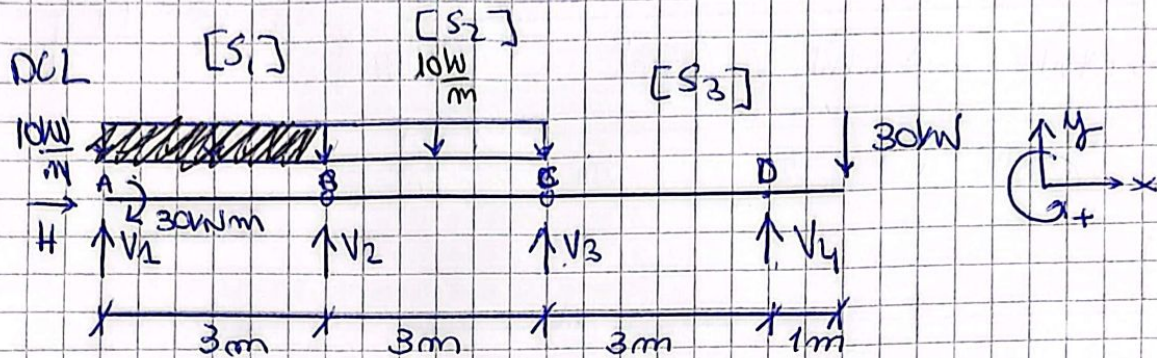


Ejercicio 1

T2



RVE:

$$\sum M_{[S_2]}^C = V_4 3m - 30kN 4m = 0 \rightarrow \boxed{V_4 = 40kN}$$

$$\sum M_{[S_2][S_3]}^B = -30kN 7m + \underbrace{V_4}_{40kN} \cdot 6m + V_3 3m - \underbrace{10kN/m}_{m} 3m \cdot 1,5m = 0$$

$$-210kNm + 240kNm + V_3 3m - 45kNm = 0$$

$$V_3 3m = 15kNm$$

$$\boxed{V_3 = 5kN}$$

$$\sum F_x = H = 0 \rightarrow \boxed{H = 0kN}$$

$$\sum F_y = -30kN - \underbrace{10kN/m}_{m} 3m + \underbrace{V_3}_{5kN} + \underbrace{V_4}_{40kN} + V_2 + V_1 = 0$$

$$-60kN + 5kN + 40kN + V_2 + V_1 = 0$$

$$V_1 + V_2 = 15kN \quad (1)$$

$$\sum M_{[S_1]}^A = -V_1 3m - 30kNm = 0$$

$$\boxed{-10kN = V_1} \rightarrow \text{en (1)}$$

$$V_2 = 15kN - V_1$$

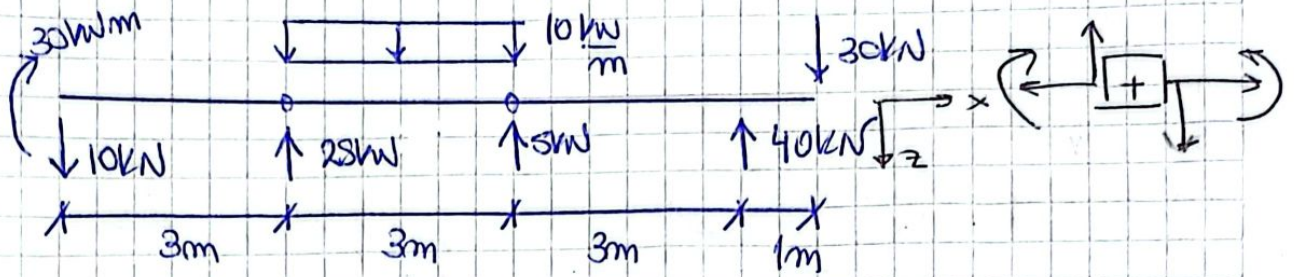
$$V_2 = 15kN - (-10kN)$$

$$\boxed{V_2 = 25kN}$$

DCE para diagramas.

(a)

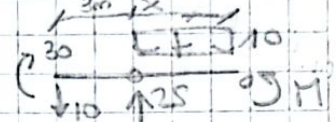
$N(kN)$



0ª viga pues $\sum F_x = 0$
y no hay fijas en "ext" externas

C. aux.

Buco $x / Q_2(x) = 0$



$$10 \cdot x = 25 - 10$$

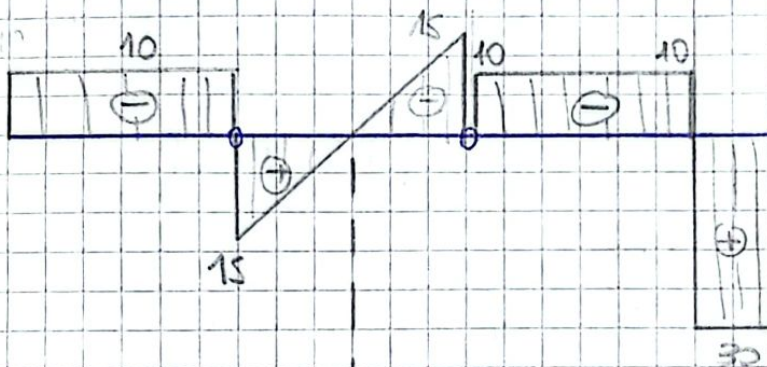
$$x = 1,5m$$

$$M^0 = 10 \cdot 1,5 \cdot \frac{1,5}{2} - 25 \cdot 1,5 + 10 \cdot 4,5 - 3$$

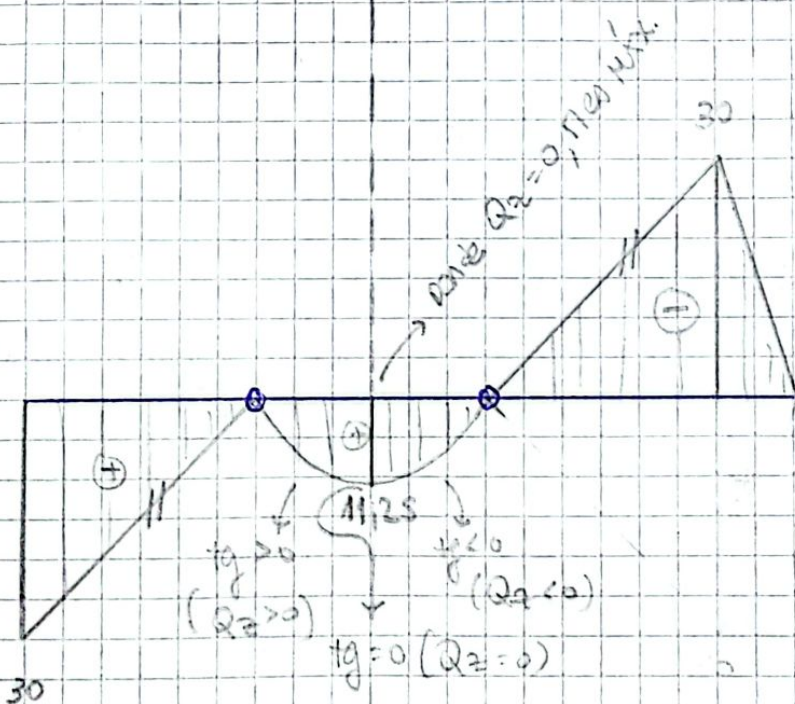
$$M^0 = -11,25 kNm$$

combio signo pues miro "←"

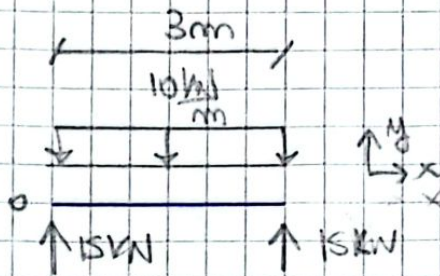
$Q_2(kN)$



$M_y(kNm)$



b) equilibrio de barras del centro ($[S_2]$)



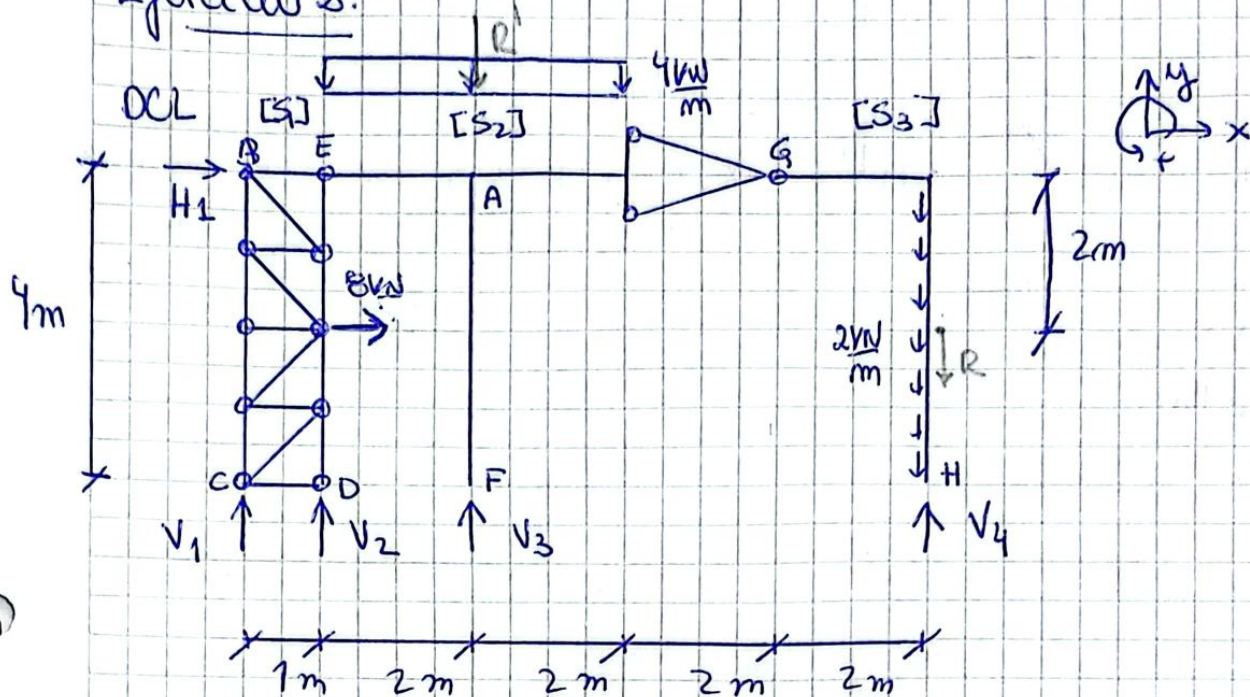
se halla en equilibrio:

$$\sum M^O = 0 = -10 \frac{\text{kN}}{\text{m}} \cdot 3\text{m} \cdot 1,5\text{m} + 15 \cdot 3\text{m} = 0 \quad \checkmark$$

$$\sum F_x = 0 \quad \checkmark$$

$$\sum F_y = 0 = -10 \frac{\text{kN}}{\text{m}} \cdot 3\text{m} + 15\text{kN} + 15\text{kN} = 0 \quad \checkmark$$

Ejercicio 2.



RUE :

$$\sum M_G^{[S_3]} = V_4 \cdot 2m - \frac{2kN}{m} \cdot 4m \cdot 2m = 0 \rightarrow \boxed{V_4 = 8kN}$$

$$\sum M^{[S_2][S_3]} = -4 \frac{kN}{m} \cdot 4m \cdot 2m + V_3 \cdot 2m - \frac{2kN}{m} \cdot 4m \cdot 8m + \overbrace{8kN}^{V_4} \cdot 8m = 0$$

$$-32kNm + V_3 \cdot 2m - 64kNm + 64kNm = 0$$

$$\boxed{V_3 = 16kN}$$

$$\sum M^{[S_1]} = 8kN \cdot 2m - V_1 \cdot 1m = 0 \rightarrow \boxed{V_1 = 16kN}$$

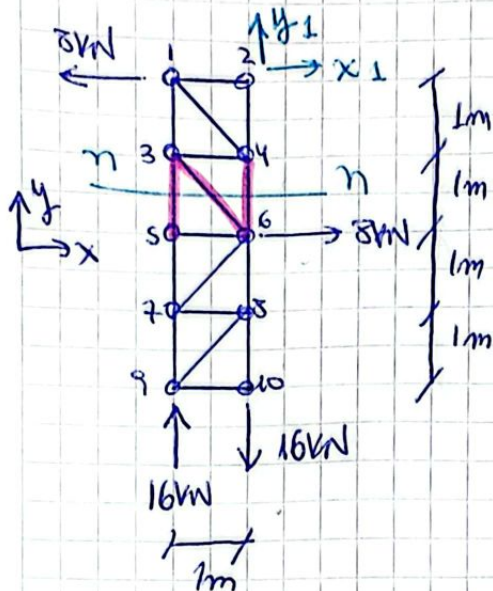
$$\sum F_x = H + 8kN = 0 \rightarrow \boxed{-8kN = H}$$

$$\sum F_y = V_1 + V_2 + V_3 + V_4 - 4 \frac{kN}{m} \cdot 4m - 2 \frac{kN}{m} \cdot 4m = 0$$

$$\cancel{16kN} + V_2 + 16kN + 8kN - \cancel{16kN} - \cancel{8kN} = 0$$

$$\boxed{V_2 = -16kN}$$

para seguir, busco aislar el reticulado (E1). Abro cordón en E



$$\sum F_y = y_1 + 16 \text{ kN} - 16 \text{ kN} = 0$$

$$y_1 = 0$$

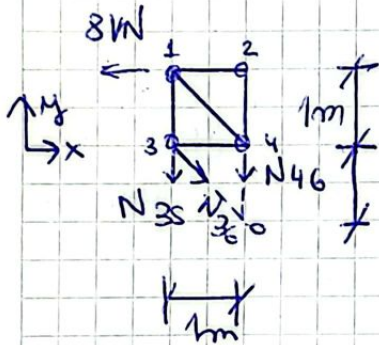
$$\sum M^O = -x_1 4 \text{ m} + 8 \text{ kN} 4 \text{ m} - 8 \text{ kN} 2 \text{ m} - 16 \text{ kN} \cdot 1 \text{ m} = 0$$

$$32 \text{ kNm} - 16 \text{ kNm} - 16 \text{ kNm} = x_1 4 \text{ m}$$

$$0 = x_1$$

INCISO (b) pide esfuerzo axial en barras rosa. para ello, uso el método de las reacciones y equilibrio.

Corte n-n. Supongo tracción.



$$\sum M^O = N_{35} 1 \text{ m} + 8 \text{ kN} 2 \text{ m} = 0$$

$$N_{35} = -16 \text{ kN}$$

$$\sum M^3 = -N_{46} 1 \text{ m} + 8 \text{ kN} 1 \text{ m} = 0$$

$$N_{46} = 8 \text{ kN}$$

$$\sum F_y =$$

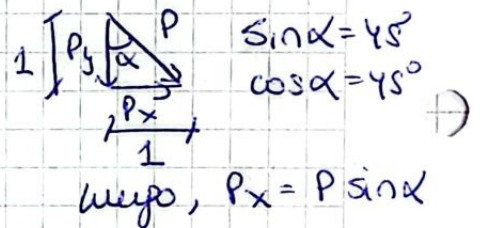
$$\sum F_x = N_{36} x - 8 \text{ kN} = 0$$

$$N_{36} x = 8 \text{ kN}$$

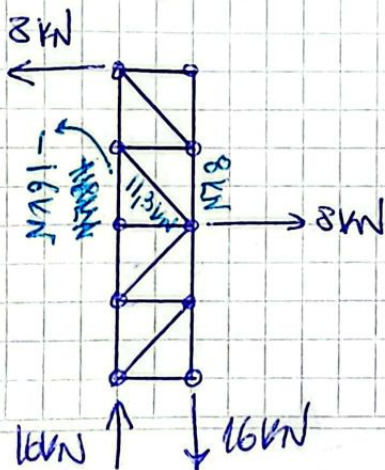
$$N_{36} = \frac{8 \text{ kN}}{\sin 45^\circ}$$

$$N_{36} = 11,3 \text{ kN}$$

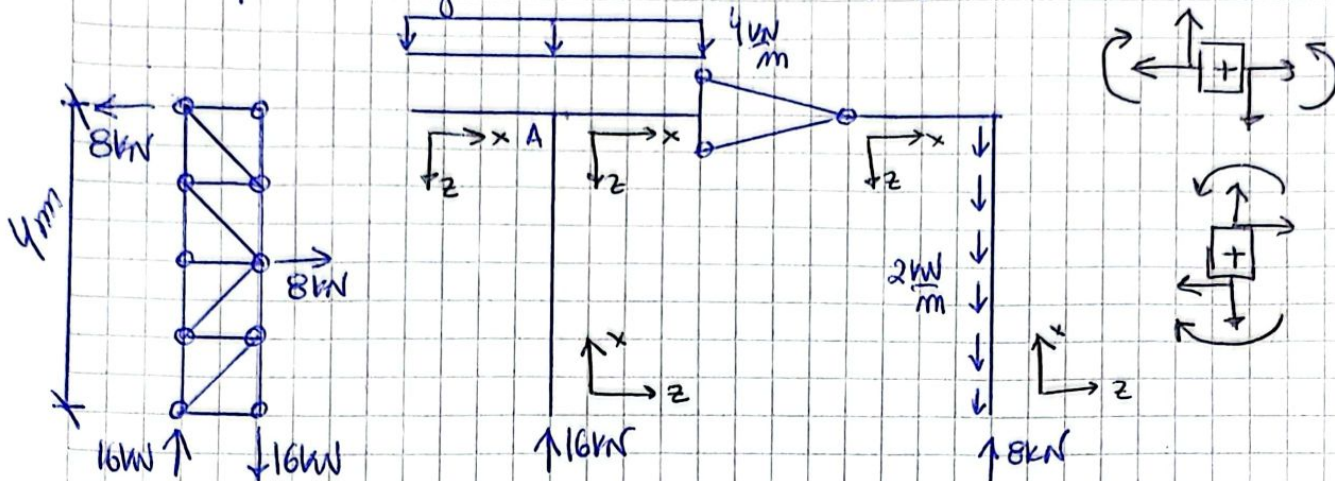
c.aux



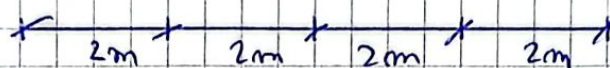
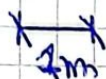
RTA (b). esfuerzos en barras indicados.



DLE para diagramas del inciso (a)



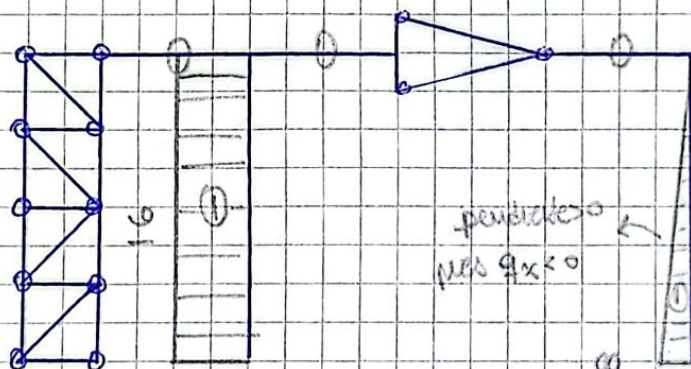
TODAS SON BARRAS DE
MMA CORIZADA (NO POSEEN
CORPES OBLICUOS SOBRE ELLA).



(a) diagramas pedidos en barras de alguno elemento.

$N(KN)$

$$\frac{dN}{dx} = -9x$$

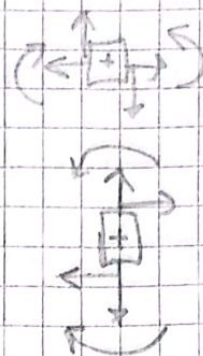
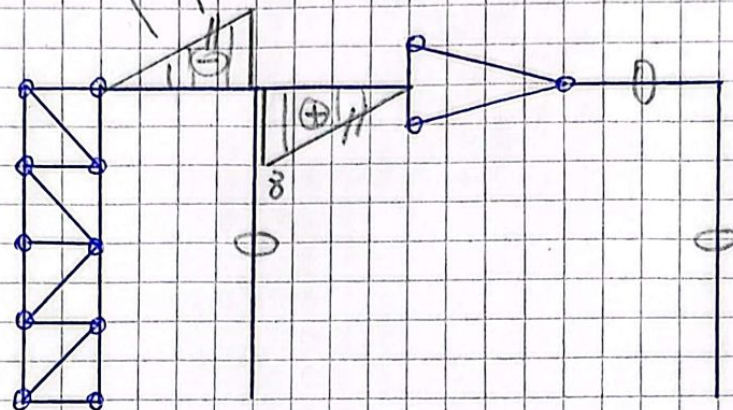


pendiente
para $9x < 0$

analisis $9x$ es
uniforme

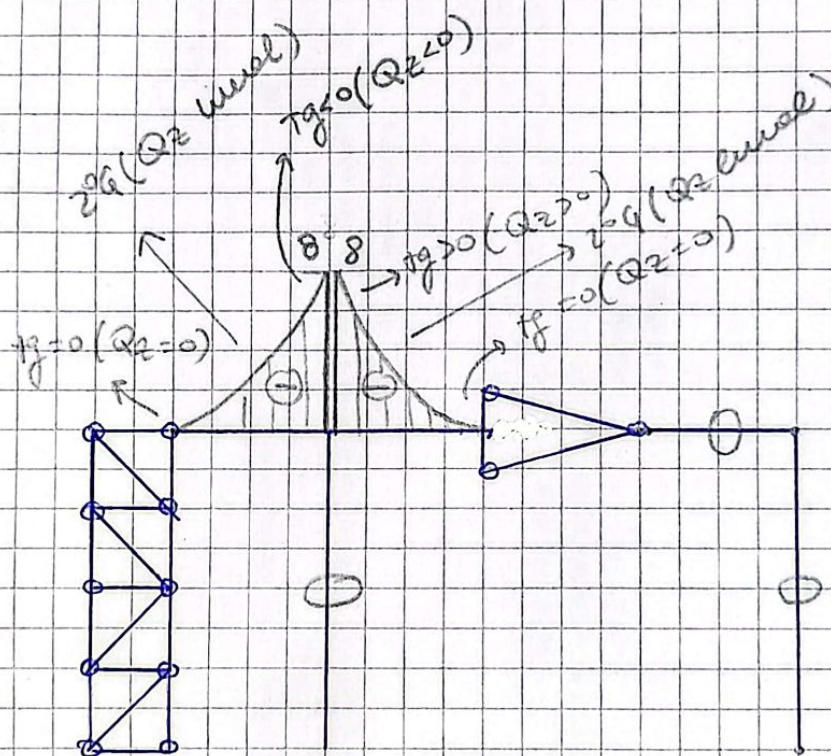
$$Q_z (\text{kN})$$

$$\frac{dQ_z}{dx} = -q_z$$

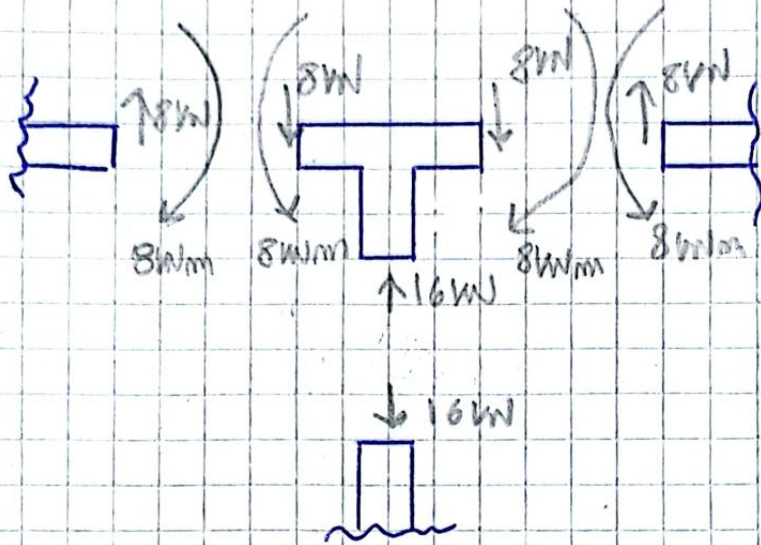


$$M_y (\text{kNm})$$

$$\frac{dM_y}{dx} = Q_z$$



c) equilibrio del nudo A.



$$\begin{aligned}\sum F_x &= 0 \checkmark \\ \sum F_y &= 0 \checkmark \\ \sum M &= 0 \checkmark\end{aligned}$$