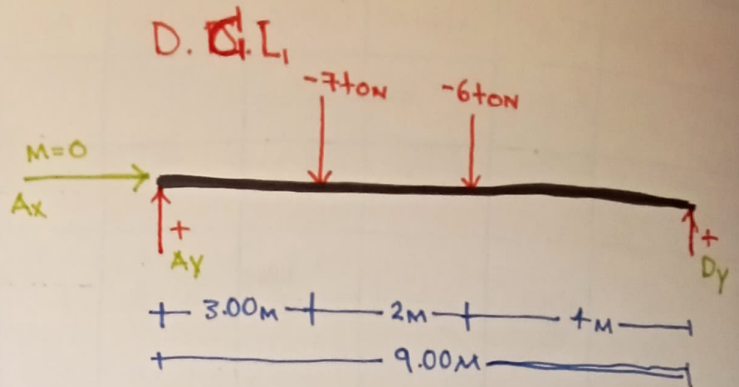
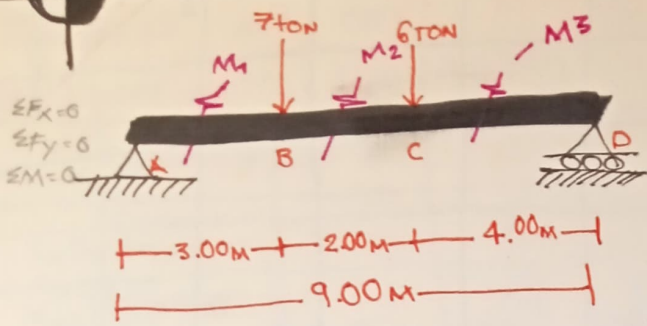


# CALCULO DE REACCIONES · SR - S.V



$$\sum F_x = 0$$

$$A_x = 0$$

$$\sum M_A = 0$$

$$D_y(9m) - 6\text{ton}(5m) - 7\text{ton}(3m) = 0$$

$$D_y(9m) - 30\text{ton}\cdot\text{m} - 21\text{ton}\cdot\text{m} = 0$$

$$D_y(9m) - 51\text{ton}\cdot\text{m} = 0$$

$$D_y = \frac{51\text{ton}\cdot\text{m}}{9m}$$

$$D_y = 5.66\text{ton}$$

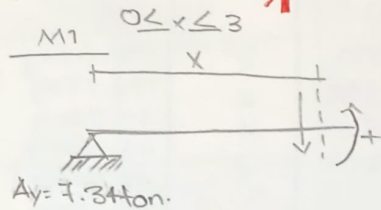
$$\sum F_y = 0$$

$$A_y - 7\text{ton} - 6\text{ton} + 5.66\text{ton} = 0$$

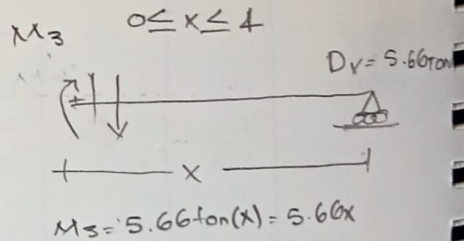
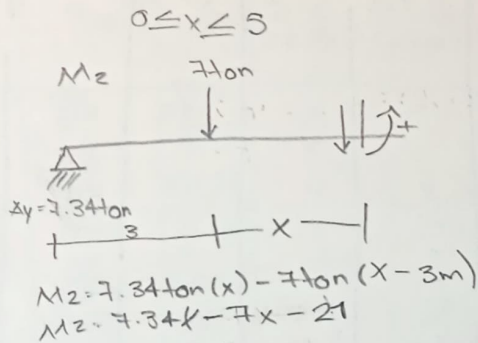
$$A_y - 7.34\text{ton} = 0$$

$$A_y = 7.34\text{ton}$$

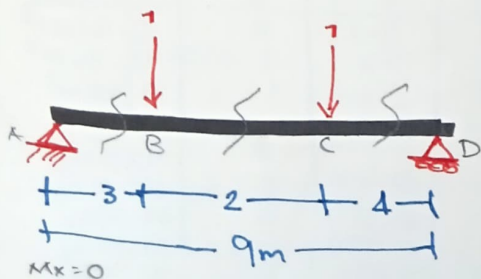
## SISTEMA REAL



$$M_1 = 7.34\text{ton}(x) = 7.34x$$



## SISTEMA VIRTUAL



$$\sum M_A = 0$$

$$D_y(9m) + 1(5m) - 1(3m) = 0$$

$$D_y(9m) - 5m - 3m = 0$$

$$D_y(9m) = 8m$$

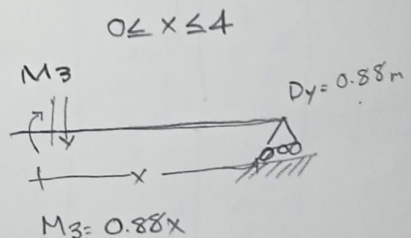
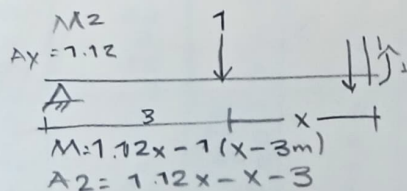
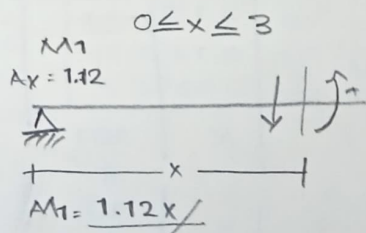
$$D_y = \frac{8m}{9m} = 0.88m$$

$$D_y = 0.88m$$

$$\sum F_x = 0$$

$$A_y - 1 - 0.88m = 0$$

$$A_y = 1.12$$



INTEGRALES

$$\Delta v.C = \int_0^3 \frac{(7.34x)(1.12x)}{EI} dx \rightarrow \frac{1}{EI} (8.22x^2) dx \rightarrow \frac{1}{EI} \left[ \frac{8.22 \frac{x^{2+1}}{2+1}}{1} \right]_0^3 \rightarrow$$

$$\rightarrow \frac{1}{EI} \left[ \frac{8.22x^3}{3} \right]_0^3 = \frac{1}{EI} \cdot \frac{(2.74x^3)}{1} = \frac{2.74x^3}{EI} \quad \text{ID}$$

$$\frac{2.74(3)^3}{EI} - \frac{2.74(0)^3}{EI} = \frac{2.74(27)}{EI} = \frac{73.98}{EI}$$

$$\int_0^6 \frac{(7.34x-7x-3)(1.12x^2-x-3)}{EI} dx \rightarrow \frac{1}{EI} (8.22x^2-7x^2-9) dx = \frac{1}{EI} \left[ \frac{8.22x^3-7x^3-9}{3} \right]_0^6 \rightarrow$$

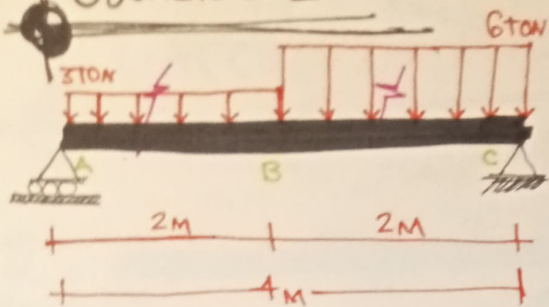
$$\rightarrow \frac{1}{EI} \left[ \frac{2.74x^3 - 2.33x^2 - 3}{EI} \right] \rightarrow \text{ID}$$

$$\int_0^4 \frac{(5.66x)(0.88x)}{EI} dx \rightarrow \frac{1}{EI} (4.98x^2) dx \rightarrow \frac{1}{EI} \left[ \frac{1}{EI} \frac{4.98x^3}{3} \right]_0^4 \rightarrow$$

$$\frac{1}{EI} = \frac{4.66x^3}{1} = \frac{1.66x^3}{EI} \quad \text{ID}$$

$$\frac{1.66(4)^3}{EI} - \frac{1.66(0)^3}{EI} = \frac{1.66(256)}{EI} = \frac{4.24.96}{EI}$$

# EJERCICIO 2



FUERZA RESULTANTE

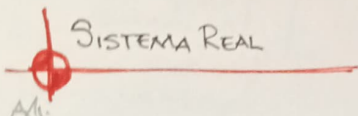
- ①  $2m \times 3ton = 6ton \cdot m$   
 $2m : 2m = 1m$
- ②  $2m \times 6ton = 12ton \cdot m$   
 $2m : 2 = 1m$

$$\sum F_y = 0$$

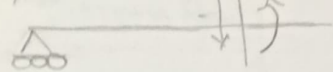
$$A_y - 18ton - 2.25ton = 0$$

$$A_y = 15.75ton$$

$$A_y = 15.75ton$$

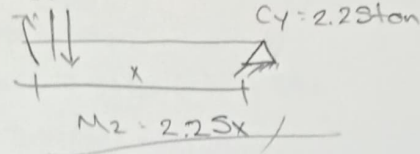


$$A_y = 15.75ton$$

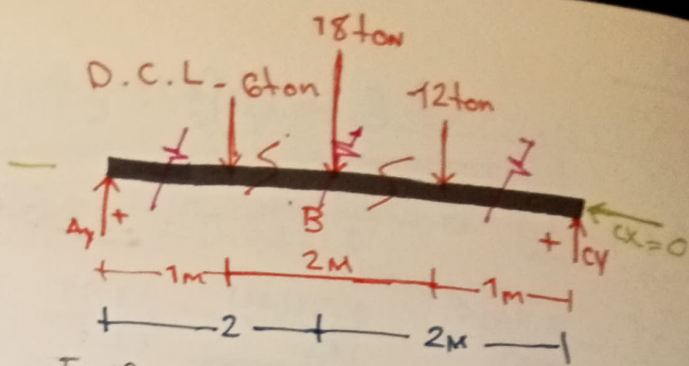


$$A_y = 15.75ton(x)$$

$M_2 =$



$$M_2 = 2.25x$$



$$F_x = 0$$

$$C_x = 0$$

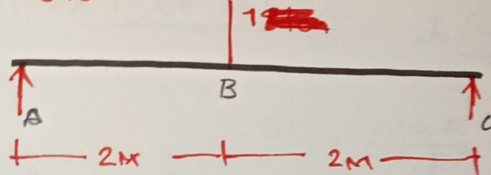
$$\sum M_A = 0$$

$$C_y(4m) - 18ton(2m) = 0$$

$$E_y(4m) - 9ton \cdot m = 0$$

$$C_y = \frac{9ton \cdot m}{4m} = 2.25ton$$

SISTEMA VIRTUAL



$$\sum M = 0$$

$$C_y(4m) = 1(2m)$$

$$C_y(4m) = 2m$$

$$C_y = \frac{2m}{4m} = 0.5m$$

$$\sum F_y = 0$$

$$A_y - 1 + 0.5m = 0$$

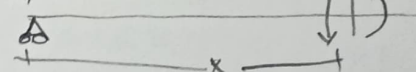
$$A_y = 0.5m$$

$$A_y = 0.5m$$

$$0 \leq x \leq 2$$

$M_1$

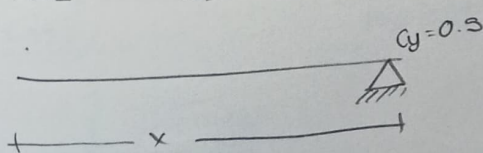
$$A_y = 0.5m$$



$$M_1 = 0.5x$$

$M_2$

$$0 \leq x \leq 2$$



$$M_2 = 0.5x$$

# INTEGRALES

$$\Delta v \cdot B \cdot \int_0^2 \frac{(15.75x)(0.3x) dx}{EI} = \frac{1}{EI} (7.875x^2) dx \rightarrow \frac{1}{EI} \left[ \frac{7.875x^3}{3} \right]_0^2 \rightarrow$$

$$\rightarrow \frac{1}{EI} \frac{2.625x^3}{1} \rightarrow \frac{2.625x^3}{EI} = ID$$

$$\frac{2.625(2)^3}{EI} - \frac{2.625(0)^3}{EI} = \frac{2.625(8)}{EI} = \frac{21}{EI}$$

$$\int_0^2 \frac{(2.25x)(0.3x) dx}{EI} = \frac{1}{EI} (1.125x^2) dx \rightarrow \frac{1}{EI} \left[ \frac{1.125x^3}{3} \right]_0^2 \rightarrow$$

$$\rightarrow \frac{1}{EI} \frac{0.375x^3}{1} = \frac{0.375x^3}{EI} \rightarrow ID$$

$$\frac{0.375(2)^3}{EI} - \frac{0.375(0)^3}{EI} = \frac{0.375(8)}{EI} = \frac{3}{EI}$$

$$\Sigma \frac{21}{EI} + \frac{3}{EI} = \frac{24}{EI}$$