



Mi Universidad

LINEAS DE INFLUENCIA

Nombre del estudiante: Carlos Jesus Ordoñez Castro

Nombre del tema: lineas de influencia

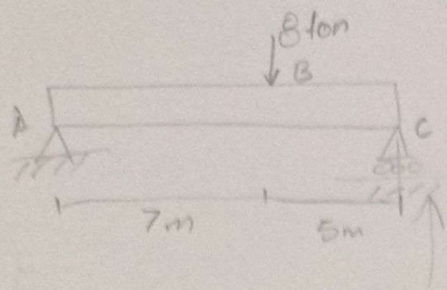
Parcial: 3

Nombre de la Materia: ANALISIS DE ESTRUCTURAS

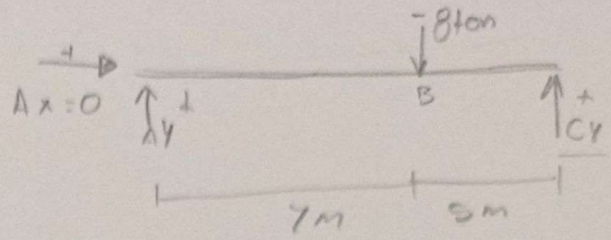
Nombre del profesor: PERLA MARISOL BARAJAS PEREZ

Nombre de la licenciatura: arquitectura

Cuatrimestre: 5



$$\begin{aligned} \sum M_0 &= 0 \\ \sum F_x &= 0 \\ \sum F_y &= 0 \end{aligned}$$



$$\sum M_0 = 0$$

$$\sum M_A = 0$$

$$C_y(12\text{m}) - 8\text{ton}(7\text{m}) = 0$$

$$C_y(12\text{m}) - 56\text{ton}\cdot\text{m} = 0$$

$$C_y(12\text{m}) = 56\text{ton}\cdot\text{m}$$

$$C_y = \frac{56\text{ton}\cdot\text{m}}{12\text{m}} = 4.66\text{ton}$$

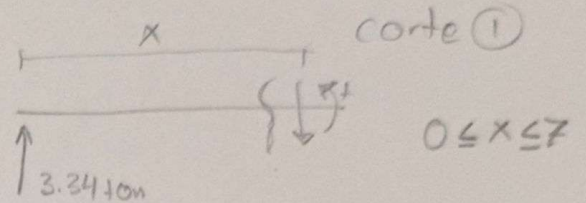
$$\sum F_y = 0$$

$$A_y - 8\text{ton} + 4.6\text{ton} = 0$$

$$A_y - 3.34 = 0$$

$$A_y = 3.34\text{ton}$$

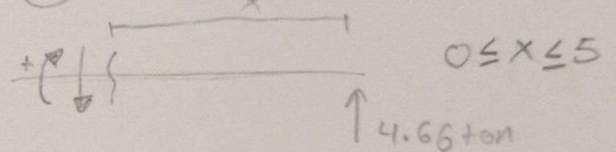
Sistema Real



$$M_1 = 3.34\text{ton}(x)$$

$$M_1 = 3.34x$$

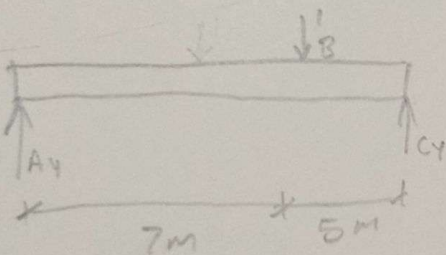
Corte 2



$$M_2 = 4.66\text{ton}(x)$$

$$M_2 = 4.66x$$

Sistema virtual



$$\sum M = 0$$

$$\sum M_A = 0$$

$$C_y(12\text{m}) - 1(7\text{m}) = 0$$

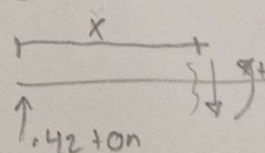
$$C_y(12\text{m}) - 7\text{ton}\cdot\text{m} = 0$$

$$C_y = \frac{7\text{ton}\cdot\text{m}}{12\text{m}} = 0.58\text{ton}$$

$$A_y - 1\text{ton} + 0.58\text{ton} = 0$$

$$A_y - 0.42\text{ton} = 0 \Rightarrow A_y = 0.42\text{ton}$$

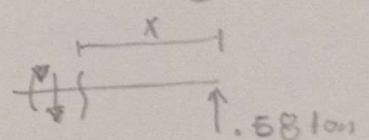
Corte 1



$$M_1 = 0.42x$$

$$0 \leq x \leq 7$$

Corte 2



$$M_2 = 0.58x$$

$$0 \leq x \leq 5$$

$$\Delta v B \int_0^L \frac{(m \cdot x)(m \cdot v)}{EI}$$

$$\Delta v B : \int_0^7 \frac{(3.34x)(1.42x)}{EI} dx + \int_0^5 \frac{(4.66x)(0.58x)}{EI} dx$$

$$\Delta v B : \int_0^7 \frac{(3.34x)(1.42x)}{EI} dx = \frac{1}{EI} \int_0^7 (1.4028 x^2) dx$$

$$\frac{1}{EI} \left[1.4028 \left(\frac{x^{n+1}}{n+1} \right) \right] \Big|_0^7 = \frac{1}{EI} \left[1.4028 \left(\frac{x^{2+1}}{2+1} \right) \right] \Big|_0^7$$

$$\frac{1}{EI} \left[\frac{1.4028 x^3}{3} \right] \Big|_0^7 = \frac{1}{EI} \left(\frac{0.4676 x^3}{1} \right) \Big|_0^7 = \frac{0.4676 x^3}{EI} \Big|_0^7$$

Formula de la función

$$\frac{0.4676(7)^3}{EI} - \frac{0.4676(0)^3}{EI} = \frac{0.4676(343)}{EI} = \frac{160.3868}{EI}$$

$$\frac{160.3868}{EI} + \int_0^5 \frac{(4.66x)(0.58x)}{EI} dx$$

$$\frac{1}{EI} \int_0^5 (2.7028 x^2) dx = \frac{1}{EI} \left[2.7028 \left(\frac{x^{n+1}}{n+1} \right) \right] \Big|_0^5 =$$

$$\frac{1}{EI} \left[2.7028 \left(\frac{x^{2+1}}{2+1} \right) \right] \Big|_0^5 = \frac{1}{EI} \left[\frac{2.7028 x^3}{3} \right] \Big|_0^5 =$$

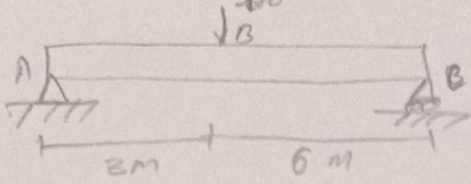
$$\frac{1}{EI} \left(\frac{0.9009 \times 3}{1} \right) \Big|_0^5$$

$$\frac{0.9009}{EI} \Big|_0^5$$

Formula de la función

$$\frac{0.9009(5)^3}{EI} - \frac{0.9009(0)^3}{EI} = \frac{0.9009(125)}{EI} = \frac{112.6125}{EI}$$

$$\frac{160.3868}{EI} + \frac{112.6125}{EI} = \frac{272.9993}{EI} \text{ ton/m}^3$$



$$\sum M_A = 0$$

$$\sum M_B = 0$$

$$\sum V = 0 \Rightarrow 1(3\text{m}) - 0 = 0$$

$$\sum H = 0 \Rightarrow 3 - 0 = 0$$

$$C_v = 3/9 = 0.33$$

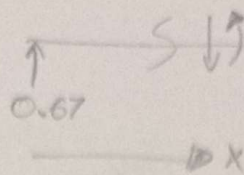
$$\sum F_y = 0$$

$$A_y - 1\text{ ton} + 0.33\text{ ton} = 0$$

$$A_y = 0.67\text{ ton}$$

Corte ①

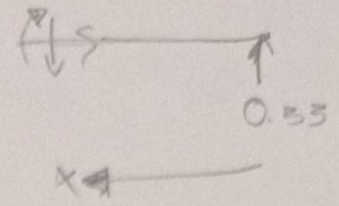
$$M_1 = 0.67x$$



$$0 \leq x \leq 3$$

Corte ②

$$M_2 = 0.33x$$



$$0 \leq x \leq 6$$

Distancia virtual

Formula Integral

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

Integral Definida

$$\int_a^b f(x) dx = F(b) - F(a)$$

$$\Delta v_B = \int_0^L \frac{(M_r)(M_s)}{EI}$$

$$\Delta v_B = \int_0^3 \frac{(4x)(0.67x)}{EI} dx + \int_0^6 \frac{(2x)(0.33x)}{EI} dx$$

$$\Delta v_B = \int_0^3 \frac{(4x)(0.67x)}{EI} dx = \frac{1}{EI} \int_0^3 (2.68x^2) dx$$

$$\frac{1}{EI} \left[2.68 \left(\frac{x^{2+1}}{2+1} \right) \right]_0^3 = \frac{1}{EI} \left[2.68 \left(\frac{x^3}{3} \right) \right]_0^3$$

$$\frac{1}{EI} \left[\frac{2.68 x^3}{3} \right] \Big|_0^3 =$$

$$\frac{1}{EI} (0.893 x^3) \Big|_0^3 = \frac{0.893 x^3}{EI}$$

Formulas de la función

$$\frac{0.89(3)^3}{EI} - \frac{0.89(0)^3}{EI} = \frac{0.893(27)}{EI} = \frac{24.03}{EI}$$

$$\frac{24.111}{EI} + \int_0^6 \frac{(2x)(0.33x)}{EI} dx$$

$$\frac{24.111}{EI} + \int_0^6 (0.66x) dx$$

$$\frac{24.111}{EI} + \frac{1}{EI} \left[0.66 \left(\frac{x^{n+1}}{n+1} \right) \right]_0^6 = \frac{1}{EI} \left[0.66 \left(\frac{x^{2+1}}{2+1} \right) \right]_0^6$$

$$\frac{24.111}{EI} + \frac{1}{EI} \left[\frac{0.66 x^3}{3} \right]_0^6$$

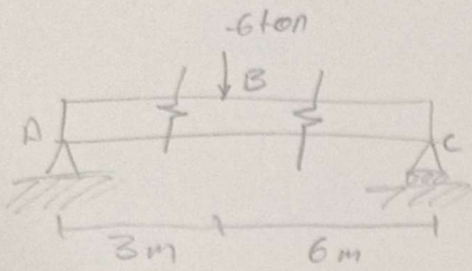
$$\frac{24.111}{EI} + \frac{1}{EI} (0.22 x^3) \Big|_0^6 = \frac{0.22 x^3}{EI}$$

Formula de la función

$$\frac{0.22(6)^3}{EI} - \frac{0.22(0)^3}{EI} =$$

$$\frac{0.22(216)}{EI} = \frac{47.52}{EI}$$

$$\frac{24.111}{EI} + \frac{47.52}{EI} = \frac{71.631}{EI} \text{ ton/m}^3$$



$$\sum M_o = 0 \quad \sum F_y = 0$$

$$\sum F_x = 0$$

$$\sum M_o = 0$$

$$\sum F_x = 0$$

$$C_y(9) - 6 \text{ ton}(3) = 0$$

$$C_y(9\text{m}) - 18 \text{ ton}\cdot\text{m} = 0$$

$$C_y(9\text{m}) = 18 \text{ ton}\cdot\text{m}$$

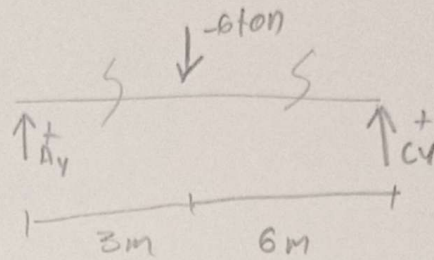
$$C_y = \frac{18 \text{ ton}\cdot\text{m}}{9 \text{ m}} = 2 \text{ ton}$$

$$\sum F_y = 0$$

$$A_y - 6 \text{ ton} + 2 \text{ ton} = 0$$

$$A_y - 4 \text{ ton} = 0$$

$$A_y = 4 \text{ ton}$$



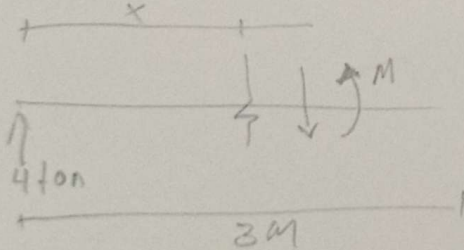
1: Intervalo

$$0 \leq x \leq 3$$

2: Intervalo

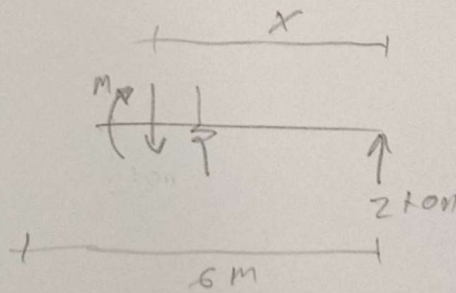
$$0 \leq x \leq 6$$

Sistema red



$$M_1 = 4 \text{ ton}(x)$$

$$M_1 = 4x$$



$$M_2 = 2 \text{ ton}(x)$$

$$M_2 = 2x$$