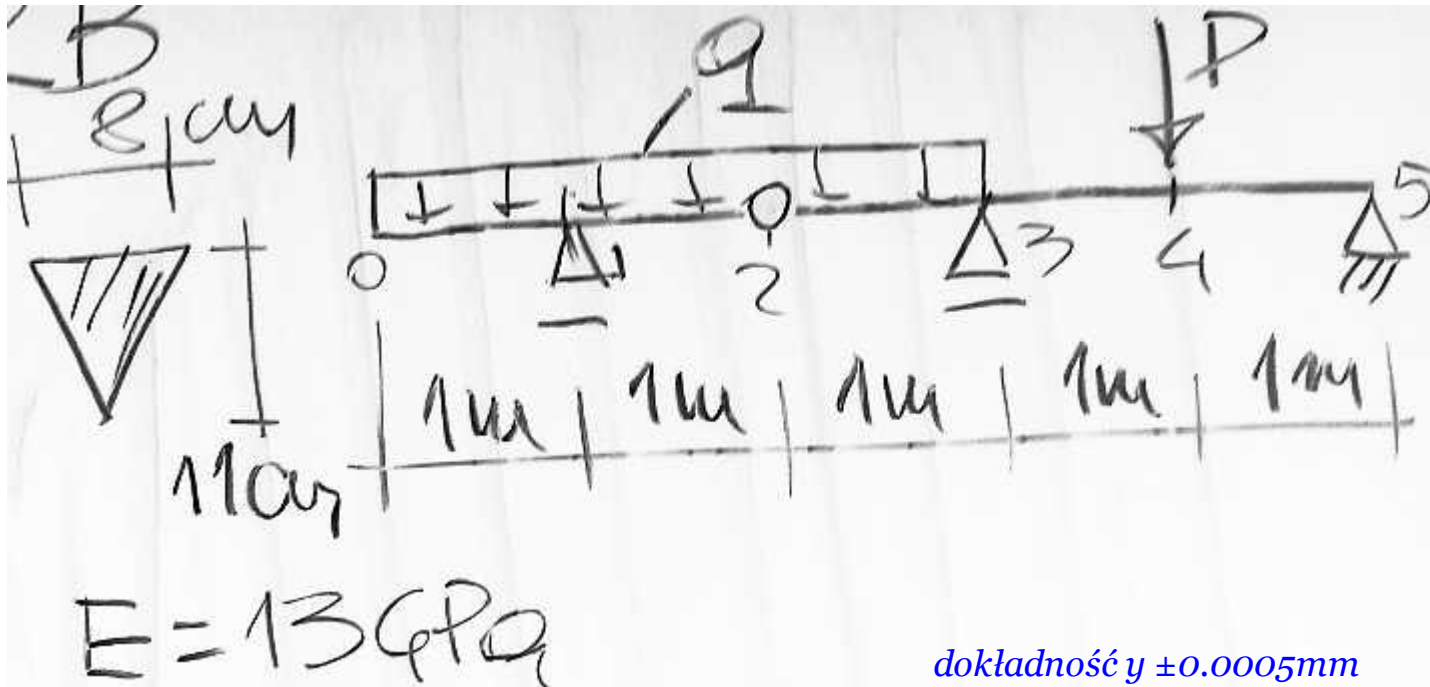


Grupa 2B - Metoda różnic skończonych - ugięcie belki



dokładność $y \pm 0.0005$ mm

$$R1 := \frac{q \cdot 2m \cdot 1m}{1m} \quad R3 := \frac{P \cdot 1m + q \cdot 1m \cdot 2.5m}{2m}$$

$$M1(x) := -q \cdot \frac{x^2}{2} \quad M2(x) := M1(x) + R1 \cdot (x - 1m)$$

$$M3(x) := M2(x) + R3 \cdot (x - 3m) + q \cdot \frac{(x - 3m)^2}{2}$$

$$M4(x) := M3(x) - P \cdot (x - 4m)$$

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

$$E := 13 \text{ GPa} \quad L := 5 \text{ m}$$

$$b := 8 \text{ cm} \quad h := 11 \text{ cm}$$

$$J := b \cdot \frac{h^3}{36} = 295.7778 \cdot \text{cm}^4$$

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

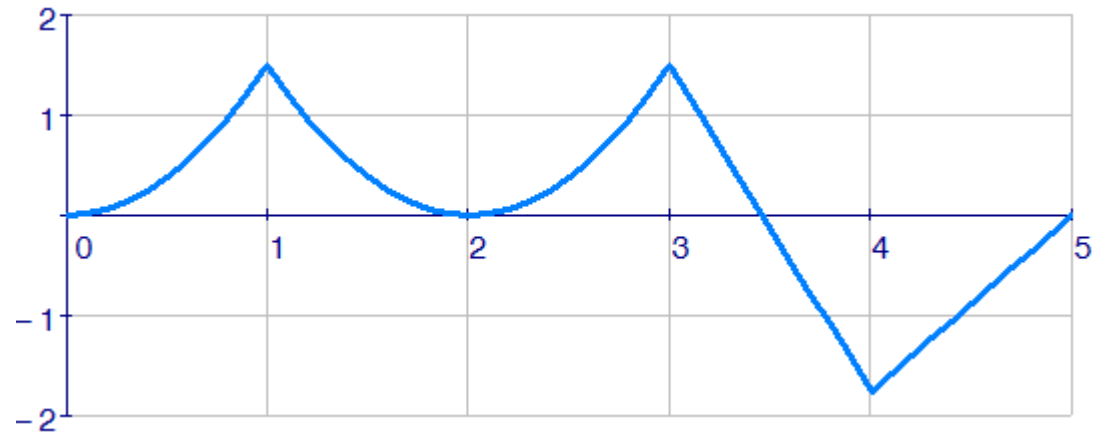
$$\alpha := \frac{\Delta^2}{E \cdot J} = 26.00705 \cdot \frac{1}{\text{MN}}$$

$$\frac{M}{\text{kN} \cdot \text{m}} =$$

	0
0	0
1	-1.5
2	0
3	-1.5
4	1.75
5	0

$$\frac{X}{\text{m}} =$$

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



Warunki brzegowe

$$y_1 = 0 \quad y_3 = 0 \quad y_5 = 0$$

$$\alpha = 26.00705 \cdot \frac{1}{\text{MN}}$$

Równania MRS

$$y_0 - 2y_1 + y_2 = \alpha M_1$$

$$y_2 - 2y_3 + y_4 = \alpha M_3$$

$$y_3 - 2y_4 + y_5 = \alpha M_4$$

$$\frac{y}{\text{mm}} =$$

	0
0	-22.756
1	0.000
2	-16.254
3	0.000
4	-22.756
5	0.000

