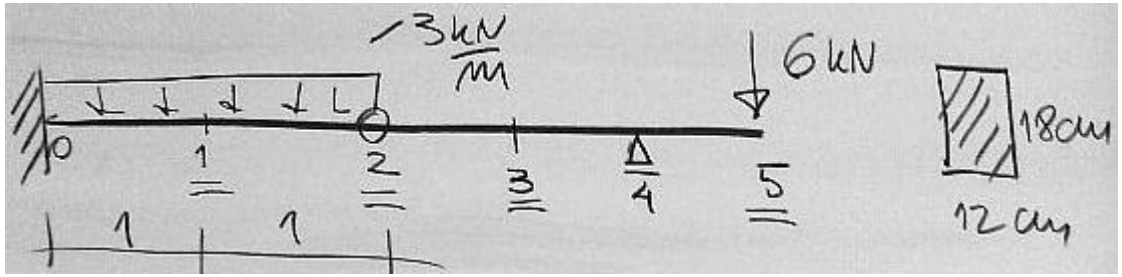
ORIGIN := 0



$q := 3\frac{kN}{m}$ $P := 6kN$

$L := 5m$ $b := 12cm$ $h := 18cm$ $J := b \cdot \frac{h^3}{12}$ $E := 15GPa$

$R4 := \frac{P \cdot 3m}{2m}$ $T2 := P - R4$ $R0 := q \cdot 2m + T2$

$M0 := T2 \cdot 2m + q \cdot 2m \cdot 1m$ $T2 = -3 \cdot kN$ $M0 = 0 \cdot kN \cdot m$ $R4 = 9 \cdot kN$

$n := 5$ $\Delta := \frac{L}{n} = 1\,m$ $\alpha := \frac{\Delta^2}{E \cdot J}$ $\alpha = 1.143 \times 10^{-3} \cdot \frac{1}{kN}$

$M1(x) := -M0 + R0 \cdot x - q \cdot \frac{x^2}{2}$

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

$M3(x) := -P \cdot (5m - x)$

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

$i := 0 .. \quad 2 \qquad M_i := M1(X_i)$

$i := 3 .. \quad 4 \qquad M_i := M2(X_i)$

$i := 4 .. \quad n \qquad M_i := M3(X_i)$

Układ równań metody róznic skończonych

$A \cdot y = \alpha \cdot M$

$M =$

	0
0	0
1	1.5
2	0
3	-3
4	-6
5	0

$\cdot kN \cdot m$

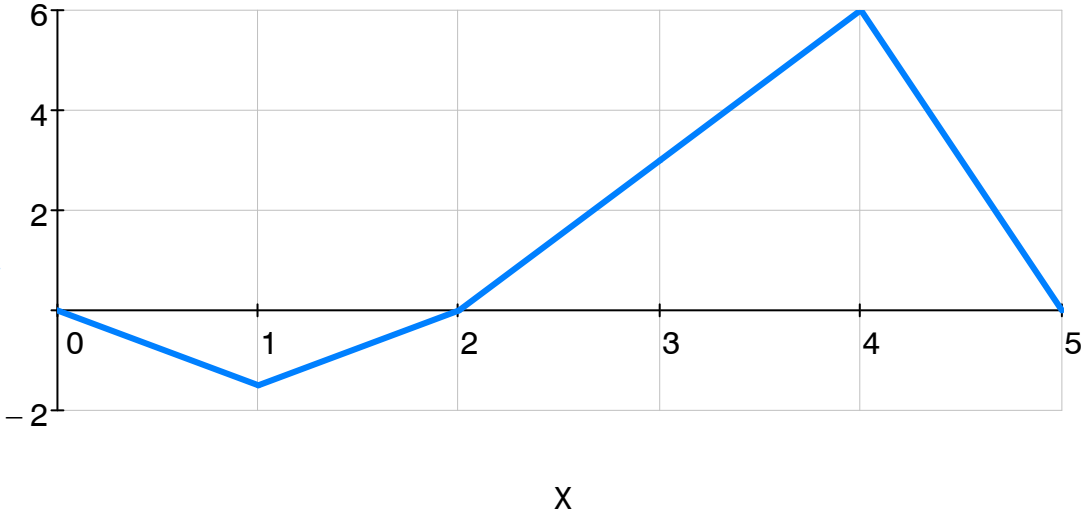
$X =$

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

m

$$A := \begin{pmatrix} 0 & 2 & 0 & 0 & 0 & 0 \\ 1 & -2 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & -2 & 1 & 0 \\ 0 & 0 & 0 & 1 & -2 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 \end{pmatrix}$$

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



$$y := \mathrm{lsolve}(A, \alpha \cdot M)$$

$$y = \begin{pmatrix} 0 \\ 0 \\ 1.715 \\ 2.572 \\ 0 \\ -9.431 \end{pmatrix} \cdot mm$$