Nombre del Alumno: Aguilar López Jorge Alberto

Nombre del tema: Centroides y momentos de inercia

Parcial: 3

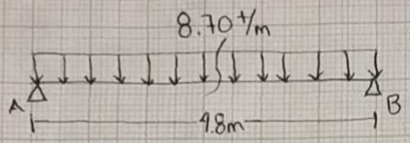
Nombre de la Materia: resistencia de materiales

Nombre del profesor: Pedro Alberto García López

Nombre de la Licenciatura: Arquitectura

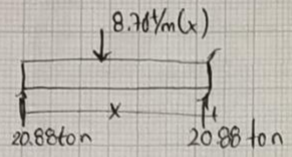
Cuatrimestre: 4

Problema 01



$q.l = 8.70 \cdot 4.8m = 41.76$ ton

$\frac{8.70}{2} \cdot 4.8m = 20.88$ ton



$\Sigma F_y = 0$

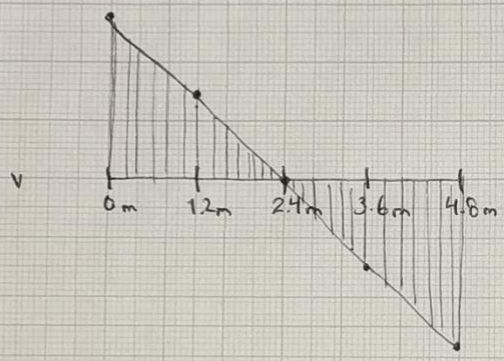
$20.88 - [8.70\,t/m \cdot (x)] - v = 0$

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

$\Sigma M = 0$

$-20.88\,ton \cdot x + [8.70\,t/m\,(x) - (x/2)] + M = 0$

$M = 20.88\,ton \cdot x + [8.70\,t/m\,(x) - (x/2)^2]$



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

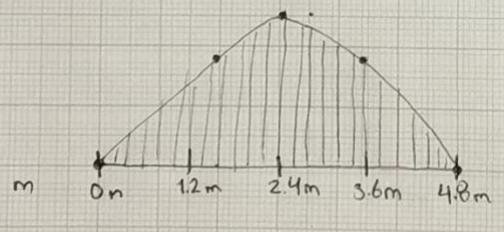
$V = 20.88\,ton - [8.70\,t/m\,(0)] = 20.88$

$V = 20.88\,ton - [8.70\,t/m\,(1.2)] = 10.44$

$V = 20.88\,ton - [8.70\,t/m\,(2.4)] = 0$

$V = 20.88\,ton - [8.70\,t/m\,(3.6)] = -10.44$

$V = 20.88\,ton - [8.70\,t/m\,(4.8)] = -20.88$



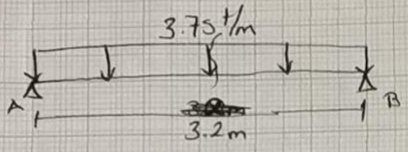
x	0	1.2m	2.4m	3.6m	4.8m
M	0	18.792	25.056	18.792	0

$M = (20.88\,ton \cdot 1.2m - [4.35\,(1.2m)^2] = 18.792$

$M = (20.88\,ton \cdot 2.4 [4.35(2.4)^2] = 25.056$

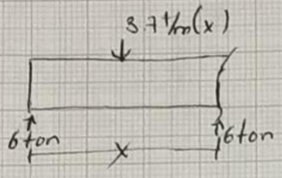
$M = 20.88\,ton \cdot 3.6 [4.35\,(2.4)^2] = -18.792$

Problema 02



$3.75\,t/m \cdot 3.2m = 12\,ton$

$\frac{3.75\,t/m \cdot 3.2m}{2} = 6\,ton$



$\Sigma F_y = 0$

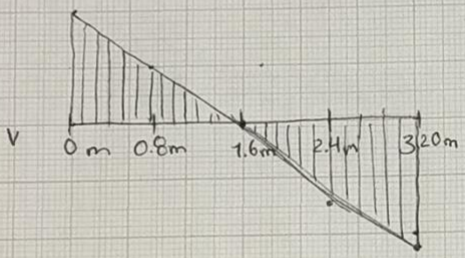
$6ton - [3.75\,t/m(x)] + v = 0$

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

$\Sigma M = 0$

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

$M = 6ton(x) + [3.75\,t/m(x)^2]$



x	0	0.8	1.6	2.4	3.2
v	6	3	0	-3	-6

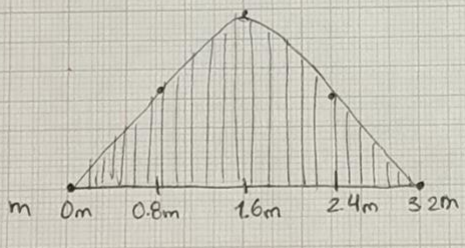
$v = 6ton - [3.75(0)] = 6$

$v = 6ton - [3.75(0.8)] = 3$

$v = 6ton - [3.75(1.6)] = 0$

$v = 6ton - [3.75(2.4)] = -3$

$v = 6ton - [3.75(3.2)] = -6$



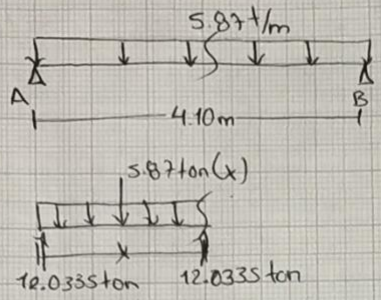
x	0	.8	1.6	2.4	3.2
V	0	3.6m	4.8m	-3.6m	0

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

$M = (6ton \cdot 1.6 - [3.75\,t/m(1.6)]^2 = 4.8m$

$M = (6ton \cdot 2.4 - [3.75\,t/m(2.4)] = -3.6m$

Problema 03



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

$\frac{5.87\ t/m \cdot 4.10\ m}{2} = 12.0335\ ton$

$\Sigma F_y = 0$

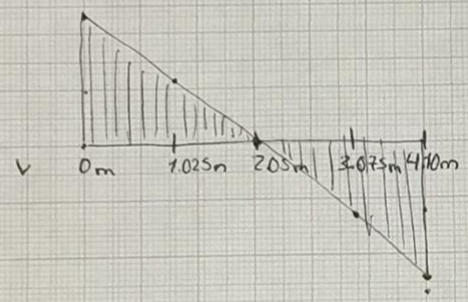
$12.0335\ ton - [5.87\ t/m\ (x)] - V = 0$

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

$\Sigma M = 0$

$12.0335\ ton(x) + [5.87\ t/m(x)(x/2)] + M = 0$

$M = 12.0335\ ton(x) + [5.87\ t/m(x)^2]$



x	0	1.025	2.05	3.075	4.10
V					

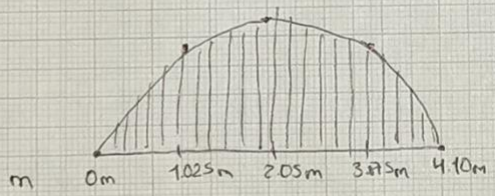
$V = 12.0335\ ton - [5.87(0)] = 12.0335$

$V = 12.0335\ ton - [5.87(1.025)] = 6.01675$

$V = 12.0335\ ton - [5.87(2.05)] = 0$

$V = 12.0335\ ton - [5.87(3.075)] = -6.06675$

$V = 12.0335\ ton - [5.87(4.10)] = -12.0335$



x	0	1.025	2.05	3.075	4.10
M	0	9.2507	11.79	-9.2507	0

$M = 12.0335\ t/m \cdot 1.025 [-5.935\ (1.025)^2] = 9.2507$

$M = 12.0335\ t/m \cdot 2.05 [-5.935\ (2.05)^2] = 11.79$

$M = 12.0335\ t/m \cdot 3.075 [-5.935 (3.075)] = -9.2507$