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Nombre del tema: Centroides y Momentos de Inercia

Parcial: 3

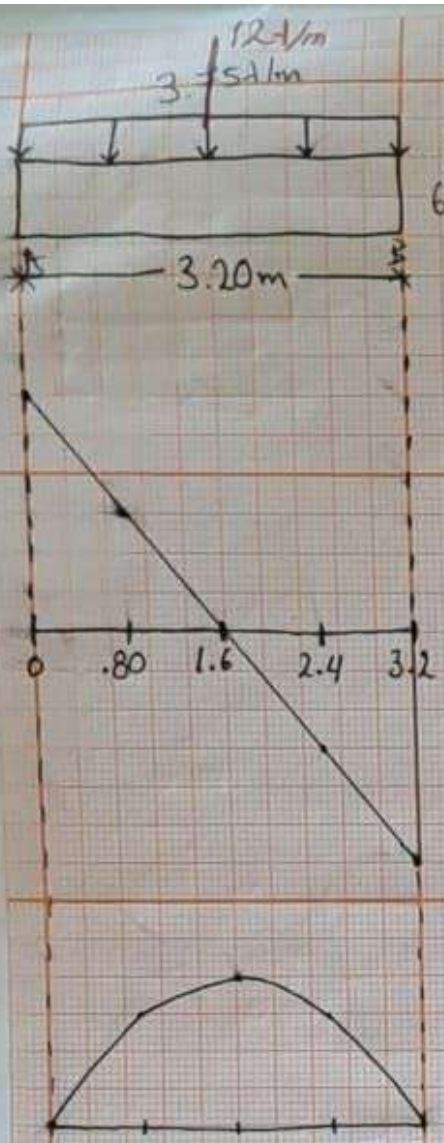
Nombre de la Materia: Resistencia de Materiales de Construcción

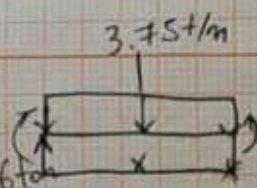
Nombre del profesor: Pedro Alberto Garcia Lopez

Nombre de la Licenciatura: Arquitectura

Cuatrimestre: Cuarto Cuatrimestre

Comitán de Domínguez a 11 de Noviembre del 2023.





① $q \cdot L = 3.75 t/m \cdot 3.20 m = 12 t/m$

② $\frac{q \cdot L}{2} = \frac{3.75 t/m \cdot 3.20 m}{2} = 6 ton$

③ Ecuación de Cortante $\Sigma F_Y = 0$

$6 ton - 3.75 t/m (x) = V = 0$

$V = 6 ton - [3.75 t/m (x)]$

④ Ecuación de Momentos $\Sigma M = 0$

$-6 ton (x) + [3.75 t/m (x)(x/2)] + M = 0$

$-6 ton (x) + \frac{3.75 t/m \, X^2}{2} + M = 0$

$-6 ton (x) - 1.875 x^2 + M = 0$

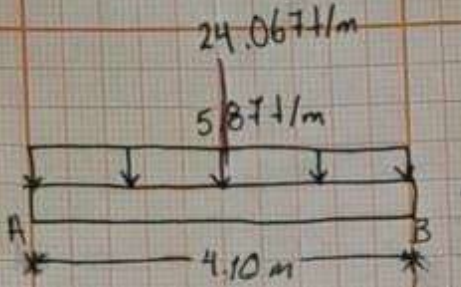
$M = 6 ton (x) - 1.875 t/m (x^2)$

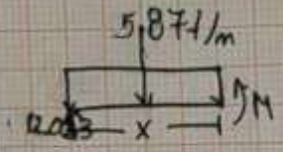
$> V = 6 ton - [3.75 t/m (x)]$

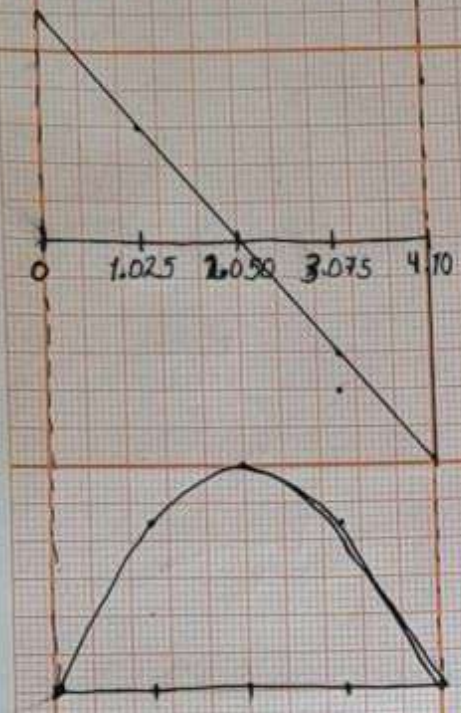
~~$M = 6 ton [3.75 t/m (x)]$~~

$> M = 6 ton (x) - 1.875 (x^2)$

X	0	.80	1.6	2.4	3.2
V	6	3	0	-3	-6
M	0	3.6	4.8	3.6	0







① $q \cdot L = 5.87\,t/m \cdot 4.10\,m = 24.067\,t/m$

② $\frac{q \cdot L}{2} = \frac{5.87\,t/m \cdot 4.10\,m}{2} = 12.033\,ton$

③ Ecuación de Cortante. $\sum F_Y = 0$

$12.033\,ton - 5.87\,t/m\,(x) - V = 0$

$V = 12.033\,ton - [5.87\,t/m\,(x)]$

④ Ecuacion de Momento $\sum M = 0$

$-12.033\,ton\,(x) + [5.87\,t/m\,(x)]\,(x/2) + M = 0$

$-12.033\,ton\,(x) + \frac{5.87\,t/m\,x^2}{2} + M = 0$

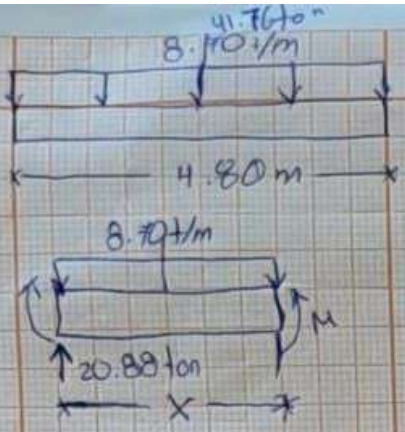
$-12.033\,ton\,(x) + 2.935\,t/m\,x^2 + M = 0$

$M = 12.033\,ton\,(x) - 2.935\,t/m\,(x^2)$

$V = 12.033\,ton - [5.87\,t/m\,(x)]$

$M = 12.033\,ton\,(x) - 2.935\,t/m\,(x^2)$

X	0	1.025	2.050	3.075	4.10
V	12.033	6.016	0	-6.076	-12.033
M	0	9.250	12.333	9.250	0



① $q \cdot L = 8.70 \text{ t/m}(4.80\text{m}) = 41.76 \text{ ton}$

② $\frac{q \cdot L}{2} = \frac{8.70 \text{ t/m}(4.80\text{m})}{2} = 20.88 \text{ ton}$

③ Ecuación de Cortante

$\Sigma FY = 0$

$20.88 \text{ ton} - 8.70 \text{ t/m}(x) = V = 0$

$V = 20.88 \text{ ton} \cdot [8.70 \text{ t/m}(x)]$

④ Ecuación de Momentos

$\Sigma M = 0$

$-20.88 \text{ ton}(x) + [8.70 \text{ t/m}(x)(x/2)] + M = 0$

$-20.88 \text{ ton}(x) + \frac{8.70 \text{ t/m} x^2}{2} + M = 0$

$-20.88 \text{ ton}(x) - 4.35 x^2 + 0$

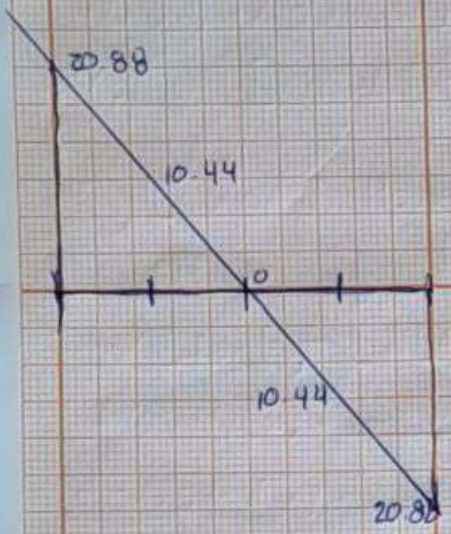
$M = 20.88 \text{ ton}(x) - 4.35 \text{ t/m}(x^2)$

$> V = 20.88 \text{ ton} - [8.70 \text{ t/m}(x)]$

~~$20.88 \text{ ton} - [8.70 \text{ t/m}(x)]$~~

$> M = 20.88 \text{ ton}(x) - 4.35 \text{ t/m}(x^2)$

X	0	1.20	2.40	3.60	4.80
V	20.88	10.44	0	20.88	10.44



M	0	18.79	25.05	18.79	0