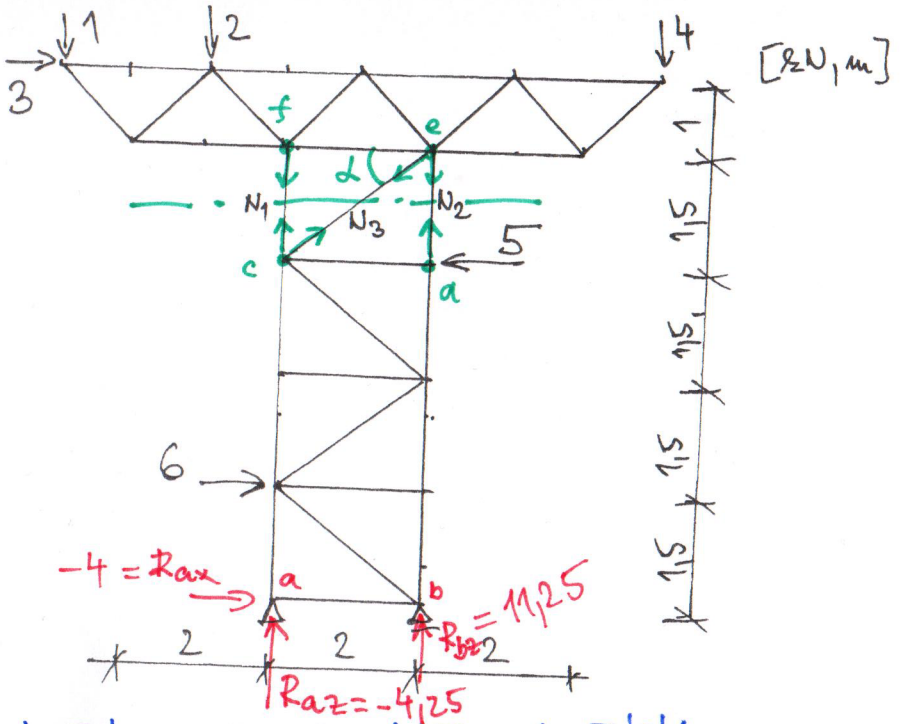
JMENO:



A) výpočet na horní oddělené části
- výhoda: nepotřebuji reakce ⇒ špatně vypočtené reakce neovlivní výsledek

$\oplus\uparrow \Sigma M_{ci} = 0$

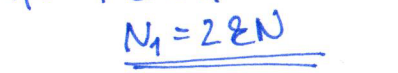
$-N_2 \cdot 2 - 4 \cdot 5 + 2 \cdot 1 + 1 \cdot 3 - 3 \cdot 2{,}5 = 0$

$N_2 = -11{,}25\ kN$

$\oplus\uparrow \Sigma M_{ei} = 0$

$N_1 \cdot 2 + 2 \cdot 3 + 1 \cdot 5 - 3 \cdot 1 - 4 \cdot 3 = 0$

$N_1 = 2\ kN$



$\oplus\rightarrow \Sigma F_{xi} = 0$

$3 - N_{3x} = 0 \qquad N_{3x} = N_3 \cdot \cos\alpha \qquad \cos\alpha = \frac{2}{2{,}5}$

$N_3 = \frac{3}{\cos\alpha} = \frac{3 \cdot 2{,}5}{2} = 3{,}75\ kN \qquad \sin\alpha = \frac{1{,}5}{2{,}5}$

KONTROLA:

$\oplus\downarrow \Sigma F_{zi} = 0 \qquad 1 + 2 + 4 + N_1 + N_2 + N_3 \cdot \sin\alpha = 0$

$0 = 0\ \checkmark$

[5 min]

REAKCE:

$\Sigma F_{ix} = 0$

$\oplus\rightarrow \quad 3 + 6 - 5 + R_{ax} = 0 \Rightarrow R_{ax} = -4\ kN$

$\oplus\circlearrowleft \Sigma M_{ai} = 0$

$R_{bz} \cdot 2 + 5 \cdot 4{,}5 - 6 \cdot 1{,}5 + 1 \cdot 3 + 2 \cdot 1 - 3 \cdot 4 - 4 \cdot 5 = 0$

$R_{bz} = 11{,}25\ kN$

$\oplus\circlearrowleft \Sigma M_{bi} = 0$

$-R_{az} \cdot 2 - 6 \cdot 1{,}5 + 5 \cdot 4{,}5 - 4 \cdot 3 + 2 \cdot 3 + 1 \cdot 5 - 3 \cdot 4 = 0$

$R_{az} = -4{,}25\ kN$

$\oplus\uparrow \Sigma F_{iz} = 0$ KONTROLA

$R_{az} + R_{bz} - 1 - 2 - 4 = 0$

$0 = 0\ \checkmark$

[4 min]

B) Výpočet na spodní části s podporami

$\oplus\circlearrowleft \Sigma M_{ei} = 0$

$N_2 \cdot 2 + 6 \cdot 3 - 4 \cdot 4{,}5 + 11{,}25 \cdot 2 = 0$

$N_2 = -11{,}25\ kN$

$\oplus\uparrow \Sigma M_{ei} = 0$

$-N_1 \cdot 2 - 5 \cdot 1{,}5 + 6 \cdot 4{,}5 - 4 \cdot 6 + 4{,}25 \cdot 2 = 0$

$N_1 = 2\ kN$

$\oplus\rightarrow \Sigma M_{po} \Rightarrow \Sigma F_{xi} = 0$

$-5 + 6 - 4 + N_{a3} \cos\alpha = 0$

$N_3 = 3{,}75\ kN$

$\sin\alpha = \frac{1{,}5}{2{,}5}$

$\cos\alpha = \frac{2}{2{,}5}$

$\oplus\uparrow \Sigma F_{zi} = 0$ KONTROLA

$R_{az} + R_{bz} + N_3 \cdot \sin\alpha = 0$

$+N_1 + N_2$

$0 = 0\ \checkmark$

[5 min]