Pauta Auxiliar 1 - P1

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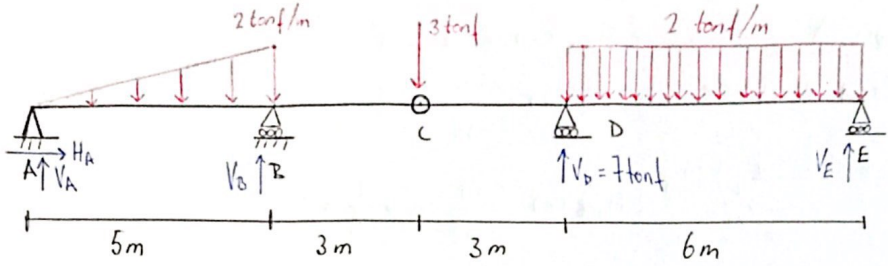


Equilibrio de fuerzas:

$\sum F_x = 0$: $\boxed{H_A = 0 \text{ tonf}}$

$\sum F_y = 0$: $V_A + V_B + 7 + V_E = \frac{1}{2} \cdot 2 \cdot 5 + 3 + 2 \cdot 6$

$\longrightarrow V_A + V_B + V_E = 13$

$\sum M_A^{\circlearrowleft} = 0$: $5 \cdot V_B + 11 \cdot 7 + 17 \cdot V_E = \frac{1}{2} \cdot 2 \cdot 5 \cdot \frac{2}{3} \cdot 5 + 3 \cdot 8 + 2 \cdot 6 \cdot 14$

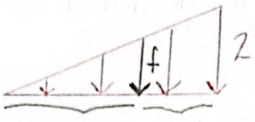
$\longrightarrow 5V_B + 17V_E = \frac{395}{3}$

$\sum M_R^{\circlearrowleft} = 0$: $3 \cdot 7 + 9 \cdot V_E = 2 \cdot 6 \cdot 6$

$\longrightarrow \boxed{V_E = \frac{17}{3} \text{ tonf}}$

Despejando $\rightsquigarrow$ $\boxed{V_A = \frac{4}{15} \text{ tonf}, \; V_B = \frac{106}{15} \text{ tonf}, \; V_E = \frac{17}{3} \text{ tonf}}$

Diagramas de esfuerzos internos

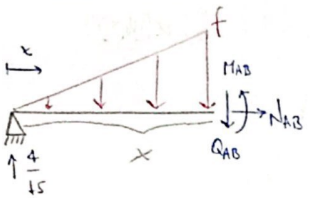


$$f = \frac{2}{5}x$$

- **Tramo AB**: $x \in [0,5)$

$$N_{AB}(x) = 0 \text{ tonf}$$

$$Q_{AB}(x) = \frac{4}{15} - \frac{1}{5}x^2$$

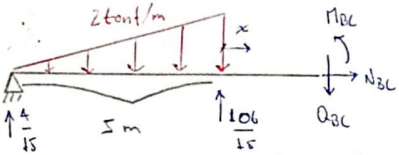


$$M_{AB}(x) = \frac{4}{15}\cdot x - \frac{1}{15}x^3$$

$M(0) = 0$ tonf-m

$M(5) = -7$ tonf-m

- **Tramo BC**: $x \in [0,3)$



$$N_{BC}(x) = 0 \text{ tonf}$$

$$Q_{BC}(x) = \frac{7}{3} \text{ tonf}$$

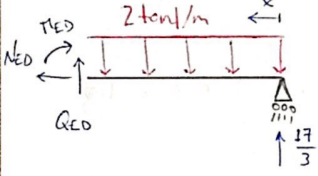
$$M_{BC}(x) = \frac{4}{15}(5+x) + \frac{106}{15}x - \frac{1}{2}\cdot 2\cdot 5\left(x+\frac{5}{3}\right)$$

$$\rightarrow M_{BC}(x) = \frac{7}{3}x - 7$$

$M(0) = -7$ tonf-m

$M(3) = 0$ tonf-m

- **Tramo ED**: $x \in [0,6)$



$$N_{ED}(x) = 0 \text{ tonf}$$

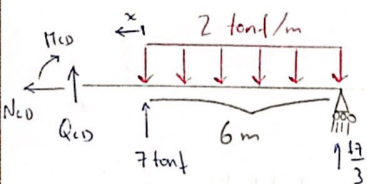
$$Q_{ED}(x) = \frac{17}{3} - 2x$$

$$M_{ED}(x) = \frac{17}{3}x - x^2$$

$M(0) = 0$ tonf-m

$M(6) = -2$ tonf-m

- **Tramo CD**: $x \in [0,3)$



$$N_{ED}(x) = 0 \text{ tonf}$$

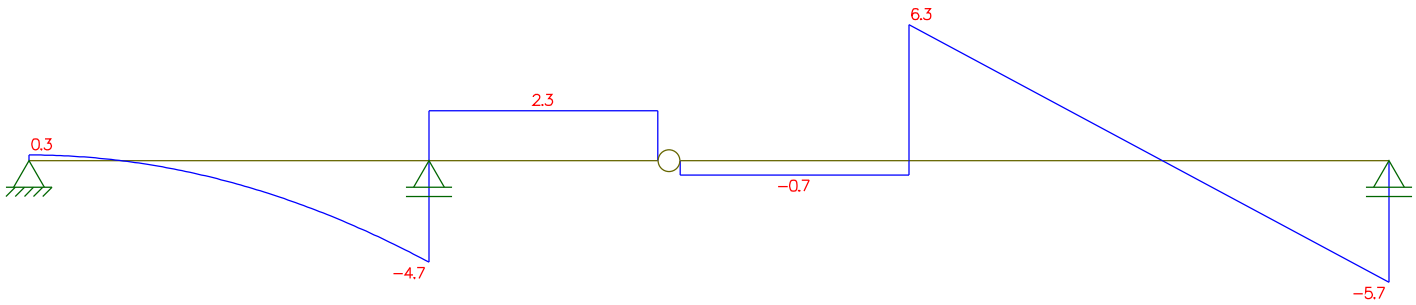
$$Q_{ED}(x) = \frac{2}{3} \text{ tonf}$$

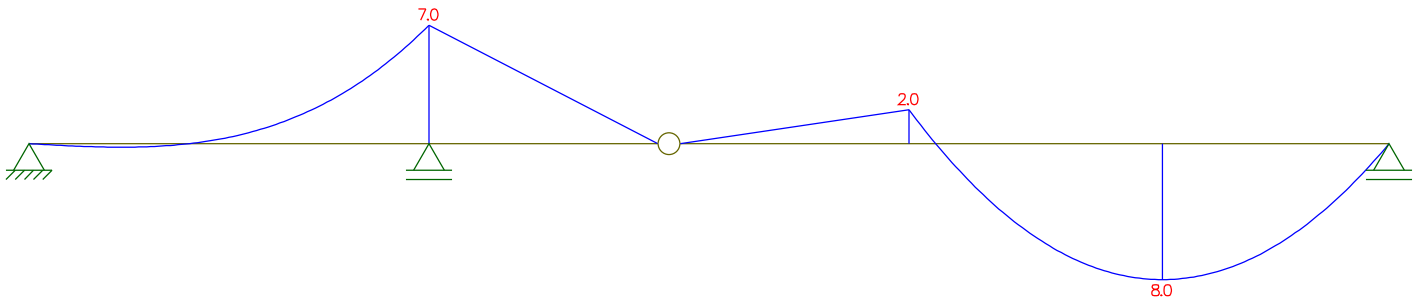
$$M_{ED}(x) = 7\cdot x + \frac{17}{3}(x+6) - 2\cdot 6\cdot (x+3)$$

$$\rightarrow M_{ED}(x) = \frac{2}{3}\cdot x - 2$$

$M(0) = -2$ tonf-m

$M(3) = 0$ tonf-m


0.3
2.3
6.3
−4.7
−0.7
−5.7


7.0
2.0
8.0