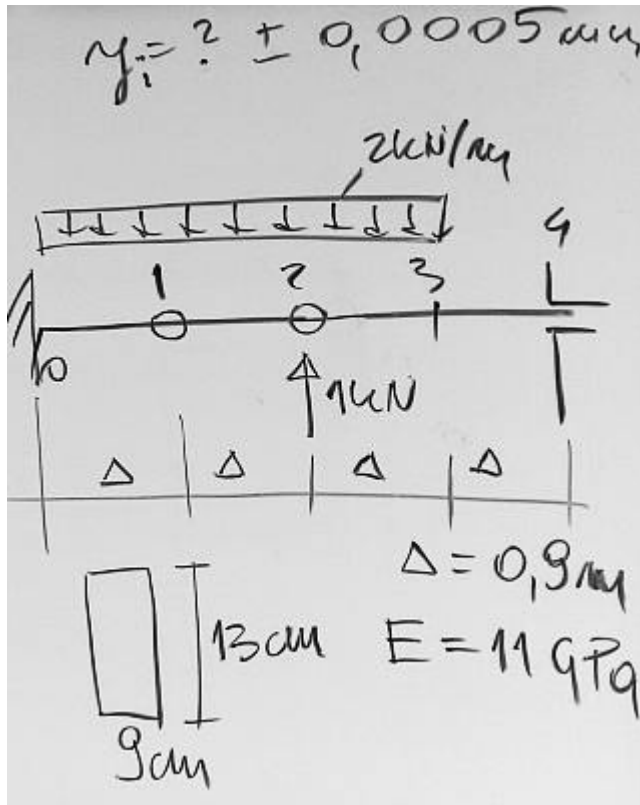


Metoda różnic skończonych - ugięcie belki Grupa2



$$P := 1 \text{ kN} \quad q := 2 \frac{\text{kN}}{\text{m}} \quad E := 11 \text{ GPa}$$

$$b := 9 \text{ cm} \quad h := 13 \text{ cm} \quad \Delta := 0,9 \text{ m}$$

$$n := 4 \quad L := 4 \cdot \Delta = 3,6 \text{ m}$$

$$J := b \cdot \frac{h^3}{12} = 1647,75 \cdot \text{cm}^4$$

$$\alpha := \frac{\Delta^2}{E \cdot J} = 4,4689 \cdot \frac{1}{\text{MN}}$$

dokładność $y \pm 0,0005 \text{ mm}$

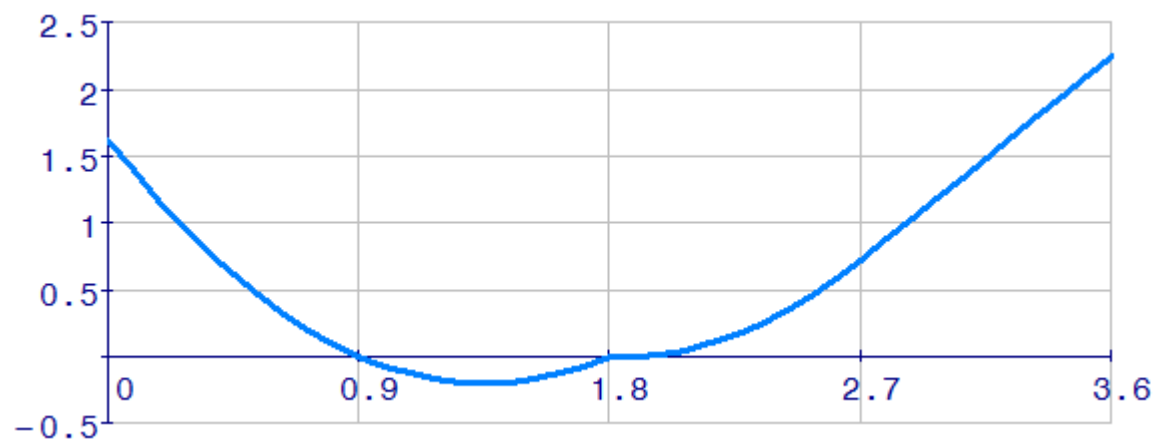
$$T1 := \frac{q \cdot \Delta}{2} = 0,9 \text{ kN} \quad T2 := T1$$

$$M1(x) := -q \cdot \frac{(\Delta - x)^2}{2} - T1 \cdot (\Delta - x)$$

$$M2(x) := M1(x) + P \cdot (x - 2\Delta)$$

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

$\frac{M}{\text{kN} \cdot \text{m}} =$		0	$\frac{X}{\text{m}} =$		0
	0	-1.620		0	0
	1	0.000		1	0.9
	2	0.000		2	1.8
	3	-0.720		3	2.7
	4	-2.250		4	3.6



Warunki brzegowe

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

$$y_4 = 0 \quad \varphi_4 = 0 \quad \text{-----} > \quad 2 y_3 = \alpha M_4$$

Równania MRS

$$2 y_1 = \alpha M_0$$

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

$$2 y_3 = \alpha M_4$$

$y =$		0	$\cdot \text{mm}$
	0	0.000	
	1	-3.620	
	2	-13.273	
	3	-5.028	
	4	0.000	

$$\alpha = 4.4689 \cdot \frac{1}{\text{MN}}$$

dokładność $y \pm 0.0005 \text{mm}$

