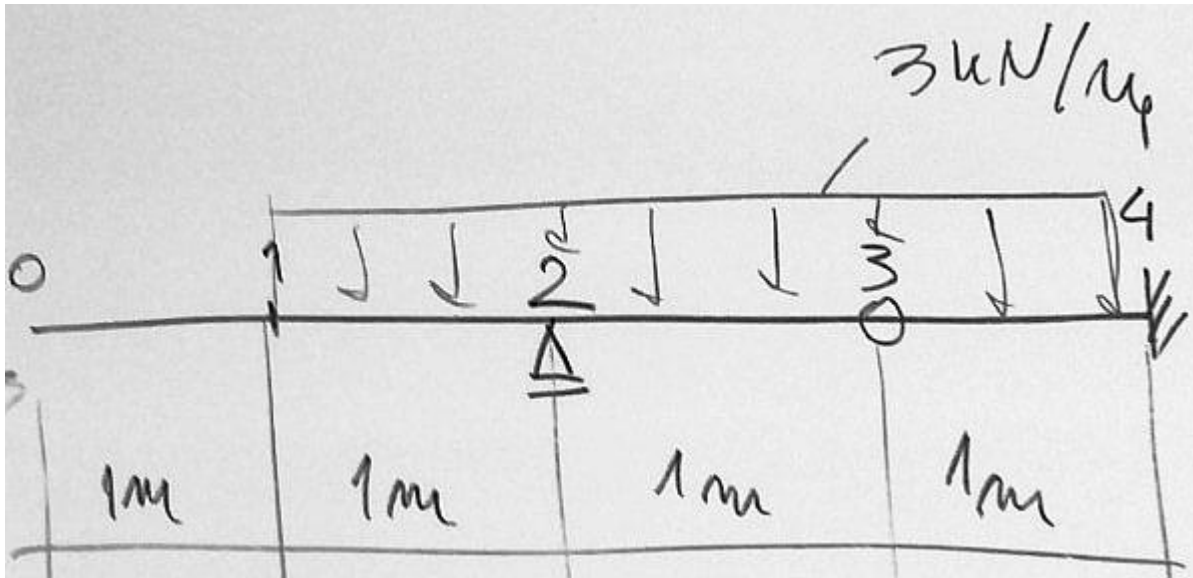


ORIGIN := 0



$$q := 3 \frac{\text{kN}}{\text{m}} \quad P := 0 \text{ kN}$$

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

$$R2 := \frac{q \cdot 2 \text{ m} \cdot 1 \text{ m}}{1 \text{ m}} \quad T3 := q \cdot 2 \text{ m} - R2 \quad R4 := q \cdot 3 \text{ m} - R2$$

$$R2 = 6 \cdot \text{kN} \quad T3 = 0 \cdot \text{kN} \quad R4 = 3 \cdot \text{kN}$$

$$n := 4 \quad \Delta := \frac{L}{n} = 1 \text{ m} \quad \alpha := \frac{\Delta^2}{E \cdot J} \quad \alpha = 1.4289 \times 10^{-3} \cdot \frac{1}{\text{kN}}$$

$$M1(x) := 0$$

$$M_2(x) := -q \cdot \frac{(x - 1m)^2}{2}$$

$$M3(x) := M2(x) + R2 \cdot (x - 2m)$$

$$i := 0 .. n \quad X_i := i \cdot \Delta$$

$$\mathbf{i} := 0 .. 1 \quad M_{\mathbf{i}} := M1(X_{\mathbf{i}})$$

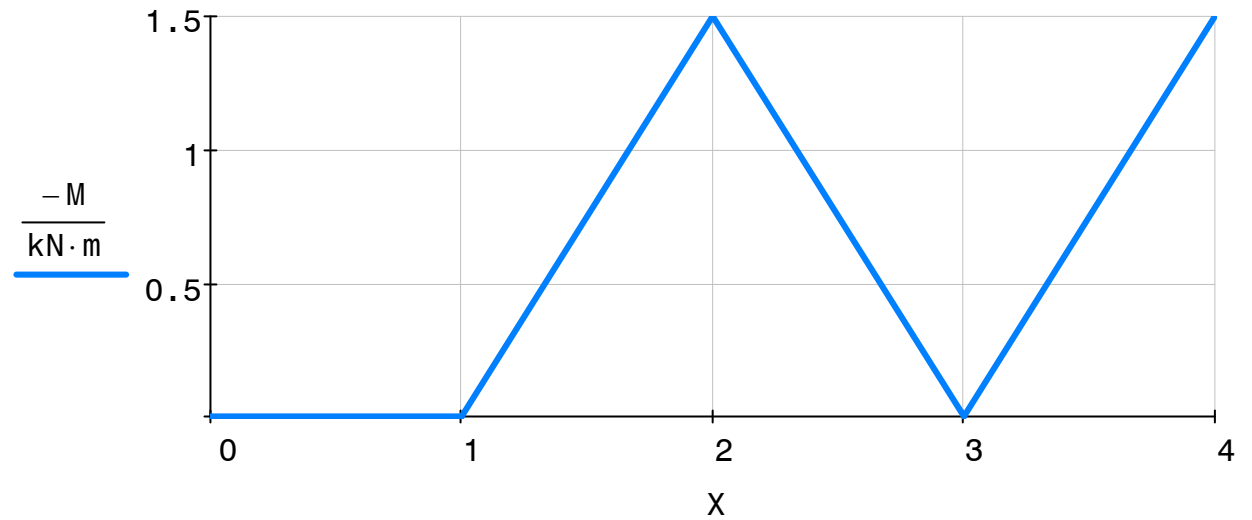
$$\mathbf{i} := 1 \dots 2 \quad \mathbf{M_i} := \mathbf{M2}(\mathbf{X_i})$$

$$i := 2 \dots n \quad M_i := M3(X_i)$$

Układ równań metody różnic skończonych

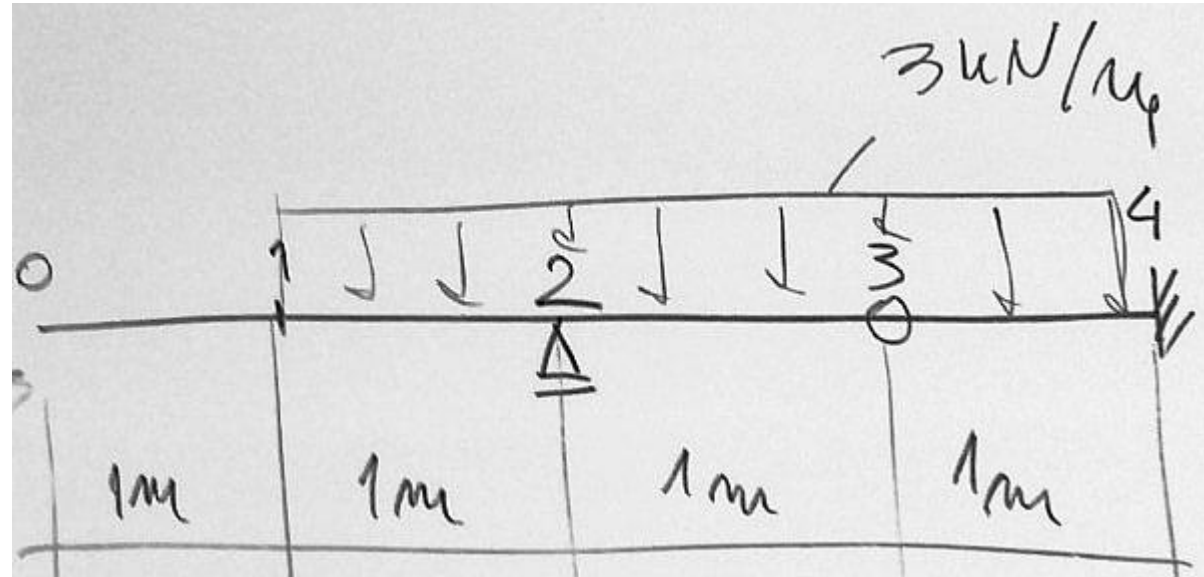
$$A \cdot y = \alpha \cdot M$$

$$M = \begin{bmatrix} & 0 \\ 0 & 0 \\ 1 & 0 \\ 2 & -1.5 \\ 3 & 0 \\ 4 & -1.5 \end{bmatrix} \cdot \text{kN} \cdot \text{m} \quad X = \begin{bmatrix} & 0 \\ 0 & 0 \\ 1 & 1 \\ 2 & 2 \\ 3 & 3 \\ 4 & 4 \end{bmatrix} \text{m}$$



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

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



$$y = \begin{pmatrix} -2.1433 \\ -1.0717 \\ 0.0000 \\ -1.0717 \\ 0.0000 \end{pmatrix} \cdot \text{mm}$$

