ALUMNO(A): GRISEYDA JOACHIN VELAZQUEZ

DOCENTE: ARQ. PEDRO ALBERTO GARCÍA LÓPEZ

MATERIA: ESTÁTICA PARA LA ARQUITECTURA

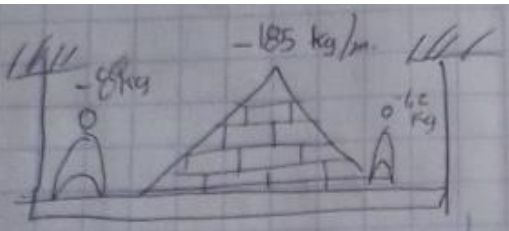
ACTIVIDAD: EQUILIBRIO DE UN CUERPO RÍGIDO

CUATRIMESTRE: 3° CUATRIMESTRE

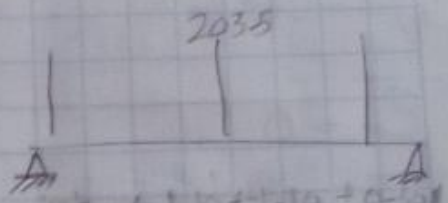
GRUPO: A

LUGAR Y FECHA: 08/07/2022

Comitán de Domínguez Chiapas 2022



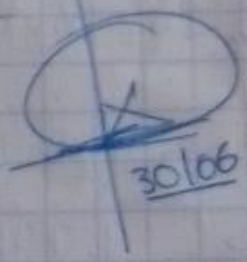
+1.20 t — 2.20m — 10.60 m t



$P = \frac{w \cdot l}{2}$ $up = \frac{L}{2}$

$P = \frac{+185\ kg/m \cdot 2.20m}{2} = -\frac{407}{2} = -203.5\ kg$

$Up = \frac{2.20}{2}m = 1.10\ m$



$\Sigma_M = 0$

$= [\Sigma - 80\ kg \cdot (1.20\ m)] + [-203.5\ kg/m\ (2.30m)] + [-612\ kg\ (3.40)]$

$-96 + 468.03 + 216.30$

$-774.99 \text{ kg} + B\,4.00 = 0$

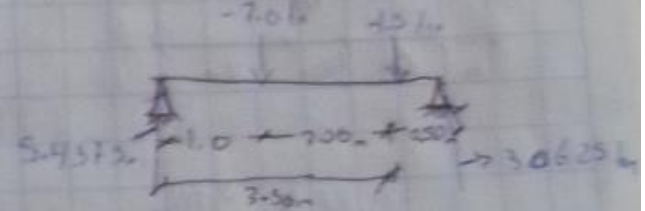
$\frac{774.990}{4} = 193.7125 \text{ kg/m}$

$\Sigma F_y = 0$

$(-80 \text{ kg} + 200.3) + (-62.49) + (193.7125)$

$A = 131.7875 = 0$

$A = 131.7875 \text{ kg/m}$

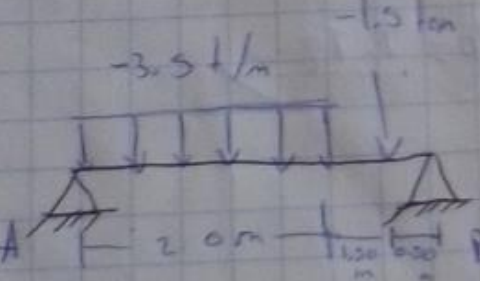


$P = (-3.5 \text{ t/m})\,2.0\text{ m}$

$P = -7.0 \text{ ton}$

$Up = \frac{2.0\text{ m}}{2} = 1.0\text{ m}$

$\Sigma M = 0$



$\Sigma M = 0$

$[(-7.0 \text{ t})(1.0\text{ m})] + [(-1.50 \text{ t/m})(3.50\text{ m})] + [(B)\,4.0\text{ m})] = 0$

$-7 \text{ t/m} - 5.25 \text{ t/m} + B(4\text{m}) = 0$

$-12.25 \text{ t/m} + B(4\text{m}) = 0$

$B = \frac{12.25 \text{ t/m}}{4\text{ m}} = 3.0625 \text{ ton}$

$\Sigma F_y = 0 \quad A = 7 \text{ ton} - 1.50 \text{ ton} + 3.0625 \text{ ton} = 0$

$A = -8.50 \text{ ton} + 3.0625 \text{ ton} = 0$

$A = 5.4375 \text{ ton} = 0 \rightarrow$

$A = 5.4375 \text{ ton}$

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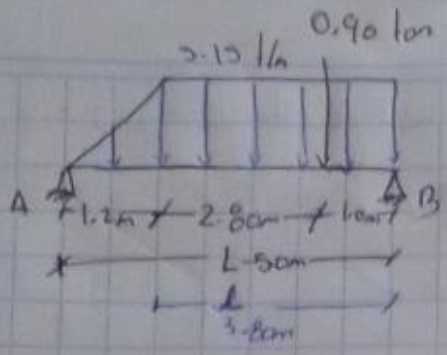
$\Sigma F_y = 0$

$2.4375 \text{ ton} - 7.0$

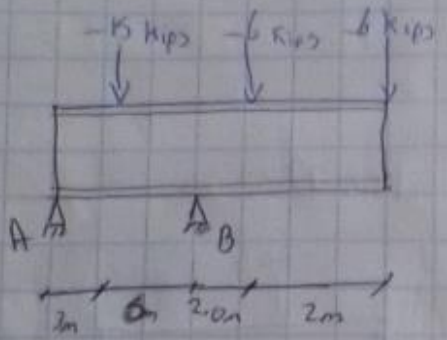
$+ 3.0625 =$



$P = \left[\frac{3.0m + 3.80m}{2}\right] \cdot 3.15\ k/ft$

$P = (4.4cm)\ 3.15\ k/ft$

$P = 13.86\ k/m$



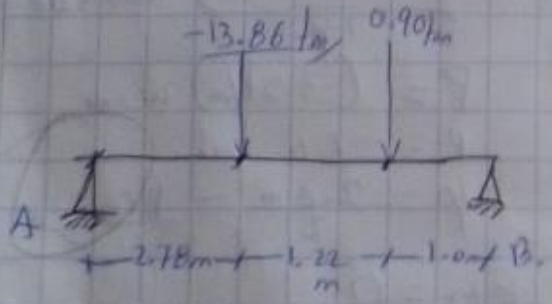
$Up = \frac{[2(3.0m)^2] - (3.80m)^2 + [2(5m)(3.8m)]}{3(5m + 3.8m)}$

$Up = 50m^2 - 14.44m^2 + [19m(3.80m)]$
$3(8.8m)$

$= 35.56\ m^2 + 38\ m$

$Up = \frac{73.56\ m^2}{3(8.80m)} = \frac{73.56m}{26.40}$

$Up = 2.78\ m$



$\Sigma M = 0$

$+[(-13.86\ k/m)(2.78m)] + [(0.90\ k/m)(4m)] + [(B)(5m)] = 0$

$-38.530\ k/m - 3.6 + [(B)(5m)] = 0$

$-42.1308 + B(5m) = 0$

$B = \frac{42.1308\ k/m}{5\ m} = 8.426\ k/m$

$\Sigma F_y = 0$

$A - 13.86 \text{ ton} + 0.90 \text{ ton} + 8.426 \text{ ton}$

$A - 14.76 \text{ ton} + 8.426 \text{ ton}$

$A - 6.334 \text{ ton}$

$A = 6.334 \text{ ton}$

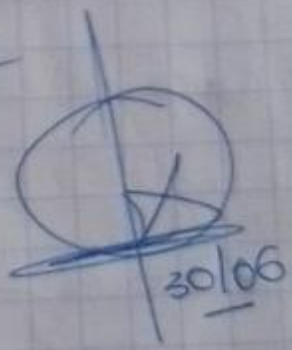
$\Sigma m = 0$

$[(15 \text{ kips})(3m)] + [(-6 \text{ kips})(11m)] + [(-6 \text{ kips})(3m)] + [B(9m)] = 0$

$-45 \text{ kips} - 66 \text{ kips} - 18 \text{ kips} + B(9m) = 0$

$-189 \text{ kips} + B(9m) = 0$

$B = \frac{189}{9} = 21 \text{ kips}$



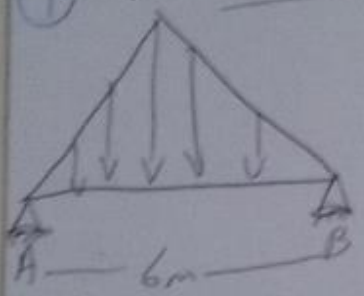
$\Sigma F_y = 0$

$A - 15 \text{ kips} - 6 \text{ kips} + 21 \text{ kips} = 0$

$A - 6 = 0$

$A = 6 \text{ kips}$

① $w = 0.32$ ton



$P = 0.32 \text{ ton/m} (6\text{m}) = 0.96 \text{ ton}$

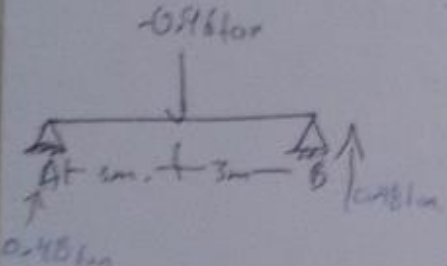
$UP = \frac{6}{2} = 3\text{m}.$

$\Sigma M_A = 0$

$[-0.96 \text{ ton}(3\text{m})] + [B(6\text{m})] = 0$

$-2.88 \text{ ton-m} + B(6\text{m}) = 0$

$B = \frac{2.88 \text{ ton-m}}{6\text{m}} = 0.48 \text{ ton}$



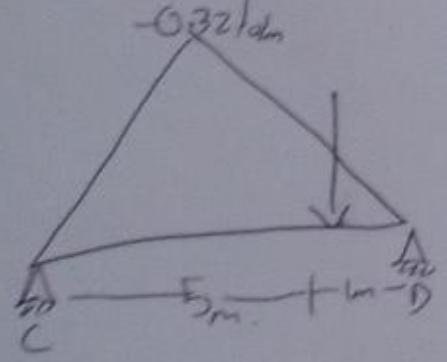
$\Sigma F_y A = 0$

$A - 0.96 \text{ ton} + 0.48 \text{ ton} = 0$

$A = 0.48 \text{ ton}$

$A = 0.48 \text{ ton}$

② 0.32 t/m



$P = \frac{w \cdot L}{2} = \frac{0.32 \text{ ton}(6\text{m})}{2} = 0.96 \text{ ton}$

$UP = \frac{1}{2} = \frac{6}{2} = 3\text{m}.$

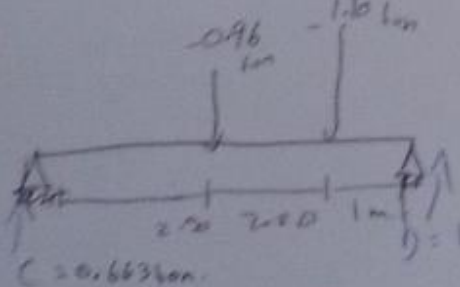
$\Sigma M_C = 0$

$[-0.96 \text{ ton}(3\text{m})] + [-1.10 \text{ ton}(5\text{m})] + [D(6\text{m})] = 0$

$-2.88 \text{ ton-m} - 5.50 \text{ ton-m} + D(6\text{m}) = 0$

$-8.380 \text{ ton-m} + D(6\text{m}) = 0$

$D = \frac{8.380 \text{ ton-m}}{6\text{m}} = 1.396 \text{ ton}$



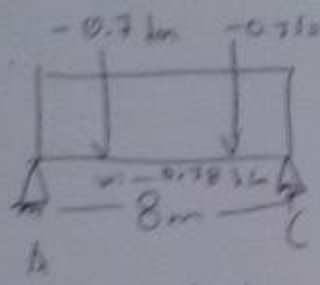
$\Sigma F_y = 0$

$C - 0.96 \text{ ton} - 1.10 \text{ ton} + 1.396 \text{ ton} = 0$

$C - 2.06 \text{ ton} + 1.396 \text{ ton} = 0$

$C - 0.663 \text{ ton}$

$C = 0.663 \text{ ton}.$



$R = w \cdot L = (0.78 \text{ ton/m})(8\text{m}) = 6.24 \text{ ton}$

$UP: \frac{L}{2} = \frac{8}{2} = 4.0\text{m}$

$\Sigma = 0$

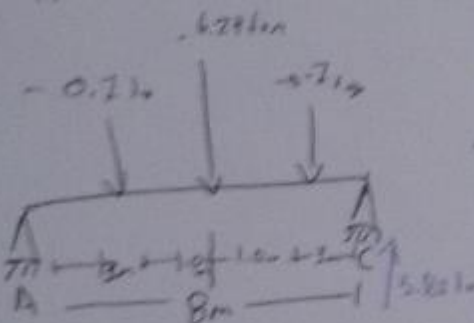
$[-0.7 \text{ ton} \quad (3\text{m})] + [-6.24 \text{ ton}(4\text{m})] + [-0.7$

$(5\text{m})] + [C(8\text{m})] = 0$

$-2.10 \text{ ton-m} - 24.96 \text{ ton-m} - 3.5 \text{ ton-m} + C(8\text{m}) = 0$

$-30.56 \text{ ton-m} + C(8\text{m}) = 0$

$C = \frac{30.56 \text{ ton-m}}{8\text{m}} = 3.82 \text{ ton}$



$\Sigma_{yA} = 0$

$A - 0.7 \text{ ton} - 6.24 \text{ ton} + 3.820 \text{ ton} = 0$

$A = 0.7 \text{ ton} - 6.24 \text{ ton} - 0.7 \text{ ton} + 3.820 \text{ ton} = 0$

$A - 7.64 \text{ ton} + 3.820 = 0$

$A = 3.820 \text{ ton}$

$A = 3.820 \text{ ton}$

$A = 3.820 \text{ ton} + 0.48 \text{ ton} = 4.38 \text{ ton}$

$B = 0.48 \text{ ton}$

$C = 3.820 \text{ ton} + 0.663 \text{ ton} = 4.483 \text{ ton}$

$D = 1.396 \text{ ton}$