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**Nombre del trabajo: Problemarío 2**

**Materia: Física I**

**Grado: 4<sup>to</sup>**

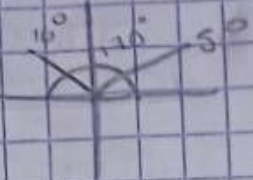
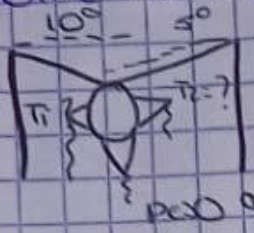
**Grupo: A**

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# Problema 2

03/JUNIO/23

① Una pirata que pesa 90N se suspende dos postes con cuerdas, como se muestra en la figura



$$\sum T_x = 0$$

$$T_1 \sin 10^\circ - T_2 \sin 5^\circ = 0$$

$$-0.1736 T_1 + 0.0872 T_2 = 0$$

$$\sum T_y = 0$$

$$T_1 \cos 10^\circ + T_2 \cos 5^\circ = W$$

$$0.1736 T_1 + 0.9914 T_2 = 90$$

$$T_{1x} = T_1 \cos 170^\circ$$

$$T_{1x} = -0.98 T_1$$

$$T_{1y} = T_1 \sin 170^\circ$$

$$T_{1y} = 0.17 T_1$$

$$T_{2x} = T_2 \cos 5^\circ$$

$$T_{2x} = 0.99 T_2$$

$$T_{2y} = T_2 \sin 5^\circ$$

$$T_{2y} = 0.08 T_2$$

$$-0.98 T_1 + 0.99 T_2 = 0$$

$$-0.98 T_1 = -0.99 T_2$$

$$T_1 = 0.98 T_2$$

$$T_1 = -10.10 T_2$$

$$T_1 = 10.10 (50.23 \text{ N})$$

$$T_1 = 507.72 \text{ N}$$

$$0.1736 T_1 + 0.0872 T_2 = 90$$

$$0.1736 (10.10 T_2) + 0.0872 T_2 = 90$$

$$1.753 T_2 + 0.0872 T_2 = 90$$

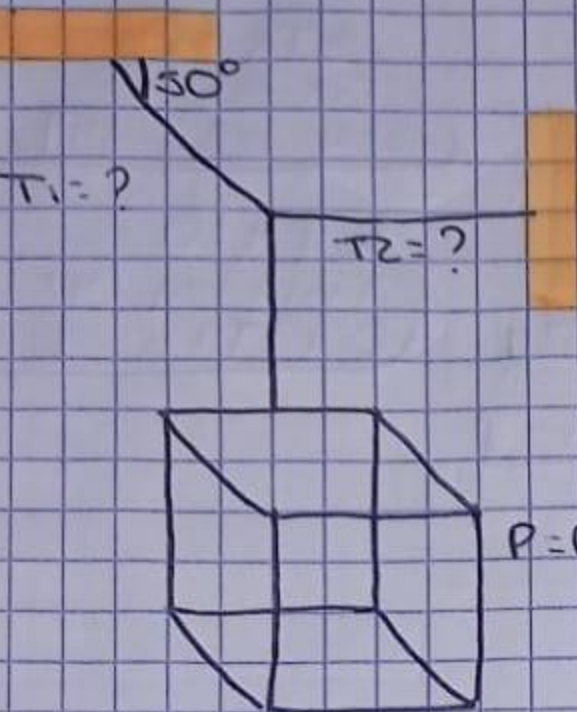
$$1.84 T_2 = 90$$

$$T_2 = 90 \text{ N} / 1.84$$

$$T_2 = 50.23 \text{ N}$$

03/JUNIO/23

Un objeto de acero de 679.14 N de peso está suspendido por cables. Serán las tensiones de  $T_1$  y  $T_2$  que sostiene el cuerpo.



$$T_{1x} = \cos 130^\circ$$

$$T_{1x} = -0.64 T_1$$

$$T_{1y} = \sin 130^\circ$$

$$T_{1y} = 0.76 T_1$$

$$T_{2x} = \cos 0^\circ$$

$$T_{2x} = 1 T_2$$

$$T_{2y} = T_2 \sin 0^\circ$$

$$T_{2y} = 0 T_2$$

$$P = 679.14 \text{ N}$$

$$\sum T_x = 0$$

$$T_{1x} + T_2 = 0$$

$$-0.64 T_1 + T_2$$

$$\sum T_y = 0$$

$$T_{1y} + T_{2y} = P$$

$$0.76 T_1 + T_2 = 679.14$$

$$-0.64 T_1 + T_2$$

$$-0.64 T_1 + T_2$$

$$T_1 = T_2$$

$$-0.64$$

$$T_1 = 1.56$$

$$0.76 T_1 + T_2 = 679.14$$

$$0.76 (1.56 T_2) + T_2 = 679.14$$

$$1.18 T_2 + T_2 = 679.14$$

$$1.18$$

$$T_2 = 575.54 \text{ N}$$

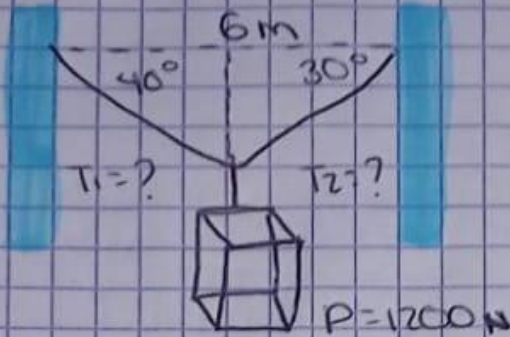
$$T_1 = 1.56 (575.54 \text{ N})$$

$$T_1 = 897.84 \text{ N}$$

# Problema 2.

03/JUNIO/2023

③ Dos paredes están separadas a una distancia de 6m y un objeto cuyo peso es de 1200N está en el centro de una cuerda y forma ángulos de  $40^\circ$  y  $30^\circ$ .



$$T_{1x} = T_1 \cos 140^\circ$$

$$T_{1x} = -0.76 T_1$$

$$T_{1y} = T_1 \sin 140^\circ$$

$$T_{1y} = 0.64 T_1$$

$$T_{2x} = T_2 \cos 30^\circ$$

$$T_{2x} = 0.86 T_2$$

$$T_{2y} = T_2 \sin 30^\circ$$

$$T_{2y} = 0.5 T_2$$

$$\sum T_x = 0$$

$$T_{1x} + T_{2x} = 0$$

$$-0.76 T_1 + 0.86 T_2 = 0$$

$$-0.76 T_1 + 0.86 T_2 = 0$$

$$-0.76 T_1 = -0.86 T_2$$

$$T_1 = 0.86 T_2$$

$$0.76 T_1$$

$$T_1 = 1.13 T_2$$

$$T_1 = 1.13 (983.60)$$

$$T_1 = 1111.57$$

$$0.64 T_1 + 0.5 T_2 = 1200$$

$$0.64 T_1 + 1.13 T_2 + 0.5 T_2 = 1200$$

$$0.72 T_2 + 0.5 T_2 = 1200$$

$$1.22 T_2 = 1200$$

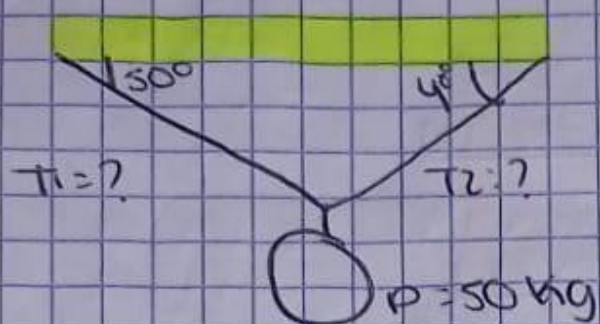
$$T_2 = 1200$$

$$1.22$$

$$T_2 = 983.60 \text{ N}$$

03 / JUNIO / 2023

4) Se tiene una bola metálica de 50 kg de peso, que está suspendida de dos cuerdas  $50^\circ$  y  $40^\circ$



$$T_{1x} = T_1 \cos 130^\circ$$

$$T_{1x} = -0.64 T_1$$

$$T_{1y} = T_1 \sin 130^\circ$$

$$T_{1y} = 0.76 T_1$$

$$T_{2x} = T_2 \cos 40^\circ$$

$$T_{2x} = 0.76 T_2$$

$$T_{2y} = T_2 \sin 40^\circ$$

$$T_{2y} = 0.64 T_2$$

$$\sum T_x = 0$$

$$T_{1x} + T_{2x} = 0$$

$$-0.64 T_1 + 0.76 T_2 = 0$$

$$\sum T_y = 0$$

$$T_{1y} + T_{2y} = 0$$

$$0.76 T_1 + 0.64 T_2 = 0$$

$$-0.64 T_1 + 0.76 T_2 = 0$$

$$-0.64 T_1 = -0.76 T_2$$

$$T_1 = \frac{0.76 T_2}{0.64 T_1}$$

$$T_1 = 1.18 T_2$$

$$T_1 = 1.18 T_2 \quad | \quad 32.67 \text{ kg}$$

$$T_1 = 38.55 \text{ kg}$$

$$0.76 T_1 + 0.64 T_2 = 0$$

$$0.76 T_1 \quad | \quad 1.18 T_2 \quad | \quad + 0.64 T_2$$

$$0.89 T_2 + 0.64 T_2 = 50 \text{ kg}$$

$$1.53 T_2 = 50 \text{ kg}$$

$$T_2 = \frac{50}{1.53}$$

$$T_2 = 32.67 \text{ kg}$$