TRABAJO VIRTUAL

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Nombre del tema: fuerzas y tensiones
Parcial: 3
Nombre de la Materia: Estatica
Nombre del profesor: Pedro Alberto Garcia Lopez
Nombre de la licenciatura: arquitectura
Cuatrimestre: 3
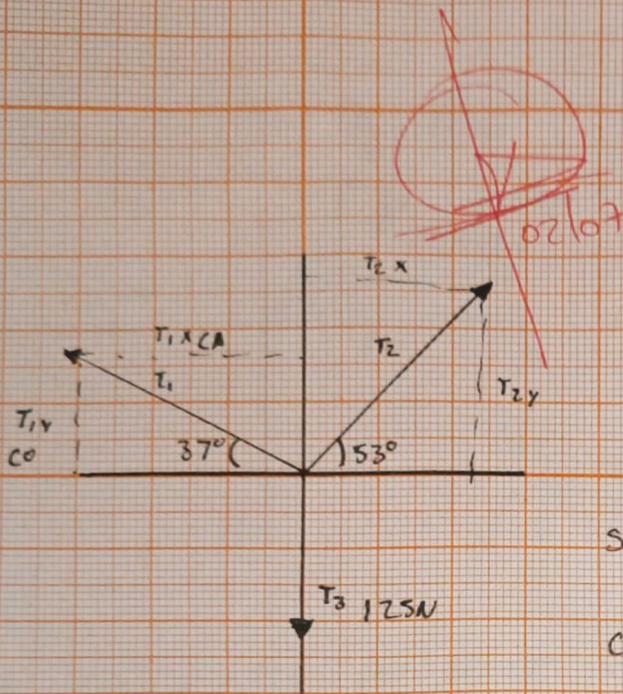
$T_1 =$

$$\text{Sen } 37° = \frac{T_{1y}}{T_1} \quad \rightarrow \quad T_{1y} = T_1 \cdot \text{Sen } 37°$$

$$\text{COS } 37° = \frac{T_{1x}}{T_1} \quad \rightarrow \quad T_{1x} = T_1 \cdot \text{COS } 37°$$

T_2

$$\text{Sen } 53° = \frac{T_{2y}}{T_2} \quad \rightarrow \quad T_{2y} = T_2 \cdot \text{Sen } 53°$$

$$\text{Cos } 53° = \frac{T_{2x}}{T_2} \quad \rightarrow \quad T_{2x} = T_2 \cdot \text{COS } 53°$$

$\sum T_x = 0$

$T_2 \cdot \cos 53° - T_1 \cdot \cos 37° = 0$

$T_2 \cdot \cos 53 = T_1 \cdot \cos 37°$

$T_2 = \frac{T_1 (\cos 37°)}{(\cos 53°)}$ ① $T_2 = T_1 \cdot 1.32$

②

$T_2 = T_1 \cdot 1.32$

$T_2 = (76.21) \, 1.32$

$T_2 = 100.59 \, N$

$\sum T_y$

$T_1 \cdot \text{Sen } 37° + T_2 \cdot \text{Sen } 53° - 125N = 0$

$T_1 \cdot \text{Sen } 37° + [(T_1 \cdot 1.32) \text{Sen } 53] - 125N = 0$

$T_1 \cdot 0.60 + [(T_1 \cdot 1.32) 0.79] - 125N = 0$

$T_1 \cdot 0.60 + T_1 \cdot 1.04 N - 125N = 0$

$T_1 \cdot 1.64 - 125N = 0$

$T_1 = \frac{125}{1.64} = 76.21 \, N$

$F_2 = 100N$

$105N$

$=168N$

$21°$ $15°$

F_1x
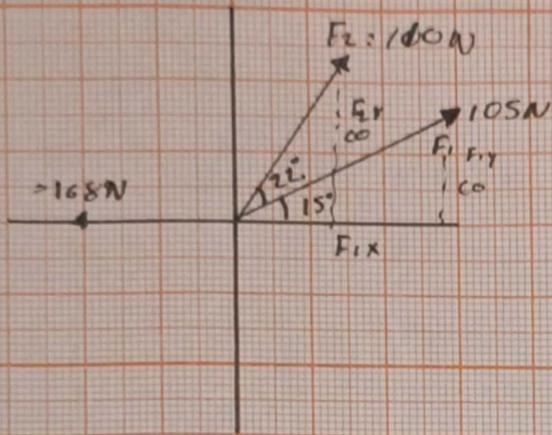
F_1

$Sen\ 15° = \dfrac{F_{1y}}{105}$: $F_{1y} = 105 \cdot Sen\ 15° = 27.175$

$Cos\ 15 = \dfrac{F_{1x}}{105}$: $F_{1x} = 105 \cdot Cos\ 15° = 101.422$

$F_2 =$

$Sen\ 37° = \dfrac{F_{2y}}{110}$: $F_{2y} = 110 \cdot Sen\ 37° = 66.199$

$Cos\ 37° = \dfrac{F_{2x}}{110}$: $F_{2x} = 110 \cdot Cos\ 37° = 87.849$

$\sum F_x:$

$101.422 + 87.849 - 168N = \underline{21.271\ N}$

$\sum F_y$

$27.175 + 66.199 = \underline{93.3704\ N}$

93.374

$θ$
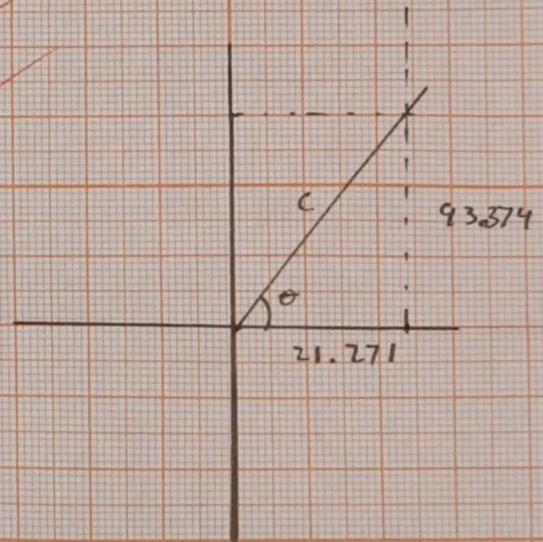
21.271

$Tan\ θ = \dfrac{93.374}{21.271}$

$θ = Tan^{-1} = \dfrac{93.374}{21.271}$

$\underline{θ = 77.166}$

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

$R = \sqrt{21.271^2 + 93.374^2}$

$R = \sqrt{452.455 + 8718.703}$

$R = \sqrt{9171.158}$

$R = \sqrt{}$
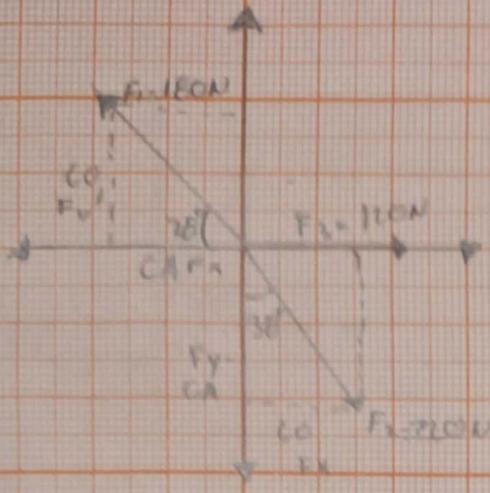
$\underline{R = 95.766}$

$Sen\ 28° = \dfrac{Fy}{180}$ $Cos\ 28 = \dfrac{Fx}{180}$

$Fy = Sen\ 28° \cdot 180$ $Fx = Cos\ 28° \cdot 180$

$Fy = 84.50 N$ $Fx = 158.93 N$

$F_2 =$

$Sen\ 38° = \dfrac{Fx}{220N}$ $Cos\ 38° = \dfrac{Fy}{220}$

$Fx = Sen\ 38° \cdot 220N$ $Fy = Cos\ 38° \cdot 220$

$Fx = 135.44N$ $Fy = 173.36N$

$\Sigma Fx = 120N + 135.44N - 158.93$

$\Sigma Fx = 96.51 N$

$\Sigma Fy = 84.50N - 173.36N$

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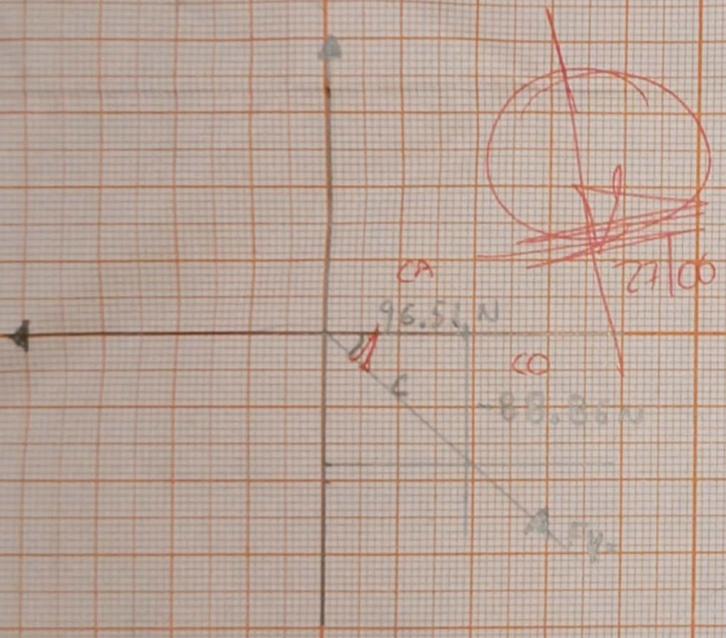
$C = \sqrt{96.51^2 + (88.86)^2}$

$C = \sqrt{9314.19 + 7896.09}$

$C = \sqrt{17110.28}$

$C = 131.19N$

$tan\theta = \dfrac{-88.86}{96.51}$

$\theta = Tan^{-1}\ \dfrac{-88.86}{96.51}$

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

$\boxed{\theta = 42.61°}$

$\dfrac{CO}{CA}$

Rayler

$F_2 = 50N$

$F_1 = 80N$

$F_3 = -70N$

F_1
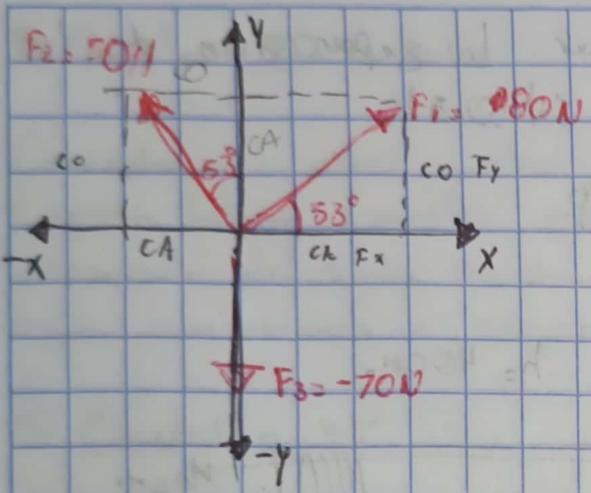
$Sen\ 53° = \dfrac{Fy}{80N}$ $Cos\ 53 = \dfrac{Fx}{80N}$

$Fy = Sen\ 53 \cdot 80N$

$Fx = Cos\ 53 \cdot 80N$

$Fy = 63.89\ N$

$Fx = 48.14\ N$

F_2

$Sen\ 53° = \dfrac{Fy}{50N}$ $Cos\ 53 = \dfrac{Fx}{50N}$

$Fy = Sen\ 53° \cdot 50N$ $Fx = Cos\ 53° \cdot 50N$

$Fy = 39.93N$ $Fx = 30.09\ N$

25/06

ΣFy

$(63.89N) + (30.09) + (-70N) = 23.98N$

$\Sigma Fx = 48.14N - 30.09N$
$\qquad\qquad 39.93N$

$8.21\ N$