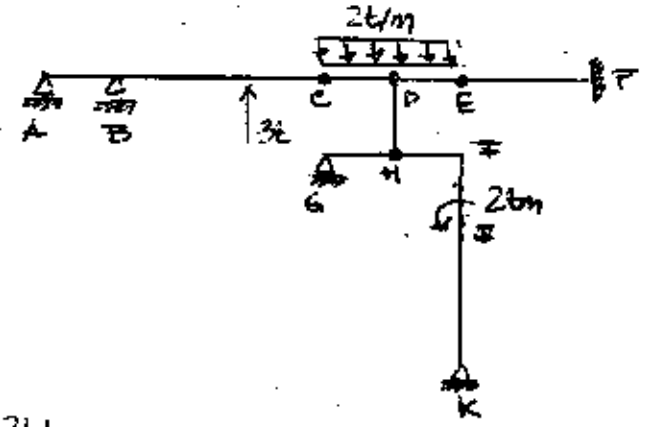
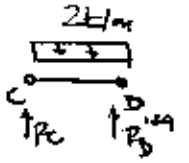
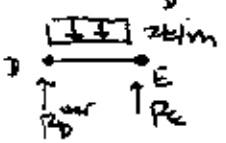
Solución 1er PARCIAL Resistencia 1N 2009

Ejercicio 1

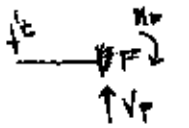




$R_C = R_D^{izq} = 1t$

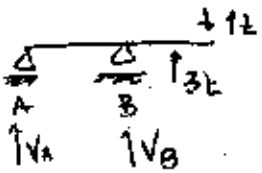


$R_D^{der} = R_E = 1t.$



$V_F = 1t$

$M_F = 2tm$

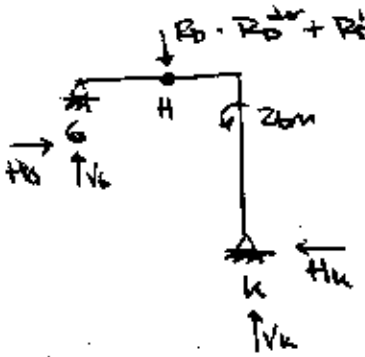


$M_A = 0 \quad V_B \times 1m + 3 \times 2m - 1t \times 3m = 0$

$V_B = -3t$

$V_A + V_B = 1 - 3 = -2t$

$V_A = 1t.$



eq H: $H_G = H_K$

eq V: $V_G + V_K = 2t. \quad V_K = 2t.$

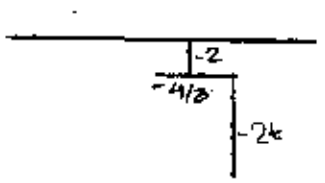
$eq\,M_{Hizq}$: $V_G = 0$

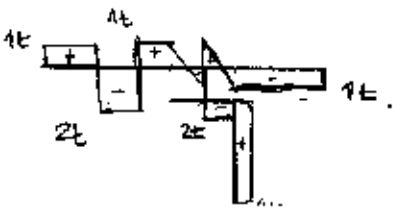
$eq\,M_{der}$: $2tm + V_K \times 1 - H_K \times 3 = 0$

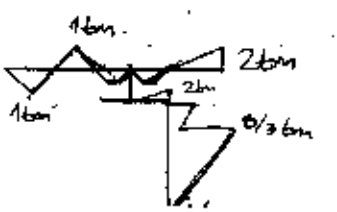
$H_K = 4/3\,t$

$H_G = H_K = 4/3\,t$

Diagramas



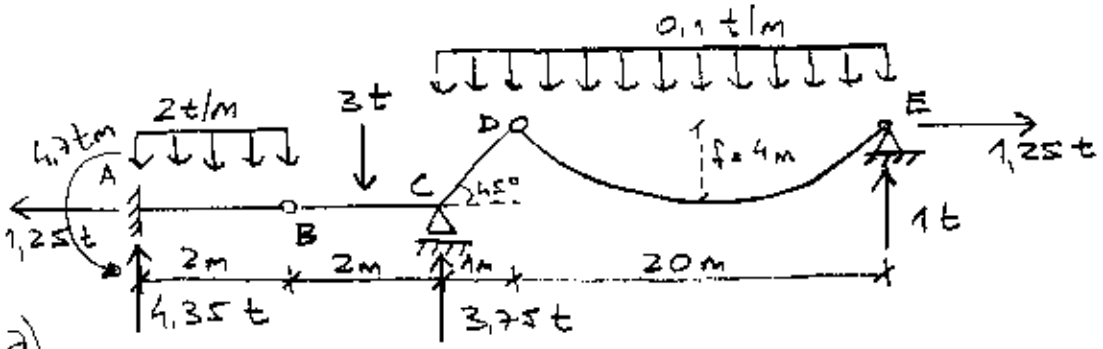




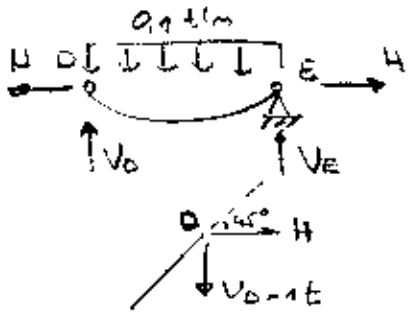
PLAN 97 — Solución Primer Parcial — 26/09/09

Resistencia de Materiales 1N

EJERCICIO 2



a)

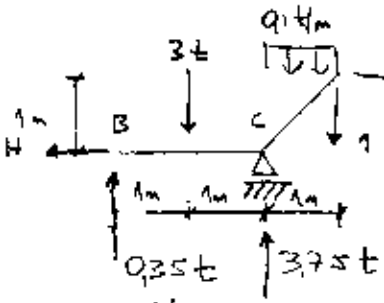


$\times$ Simetría $V_D = V_E = \frac{0,1 \cdot 20}{2} = 1\,t$

$N_D = H \cdot \frac{\sqrt{2}}{2} - 1\frac{\sqrt{2}}{2} = 0,125\sqrt{2} \Rightarrow \underline{H = 1,25\,t}$

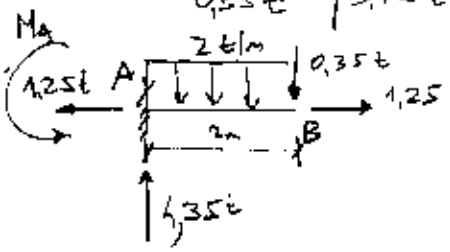
$f = \frac{pL^2}{8H} = \frac{0,1\ 20^2}{8\ 1,25} = 4M \Rightarrow \boxed{f_{max} = 4\,m}$

b)



$M_B = 0 \Rightarrow V_C \cdot 2 - 3 \cdot 1 - 1 \cdot 3 - 1,25 \cdot 1 - 0,1 \cdot 1 \cdot 2,5 = 0$

$\boxed{V_C = 3,75\,t} \Rightarrow \boxed{V_B = 0,35\,t}$



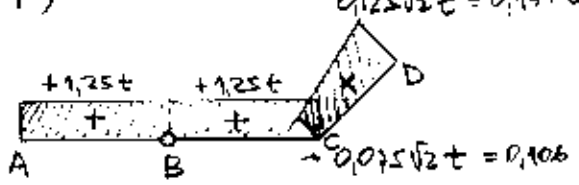
$\boxed{H_A = 1,25\,t}$

$V_A = 2 \cdot 2 + 0,35 = 4,35\,t \Rightarrow \boxed{V_A = 4,35\,t}$

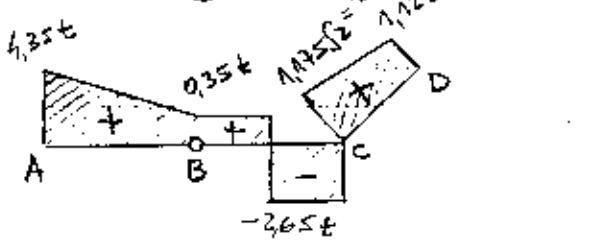
$M_A = 0,35 \cdot 2 + 2 \cdot 2 \cdot 1 = 4,7\,tm$

$\Rightarrow \boxed{M_A = 4,7\,tm}$

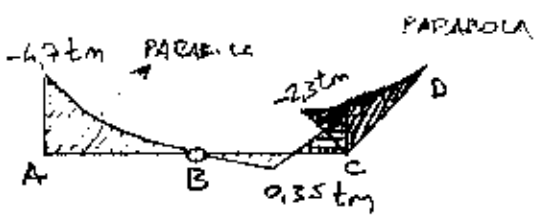
c)



(N)



(V)



$M_C = 1 + 1,25 + \frac{0,1\ 1^2}{2} = 2,3\,tm$

$M = -4,7 + 4,35 \cdot 3 - 2 \cdot 2 \cdot 2 = 0,35\,tm$