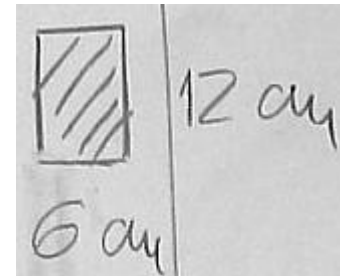
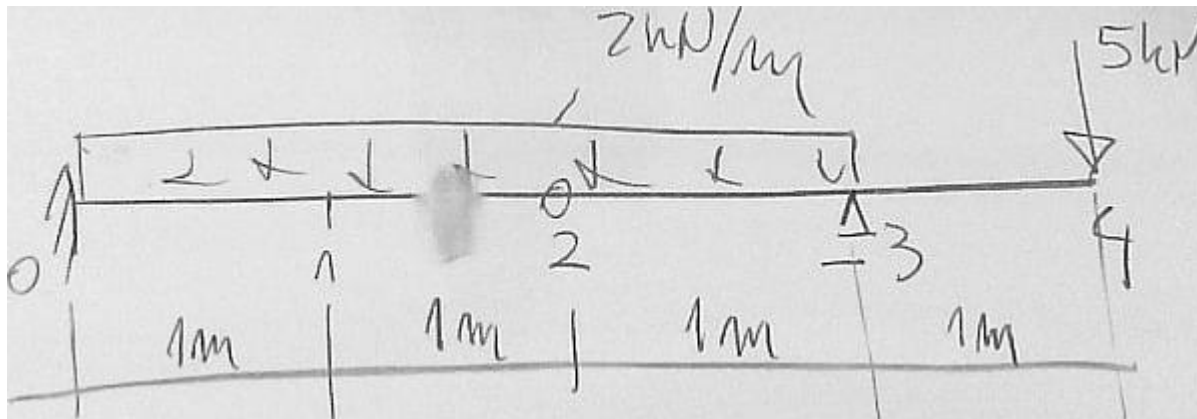


ORIGIN := 0



$$q := 2 \frac{\text{kN}}{\text{m}} \quad P := 5 \text{ kN}$$

$$\underline{L} := 4 \text{ m} \quad b := 6 \text{ cm} \quad h := 12 \text{ cm} \quad \underline{J} := b \cdot \frac{h^3}{12} \quad E := 13 \text{ GPa} \quad J = 864.000 \cdot \text{cm}^4$$

$$R3 := \frac{q \cdot 1 \text{ m} \cdot 0.5 \text{ m} + P \cdot 2 \text{ m}}{1 \text{ m}} \quad T2 := q \cdot 1 \text{ m} + P - R3 \quad R0 := T2 + q \cdot 2 \text{ m} \quad M0 := T2 \cdot 2 \text{ m} + q \cdot 2 \text{ m} \cdot 1 \text{ m}$$

$$R3 = 11 \cdot \text{kN} \quad T2 = -4 \cdot \text{kN} \quad R0 = 0 \cdot \text{kN} \quad M0 = -4 \cdot \text{kN} \cdot \text{m}$$

$$n := 4 \quad \Delta := \frac{L}{n} = 1 \text{ m} \quad \alpha := \frac{\Delta^2}{E \cdot J} \quad \alpha = 8.903134 \cdot \frac{1}{\text{MN}}$$

$$M1(x) := -M0 - q \cdot \frac{x^2}{2} + R0 \cdot x$$

$$M2(x) := -P \cdot (L - x)$$

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

$$i := 0 \ldots 3 \qquad M_i := M1(X_i)$$

$$i := 3 \ldots n \qquad M_i := M2(X_i)$$

	0
0	4
1	3
2	0
3	-5
4	0

· kN · m

	0
0	0
1	1
2	2
3	3
4	4

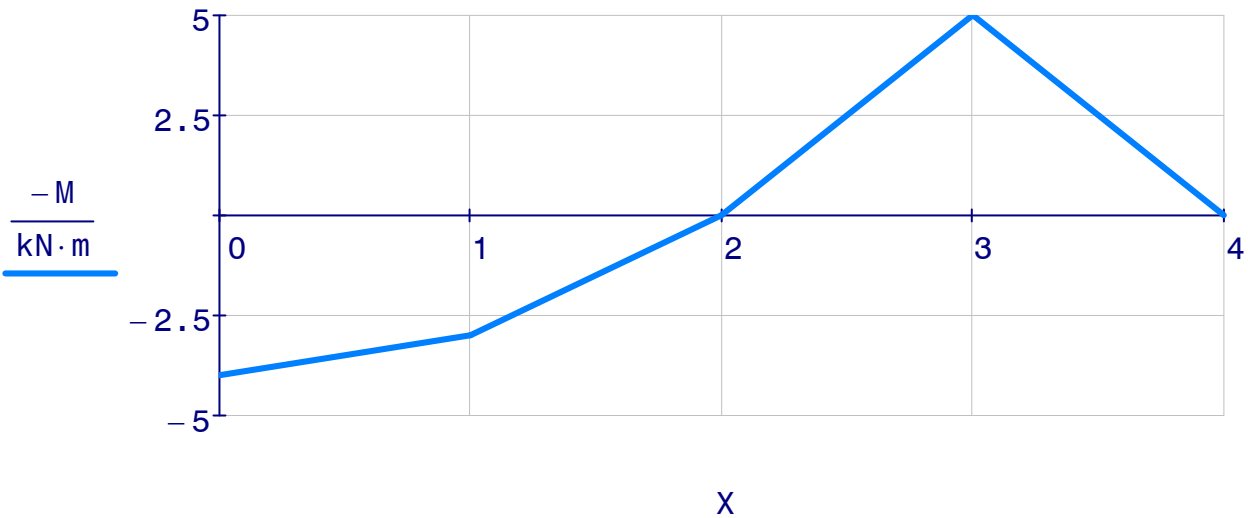
m

M =

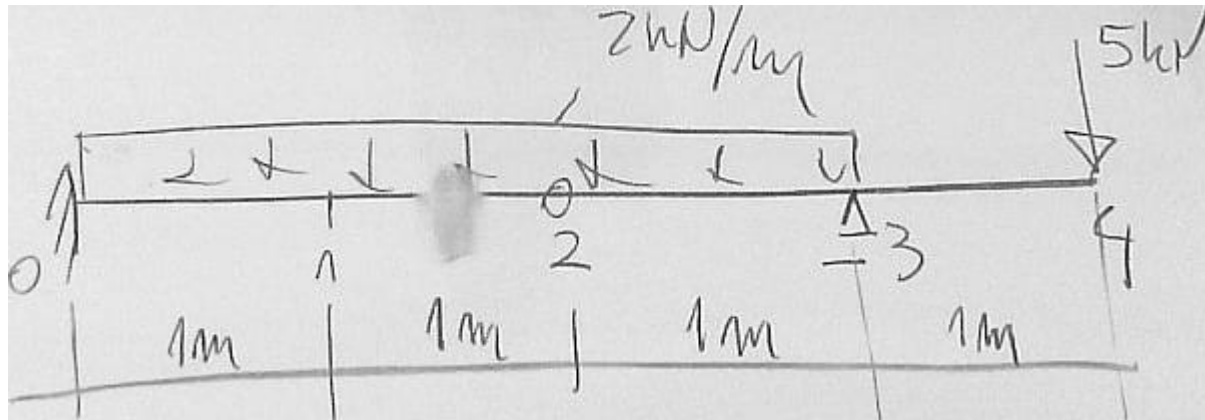
X =

Układ równań metody różnic skończonych

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



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



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

$$y = \begin{pmatrix} 0 \\ 17.806 \\ 62.322 \\ 0 \\ -106.838 \end{pmatrix} \cdot \text{mm}$$

