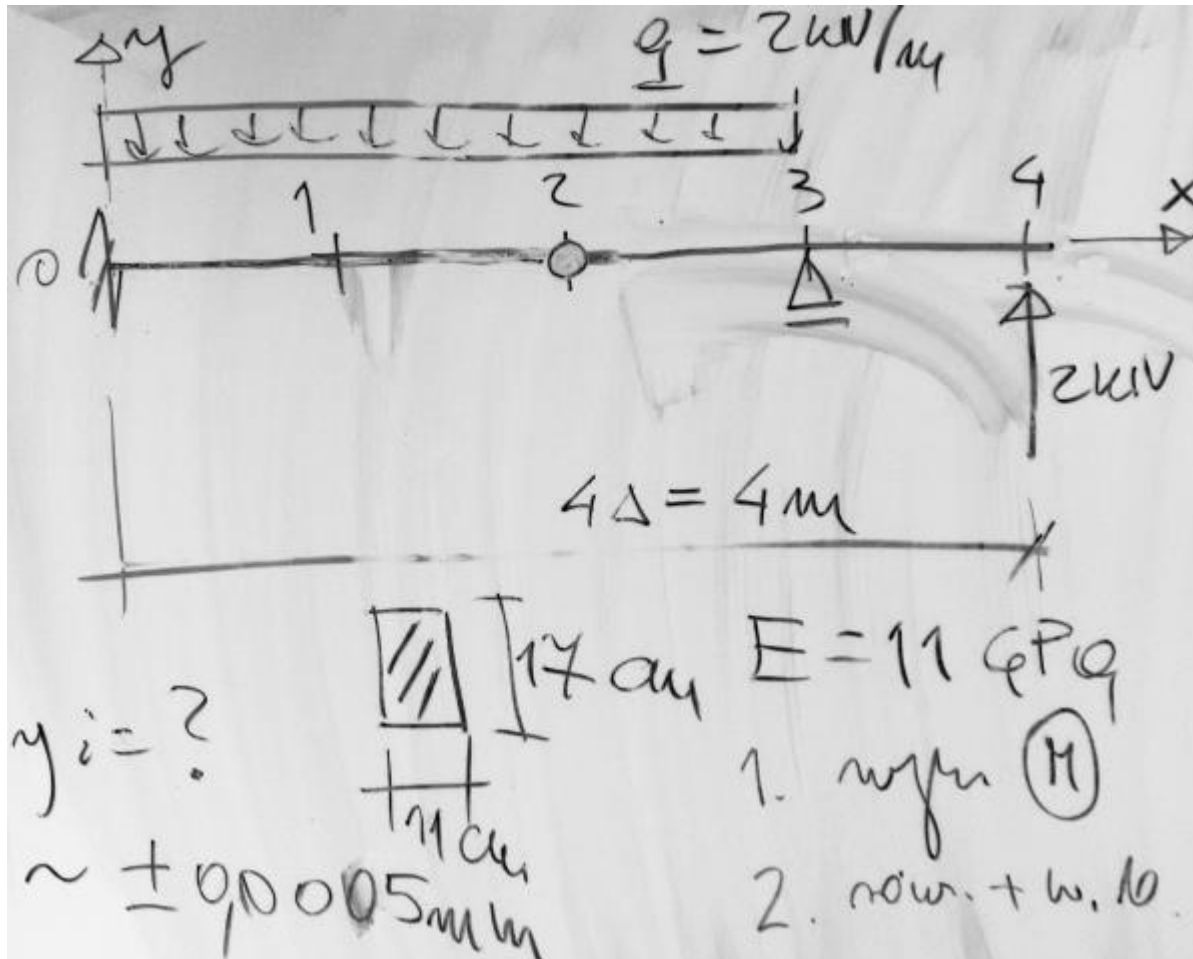


## Metoda różnic skończonych - ugięcie belki



$$P := 2 \text{ kN} \quad q := 2 \frac{\text{kN}}{\text{m}} \quad E := 11 \text{ GPa}$$

$$b := 11 \text{ cm} \quad h := 17 \text{ cm}$$

$$L := 4 \text{ m} \quad J := b \cdot \frac{h^3}{12} = 4503.5833 \cdot \text{cm}^4$$

$$n := 4 \quad \Delta := \frac{L}{n} = 1 \text{ m}$$

$$\alpha := \frac{\Delta^2}{E \cdot J} = 2.01859 \cdot \frac{1}{\text{MN}}$$

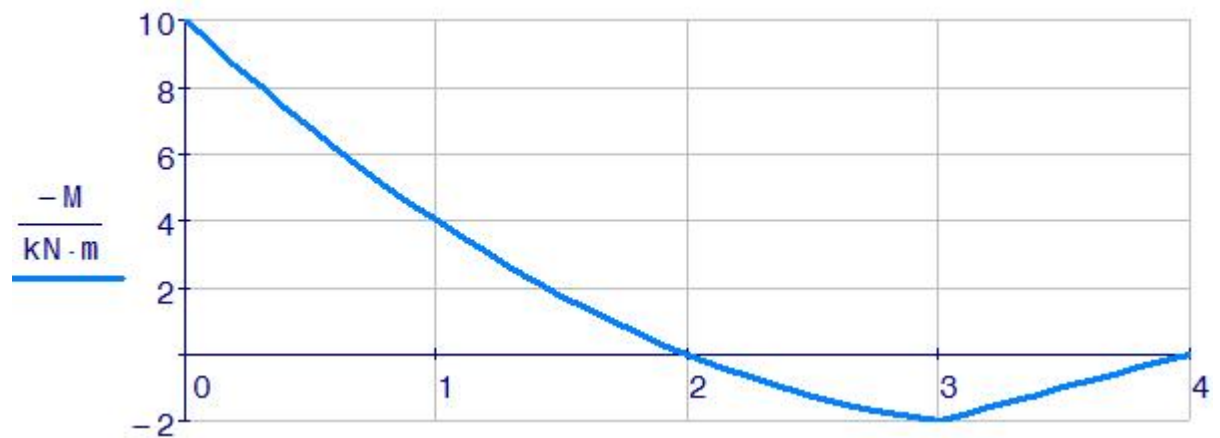
dokładność  $y \pm 0.0005 \text{ mm}$

$$R3 := q \cdot 1 \text{ m} \cdot 0.5 - 2P$$

$$M4(x) := P \cdot (L - x) \quad M3(x) := M4(x) + R3 \cdot (3 \text{ m} - x) - q \cdot \frac{(3 \text{ m} - x)^2}{2}$$

$\frac{M}{\text{kN} \cdot \text{m}} =$		0
	0	-10
	1	-4
	2	0
	3	2
	4	0

$\frac{X}{\text{m}} =$		0
	0	0
	1	1
	2	2
	3	3
	4	4



*Warunki brzegowe*

$$y_0 = 0 \quad \varphi_0 = 0 \quad \text{-----} > \quad 2y_1 = \alpha M_0 \quad y_3 = 0$$

*Równania MRS*

$$2y_1 = \alpha M_0$$

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

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

$y =$		0
	0	0.000
	1	-10.093
	2	-28.260
	3	0.000
	4	32.298

· mm

$$\alpha = 2.01859 \cdot \frac{1}{\text{MN}}$$