Nombre del docente:

Pedro Alberto García López

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Materia:

Estática para la arquitectura
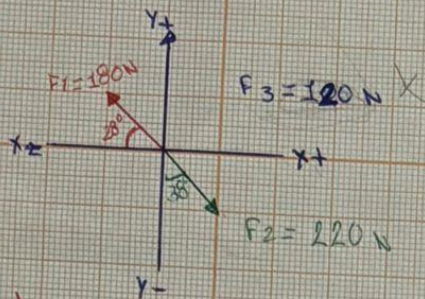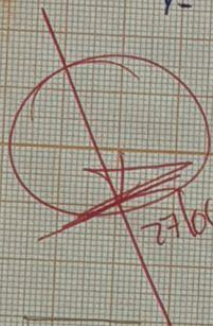
Licenciatura:

Arquitectura

Cuatrimestre:

3

Unidad:

3

UDS

$Y+$

$F_1 = 180N$

$F_3 = 120N$ X

$X-$ $X+$

$38°$

$28°$

$F_2 = 220N$

$Y-$

$$Sen\ 28° = \frac{F_{yy}}{180N} \rightarrow F_{yy} = 180(sen(28°)) = 84.50\ N$$

$$Cos\ 28° = \frac{F_{x2}}{100N} \rightarrow F_{x2} = 180(cos(28)) = 158.93N$$

$$Sen\ 38° = \frac{F_{y1}}{220} \rightarrow F_{y1} = 220(sen(38°)) = 135.44N$$

$$Cos\ 38 = \frac{F_{x2}}{220} \rightarrow F_{x2} = 220(cos(38°)) = 173.36N$$

$$\Sigma F_Y = 84.50 + 173.36 = -88.86N$$

$$\Sigma F_X = -158.93 + 84.50 + 120 = 96.51N$$

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

$$C = \sqrt{(96.51)^2 (-88.86N)}$$
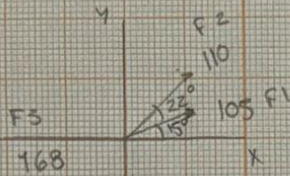
$$C = \sqrt{9514.19 + 7896.09}$$

$$C = \sqrt{17210.28}$$

$$C = 131.18\ N$$

$$Tan\ \theta = \frac{88.86}{96.51}$$

$$\theta = tan^{-1} = 0.920$$

$$\theta = tan^{-1} = \frac{-88.86}{96.51}$$

$$\theta = 42.61°$$

$Sen = 15° = \dfrac{F1y}{105N} \rightarrow F1y = 105 N \cdot sen \; 15° = 27.175 \; N$

$Cos \; 15° = \dfrac{F1x}{105} \rightarrow F1x = 105N \cdot cos \; 15° = 101.422$

$Sen \; 37° = \dfrac{F1y}{110} \rightarrow F1y = 110N \cdot sen \; 37° = 66.199$

$Cos \; 37° = \dfrac{F1x}{110} \rightarrow F1x = 10N \cdot cos \; 37° = 87.849$

$\varepsilon Fy = 0$

$\varepsilon Fy = 27.175 + 66.199 = 93.374$

$\varepsilon Fx = 0$

$\varepsilon Fx = 101.422 + 87.849 - 168 = 21.271$

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

$C = \sqrt{(21.271)^2 + (93.374)^2}$

$C = \sqrt{432.455 + 8718.703}$

$C = \sqrt{9171.158}$

$C = 95.766$

$\theta \; tan^{-1} = 77.6$

$Tan \; \theta = \dfrac{93.374}{21.271}$
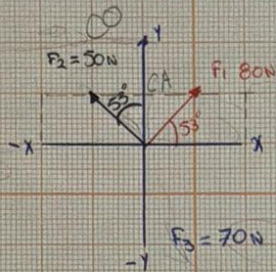
$F_1 = \text{Sen } 53° = \dfrac{Fy}{80N}$

$F_{y1} = 80N \,(\text{Sen } 53°) = 63.89\,N$

$\text{Cos } 53° = \dfrac{Fx}{80N}$

$F_{x1} = 80\,N \,(\text{Cos } 53°) = 48.14\,N$
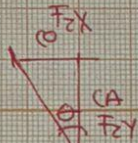
$F_2 = \text{Sen } 53° = \dfrac{Fx_2}{50N}$

$F_{y2} = 50N \,(\text{Cos } 53°) = +30.09$

$F_{x2} = 50N \,(\text{Sen } 53°) = -39.93 \quad 39.93$

$\Sigma F_y = 63.89N + 30.09 + -70 = 23.98$

$\Sigma F_x = 48.14 - 39.93 = 8.21$