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Licenciatura: Arquitectura

Cuatrimestre: 4

Materia: Resistencia de materiales de construcción

Profesor: García López Pedro Alberto

Actividad: Centroides y momentos de inercia

Fecha: 12/11/2023

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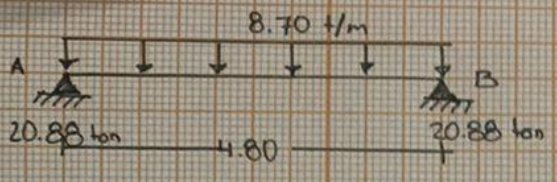


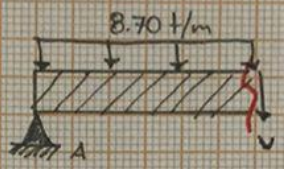
$q(L) = 8.70\ t/m\ (4.80\ m) = 41.76\ ton$

$RA = RB \rightarrow \frac{qL}{2} \rightarrow \frac{41.76}{2} = 20.88\ ton$

$\Sigma F_y = 0$

$20.88\ ton - [8.70\ t/m\ (x)] - V = 0$

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



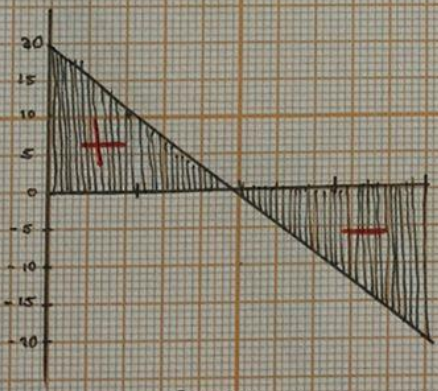
$\Sigma M = 0$

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

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

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

X	0	1.20	2.40	3.60	4.80
V	20.88	10.44	0	-10.44	-20.88
M	0	18.79	25.05	18.79	0



GRAFICA DE CORTANTES

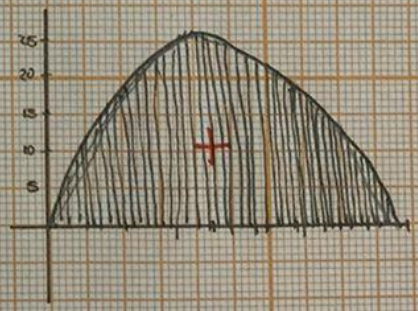


GRAFICO DE MOMENTOS

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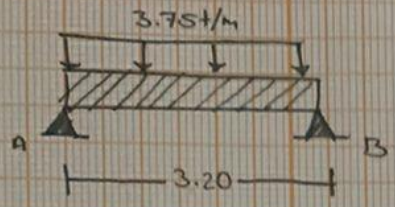
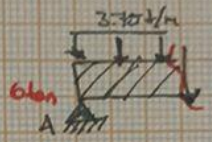


$q(L) = 3.75\ t/m\ (3.20m) = 12\ ton$

$R_A = R_B$

$\frac{q(L)}{2} \rightarrow \frac{12}{2} = 6\ ton$



$\Sigma F_y = 0$

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

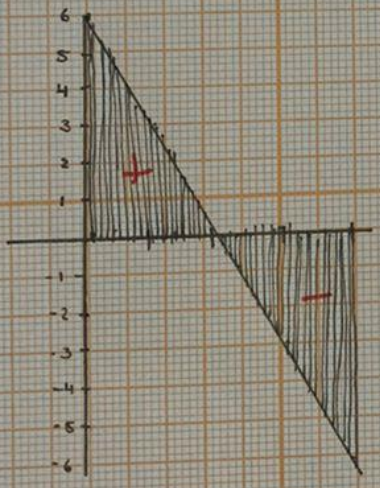
$V = 6\ ton - [3.75\ t/m\ (x)]$

$\Sigma m = 0$

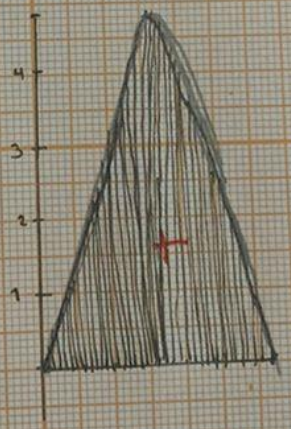
$-6\ ton\ (x) + [3.75\ t/m\ (x)(\frac{x}{2})] + M = 0$

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

X	0	0.80	1.60	2.40	3.20
V	6	3	0	-3	-6
M	0	3.6	4.8	3.6	0



GRAFICA DE CORTANTES



GRAFICA DE MOMENTOS

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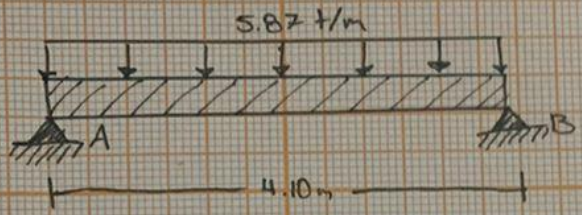
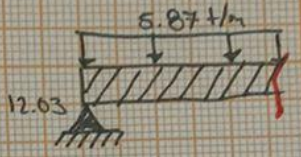


$q(L) = 5.87\ t/m\ (4.10m) = 24.067\ ton$

$R_A = R_B$

$\frac{q(L)}{2} = \frac{24.067}{2} = 12.03\ ton$



$\Sigma F_y = 0$

$12.03\ ton - [5.87\ t/m\ (x)] - V = 0$

$V = 12.03\ ton - [5.87\ t/m\ (x)]$

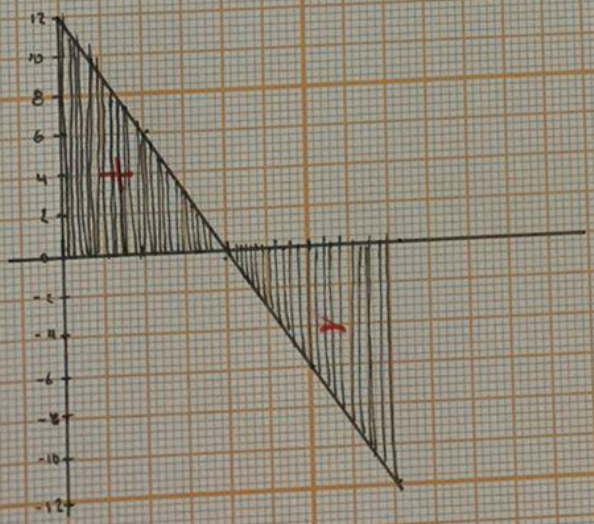
$\Sigma M = 0$

$-12.03\ ton\ (x) + [5.87\ t/m\ (x)(\frac{x}{12})] + M = 0$

$M = 12.03\ ton\ (x) - [\frac{5.87\ t/m\ (x)^2}{2}]$

$M = 12.03\ ton\ (x) - [2.935\ t/m\ (x)^2]$

X	0	1.025	2.05	3.075	4.100
V	12.03	6.013	0	-6.013	-12.03
M	0	9.247	12.327	9.247	0



GRAFICA DE CORTANTES

GRAFICO DE MOMENTOS