



Mi Universidad

EJERCICIOS

Nombre del Alumno: Ángel Alexis Moreno Córdova

Nombre del tema: Ejercicios

Parcial: TERCERO

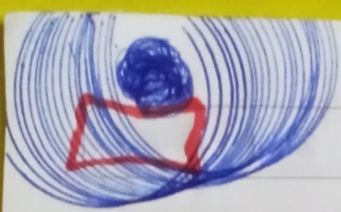
Nombre de la Materia: Estatica para la arquitecturaa

Nombre del profesor: Arq. Pedro Alberto Garcia

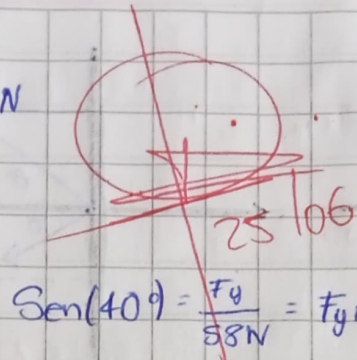
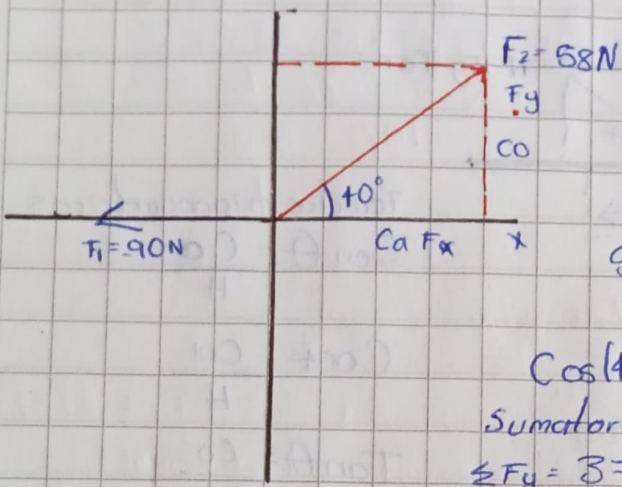
Nombre de la Licenciatura: Arquitectura

Cuatrimestre: Tercero

Fecha y lugar de elaboracion: 05 de julio del 2024, Comitán de Domínguez.



A LÍMITE DE TUBERIAS 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50



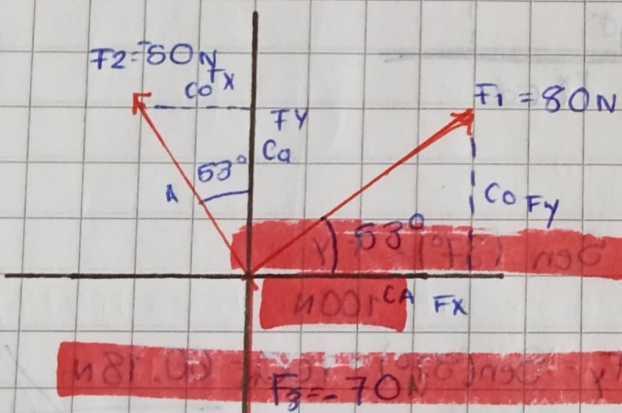
$$\text{Sen}(40^\circ) = \frac{F_y}{58N} = F_{y1} = 58N \cdot \text{Sen } 40^\circ = 37.28N$$

$$\text{Cos}(40^\circ) = \frac{F_x}{58N} = F_x = 58N \cdot \text{Cos}(40^\circ) = 44.43N$$

Sumatoria

$$\Sigma F_y = 37.28N$$

$$\Sigma F_x = 44.43N + (-90N) = -45.57N$$



$$\text{Sen}(53^\circ) = \frac{F_y}{80N} = F_{y1} = \text{Sen}(53^\circ) \cdot 80N$$

$$F_{y1} = 63.89N$$

$$\text{Cos}(53^\circ) = \frac{F_x}{80} = F_{x1} = \text{Cos}(53^\circ) \cdot 80N$$

$$F_{x1} = 48.14N$$

$$\text{Cos } 53^\circ = \frac{F_y}{50N} = F_{y2} = \text{Cos } 53^\circ \cdot 50N$$

$$F_{y2} = 30.09N$$

$$\text{Sen } 53 = \frac{F_x}{50N} = F_{x2} = \text{Sen } 53 \cdot 50N$$

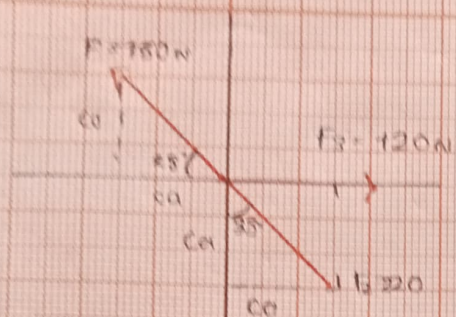
$$F_{x2} = -39.93N$$

Sumatorias

$$\Sigma F_y = 63.89N + 30.09 + (-70N)$$

$$\Sigma F_y = 23.98N$$

$$\Sigma F_x = 48.14N - 39.93 = 8.21N$$



$$F_1 = F_y \cdot \sin 28^\circ = \frac{F_y}{180N} \quad F_{1y} = 180N \cdot \sin 28^\circ = 84.50N$$

$$F_x = \cos 38^\circ = \frac{F_x}{180N} \quad F_{1x} = 180N \cdot \cos 38^\circ = 138.93N$$

$F_2 =$

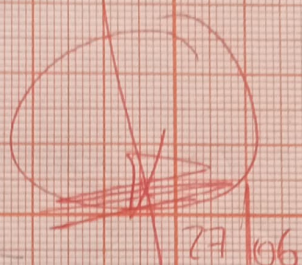
$$F_y = \cos 38^\circ = \frac{F_{2y}}{220N} \quad F_{2y} = 220N \cdot \cos 38^\circ = 172.36N$$

$$F_x = \sin 38^\circ = \frac{F_{2x}}{220N} \quad F_{2x} = 220 \cdot \sin 38^\circ = 135.44N$$

Sumatoria

$$\sum F_y = 84.50N + 172.36N = 256.86N$$

$$\sum F_x = -138.93N + 135.44N + 120N = 96.51N$$

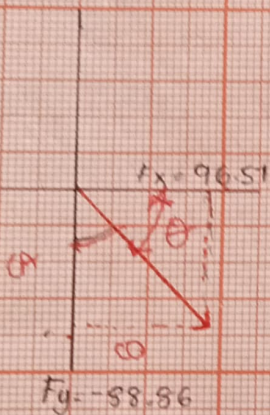


$$C = \sqrt{(96.51)^2 + (256.86)^2}$$

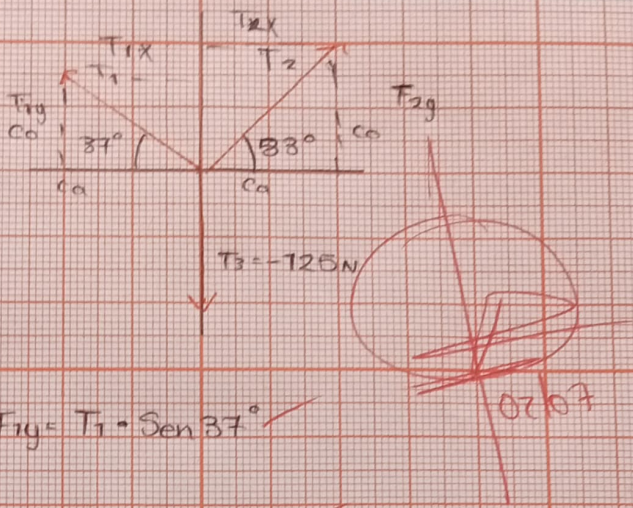
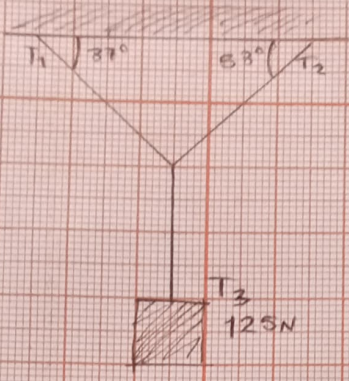
$$C = \sqrt{9314.18 + 65986.09}$$

$$C = \sqrt{75300.27}$$

$$C = 274.18N = R$$



$$\tan \theta = \frac{-58.86}{96.51} = \theta = \tan^{-1} \left(\frac{-58.86}{96.51} \right) = -34.63^\circ$$



$$T_1 \sin 37^\circ = \frac{F_{1y}}{T_1} \rightarrow F_{1y} = T_1 \sin 37^\circ$$

$$\cos 37^\circ = \frac{F_{1x}}{T_1} \rightarrow F_{1x} = T_1 \cos 37^\circ$$

$$T_2 \sin 53^\circ = \frac{F_{2y}}{T_2} \rightarrow F_{2y} = T_2 \sin 53^\circ$$

$$\cos 53^\circ = \frac{F_{2x}}{T_2} \rightarrow F_{2x} = T_2 \cos 53^\circ$$

$$\textcircled{2} \sum F_x = 0$$

$$T_2 \cos 53^\circ - T_1 (\cos 37^\circ) = 0$$

$$T_2 = \frac{T_1 \cos 37^\circ}{\cos 53^\circ} = 1.32 \cdot T_1 = 1.32 \cdot 76.72 \text{ N} = \underline{100.59 \text{ N}}$$

$$\sum F_y = 0$$

$$T_1 \sin 37^\circ + T_2 (\sin 53^\circ) - 125 \text{ N} = 0$$

$$T_1 (\sin 37^\circ) + (1.32 \cdot T_1) \sin 53^\circ - 125 \text{ N} = 0$$

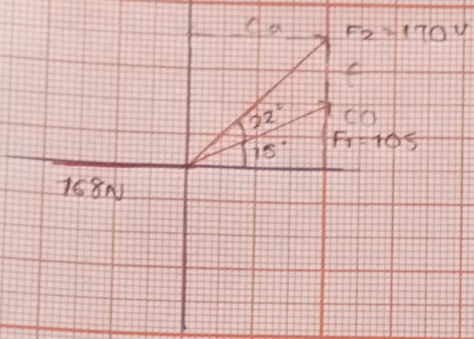
$$T_1 \cdot 0.60 + (1.32 \cdot T_1) \cdot 0.79 - 125 \text{ N} = 0$$

$$T_1 \cdot 0.60 + (1.04 \cdot T_1) - 125 \text{ N} = 0$$

$$T_1 \cdot 1.64 - 125 \text{ N} = 0$$

$$T_1 = \frac{125 \text{ N}}{1.64} = \underline{76.21 \text{ N}}$$

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$$F_1 \text{ Sen } 15^\circ = \frac{F_{1y}}{105N} \rightarrow F_{1y} = 105N \cdot \text{Sen } 15^\circ = 27.175N$$

$$\text{Cos } 15^\circ = \frac{F_{1x}}{105N} \rightarrow F_{1x} = 105 \cdot \text{Cos } 15^\circ = 101.422N$$

F_2

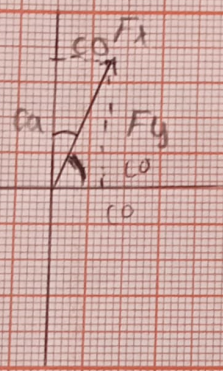
$$\text{Sen } 37^\circ = \frac{F_{2y}}{100} = F_{2y} = 100N \cdot \text{Sen } 37^\circ = 66.799N$$

$$\text{Cos } 37^\circ = \frac{F_{2x}}{110} = F_{2x} = 110N \cdot \text{Cos } 37^\circ = 87.849N$$

Sumatoria

$$\Sigma F_y = 27.175N + 66.799N = 93.374N$$

$$\Sigma F_x = 101.422N + 87.849N - 168N = 21.271N$$



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

$$C = \sqrt{452.455 + 8,718.703}$$

$$C = \sqrt{9,171.158}$$

$$R = 95.766N$$

$$\tan \theta = \frac{93.374N}{21.271N} \rightarrow \theta = \tan^{-1} \left(\frac{93.374N}{21.271N} \right) = 77.166^\circ$$