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Nombre del tema: Métodos Energéticos

Nombre de la Materia: ANALISIS DE ESTRUCTURAS

Nombre del profesor: ARQ. PERLA MARISOL BARAJAS PEREZ

Nombre de la Licenciatura: Arquitectura

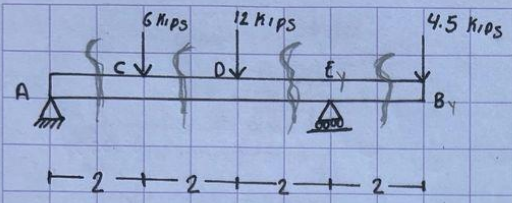
Cuatrimestre: Quinto cuatrimestre

Comitán de Domínguez Chiapas

Unidad: 2

Fecha: 15 de febrero 2025

Blanca Yoseline Cano Vázquez



$\sum M = 0$

$+\circlearrowleft \sum M_A =$

$-4.5\,kips\,(8) + Ey\,(6) - 12\,kips\,(4) - 6\,kips\,(2) = 0$

$-36\,kips + Ey\,(6) - 48\,kips - 12\,kips = 0$

$-96\,kips.pies + Ey\,(6\,pies) = 0$

$Ey\,(6\,pies) = -96\,kips.pies$

$Ey = \frac{-96\,kips.pies}{6\,pies}$

$Ey = 16\,kips$

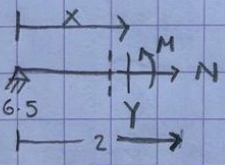
$+\uparrow \sum Fy = 0$

$Ay - 6\,kips - 12\,kips + 16\,kips - 4.5\,kips = 0$

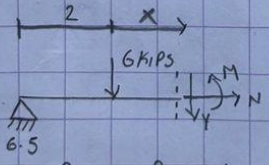
$Ay = 6.5\,kips$

Sistema Real

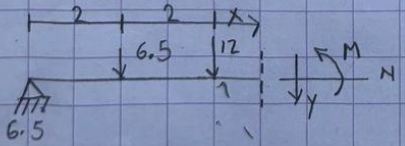
$M_1 = 6.5\,kips\,x$ Intervalo $0 \leq x \leq 2$



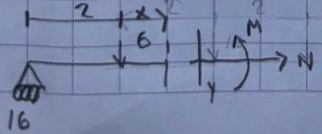
$M_2 = 6.5\,kips\,x - 6\,kips\,(x-2)$



$M_3 = 6.5\,kips\,x - 6\,kips\,x - 12\,kips\,(x-4)$

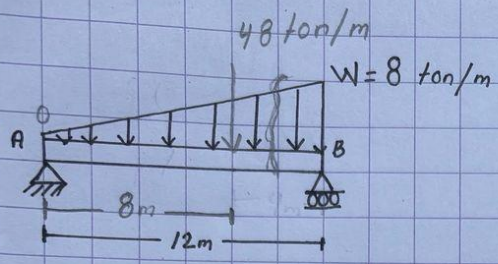


$M_4 = 16\,kips\,x$



Silky

SMART BOOK Blanca Yoseline Cano Vázquez



$\frac{12m\ (8\ ton/m)}{2} = \frac{96\ ton/m^2}{2} = 48\ ton/m$

$\circlearrowleft + \sum M = 0$

$\sum M_A =$

$By\ (12m) - 48\ ton/m\ (8m) = 0$

$By\ (12m) - 384\ ton/m^2 = 0$

$By\ (12m) = 384\ ton/m^2$

$By = \frac{384\ ton/m^2}{12m}$

$By = 32\ ton/m$

$+\uparrow \sum Fy = 0$

$Ay - 48\ ton/m + 32\ ton/m = 0$

$Ay - 16\ ton/m = 0$

$Ay = 16\ ton/m$

Sistema Real

$M_1 =$

$8x$

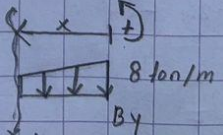
$8x - P\ (x-2)$

$48\ ton/m \times 8x\ (\frac{x}{2})$

$48\ ton/m \times 4x^2$

Intervalo

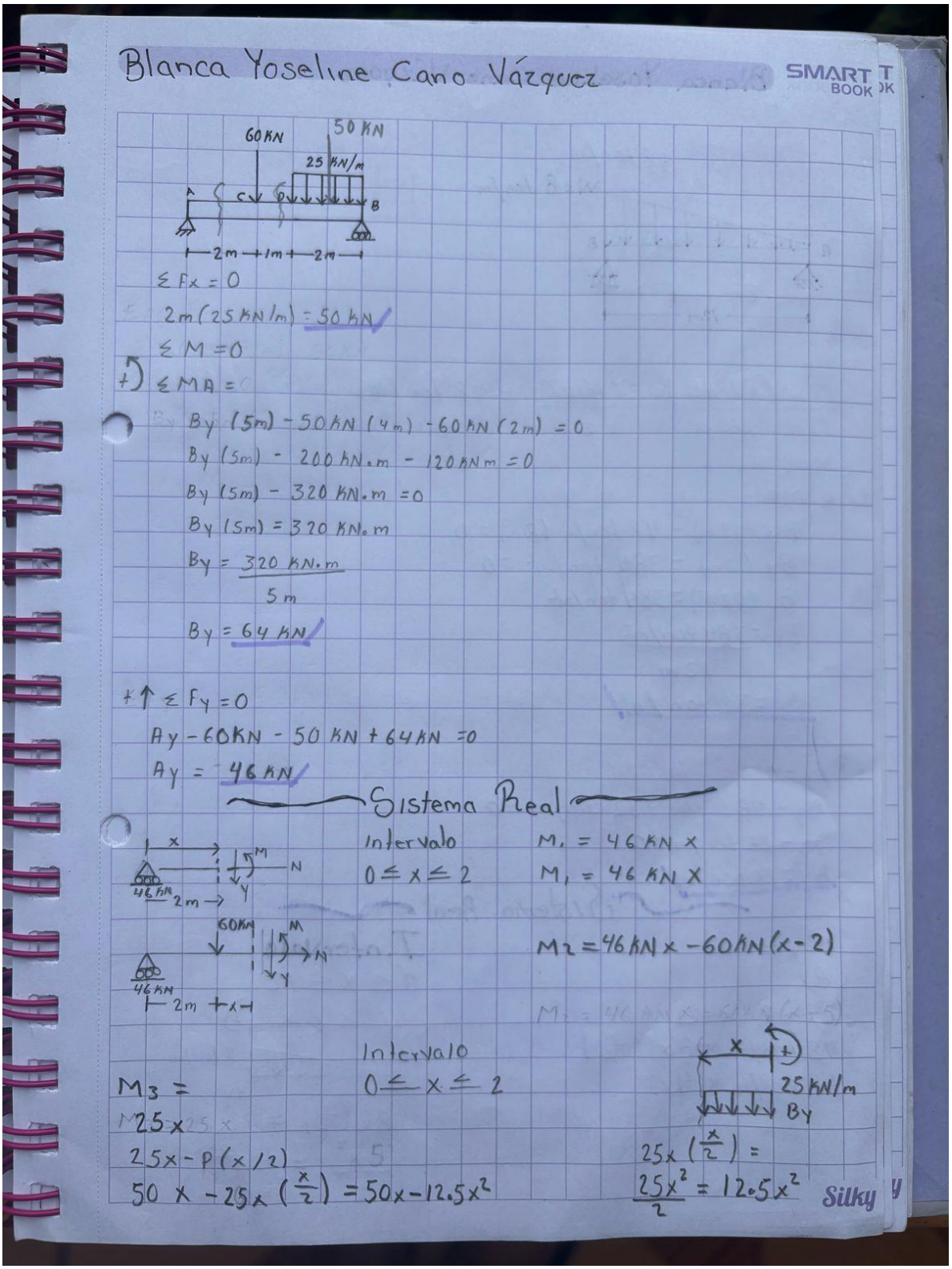
$0 \leq x \leq 12$



$8x\ (\frac{x}{2}) =$

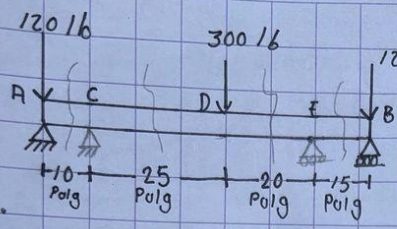
$\frac{8x^2}{2} = 4x^2$

Silky


Blanca Yoseline Cano Vázquez
60 KN
50 KN
25 KN/m
A
C
B
2m 1m 2m
ΣFx = 0
2m (25 KN/m) = 50 KN
ΣM = 0
+) ΣMA =
By (5m) - 50 KN (4m) - 60 KN (2m) = 0
By (5m) - 200 KN.m - 120 KN.m = 0
By (5m) - 320 KN.m = 0
By (5m) = 320 KN.m
By = 320 KN.m / 5m
By = 64 KN
+↑ ΣFy = 0
Ay - 60 KN - 50 KN + 64 KN = 0
Ay = 46 KN
Sistema Real
Intervalo
0 ≤ x ≤ 2
M1 = 46 KN x
M1 = 46 KN X
M2 = 46 KN x - 60 KN (x-2)
M3 =
25x
25x - P(x/2)
50x - 25x (x/2) = 50x - 12.5x²
Intervalo
0 ≤ x ≤ 2
25 KN/m
By
25x (x/2) =
25x²/2 = 12.5x²
Silky

SMART BOOK

Cano Vázquez Blanca Yoseline



$\Sigma M = 0$

$+\circlearrowleft \Sigma M_A =$

$-120\,lb\,(60\,pulg) + E_y\,(45\,pulg) - 300\,lb\,(25\,pulg) - 120\,lb\,(10\,pulg) = 0$

$-7200\,lb.pulg + E_y\,(45\,pulg) - 7{,}500\,lb.pulg - 1{,}200\,lb.pulg = 0$

$-15{,}900\,lb.pulg + E_y\,(45\,pulg) = 0$

$E_y\,(45\,pulg) = 15{,}900\,lb.pulg$

$E_y = \frac{15900\,lb.pulg}{45\,pulg}$

$E_y = 353.33\,lb$

$+\uparrow \Sigma F_y = 0$

$-120\,lb + C_y - 300\,lb + 353.3\,lb - 120\,lb = 0$

$-353.33\,lb + C_y = 0$

$C_y = 186.67\,lb$

Silky