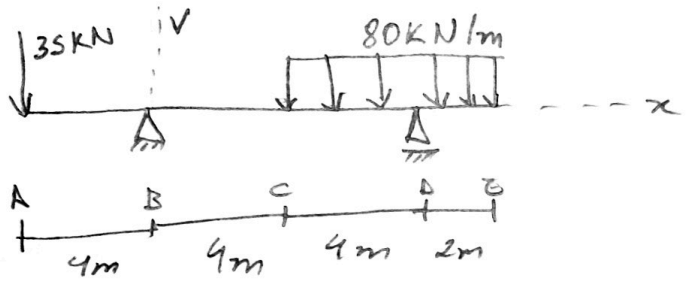
ABI PZ

LUIS HENRIQUE NASCIMENTO CAVALCANTE

(1)



Logo: $\Sigma F_V = 0 \therefore -35 + R_B - 480 + R_D = 0$

$$R_B + R_D = 515 \Rightarrow R_B + 402{,}5 = 515$$

$$R_B = 112{,}5\,KN$$

$$\Sigma M_B = 0 \therefore +35 \cdot 4 - 480 \cdot 7 + R_D \cdot 8 = 0$$

$$8R_D = -140 + 3360$$

$$R_D = \frac{3220}{8} = 402{,}5\,KN$$

Consultando a tabela: $\vartheta_A = \frac{-P \cdot L^3}{3 \cdot E \cdot I}$

$$\vartheta_A = \frac{35 \cdot 4^3}{3 \cdot 7{,}02 \cdot 10^4} = -0{,}01063\,m$$

$$\theta_B = \frac{M \cdot L}{3 \cdot E \cdot I} = \frac{140 \cdot 8}{3 \cdot 7{,}02 \cdot 10^4} = 0{,}00531\,rad$$

{ Deslocamento em A pela rotação em B

Portanto $\vartheta_A = -4 \cdot 0{,}00531 = -0{,}02127\,m$

Para a carga ao longo de CD

$$\theta_B = \frac{w \cdot A^2}{24 \cdot L \cdot EI}(2L^2 - a^2) = \frac{80 \cdot 4^2}{24 \cdot 8 \cdot 7{,}02 \cdot 10^4} \cdot (2 \cdot 8 - 16)$$

$\theta_B = 0{,}01063\,rad \Rightarrow \vartheta_A = 4 \cdot 0{,}01063 = 0{,}04254\,m$

Para o trecho da carga distribuída em DE:

$$\theta_B = \frac{m \cdot L}{6 \cdot E I} = \frac{160 \cdot 8}{6 \cdot 7{,}02 \cdot 10^4} \Rightarrow \underline{\theta_B = 0{,}00303 \text{ rad}}$$

$$\theta_A = -4 \cdot 0{,}00303 = \underline{-0{,}01215 \text{ m}}$$

O deslocamento em A será dado pela soma dos deslocamentos calculados:

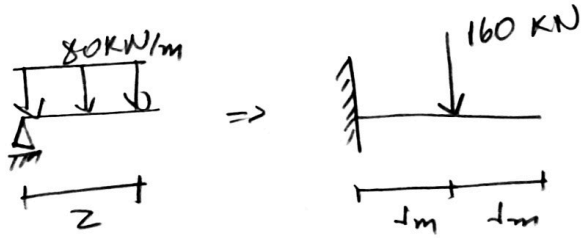
$$v_A = -0{,}01063 - 0{,}02127 + 0{,}04254 - 0{,}01215$$

$$v_A = \underline{-0{,}00151 \text{ m}} \text{ ou } \underline{-1{,}51 \text{ mm}}$$

Para o ponto D:

$$\theta_{CD} = \frac{3 \cdot w \cdot L^3}{128 \cdot E I} = \frac{3 \cdot 80 \cdot 8^3}{128 \cdot 7{,}02 \cdot 10^4} = \underline{0{,}0137 \text{ rad}}$$

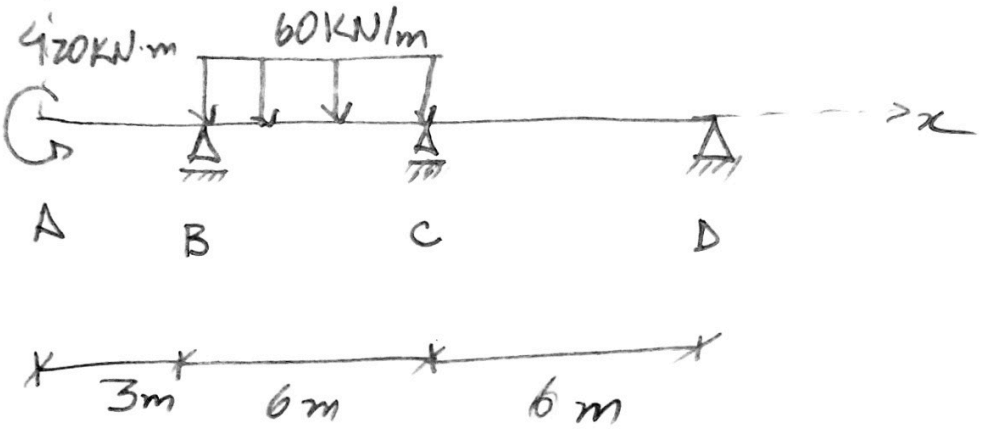
Para o trecho DE



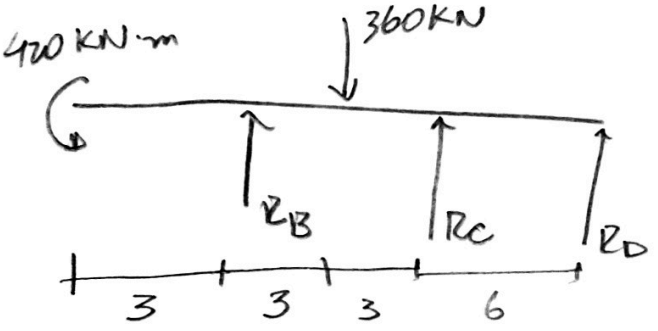
$$\theta_m = \frac{80 \cdot 2 \cdot 1 \cdot 8}{3 \cdot E \cdot I} =$$

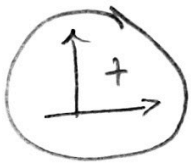
RESOLUÇÕES AB1 P2

(2)



DCL:





Logo: $\Sigma F_V = 0 \therefore \quad R_B + R_C + R_D - 360 = 0$

$$R_B + R_C + R_D = 360$$

$\Sigma m_B = 0 \therefore \quad 420 - 360 \cdot 3 + 6 \cdot R_C + 12 \cdot R_D = 0$

$6R_C + 12R_D = 660 \Rightarrow R_C + 2R_D = 110$