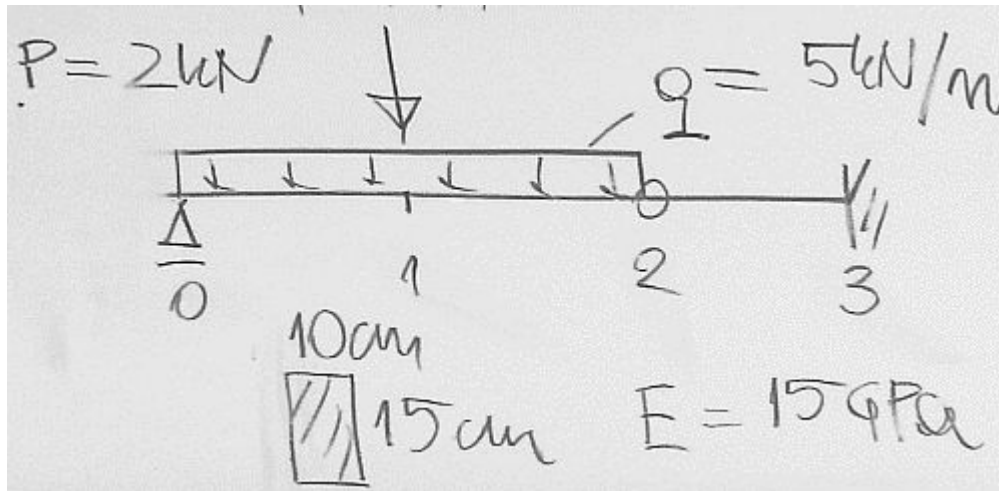


Metoda różnic skończonych - ugięcie belki



$$P := 2\text{kN} \quad q := 5 \frac{\text{kN}}{\text{m}} \quad E := 15\text{GPa}$$

$$L := 6\text{m} \quad b := 10\text{cm} \quad h := 15\text{cm} \quad J := b \cdot \frac{h^3}{12} = 2.813 \times 10^3 \cdot \text{cm}^4$$

$$R_0 := \frac{q \cdot 4\text{m}}{2} + \frac{P}{2} = 11 \cdot \text{kN}$$

$$n := 3 \quad \Delta := \frac{L}{n} = 2\text{m} \quad \alpha := \frac{\Delta^2}{E \cdot J} \quad \alpha = 9.481 \cdot \frac{1}{\text{MN}}$$

$$M_1(x) := R_0 \cdot x - q \cdot \frac{x^2}{2}$$

$$M_2(x) := M_1(x) - P \cdot (x - 2\text{m})$$

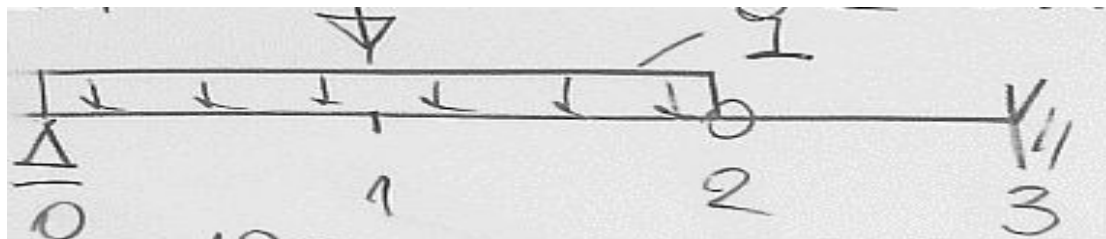
$$M_3(x) := M_2(x) + q \cdot \frac{(x - 4\text{m})^2}{2}$$

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

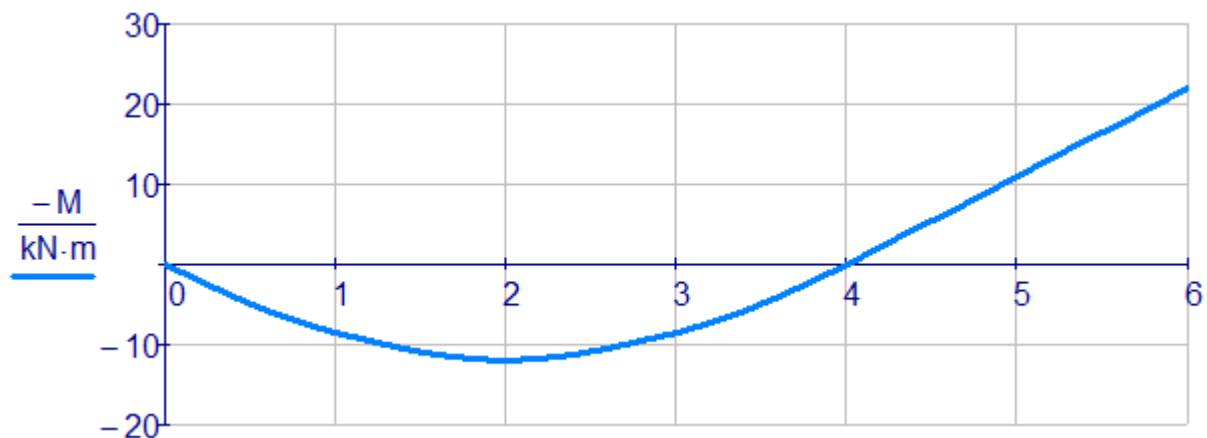
$$i := 0..1 \quad M_i := M1(X_i)$$

$$i := 1..2 \quad M_i := M2(X_i)$$

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



M =		0	·kN·m	X =		0	m
		0				0	
		1				2	
		2				4	
		3				6	
		12					
		0					
		-22					



Równania MRS

$$y_0 = 0 \quad y_3 = 0 \quad \varphi_3 = 0 \quad \alpha = 9.48148 \cdot \frac{1}{\text{MN}}$$

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

$$2y_2 = \alpha M_3$$

M =		0	·kN·m	y =		0	·mm
		0				0.0	
		1				-109.0	
		2				-104.3	
		3				0.0	
		12					
		0					
		-22					