

UDS

ALUMNO

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DOCENTE

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TRABAJO

FUERZA EN EQUILIBRIO

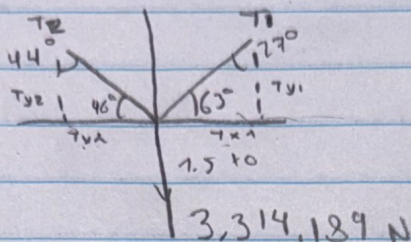
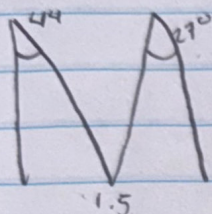
MATERIA

ESTATICA

 **2025**

NO SON APTOS LOS CABLES

Se pretenden utilizar 2 cables que tienen una resistencia de 2000 lbf, para sostener en el aire a una armadura de 1.5 ton. Dichas cuerdas formaran angulos de 27° y 44° con los soportes. Determina si los cables son aptos.



$$F = m \cdot g$$

$$F = 1500 \text{ kg} (9.81)$$

$$F = 14,715 \text{ lbf}$$

$$T_{x1} - T_{x2} = 0$$

$$T_{x1} = T_{x2}$$

$$\sin \theta = \frac{c.o}{H}$$

$$c.o = (H) \sin \theta$$

$$T_1 \cos 63 = T_2 \cos 46$$

$$T_1 0.453 = T_2 0.694$$

$$T_{y1} + T_{y2} - 3314.189 \text{ lbf} = 0$$

$$T_{y1} + T_{y2} = 3314.189 \text{ lbf}$$

$$T_1 = \frac{T_2 0.694}{0.453}$$

$$T_1 \sin \theta + T_2 \sin \theta = 3314.189 \text{ lbf}$$

$$T_1 \sin 63 + T_2 \sin 46 = 3314.189 \text{ lbf}$$

$$T_1 0.891 + T_2 0.719 = 3314.189 \text{ lbf}$$

$$(T_2 1.532) 0.891 + T_2 0.719 = 3314.189 \text{ lbf}$$

$$T_2 1.365 + T_2 0.719 = 3314.189 \text{ lbf}$$

$$T_2 2.084 = 3314.189 \text{ N}$$

$$T_1 = 1590.301 (1.532)$$

$$T_1 = 2436.341 \text{ lbf}$$

$$T_2 = \frac{3314.189 \text{ lbf}}{2.084}$$

$$T_{x1} = T_1 \cos \theta$$

$$T_{x1} = 2436.341 \cos 63^\circ$$

$$T_{x1} = 1106.07 \text{ lbf}$$

$$T_2 = 1590.301$$

$$T_{x2} = 1106.075 \text{ lbf}$$

$$T_{y1} = T_1 \sin \theta$$

$$T_{y2} = T_2 \sin \theta$$

$$T_{y1} = 2436.341 \sin 46$$

$$2170.785 \text{ lbf}$$

$$T_{y2} = 2436.341 \sin 63$$

$$T_{y1} = 1752.557 \text{ lbf}$$

$$1113.966 \text{ lbf}$$

$$T_{y2} = 2170.795 \text{ lbf}$$

$$T_{y1} = 1590.301 \sin 46$$

$$T_{y2} = 1143.966 \text{ lbf}$$

$$3314.464$$