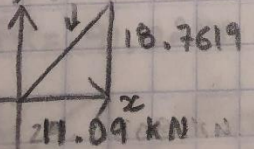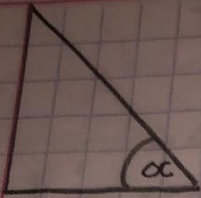
21.09 KN $F_R = 21.7944$ KN #

$$\text{Tang } \alpha = \frac{c.o}{c.A} \rightarrow \tan^{-1} = \frac{18.7619 \text{ KN}}{11.09 \text{ KN}}$$

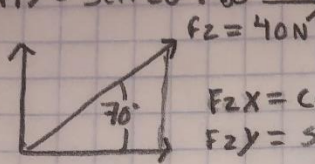$$\alpha = 59.4130° \#$$

$$\theta = 180° - 59.4130° = 120.587° \#$$

$$FR = 21.7944 \text{ KN}$$

$$59.4130°$$

$f_2 = 40\,N$ $f_1 = 60\,N$

$50°$

$20°$

$f_1 = 60\,N$

h $c.o$

$20°$

$c.A$

$\cos 20° = \dfrac{f_{1x}}{60N}$ = $f_{1x} = 60N \cdot \cos 20° = 56.3815\,N$ #

$f_1 y = \text{sen}\ 20° \cdot 60 \longrightarrow 20.5212\,N$ #

$f_2 = 40\,N$

$70°$

$F_2 x = \cos 70° \cdot 40N \longrightarrow 13.6808\,N$ #
$F_2 y = \text{sen}\ 70° \cdot 40N \longrightarrow 37.5877\,N$ #

$\Sigma f_x \longrightarrow 56.3815\,N + 13.6808\,N \longrightarrow 70.0623\,N$ #
$\Sigma f_y \longrightarrow 20.5212\,N + 37.5877\,N \longrightarrow 58.1089\,N$ #
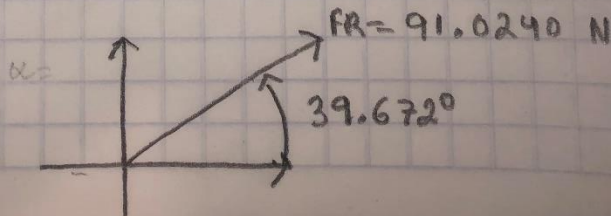
91.0240
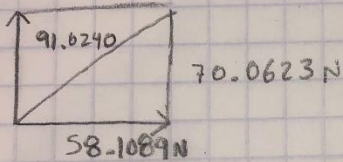
$70.0623\,N$

$58.1089\,N$

$c = \sqrt{a^2 + b^2} \longrightarrow fR = \sqrt{(70.0623\,N)^2 + (58.1089\,N)^2}$

$fR = 91.0240\,N$ # $\theta = 90° - 50.3280° = 39.672°$

h

$c.o$

α

$c.A$
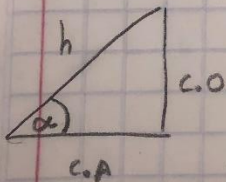
$\text{Tang}\ \alpha = \dfrac{c.o}{c.A} \longrightarrow \alpha = \tan^{-1} \dfrac{70.0623\,N}{58.1089\,N} = 50.3280°$

α

$fR = 91.0240\,N$

$39.672°$