Mi Universidad

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Nombre del tema: centroide y momento de inercia

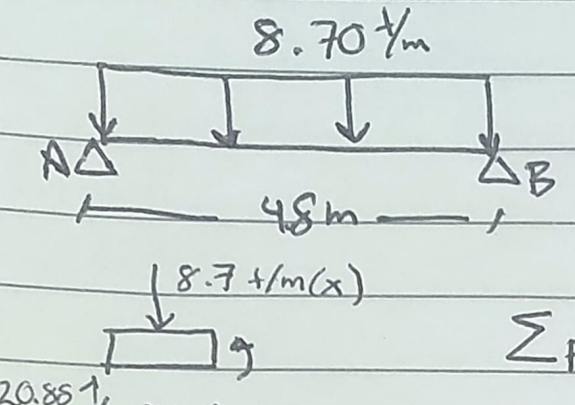
Parcial: 3

Nombre de la Materia: resistencia de materiales

Nombre del profesor: Pedro Alberto García

Nombre de la Licenciatura: arquitectura

Cuatrimestre: 4



$q \cdot L = 8.70 \cdot 4.8 = 41.76$ ton

$RA = RB = q \cdot L/2 = (8.70 \cdot 4.8m)/2 = 20.88$ ton

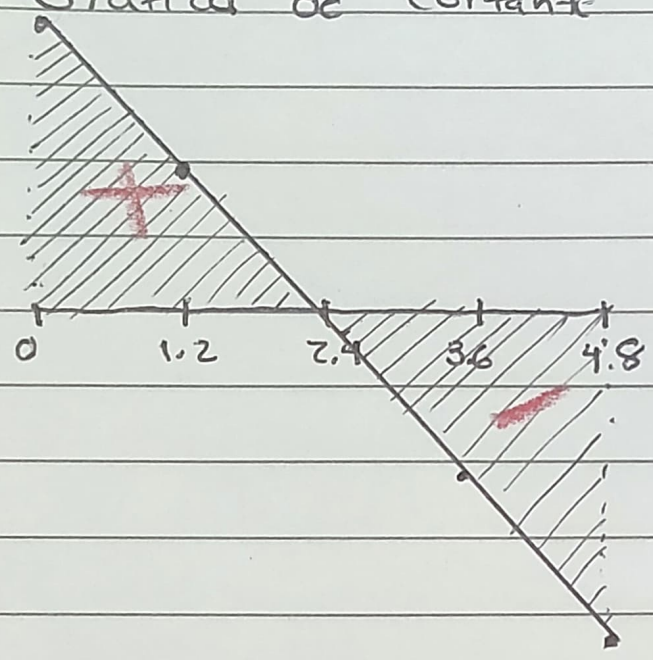
$\Sigma F_y = 0 \quad 20.88 - [8.7 \text{ t/m} \cdot (x)] - V = 0$

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot x]$

$\Sigma M = 0 \quad -20.88 \text{ ton} \cdot x + [8.7 \text{ t/m} \cdot (x) \cdot (x/2)] + M = 0$

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

Grafica de cortante



x	0	1.2	2.4	3.6	4.8
V	20.88	10.44	0	-10.44	-20.88

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot (0)] = 20.88$

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot (1.2)] \; 10.44$

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot (2.4)] \; 0$

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot (3.6)] - 10.44$

$V = 20.88 \text{ ton} - [8.7 \text{ t/m} \cdot (4.8)] - 20.88$

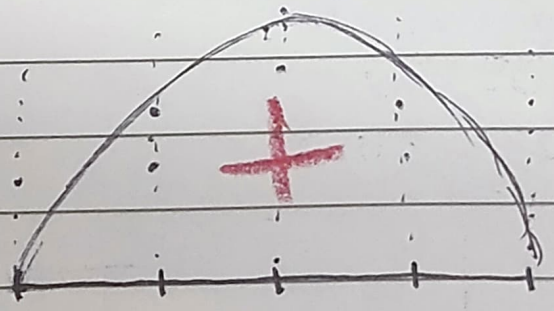
Grafica de momento

X	0	1.2	2.4	3.6	4.8
M	0	18.792	25.056	18.792	0

$M = (20.88 \text{ ton} \cdot 1.2) - [4.35 \cdot (1.2^2) = 18.792$

$M = (20.88 \text{ ton} \cdot 2.4) - [4.35 \cdot (2.4^2) = 25.056$

$M = (20.88 \text{ ton} \cdot 3.6) - [4.35 \cdot (3.6^2) = 18.792$



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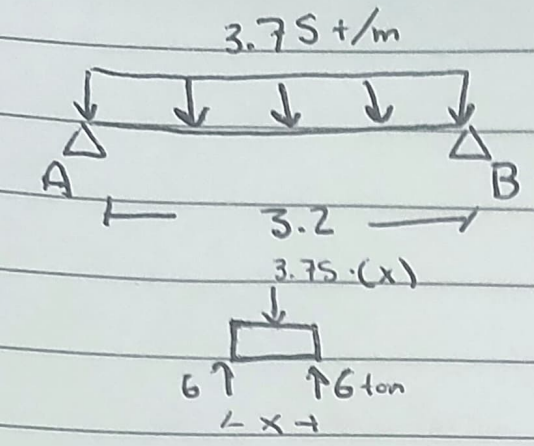


$9 \cdot L = 3.75\ t/m \cdot 3.2m = 12\ ton$

$R_A = R_B = 9 \cdot L / 2 = (3.75\ t/m \cdot 3.2)2 = 6\ ton$

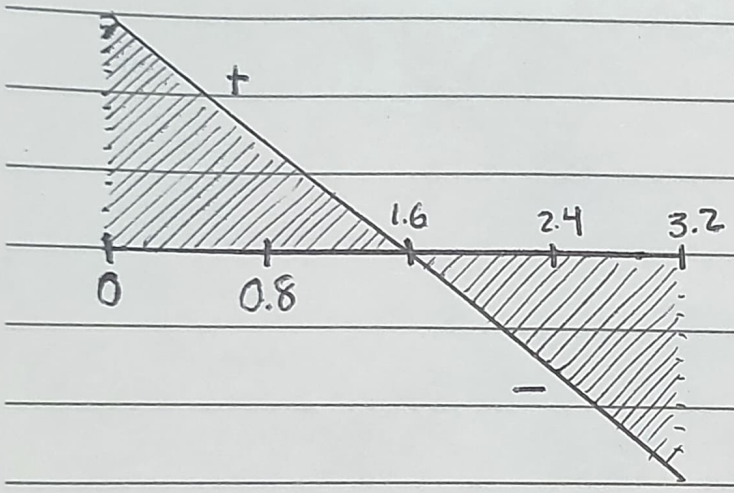
$\sum F_y = 0 \quad 6\ ton - [3.75\ t/m \cdot (x)] - V = 0$

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

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

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

Grafica de cortante



X	0	0.8	1.6	2.4	3.2
V	6	3	0	-3	-6

$V = 6\ ton - [3.75\ t/m \cdot 0] = 6$

$V = 6\ ton - [3.75\ t/m \cdot 0.8] = 3$

$V = 6\ ton - [3.75\ t/m \cdot 1.6] = 0$

$V = 6\ ton - [3.75\ t/m \cdot 2.4] - 3$

$V\ 6\ ton - [3.75\ t/m \cdot 3.2] = -6$

Grafica de momento

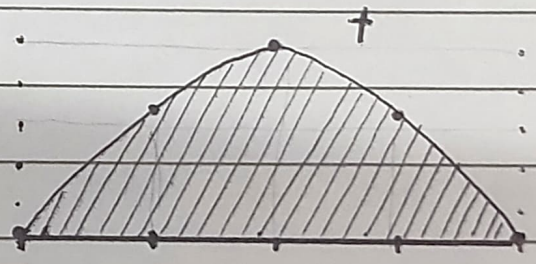
X	0	0.8	1.6	2.4	3.2
M	0	3.6	4.8	3.6	0

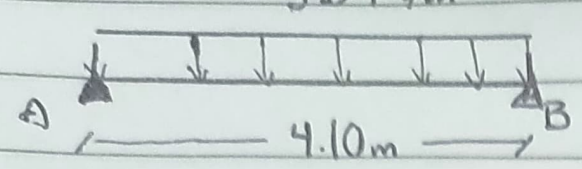
$M = (6\ ton \cdot 0.8\ m) - [3.75\ t/m \cdot (0.8)^2] = 3.6$

$M = (6\ ton \cdot 1.6m) - [1.875\ t/m \cdot (1.6)^2] = 4.8$

$M = (6\ ton \cdot 2.4m) - [1.875\ t/m \cdot (2.4)^2] = 3.6$

$M = (6\ ton \cdot 3.2m) - [1.875\ t/m \cdot (3.6)^2] = 0$





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

$R_A = R_B = (5.87 \cdot 4.10)/2 = 12.0335\ ton$

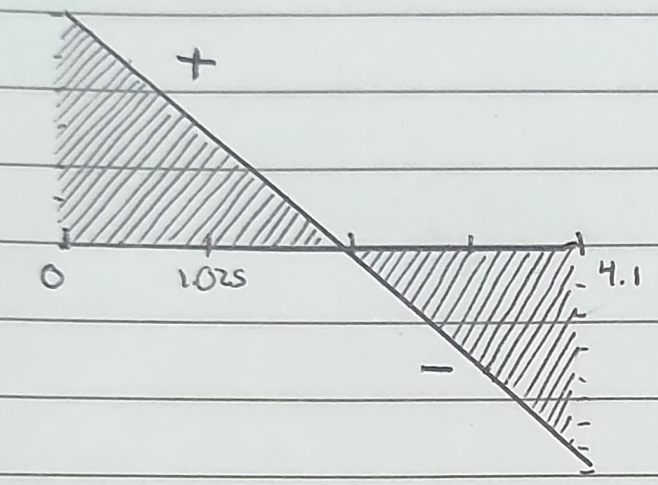
$\sum F_y = 0 \quad 12.0335 - [5.87\ t/m \cdot x] - V = 0$

$V = 12.0335\ ton - [5.87\ t/m \cdot x]$

$\sum M = 012335 \cdot x + [87\ t/m \cdot (x) \cdot (x) \cdot x/2)] \# M = 0$

$M = (12.0335\ ton \cdot x) - (2.935 \cdot x^2)$

Grafica de cortante



X	0	1.025	2.05	3.075	4.1
V	12.0335				

$V = 12.0335\ ton - [5.87\ t/m \cdot 0] = 120335$

$V = 12.0335\ ton - [5.87\ t/m \cdot 1025] = 6.01675$

$V = 12.0335\ ton - [5.87\ t/m \cdot 2.05] = 0$

$V = 12.0335\ ton - [587\ t/m \cdot 3.075] = -6.01675$

$V = 12.03351\ ton - [5.87\ t/m \cdot 4.1] = -12.0335$

Grafica de momento

X	0	1.025	2.05	3.075	4.1
M	0	9.2507	11.47		

$M = (120335 \cdot 1.025_m) - (5.935 \cdot (1.025)^2) = 9.2507$

$M = (12.0335 \cdot 2.05) - (5.935 (2.05)^2) = 11.74$

$M = (12.0335 \cdot 3.075) - (5.935 (3.075)^2) = 9.2507$

$M = (120335 \cdot 4.1) - (2935 (4.1)^2) = 0$