TRABAJO VIRTUAL

FERNANDA STEPHANIA RAMIREZ

GUILLÉN

Parcial 3

TEMA: Ejercicios clase

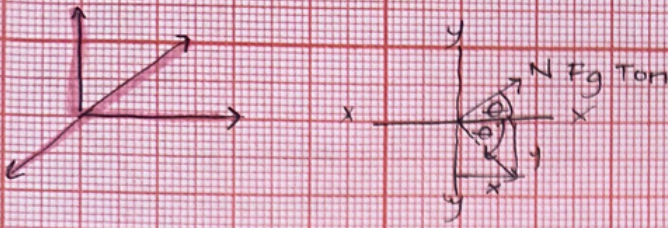*PEDRO ALBERTO GARCIA LOPEZ*

Cuatrimestre 3°

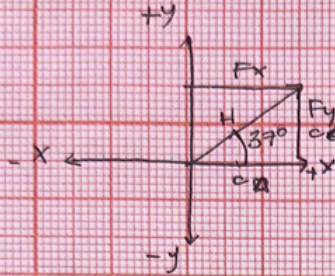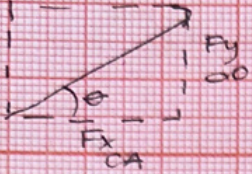*06/07/2024*

RESULTANTE DE FUERZAS CONCURRENTES

FÓRMULAS:

$$\text{sen}\,\theta = \frac{CO}{H} \qquad \text{TAN}\,\theta = \frac{CO}{OA}$$

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

N Fg Tom

$$\text{Sen } 37° = \frac{Fy}{100\,N}$$

$$Fy = 100\,N(\text{Sen } 37°) = 60.18\,N$$

$$\cos 37° = \frac{Fx}{100\,N}$$

$$Fx = 100\,N\,(\cos 37°) = 79.86\,N$$
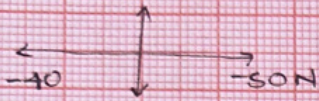
$-70N + 50N = 10N$
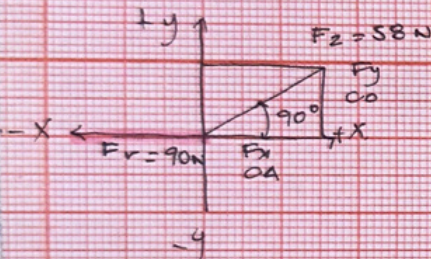
$$\text{Sen } 10° = \frac{Fy}{58\,N} \longrightarrow Fy_1 = 58\,N \cdot \text{Sen } 40° = 37.28\,N$$

$$\cos 40° = \frac{Fx}{58\,N} \longrightarrow Fx_1 = 58\,N \cdot \cos 40° = 44.43\,N$$

$$\varepsilon\, Fy = 37.28\,N$$

$$\varepsilon\, Fx = 44.43\,N + (-90\,N) = -45.57\,N$$

- -

$F_2 = 50N$ $F_1 = 80\,N$

$53°$

$F_3 = 70N$

$$1° \quad \text{sen } 53° = \frac{Fy}{80\,N} = Fy_1 = 80\,N \cdot \text{sen } 53° = 63.89\,N$$

$$\cos 53° = \frac{Fx}{80\,N} = Fx_1 = 80\,N \cdot \cos 53° = 48.14\,N$$

$$2 = \cos 53° = \frac{Fy}{50\,N} = Fy_2 = 50\,N \cdot \cos 53° = 30.09\,N$$

$$- \text{sen } 53° = \frac{Fx}{50\,N} = Fx_2 = 50\,N \cdot \text{sen } 53° = 39.93\,N$$
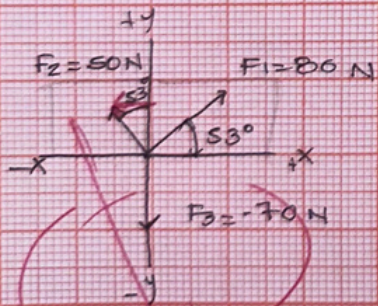
$$3 \quad \varepsilon\, Fy = 63.89\,N + 30.09\,N + (-70\,N) = 23.98\,N$$

$$\varepsilon\, Fx = 48.14\,N - 39.93\,N = 8.21\,N$$

· EJERCICIO 1:

$F_1 = 180N$

$20°$

$F_3 = 120N$

$F_2 = 220N$
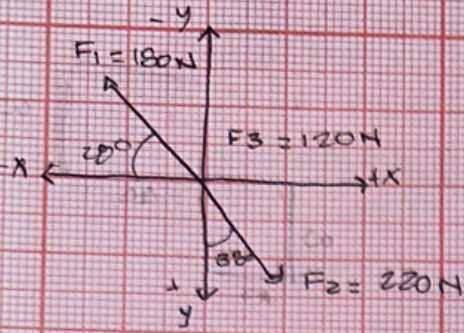
① $\operatorname{Sen} 28° = \dfrac{F_{1y}}{180N} = 180N(\operatorname{Sen} 28°) = 84.50N$

② $\cos 28° = \dfrac{F_{1x}}{180N} = 180N(\cos 28°) = 158.93N$

① $\cos 38° = \dfrac{F_{2x}}{220} = 220N(\cos 38°) = 173.36N$

② $\operatorname{Sen} 38° = \dfrac{F_{2y}}{220} = 220N(\operatorname{Sen} 38°) = 135.47N$

$\Sigma F_x = 120N + 173.36N - 158.93N$
$= 76.91$
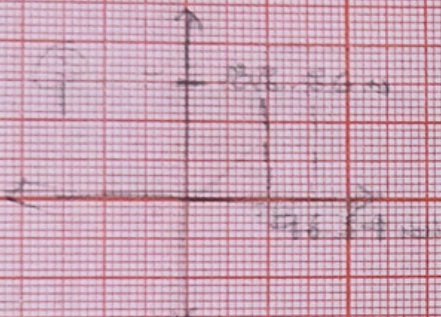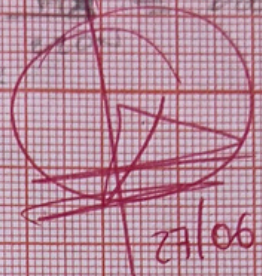
$\Sigma F_y = 84.50N - 173.36N$
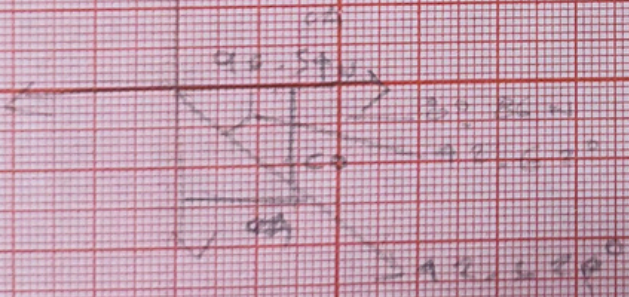$= -88.86N$

③ $d = \sqrt{(96.91N)^2 + (88.86N)^2}$

$= \sqrt{9314.9916N^2 + 7896.0996N^2}$

$= \sqrt{17211.0912 N^2}$

$= 131.1809 N^2$
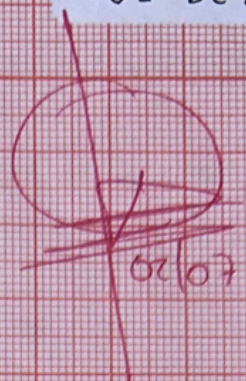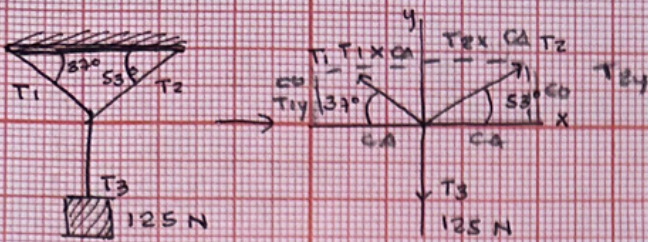
131.18

④ $\tan \theta = \dfrac{88.86N}{-76.91N}$

$\tan^{-1} = \dfrac{-88.86N}{76.91N}$

$\theta = 12.62$

27/06

① $\sin 37° = \dfrac{T_{1y}}{T_1} \longrightarrow T_{1y} = T_1(\sin 37°)$

· $\cos 37° = \dfrac{T_{1x}}{T_1} \longrightarrow T_{1x} = T_1(\cos 37°)$

· $\sin 53° = \dfrac{T_{2y}}{T_2} \longrightarrow T_{2y} = T_2(\sin 53°)$

· $\cos 53° = \dfrac{T_{2x}}{T_2} \longrightarrow T_{2x} = T_2(\cos 53°)$
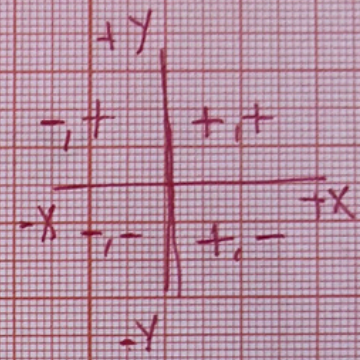
② $\Sigma F_x = 0$

$= T_2(\cos 53°) - T_1(\cos 37°) = 0$

$\quad T_2(\cos 53°) = T_1(\cos 37°)$

$\quad T_2 = \dfrac{T_1(\cos 37°)}{\cos 53°}$

$T_2 = 1.32 \cdot T_1$

③ $\Sigma F_y = 0$

$T_1(\sin 37°) + T_2(\sin 53°) + 125\,N = 0$

$T_1(\sin 37°) + (1.32 \cdot T_1)\sin 53° + 125\,N = 0$

$T_1 \cdot 0.6 + [(1.32 \cdot T_1)\,0.79] - 125\,N = 0$

$T_1 \cdot 0.6 + 1.04 \cdot T_1 - 125\,N = 0$

$(T_1 \cdot 1.64) - 125\,N = 0$

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

④ $T_2 = 1.32(76.21\,N) = 100.59\,N$

Fernanda Stephania Ramos Guillen
04 DE JULIO DEL 2024
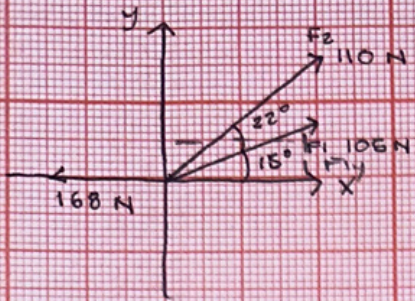
①
$$\text{sen } 15° = \frac{F_{1y}}{105N} = 105N(\text{sen } 15°) = 27.175N$$

$$\cos 15° = \frac{F_{1x}}{105N} = 105N(\cos 15°) = 101.422N$$

- $\text{sen } 22° = \frac{F_{2y}}{110N} = 110N(\text{sen } 37°) = 66.199 N$

- $\cos 22° = \frac{F_{2x}}{110N} = 110(\cos 37°) = 87.819 N$

② $\Sigma F_x = 101.422N + 87.819N - 168 N = 21.271 N$

$\Sigma F_y = 27.175 N + 66.199 = 93.371 N$

③ Resultante:
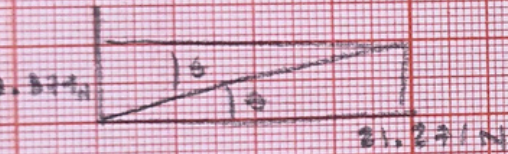
$$R = \sqrt{x^2 + y^2}$$

$$R = \sqrt{(21.271 N)^2 + (93.371 N)^2}$$

$$R = \sqrt{452.455 N + 8718.303 N}$$

$$R = \sqrt{9171.166 N^2}$$

$$R = 95.766 N$$

④ $\tan \theta = \frac{93.371}{95.766 N}$ $\theta = \tan^{-1}\left(\frac{93.371 N}{95.766 N}\right) = 47.166°$