EJERCICIOS DE CLASE

Nombre del Alumno:

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Nombre del tema:

TRABAJO VIRTUAL

Parcial: 3°

Nombre de la Materia:

ESTÁTICA PARA LA ARQUITECTURA

Nombre del profesor:

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Nombre de la Licenciatura: Arquitectura

Cuatrimestre: 3°

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$$\text{Sen } \theta = \frac{CO}{H} \qquad \cos \theta = \frac{CA}{H}$$

$$\tan \theta = \frac{CO}{CA} \qquad C = \sqrt{a^2 + b^2}$$

$F_1 = 200 N$

$F_2 = 300 N$
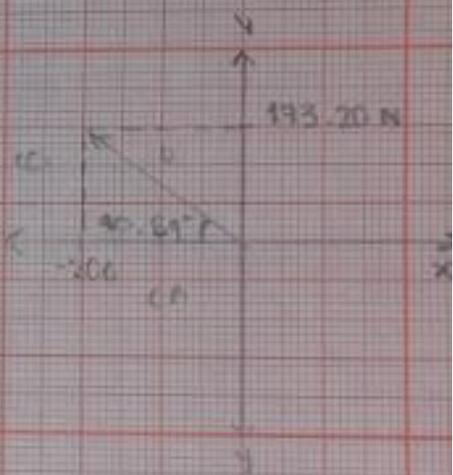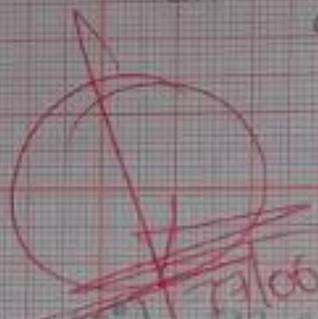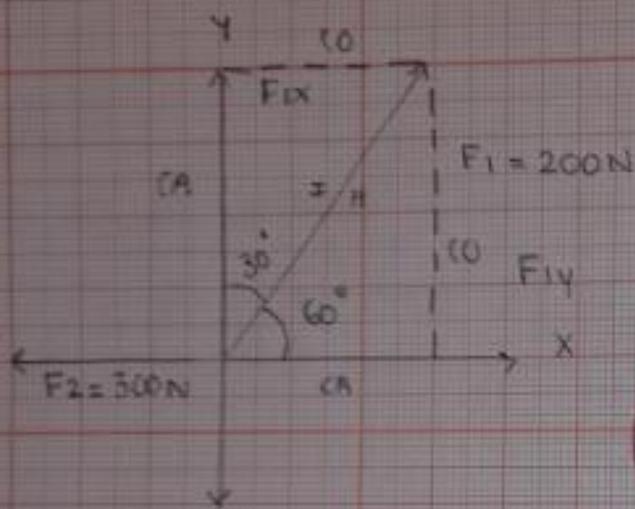
- $\text{Sen } 60° = \dfrac{F_{1y}}{200 N} \longrightarrow F_{1y} = 200 N (\text{Sen } 60°) = 173.20 N$

- $\cos 60° = \dfrac{F_{1x}}{200 N} \longrightarrow F_{1x} = 200 N (\cos 60°) = 100 N$

$\sum F_x = +100 N - 300 N = -200 N$

$\sum F_y = 173.20 N$

$c = \sqrt{a^2 + b^2} \quad = \quad c = \sqrt{(-200 N)^2 + (173.20)^2} = c = \sqrt{40,000 N + 29,998.25 N^2}$

$c = \sqrt{69,098.24 N^2} \quad = \quad c = 264.57 N = R$

$\tan \theta = \dfrac{CO}{CA} = \tan \theta = \dfrac{173.20 N}{-200 N} = \theta \tan^{-1} = \dfrac{173.20 N}{-200 N} = \theta = -40.89$

0.866

173.20 N

$F_{1x} = 180 n$

$F_3 = 120 N$

X

$F_2 = 220 N$

F_2

$\pi/00$
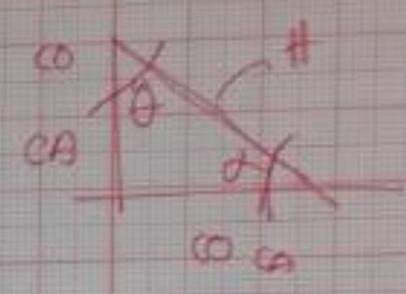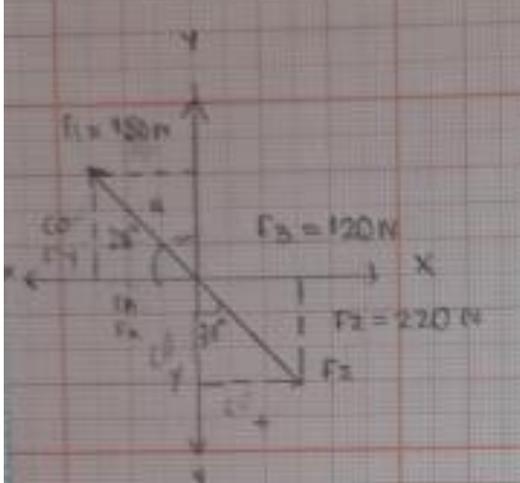
- $\operatorname{Sen} 28° = \dfrac{F_{1y}}{180N} \longrightarrow F_{1y} = 180 N (\operatorname{Sen} 28°) = +84.50\ N$

- $\cos 28° = \dfrac{F_{1x}}{180 N} \longrightarrow F_{1x} = 180 N (\cos 28°) = 158.93\ N$

- $\operatorname{Sen} 38° \dfrac{F_{2x}}{220N} \longrightarrow F_{2x} = 220 N (\operatorname{Sen} 38°) = +135.44\ N$

- $\cos 38° \dfrac{F_{2y}}{220N} \longrightarrow F_{2x} = 220 N (\cos 38°) = -173.36\ N$

- $\sum f_x = -130 N + 135.44 N + 158.93 N = 96.51$
  $\sum F_y = +84.50 N - 173.36 N = -88.86$

$C = \sqrt{(96.51\ N)^2 + (-88.86)^2} = \sqrt{9314.19 + 7836.09}$
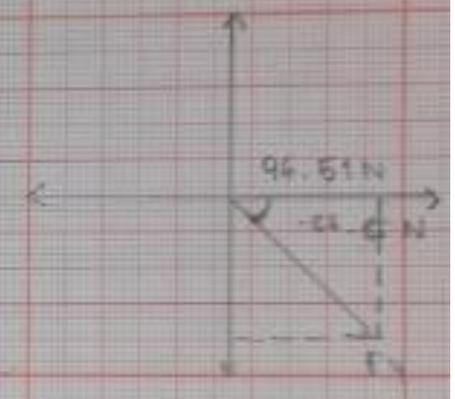
$c = \sqrt{17210.26\ N} = 131.18\ N$

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

$\theta = 42.61°$

$\tan \theta = \dfrac{-88.86}{96.51} = 42.61°$

96.51 N

96.51 N

42.61°

-88.86N
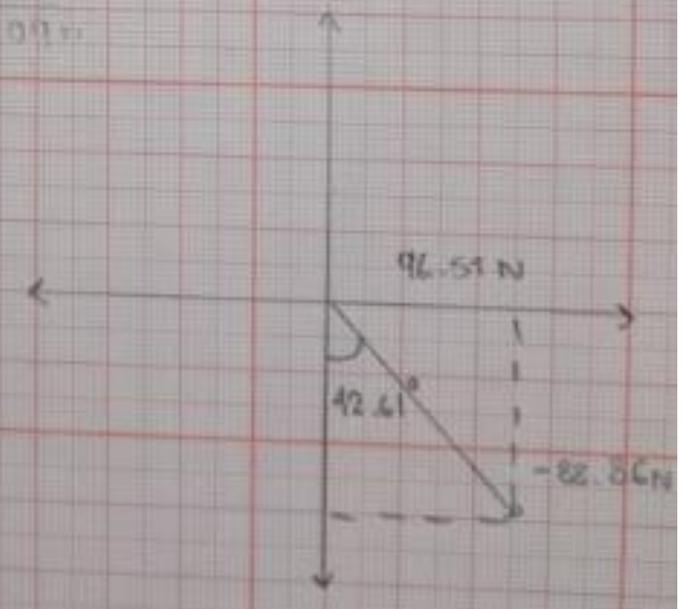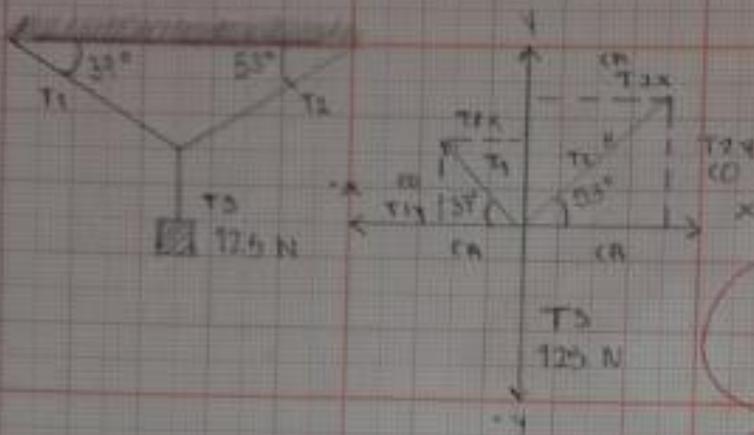
$$\text{Sen } 37° = \frac{T_{1y}}{T_1} \rightarrow T_{1y} = T_1 (\text{Sen } 37°)$$

$$\cos 37° = \frac{T_{1x}}{T_1} \rightarrow T_{1x} = T_1 (\cos 37°)$$

$$\text{Sen } 53° = \frac{T_{2y}}{T_2} \rightarrow T_{2y} = T_2 (\text{Sen } 53°)$$

$$\cos 53° = \frac{T_{2x}}{T_2} \rightarrow T_{2x} = T_2 (\cos 53°)$$

① $\Sigma f_x = 0$

$$T_2 \cdot \cos 53° - T_1 \cdot \cos 37°$$
$$T_2 \cdot \cos 53° = T_1 \cdot \cos 37°$$
$$T_2 = \frac{T_1 \cdot \cos 37°}{\cos 53°}$$

$$T_2 = 1.32 \cdot T_1$$

② $\Sigma f_y = 0$

$$T_1 \cdot \text{Sen } 37° + T_2 \cdot \text{Sen } 53° - 125N = 0$$
$$T_1 \cdot \text{Sen } 37° + (1.32 \cdot T_1) \text{Sen } 53° - 125N = 0$$
$$T_1 \cdot 0.60 + [(1.32 \cdot T_1) \cdot 0.79 - 125N = 0$$
$$T_1 \cdot 0.60 + 1.04 \cdot T_1 - 125N = 0$$
$$T_1 \cdot 1.92 - 125N = 0$$
$$T_1 = \frac{125N}{1.64} = 76.21N$$

$$T_2 = 1.32 (76.21) = 100.497N$$