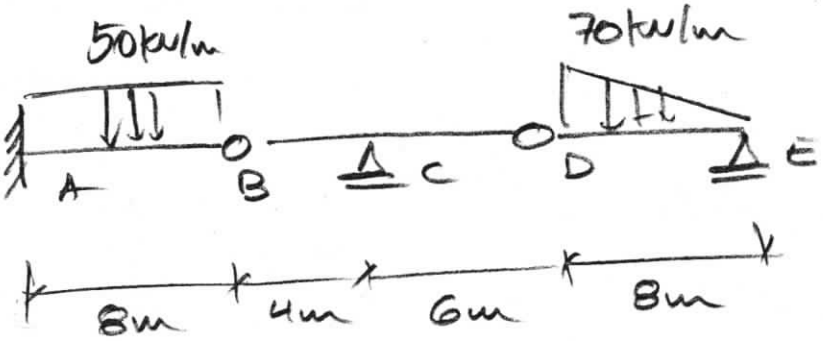
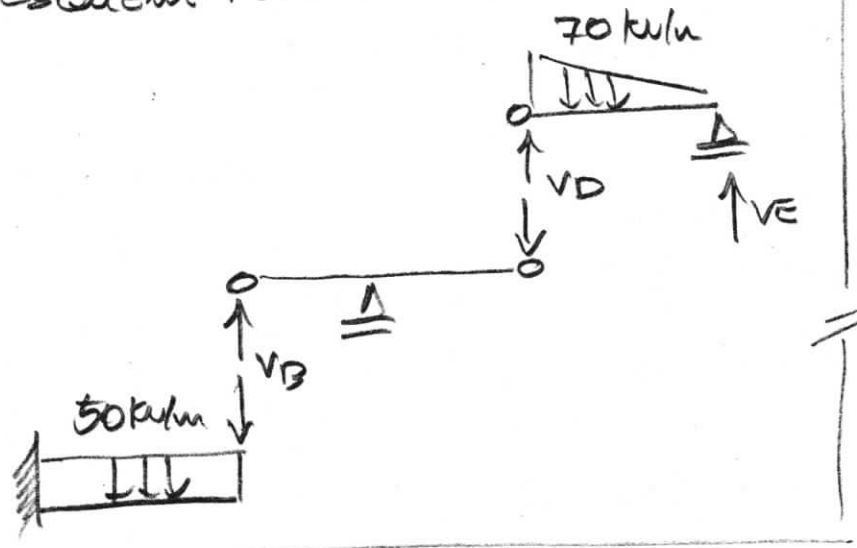
TE1-3.14



ESQUEMA FUNCIONAL:



TRECHO DE

$RES = 70\,kN/m \times 8m \times 1/2$

$RES = 280\,kN$

$\bar{x} = 2/3\,8 = 16/3\,m$

(A PARTIR DE E)

$\sum M_E = 0 \circlearrowleft^{+} \quad V_D \times 8 - 280 \times 16/3 = 0 \quad V_D = 186{,}67\,kN \uparrow$

$q_{DE}(x) = 70 - 70/8\,x$

$V_{DE}(x) = -\int 70 - 70/8\,x\,dx = \frac{70}{8}x^2/2 - 70x + C_1 \therefore C_1 = V_D$

$V_{DE}(x) = \frac{70}{16}x^2 - 70x + 186{,}67$

$M_{DE}(x) = \int \frac{70}{16}x^2 - 70x + 186{,}67\,dx$

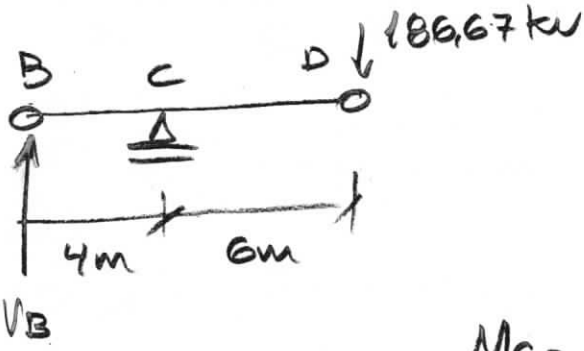
$M_{DE}(x) = \frac{70x^3}{48} - \frac{70x^2}{2} + 186{,}67x + C_2 \quad \therefore C_2 = M_D = 0$

$M_{DE}(x) = \frac{35}{24}x^3 - 35x^2 + 186{,}67x$

$$M_{DE}(x=\tfrac{1}{3}8) = \frac{35}{24}\times\left(\frac{8}{3}\right)^3 - 35\left(\frac{8}{3}\right)^2 + 186{,}67\cdot\frac{8}{3} = +276{,}55\ \text{kNm}$$

$$M_{DE}(x=\tfrac{2}{3}8) = \frac{35}{24}\left(\frac{16}{3}\right)^3 - 35\left(\frac{16}{3}\right)^2 + 186{,}67\cdot\frac{16}{3} = +221{,}25\ \text{kNm}$$

TRECHO BCD



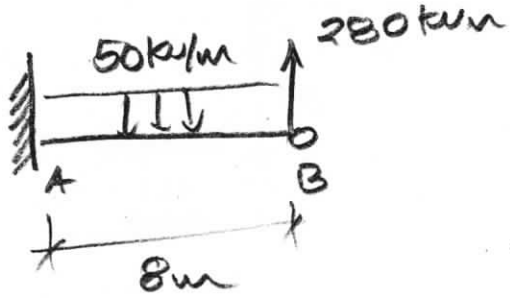
$\Sigma M_C = 0 \curvearrowright (+)$

$186{,}67 \times 6 + V_B \times 4 = 0$

$V_B = -\frac{1}{4}\times 6 \times 186{,}67 = -280{,}00\ \text{kN}$

$M_C = 186{,}67 \times 6 = 1120{,}0\ \text{kNm}$

TRECHO AB



$M_A = 280\times 8 - 50\times 8\times 8/2$

$M_A = +640\ \text{kNm}$

$M_{A\bar{B}} = \frac{+640}{2} + 50\cdot\frac{8^2}{8} = +720\ \text{kNm}$

(M) kNm

