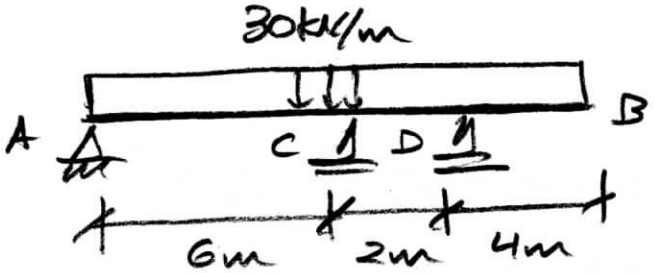
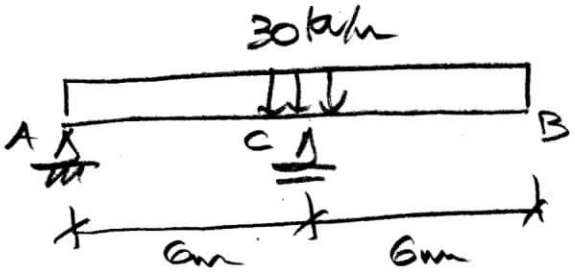
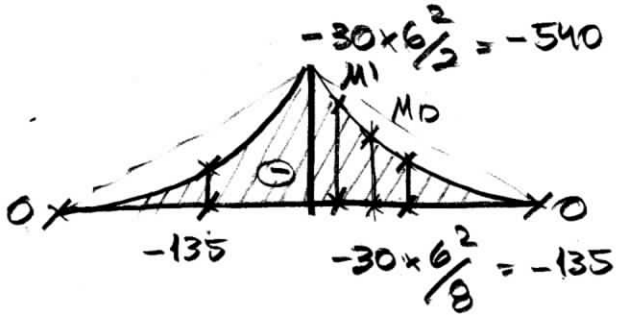
TE2-4.3

· DETERMINAR AS REAÇÕES DE APOIO

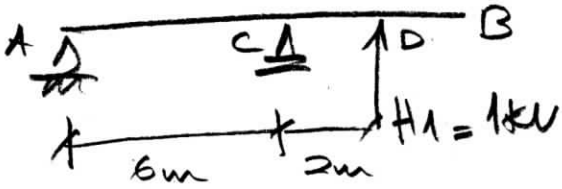


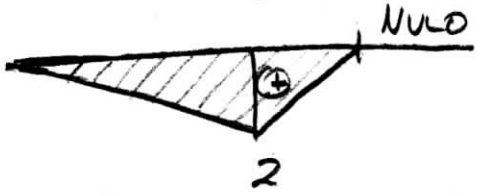
SISTEMA PRINCIPAL CASO 0





SISTEMA AUXILIAR CASO 1





$M_D = -30\times4^2/2 = -240$

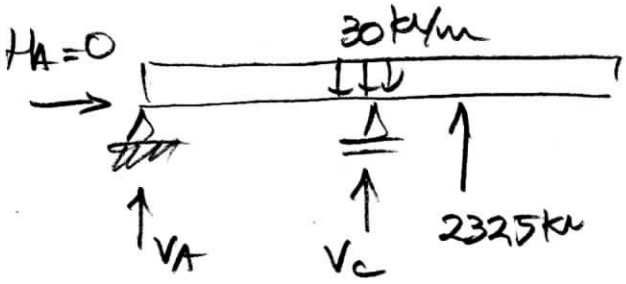
$M' = -30\times5^2/2 = -375$

$$\delta_{D0} = \frac{1}{EI}\left[\frac{1}{6}\times6m\times2kNm\left(2\times-135kNm-540kNm\right)\right] + \frac{1}{EI}\left[\frac{1}{6}\times2m\times2kNm\left(2\times-375kNm-540kNm\right)\right] = \underline{-2480/EI}$$

$$\delta_{D1} = \frac{1}{EI}\left[\frac{1}{3}\times6m\times2kNm\times2kNm\right] + \frac{1}{EI}\left[\frac{1}{3}\times2m\times2kNm\times2kNm\right] = 10,667/EI$$

$$V_D = -\delta_{D0}/\delta_{D1} = \frac{+2480/EI}{10,667/EI} = \underline{232,5kN\uparrow}$$

(=)



$\curvearrowright^{+} \Sigma M_A = 0 \quad -232{,}5\,kN \times 8\,m - V_C \times 6\,m + 30\,\frac{kN}{m} \times (12\,m)^2/2 = 0$

$V_C = 1/6\,(-232{,}5 \times 8 + 15 \times 12^2) = \underline{50\,kN} \uparrow$

$\uparrow^{+} \Sigma F_V = 0 \quad V_A + 50\,kN + 232{,}5\,kN - 30\,\frac{kN}{m} \times 12\,m = 0$

$V_A = 30 \times 12 - 50 - 232{,}5 = \underline{77{,}5\,kN} \uparrow$