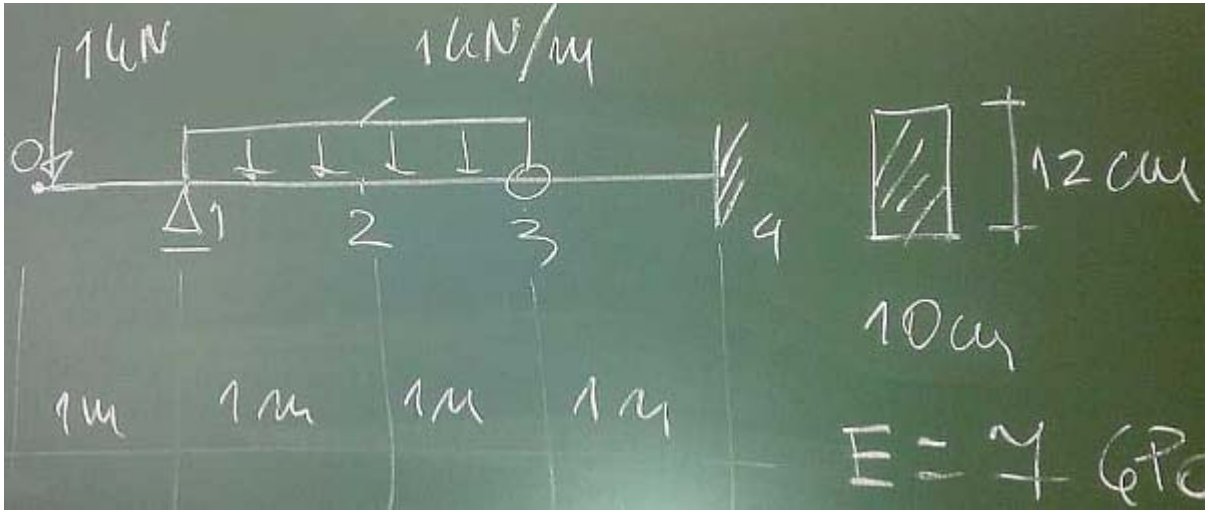
Metoda różnic skończonych - ugięcie belki



$P := 1kN \qquad q := 1\frac{kN}{m} \qquad E := 7GPa$

$b := 10cm \qquad h := 12cm$

$L := 4m \qquad J := b\cdot\frac{h^3}{12} = 1440\cdot cm^4$

$n := 4 \qquad \Delta := \frac{L}{n} = 1\,m$

$\alpha := \frac{\Delta^2}{E\cdot J} = 9.92063\cdot\frac{1}{MN}$

$R1 := \frac{P\cdot 3m + q\cdot 2m\cdot 1m}{2m}$

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

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

dokładność y ±0.005mm

$M =$

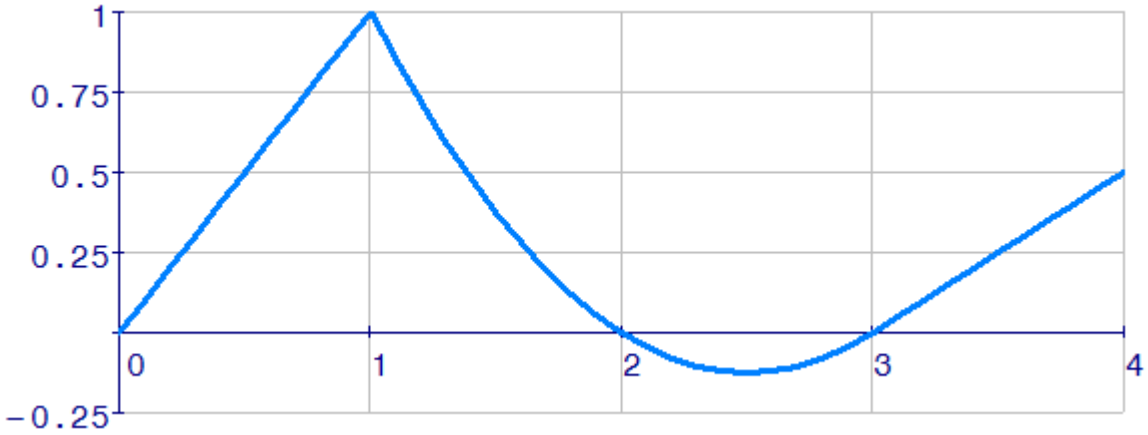
	0
0	0
1	-1
2	0
3	0
4	-0.5

$\cdot kN \cdot m$ $\quad X =$

	0
0	0
1	1
2	2
3	3
4	4

m

$\frac{-M}{kN \cdot m}$



Warunki brzegowe

$y_1 = 0 \quad y_4 = 0 \quad \varphi_4 = 0 \quad \text{-----> } \quad 2\,y_3 = \alpha M_4$

$\alpha = 9.92063 \cdot \frac{1}{MN}$

Równania MRS

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

$y_1 - 2\,y_2 + y_3 = \alpha M_2$

$2\,y_3 = \alpha M_4$

$y =$

	0
0	-8.68
1	0.00
2	-1.24
3	-2.48
4	0.00

$\cdot mm$