

**NOMBRE:**

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**DOCENTE:**

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**MATERIA:**

**Estatica**

**CUATRIMESTRE:**

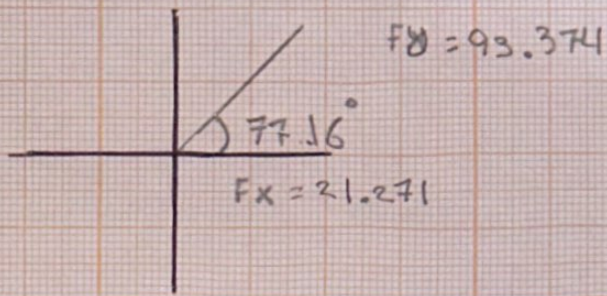
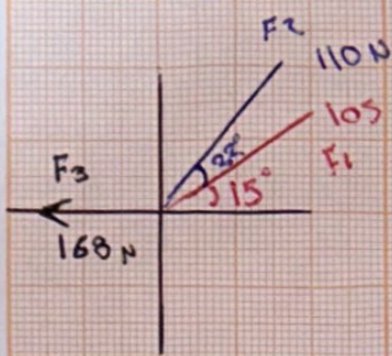
**3°**

**FECHA:**

**06/07/2024**



Gabriel Mérida



$$\sin 15^\circ = \frac{F_{1y}}{105}$$

$$F_{1y} = 105 (\sin 15^\circ)$$

$$F_{1y} = 27.175 \text{ N} \quad \checkmark$$

$$\cos 15^\circ = \frac{F_{1x}}{105}$$

$$F_{1x} = 105 (\cos 15^\circ)$$

$$F_{1x} = 101.422 \text{ N} \quad \checkmark$$

$$\sin 37^\circ = \frac{F_{2y}}{110}$$

$$F_{2y} = 110 (\sin 37^\circ)$$

$$F_{2y} = 66.199 \text{ N} \quad \checkmark$$

$$\cos 37^\circ = \frac{F_{2x}}{110}$$

$$F_{2x} = 110 (\cos 37^\circ)$$

$$F_{2x} = 87.849 \text{ N} \quad \checkmark$$

$$\sum F_x = 101.422 + 87.849 - 168 = 21.271 \quad \checkmark$$

$$\sum F_y = 27.175 + 66.199 = 93.374 \quad \checkmark$$

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

$$C = \sqrt{452.455 + 8718.703}$$

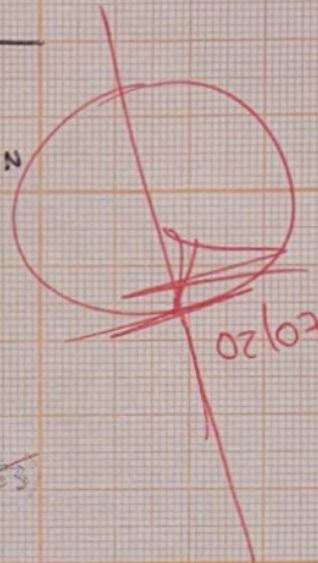
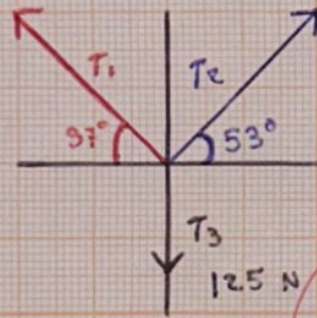
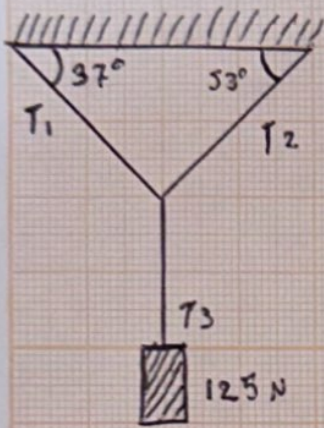
$$C = \sqrt{9171.158}$$

$$C = 95.766 \text{ N} \quad \checkmark$$

$$\tan \theta = \frac{93.374}{21.271}$$

$$\theta = \tan^{-1} = 77.16^\circ \quad \checkmark$$





1

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

$$T_{1y} = T_1 (\sin 37^\circ)$$

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

$$T_{1x} = T_1 (\cos 37^\circ)$$

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

$$T_{2y} = T_2 (\sin 53^\circ)$$

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

$$T_{2x} = T_2 (\cos 53^\circ)$$

2

$$\sum F_x = 0$$

$$\sum F_x = T_2 \cdot \cos 53^\circ - T_1 \cdot \cos 37^\circ = 0$$

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

$$T_2 = \frac{T_1 \cos 37^\circ}{\cos 53^\circ} = 1.32$$

$$T_2 = 1.32 \cdot T_1$$

$$T_2 = 1.32 \times 76.21 = 100.56 \text{ N}$$

$$T_2 = 100.59 \text{ N}$$

3

$$\sum F_y = T_1 \cdot \sin 37^\circ + T_2 \cdot \sin 53^\circ - 125 \text{ N} = 0$$

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

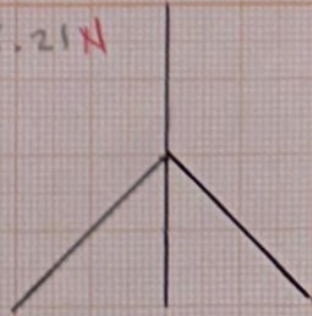
$$T_1 \cdot 0.60 + (1.32 \cdot T_1) \cdot 0.79 - 125 = 0$$

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

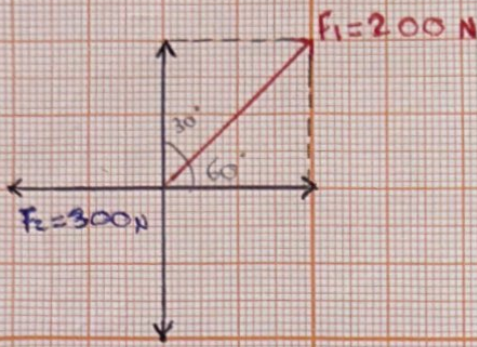
$$T_1 \cdot 1.64 - 125 = 0$$

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

$$T_1 = 76.21 \text{ N}$$







$$\frac{F_{1y}}{200} = \sin 60^\circ$$

$$F_{1y} = 200 \sin(60^\circ)$$

$$F_{1y} = 173.20 \text{ N}$$

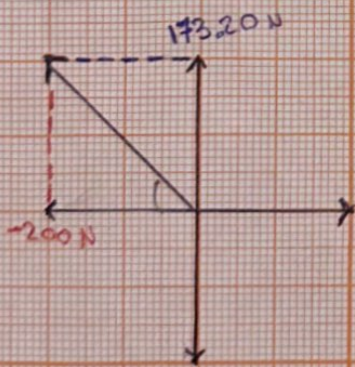
$$\cos 60^\circ = \frac{F_{1x}}{200}$$

$$F_{1x} = 200 \cos(60^\circ)$$

$$F_{1x} = 100 \text{ N}$$

$$\Sigma F_x = 100 - 300 = -200 \text{ N}$$

$$\Sigma F_y = 173.20 \text{ N}$$

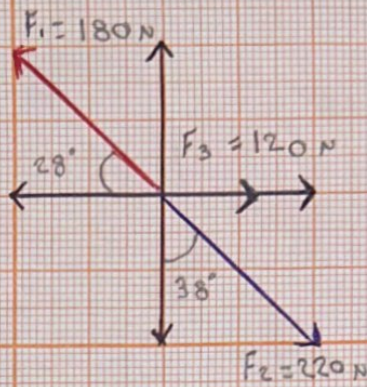


$$C = \sqrt{(200 \text{ N})^2 + (173.20 \text{ N})^2}$$

$$C = \sqrt{(40,000) + (29,998.24)}$$

$$C = \sqrt{69,998.24 \text{ N}^2}$$

$$C = 264.57 \text{ N}$$



$$\frac{F_{1y}}{180} = \sin 28^\circ$$

$$F_{1y} = 180 \sin(28^\circ)$$

$$F_{1y} = 84.50 \text{ N}$$

$$\cos 28^\circ = \frac{F_{1x}}{180}$$

$$F_{1x} = 180 \cos(28^\circ)$$

$$F_{1x} = 158.45 \text{ N}$$

$$\frac{F_{2y}}{220} = \sin 38^\circ$$

$$F_{2y} = 220 \sin(38^\circ)$$

$$F_{2y} = 135.44 \text{ N}$$

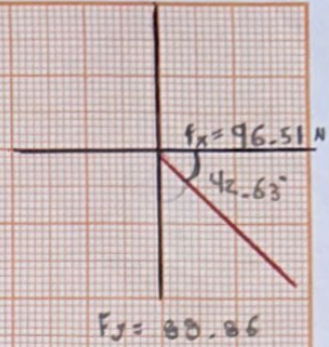
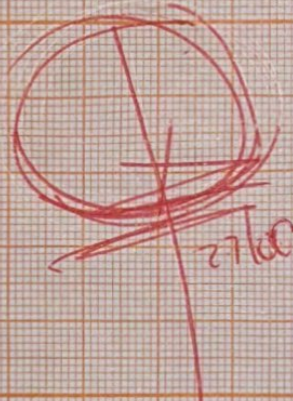
$$\cos 38^\circ = \frac{F_{2x}}{220}$$

$$F_{2x} = 220 \cos(38^\circ)$$

$$F_{2x} = 173.36 \text{ N}$$

$$\Sigma F_x = +120 + 135.44 - 158.45 = 96.99 \text{ N}$$

$$\Sigma F_y = 84.50 - 173.36 = -88.86 \text{ N}$$



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

$$C = \sqrt{9314.18 + 7896.09}$$

$$C = \sqrt{17,210.27}$$

$$C = 131.18 \text{ N}$$

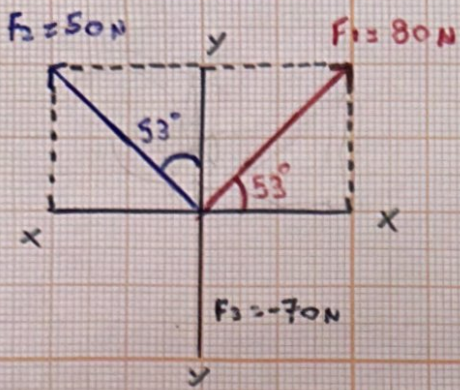
$$\tan \theta = \frac{88.86}{96.51}$$

$$\theta = \tan^{-1} \left( \frac{88.86}{96.51} \right)$$

$$\theta = 42.63^\circ$$



(F<sub>1</sub>)



$$\text{sen } 53^\circ = \frac{F_y}{80}$$

$$F_y = 80 (\text{sen } 53^\circ) = 63.89 \text{ N}$$

$$\text{cos } 53^\circ = \frac{F_x}{80}$$

$$F_x = 80 (\text{cos } 53^\circ) = 48.14 \text{ N}$$

(F<sub>2</sub>)

$$\text{sen } 53^\circ = \frac{F_x}{50}$$

$$F_x = 50 (\text{sen } 53^\circ) = 30.09 \text{ N}$$

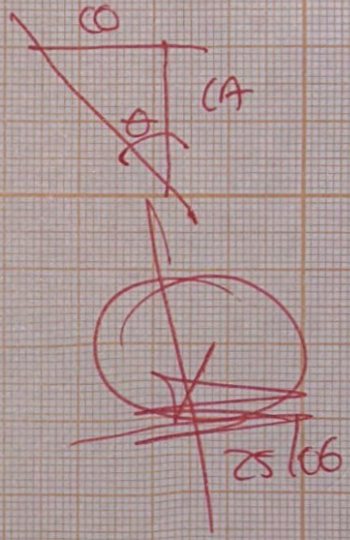
$$\text{cos } 53^\circ = \frac{F_y}{50}$$

$$F_y = 50 (\text{cos } 53^\circ) = 39.93 \text{ N}$$

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

$$\Sigma F_x = 48.14 \text{ N} - 39.93 \text{ N} = 8.21 \text{ N}$$

(F<sub>3</sub>)



(F<sub>3</sub>)