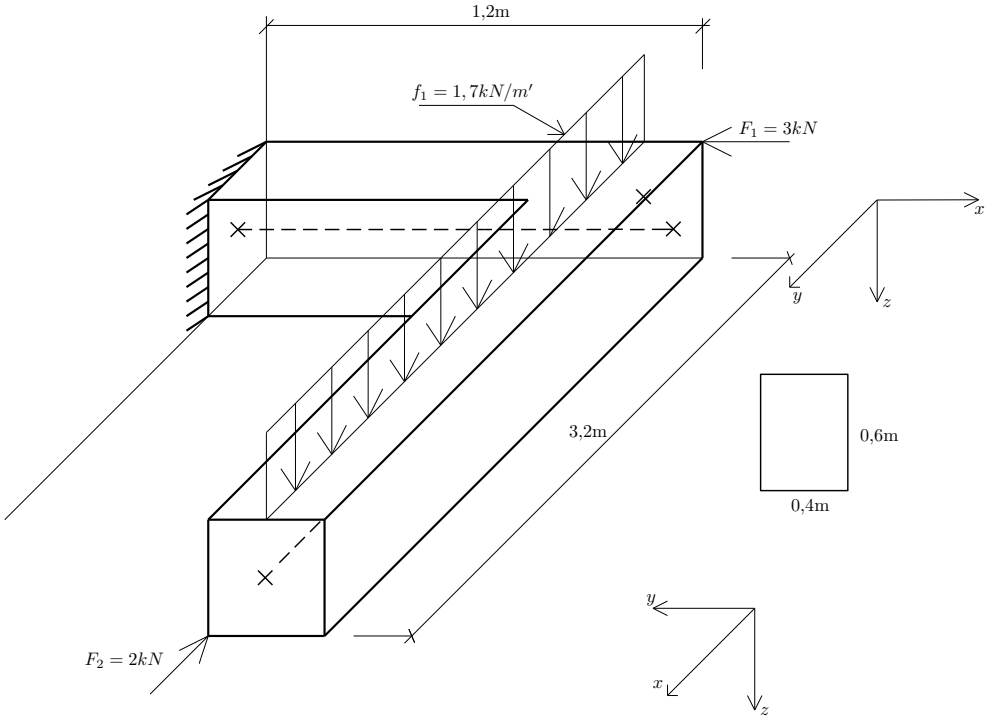
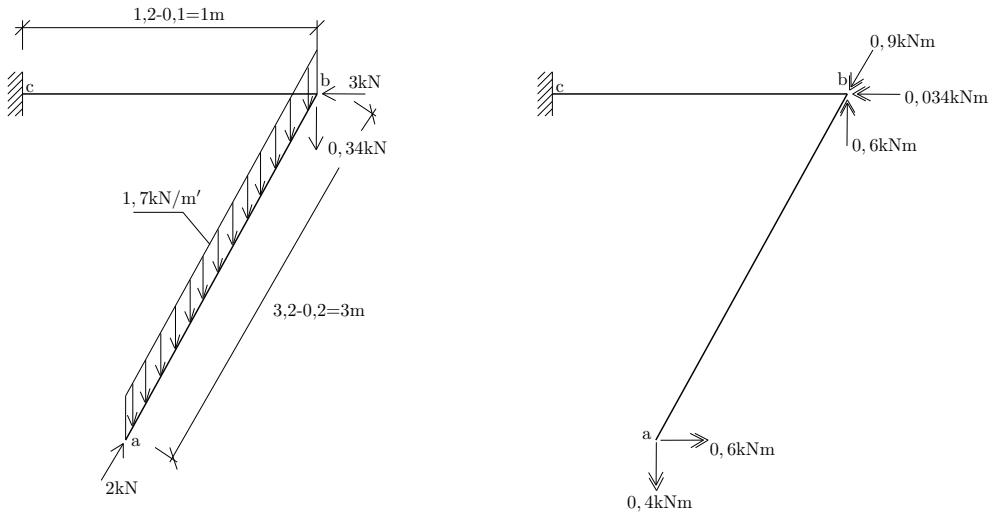
Výpočet vnitřních sil ve 3D



Obrázek 1: Zatěžovací schéma.



Obrázek 2: redukce zatížení ke střednici.

interval (a,b):

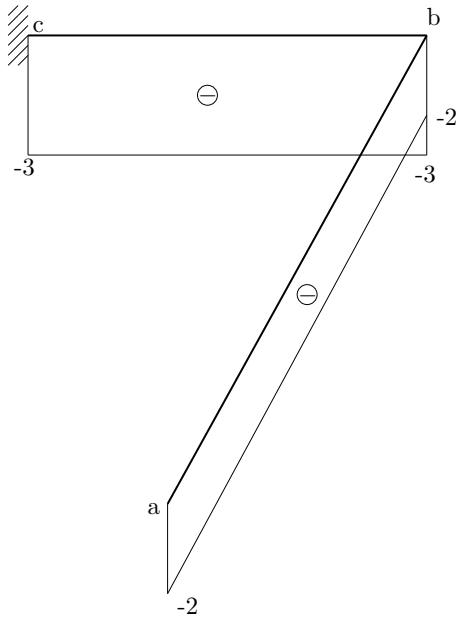
Řez a	Řez b
$N^a = \underline{-2\text{kN}}$	$N^b = \underline{-2\text{kN}}$
$V_y^a = \underline{0\text{kN}}$	$V_y^b = \underline{0\text{kN}}$
$V_z^a = \underline{0\text{kN}}$	$V_z^b = 1,7 \cdot 3 = \underline{5,1\text{kN}}$
$M_x^a = \underline{0\text{kN}}$	$M_x^b = \underline{0,9\text{kN}}$
$M_y^a = \underline{-0,6\text{kN}}$	$M_y^b = 1,7 \cdot 3 \cdot 1,5 - 1,7 \cdot 0,2 \cdot 0,1 + 2 \cdot 0,3 = \underline{-8,126\text{kN}}$
$M_z^a = \underline{0,4\text{kN}}$	$M_z^b = \underline{0,4\text{kN}}$

Tabulka 1: Vnitřní síly v řezech na intervalu (a,b).

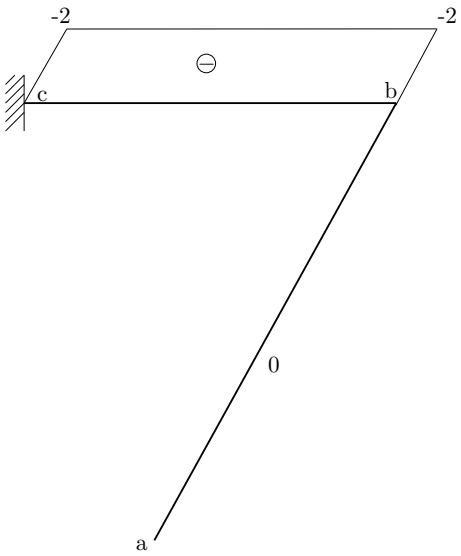
interval (b,c):

Řez b	Řez c
$N^b = \underline{-3\text{kN}}$	$N^c = \underline{-3\text{kN}}$
$V_y^b = \underline{-2\text{kN}}$	$V_y^c = \underline{-2\text{kN}}$
$V_z^b = 5,1 + 0,2 \cdot 1,7 = \underline{5,44\text{kN}}$	$V_z^c = \underline{5,44\text{kN}}$
$M_x^b = 1,7 \cdot 3 \cdot 1,5 - 1,7 \cdot 0,2 \cdot 0,1 + 2 \cdot 0,3 = \underline{8,216\text{kN}}$	$M_x^c = \underline{8,216\text{kN}}$
$M_y^b = \underline{0,9\text{kN}}$	$M_y^c = -1,7 \cdot 3,2 \cdot 1 + 3 \cdot 0,3 = \underline{-4,54\text{kN}}$
$M_z^b = 0,4 - 0,6 = \underline{-0,2\text{kN}}$	$M_z^c = -2 \cdot 0,8 - 0,6\underline{-2,2\text{kN}}$

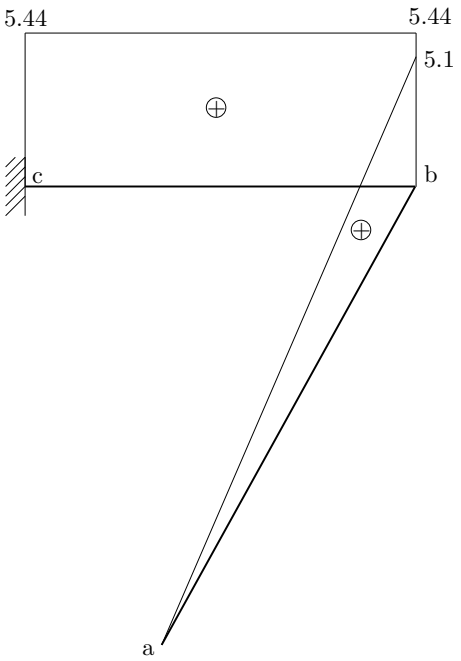
Tabulka 2: Vnitřní síly v řezech na intervalu (b,c).



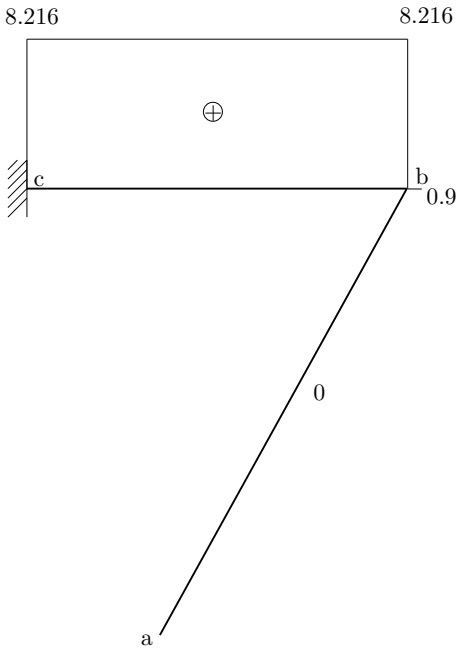
Obrázek 3: normmálové síly.



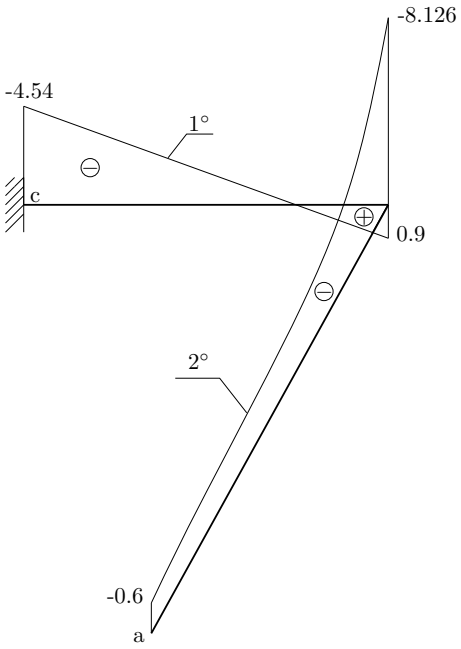
Obrázek 4: Posouvající síly Vy.



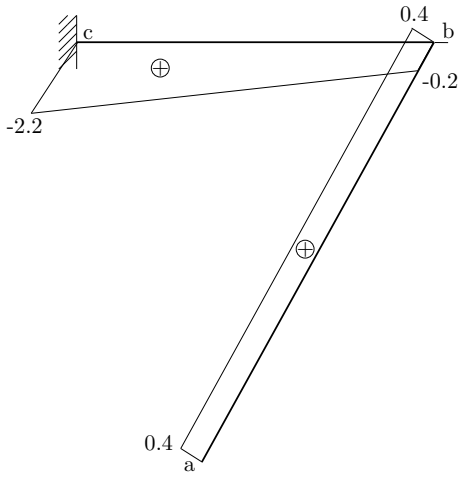
Obrázek 5: Posouvající síly Vz.



Obrázek 6: Kroutící moment Mx.



Obrázek 7: Ohybový moment My.



Obrázek 8: Ohybový moment Mz.