Mecânica dos Sólidos 3
Avaliação 2-AB1

08/09/21

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$\rightarrow EI = 70200 \ kN.m^2$

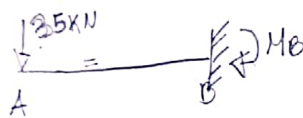**1°)** $I_z = 351 \times 10^6 \ mm^4$; $E = 200 \ GPa = 200 \times 10^6 \ kPa$; $w = 80 \ kN/m$

$= 351 \times 10^{-6} \ m^4$

* Considerando seção transversal constant

* Considerando os sentidos positivos:
   p/ cima e anti-horário.
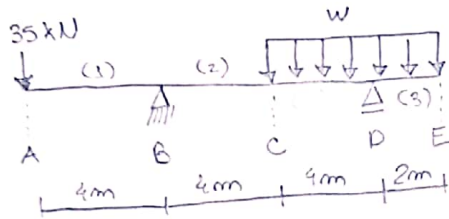
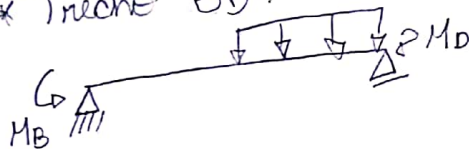*** Trecho AB:**

$M_B = 35 \times 4 = 140 \ kN.m$

$V_A = \dfrac{-Mx}{6LEI}(2L^2 - 3Lx + x^2) \Rightarrow \begin{cases} x = 4 \ m \\ M = 140 \ kN.m \\ L = 8 \ m \end{cases} \Rightarrow \boxed{V_{A_1} = 7,9772 \times 10^{-3} \ m}$

* Trecho BD:

$M_D = \dfrac{w \times 2^2}{2} = 160 \ kN.m$

$\begin{cases} L = 8 \ m \ , \ a = 4 \ m \\ EI = 70200 \ kN.m^2 \end{cases}$

$V_A = \dfrac{-wa^3}{24LEI}(4L^2 - 7aL + 3a^2) =$

$\boxed{V_{A_2} = -3,72275 \times 10^{-2} \ m}$

* Trecho DE:
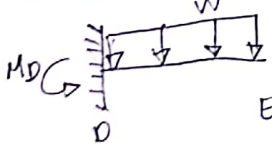
$V_A = \dfrac{-Mx}{6LEI}(2L^2 - 3Lx + x^2)$ $\begin{cases} M = -160 \ kN.m \\ L = 8 \ m \\ x = 4 \ m \end{cases}$

$\boxed{V_{A_3} = 0,1168 \times 10^{-3} \ m}$

Portanto, o deslocamento total será:

$V_A = V_{A_1} + V_{A_2} + V_{A_3} \Rightarrow V_A = -0,0201335 \ m$

$\boxed{V_A = 20,13 \ mm \ \downarrow}$