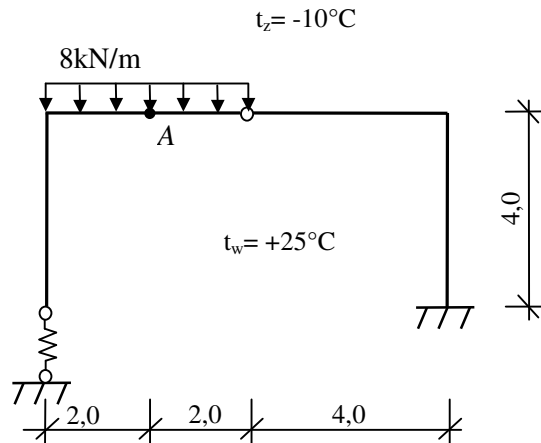


Zad. Wyznaczyć przemieszczenie pionowe pktu A wywołane obciążeniem zewnętrznym (pomiąć wpływ T i N) oraz wpływem temperatury.

Schemat układu:



$$t_m = 7,5^\circ\text{C}$$

$$|\Delta t| = 35^\circ\text{C}$$

$$t_0 = t_{sr} - t_m = 0^\circ\text{C}$$

$$\alpha_t = 1,2 \cdot 10^{-5} \frac{1}{^\circ\text{C}}$$

$$EI = \text{const}$$

$$\text{I180: } I = 1450 \text{ cm}^4$$

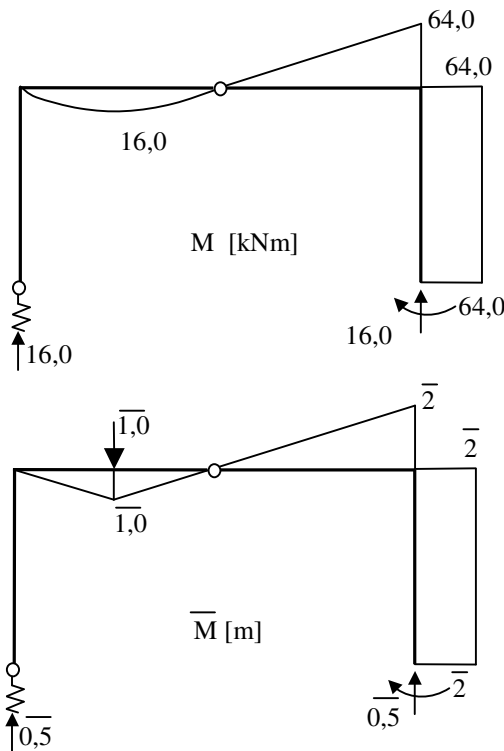
$$E = 205 \text{ GPa}$$

$$EI = 2972,5 \text{ kNm}^2$$

$$k = 5000 \frac{\text{kN}}{\text{m}}$$

RPW:

$$\bar{1} \cdot v_A = \sum \int_s \frac{\bar{M} M}{EI} ds + \sum \bar{R} R \frac{1}{k} + \sum \int_s \bar{M} \frac{\alpha_t \cdot \Delta t}{h} ds + \sum \int_s \bar{N} \cdot t_0 ds$$



$$\bar{1} \cdot v_A = \frac{1}{EI} \left[\left(\frac{1}{2} \cdot 2 \cdot 1 \cdot \frac{2}{3} \cdot 16 + \frac{2}{3} \cdot 2 \cdot \frac{8 \cdot 2^2}{8} \cdot \frac{1}{2} \cdot 1 \right) \cdot 2 + \frac{1}{2} \cdot 4 \cdot 2 \cdot \frac{2}{3} \cdot 64 + 4 \cdot 2 \cdot 64 \right] + 0,5 \cdot 16 \cdot \frac{1}{5000} +$$

$$+ \frac{1,2 \cdot 10^{-5} \cdot 35}{0,18} \left[\frac{1}{2} \cdot 2 \cdot 1 \cdot 2 - \frac{1}{2} \cdot 4 \cdot 2 - 4 \cdot 2 \right] = \frac{709,3333}{2972,5} + 0,0016 - 0,0233 = 0,2386 + 0,0016 - 0,2333 =$$

$$= 0,2169 \text{ m} = 21,7 \text{ cm} \quad (\text{duuuuzoo :})$$