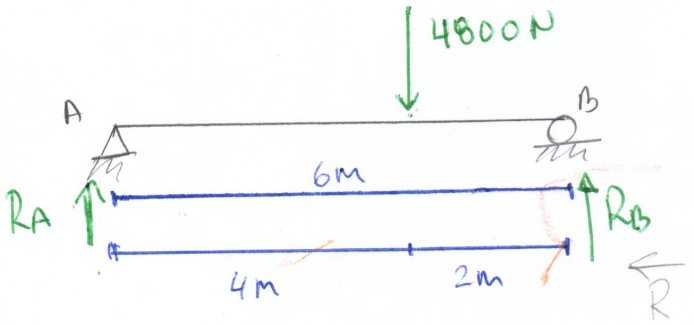
Pauta Auxiliar 2

P1. Cálculo de las reacciones

Fuerza resultante de la carga $Q = \frac{1600 \cdot 6}{2} = 4800[N]$



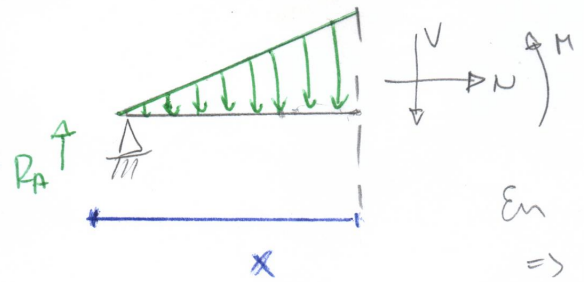
$$R_A + R_B = 4800\,[N] \quad (1)$$

$$\sum M_A = 0 \Rightarrow R_B \cdot 6 - 4800 \cdot 4 = 0 \quad (2)$$

$$(2) \Rightarrow R_B = \frac{4800 \cdot 4}{6} = 3200[N] \quad (3)$$

$$(3),(1) \Rightarrow R_A = 1600[N] \quad (4)$$

- Cálculo de las fuerzas internas



$N = 0 \quad (+x)$

En $x = 6m \quad q = 1600\ N/m$

$\Rightarrow x = x \quad q = ?$

$$\frac{6}{1600} = \frac{x}{q} \Rightarrow q = \frac{1600x}{6}$$

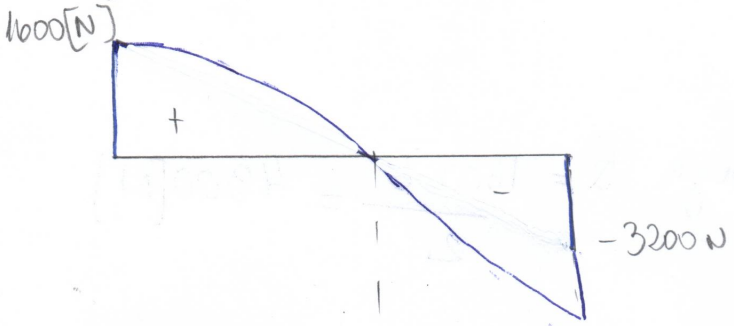
$$Q(x) = x \cdot \frac{1600x}{6} \cdot \frac{1}{2} = \frac{1600x^2}{12}\,[N]$$

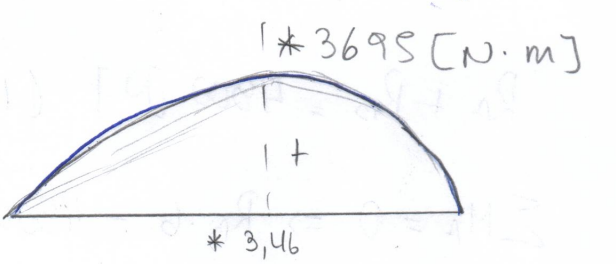
$$V = 1600 - \frac{1600x^2}{12}$$

$$M = 1600x - \frac{1600x^2}{12} \cdot \frac{x}{3} = 1600x - \frac{1600x^3}{36}$$

c) Diagramas

V





M

* M_{MAX}

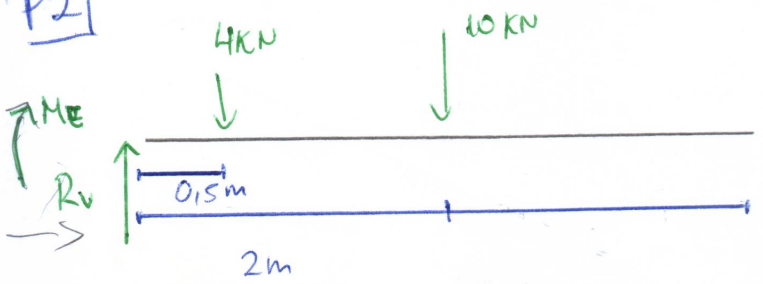
$$\frac{\partial M}{\partial x} = V \qquad V = 0$$

$$1600 - \frac{1600}{12} x^2 = 0 \Rightarrow x = \sqrt{12} = 3,46[m]$$

$$M_{MAX} = M|_{x=3,46} = 3695\ [N \cdot m]$$

P2

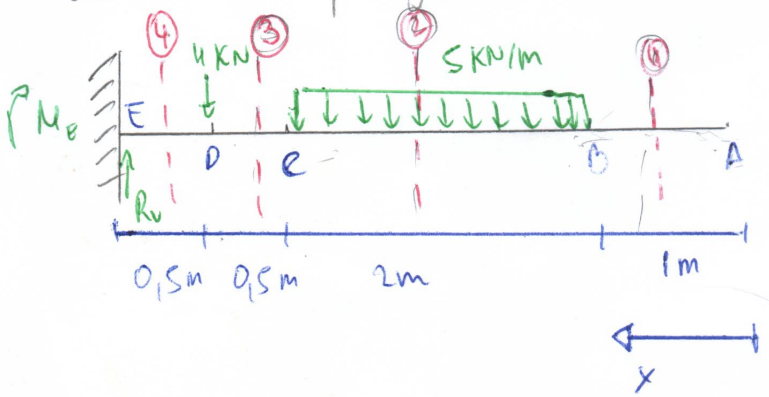
• Cálculo de Reacciones



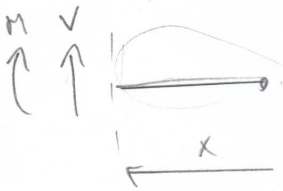
$R_V = 14KN$

$M_E = -4 \cdot 0,5 - 10 \cdot 2 = -22 [KN \cdot m]$

• Cálculo de fuerzas internas



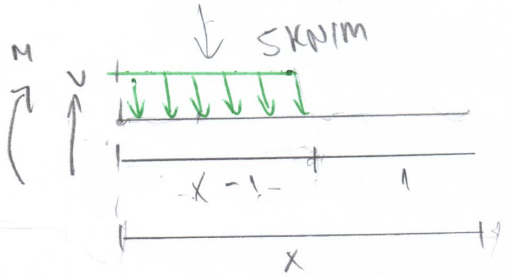
• TRamo AB



$M = 0$

$V = 0$

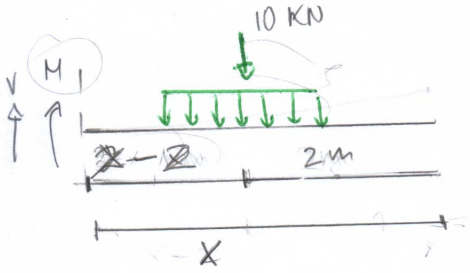
• TRamo BC



$M = -5 \frac{(x-1)^2}{2}$

$V = 5(x-1)$

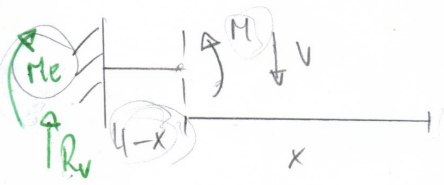
- Tramo CD



$M = -10(x-2)$

$V = 10$

- TRAMO DE.



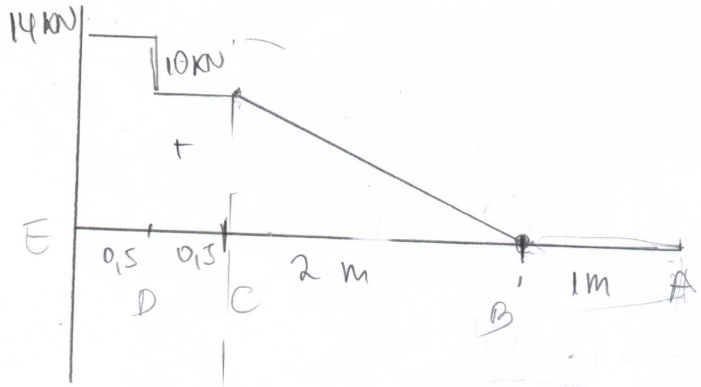
$V = R_v = 14\,[KN]$

$M = M_e + R_v(4-x)$

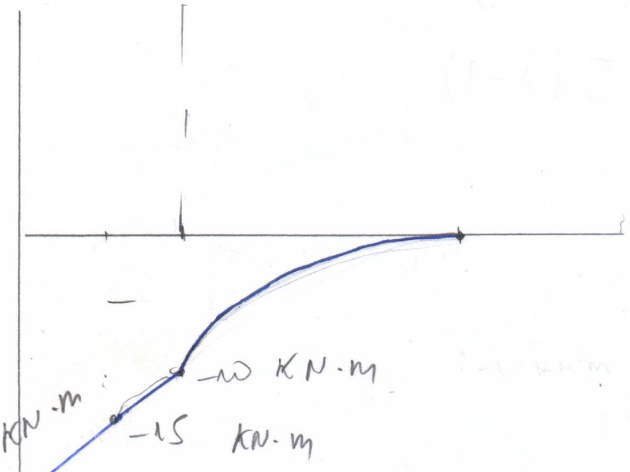
$= +22 - 14(4-x)\ [KN\cdot m]$

- Diagramas.

V

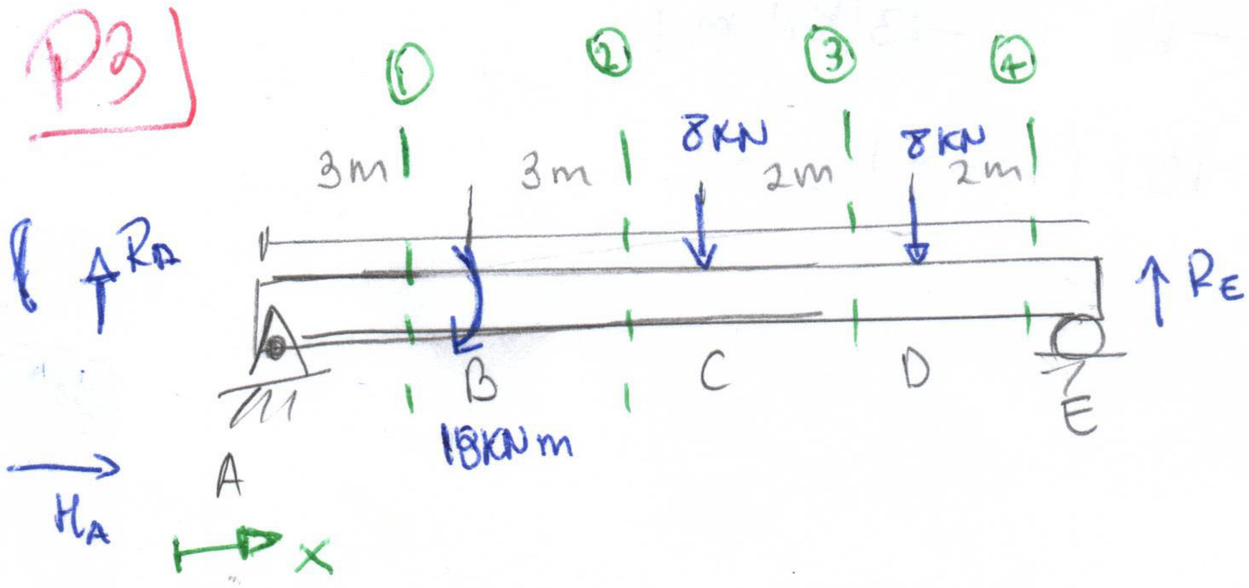


M



EX 6.12

P3



$\sum F_x = 0 \Rightarrow H_A = 0$.

$\sum F_y = 0 \Rightarrow R_A + R_E = 16[KN]$

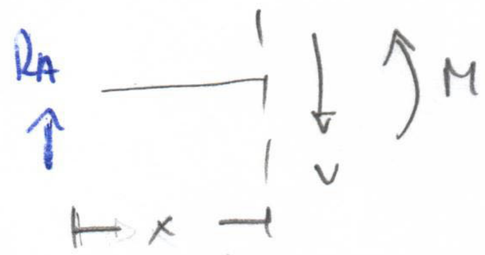
$\sum M_A = 0 \Rightarrow 18 + 8 \cdot 6 + 8 \cdot 8 = R_E \cdot 10$

$R_E = 13\ [KN]$

$R_A + R_E = 16 \Rightarrow R_A = 3[KN]$

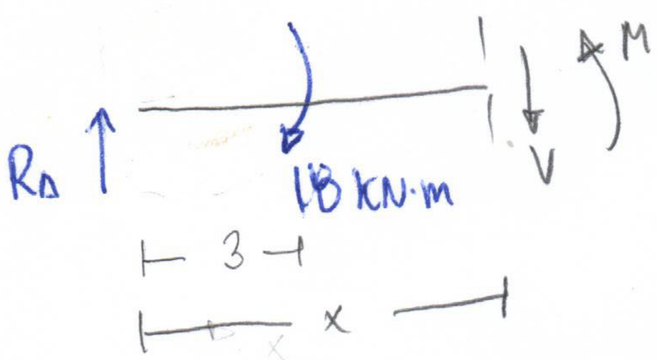
HAY QUE HACER LOS 4 CORTES QUE SE MUESTRAN EN LA FIGURA

CORTE ①



$V = R_A = 3[KN]$ $\quad M = R_A x = 3x\ [KN \cdot m]$

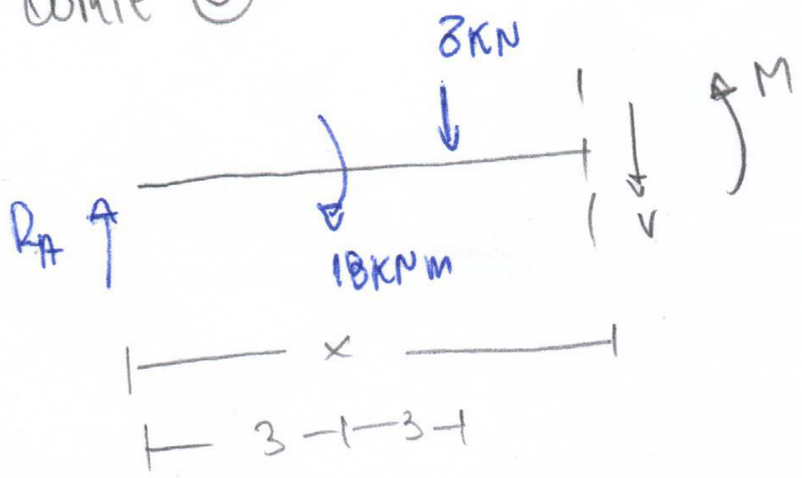
CORTE ②



$V = R_A = 3[KN]$

$M = R_A x + 18 = 3x + 18 \quad [KN \cdot m]$

CORTE ③

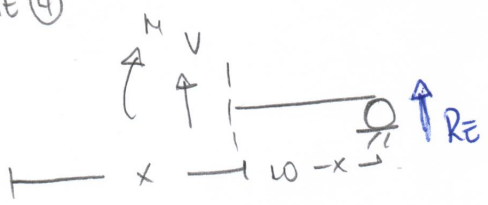


$V = R_A - 8 = -5[KN]$

$M = 18 + 3x - 8(x-6)$

$M = 66 - 5x \quad [KN \cdot m]$

CORTE ④

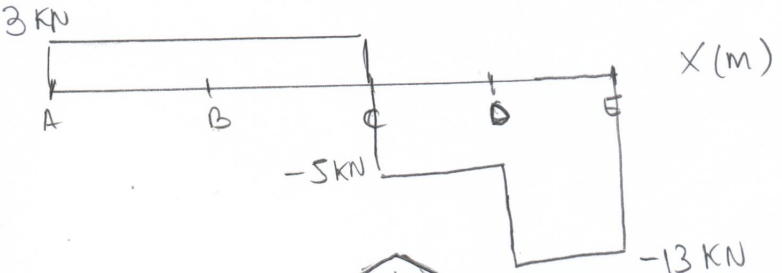


$V = -R_E = -13 [KN \cdot m]$

$M = 13 \cdot (10 - x)$

Diagramas.

V



M