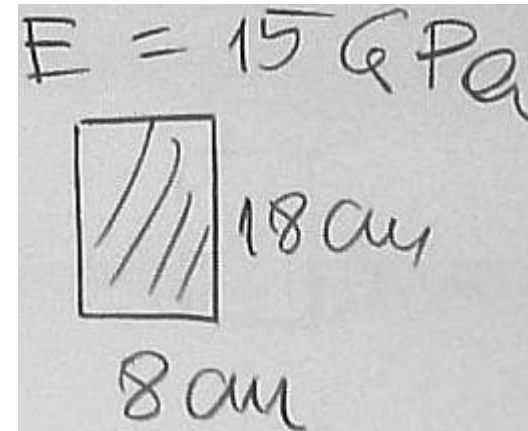
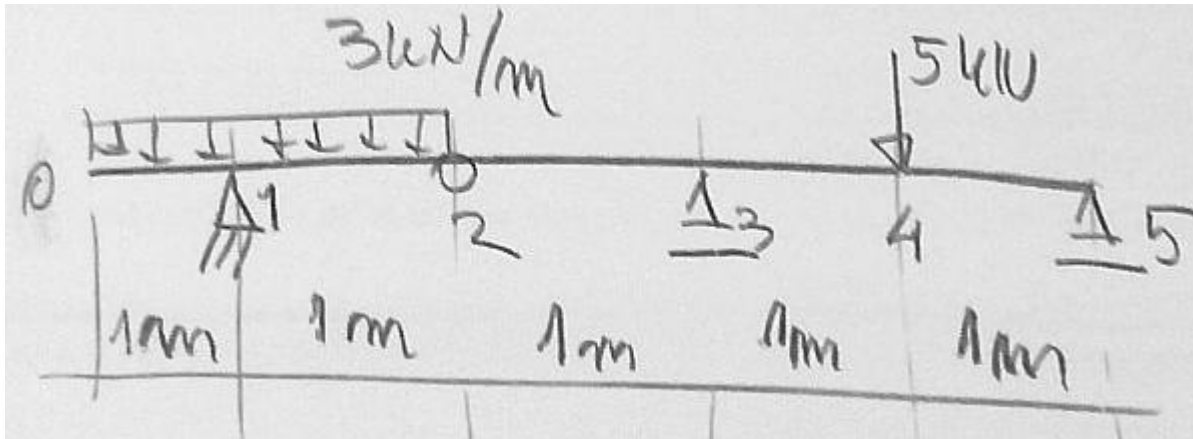


ORIGIN := 0



$$q := 3 \frac{\text{kN}}{\text{m}} \quad P := 5 \text{ kN}$$

$$\underline{L} := 5 \text{ m} \quad b := 8 \text{ cm} \quad h := 18 \text{ cm} \quad \underline{J} := b \cdot \frac{h^3}{12} \quad E := 15 \text{ GPa} \quad J = 3888.000 \text{ cm}^4$$

$$R1 := \frac{q \cdot 2 \text{ m} \cdot 1 \text{ m}}{1 \text{ m}}$$

$$T2 := q \cdot 2 \text{ m} - R1$$

$$R5 := \frac{P \cdot 1 \text{ m} - T2 \cdot 1 \text{ m}}{2 \text{ m}}$$

$$R3 := T2 + P - R5$$

$$R1 = 6 \text{ kN}$$

$$T2 = 0 \text{ kN}$$

$$R5 = 2.5 \cdot \text{kN}$$

$$R3 = 2.5 \cdot \text{kN}$$

$$n := 5 \quad \Delta := \frac{L}{n} = 1 \text{ m}$$

$$\alpha := \frac{\Delta^2}{E \cdot J} \quad \alpha = 1.714678 \cdot \frac{1}{\text{MN}}$$

$$M1(x) := -q \cdot \frac{x^2}{2}$$

$$M2(x) := M1(x) + R1 \cdot (x - 1\text{m})$$

$$M3(x) := M2(x) + q \cdot \frac{(x - 2\text{m})^2}{2}$$

$$M4(x) := M3(x) + R3 \cdot (x - 3\text{m})$$

$$M5(x) := R5 \cdot (L - x)$$

$$i := 0 \ldots n \qquad X_i := i \cdot \Delta$$

$$i := 0 \ldots 1 \qquad M_i := M1(X_i)$$

$$i := 2 \ldots 3 \qquad M_i := M3(X_i)$$

$$i := 4 \ldots n \qquad M_i := M5(X_i)$$

M =			0
0		0	
1		-1.5	
2		0	
3		0	
4		2.5	
5		0	

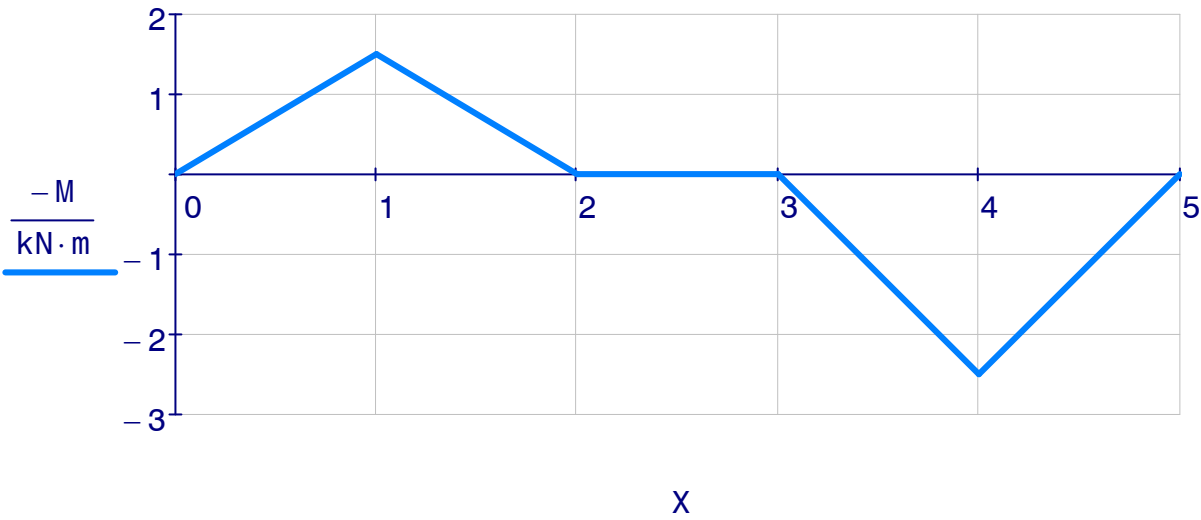
· kN · m

X =			0
0		0	
1		1	
2		2	
3		3	
4		4	
5		5	

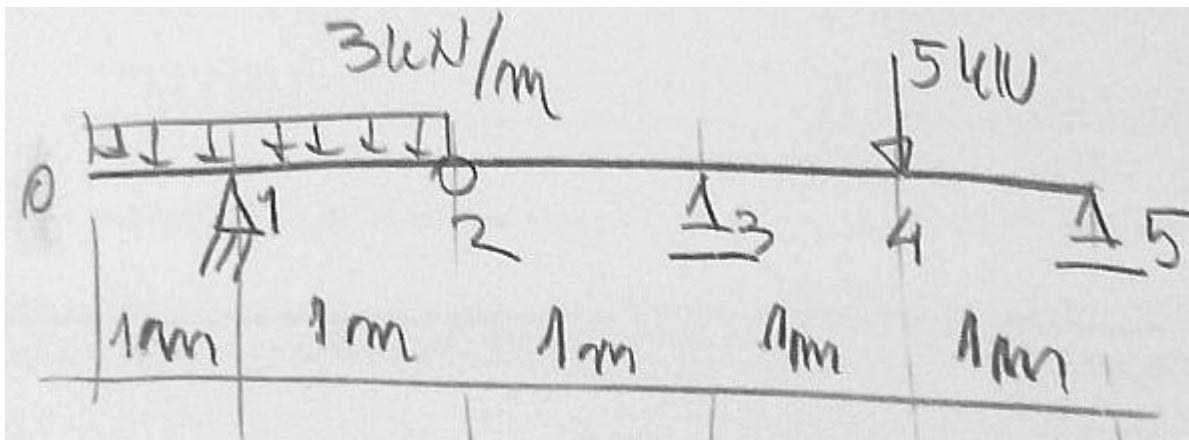
m

Układ równań metody różnic skończonych

$$A \cdot y = \alpha \cdot M$$



$$A := \begin{pmatrix} 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & -2 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 0 & 1 & -2 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$



$$y := \text{lsolve}(A, \alpha \cdot M)$$

$$y = \begin{pmatrix} -4.715 \\ 0 \\ 2.143 \\ 0 \\ -2.143 \\ 0 \end{pmatrix} \cdot \text{mm}$$

