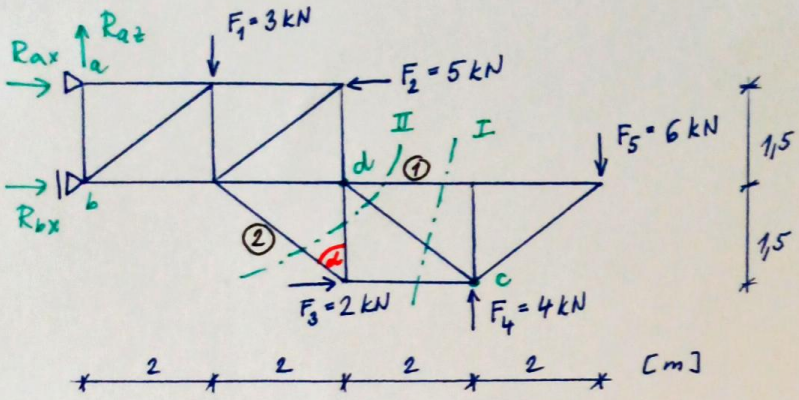
Jméno: Pondělí 16⁰⁰

VYPOČÍTEJTE:
→ REAKCE
→ OSOVÉ SÍLY V PRUTECH 1, 2 (PRŮSEČNOU METODOU)



$\oplus\uparrow \Sigma F_{iz} = 0$: $R_{az} - F_1 + F_4 - F_5 = 0$

$R_{az} = F_1 - F_4 + F_5 = 3 - 4 + 6 = \underline{5\,kN}$ (↑)

$\oplus\circlearrowleft_a \Sigma M_{ia} = 0$: $-F_1 \cdot 2 + F_2 \cdot 0 + R_{bx} \cdot 1{,}5 + F_3 \cdot 3 + F_4 \cdot 6 - F_5 \cdot 8 = 0$

$R_{bx} = \dfrac{F_1 \cdot 2 - F_3 \cdot 3 - F_4 \cdot 6 + F_5 \cdot 8}{1{,}5} = \dfrac{3 \cdot 2 - 2 \cdot 3 - 4 \cdot 6 + 6 \cdot 8}{1{,}5} = \underline{16\,kN}$ (→)

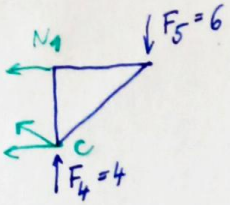
$\oplus\circlearrowleft_b \Sigma M_{ib} = 0$: $-R_{ax} \cdot 1{,}5 - F_1 \cdot 2 + F_2 \cdot 1{,}5 + F_3 \cdot 1{,}5 + F_4 \cdot 6 - F_5 \cdot 8 = 0$

$R_{ax} = \dfrac{-F_1 \cdot 2 + F_2 \cdot 1{,}5 + F_3 \cdot 1{,}5 + F_4 \cdot 6 - F_5 \cdot 8}{1{,}5} = \dfrac{-3 \cdot 2 + 5 \cdot 1{,}5 + 2 \cdot 1{,}5 + 4 \cdot 6 - 6 \cdot 8}{1{,}5} = \underline{-13\,kN}$ (←)

K: $\Sigma F_{ix} = 0$: $R_{ax} + R_{bx} - F_2 + F_3 = 0$

$-13 + 16 - 5 + 2 = 0$ ✓

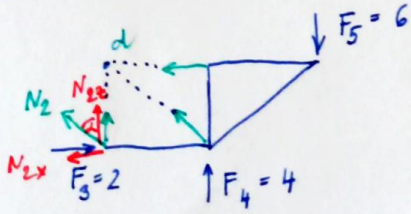
řez I:



$\oplus\circlearrowleft_c \Sigma M_{ic} = 0$: $N_1 \cdot 1{,}5 - F_5 \cdot 2 = 0$

$N_1 = \dfrac{F_5 \cdot 2}{1{,}5} = \dfrac{6 \cdot 2}{1{,}5} = \underline{8\,kN}$ (TAH)

řez II:

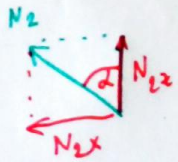


$\oplus\circlearrowleft_d \Sigma M_{id} = 0$: $-F_5 \cdot 4 + F_4 \cdot 2 + F_3 \cdot 1{,}5 - N_{2x} \cdot 1{,}5 = 0$

$-F_5 \cdot 4 + F_4 \cdot 2 + F_3 \cdot 1{,}5 - (N_2 \cdot \sin\alpha) \cdot 1{,}5 = 0$

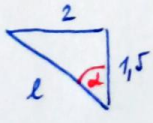
$N_2 = \dfrac{-F_5 \cdot 4 + F_4 \cdot 2 + F_3 \cdot 1{,}5}{1{,}5 \cdot \sin\alpha} =$

$= \dfrac{-6 \cdot 4 + 4 \cdot 2 + 2 \cdot 1{,}5}{1{,}5 \cdot \frac{2}{2{,}5}} = \underline{-10{,}8\overline{3}\,kN}$ (TLAK)



$N_{2x} = N_2 \cdot \sin\alpha$

$N_{2z} = N_2 \cdot \cos\alpha$



$l = \sqrt{1{,}5^2 + 2^2} = \sqrt{6{,}25} = 2{,}5\,m$

$\sin\alpha = \dfrac{2}{2{,}5}$

$\cos\alpha = \dfrac{1{,}5}{2{,}5}$