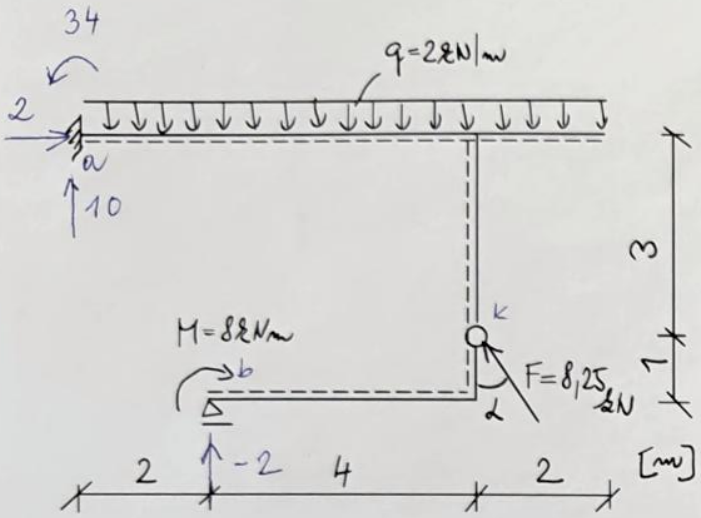
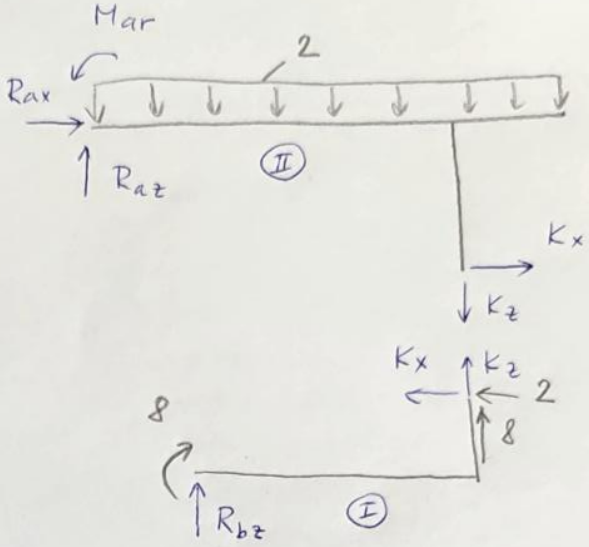


$\alpha = 14{,}03°$



$\oplus\circlearrowleft$

$\Sigma M_{ik}^{I} = 0$:

$-8 - R_{bz} \cdot 4 = 0$

$R_{bz} = -2\ kN$

$\Sigma F_{ix} = 0$:

$K_x + 2 = 0$

$K_x = -2\ kN$

$\oplus\circlearrowleft$

$\Sigma M_{ib}^{I} = 0$:

$-8 + K_x \cdot 1 + 2 \cdot 1 + 8 \cdot 4 + K_z \cdot 4 = 0$

$K_z = -6\ kN$

KO : $\Sigma F_{iz} = 0$

$R_{bz} + 8 + K_z = 0$

$-2 + 8 - 6 = 0$ ✓

$\oplus\circlearrowleft$

$\Sigma M_{ia}^{II} = 0$:

$M_{ar} - 2 \cdot 8 \cdot 4 + K_x \cdot 3 - K_z \cdot 6 = 0$

$M_{ar} = 64 - (-2) \cdot 3 + (-6) \cdot 6$

$M_{ar} = 34\ kNm$

$\Sigma F_{ix} = 0$: $R_{ax} = -K_x = 2\ kN$

$\Sigma F_{iz} = 0$: $R_{az} - 2 \cdot 8 - K_z = 0$

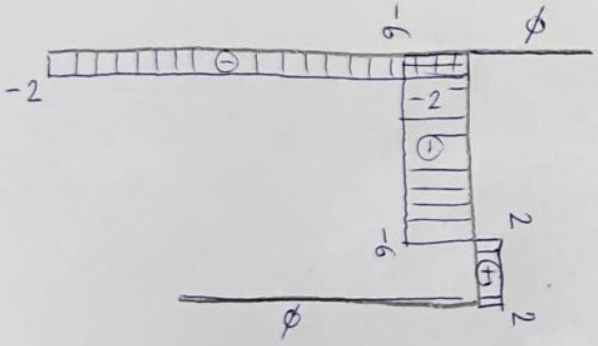
$R_{az} = 10\ kN$

KO : $\Sigma M_{ik}^{II} = 0$ $\circlearrowleft\oplus$

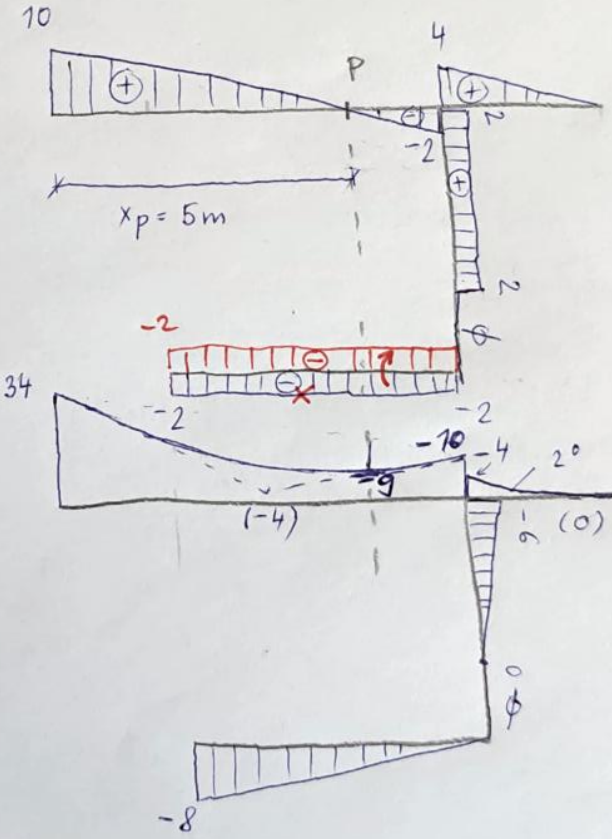
$M_{ar} - R_{ax} \cdot 3 - R_{az} \cdot 6 + 2 \cdot 8 \cdot 2 = 0$

$34 - 2 \cdot 3 - 10 \cdot 6 + 2 \cdot 8 \cdot 2 = 0$ ✓

(N)



(V)

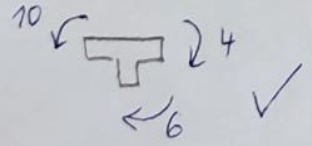


(M)

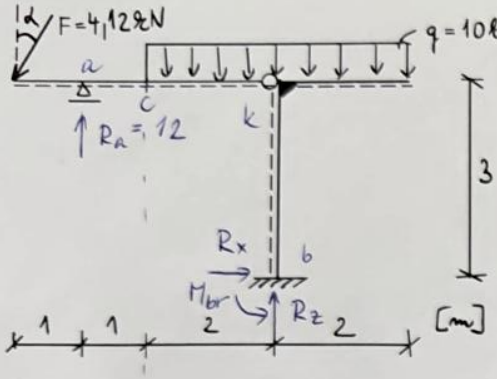
$M_p = -34 + 10 \cdot 5 - 2 \cdot 5 \cdot 2{,}5 = -9\ kNm$

nebo

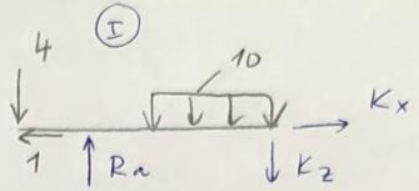
$M_p = M_a + \int_a^P V\,dx = -34 + \frac{1}{2} \cdot 10 \cdot 5 = -9\ kNm$



✓



$\alpha = 14{,}0362°$



$\oplus\ \Sigma M_{ik}^{I} = \phi$:

$4 \cdot 4 - R_a \cdot 3 + 10 \cdot 2 \cdot 1 = 0$

$\underline{R_a = 12\,kN}$

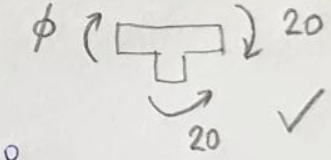
$\Sigma F_{ix} = 0$: $K_x - 1 = 0$

$\underline{K_x = 1\,kN}$

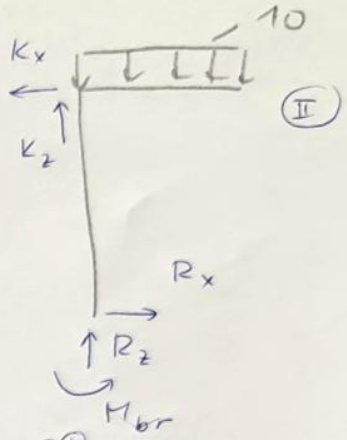
$\oplus\ \Sigma M_{ia} = 0$: $4 \cdot 1 - 10 \cdot 2 \cdot 2 - K_z \cdot 3 = 0$

$\underline{K_z = -12\,kN}$

KO: $\Sigma F_{iz} = 0$: $12 - 4 - 10 \cdot 2 - (-12) = 0$ ✓



✓



$\oplus\ \Sigma M_{ib}^{II} = 0$:

$K_x \cdot 3 - 10 \cdot 2 \cdot 1 + M_{br} = 0$

$\underline{M_{br} = 17\,kNm}$

$\Sigma F_{ix} = 0$: $\underline{R_x = K_x = 1\,kN}$

$\Sigma F_{iz} = 0$: $K_z - 10 \cdot 2 + R_z = 0$

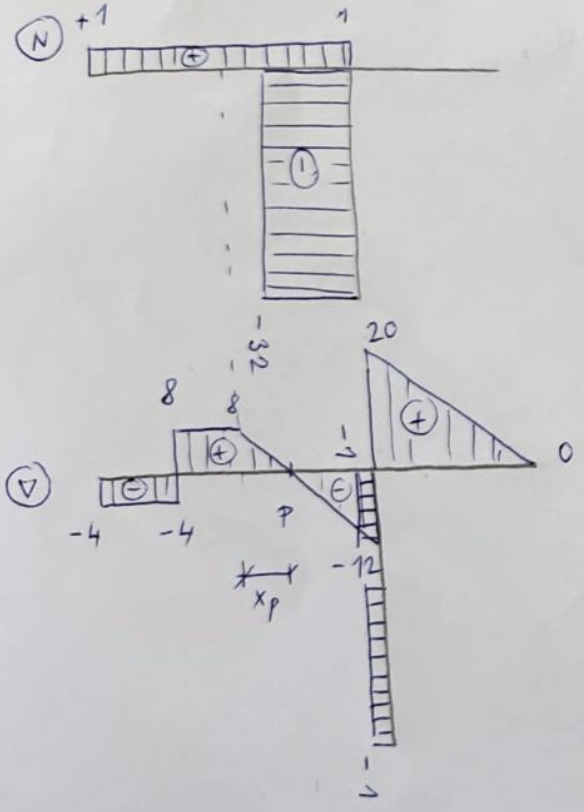
$\underline{R_z = 32\,kN}$

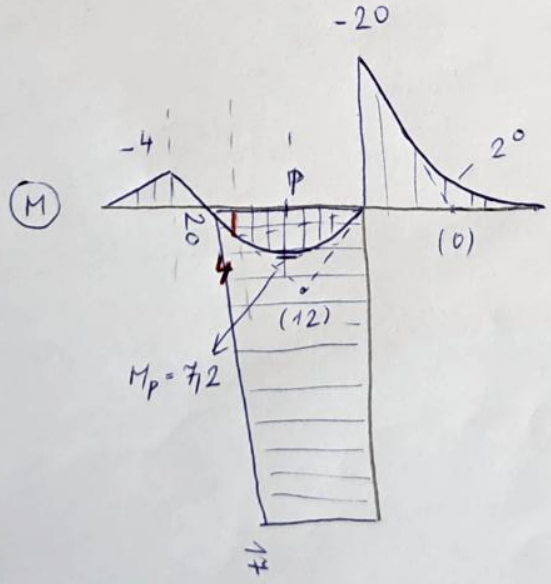
$\oplus$

KO: $\Sigma M_{iK}^{II} = 0$:

$-10 \cdot 2 \cdot 1 + M_{br} + R_x \cdot 3 = 0$

$-20 + 17 + 1 \cdot 3 = 0$ ✓



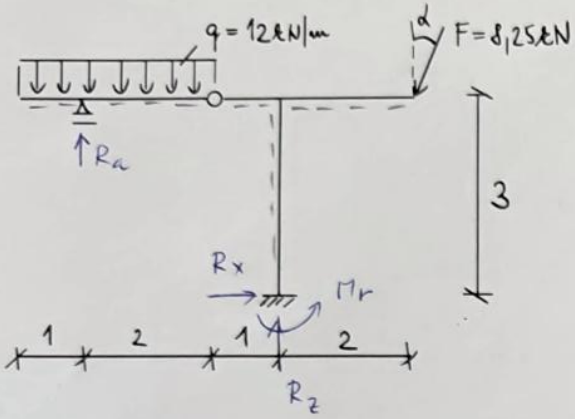


$x_p = \frac{8}{10} = 0{,}8\,m$

$M_p = M_c + \int_c^P V\,dx$

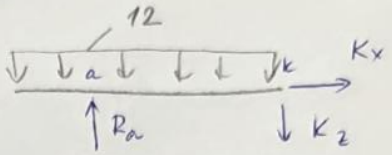
$= 4 + \frac{1}{2} \cdot 8 \cdot 0{,}8$

$= \underline{7{,}2\,kNm}$



$\alpha = 14,0362°$

(I)



$\oplus\circlearrowleft \quad \Sigma M_{ik}^{I} = \emptyset: \quad 12 \cdot 3 \cdot 1,5 - R_a \cdot 2 = 0$

$R_a = 27\,kN$

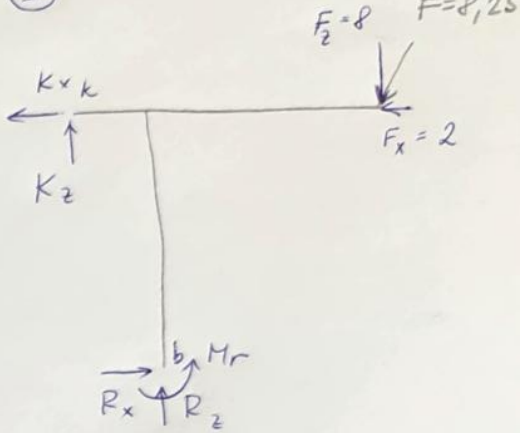
$\oplus\circlearrowleft \quad \Sigma M_{ia}^{I} = \emptyset: \quad -12 \cdot 3 \cdot 0,5 - K_z \cdot 2 = 0$

$K_z = -9\,kN$

$\Sigma F_{ix} = 0: \quad K_x = \emptyset$

$K0: \Sigma F_{iz} = 0: \quad 27 - 12 \cdot 3 - (-9) = 0$ ✓

(II)



$\Sigma F_{ix} = 0: \quad R_x - F_x = 0$

$R_x = 2\,kN$

$\Sigma F_{iz} = 0: \quad K_z - F_z + R_z = 0$

$R_z = -(-9) + 8$

$R_z = 17\,kN$

$\oplus\circlearrowleft$

$\Sigma M_{ib} = 0:$

$K_x \cdot 3 - K_z \cdot 1 - F_z \cdot 2 + F_x \cdot 3 + M_r = 0$

$M_r = -\emptyset \cdot 3 + (-9) \cdot 1 + 8 \cdot 2 - 2 \cdot 3$

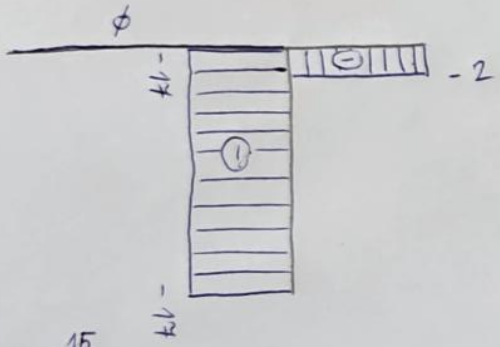
$M_r = 1\,kNm$

$K0: \Sigma M_{ik}^{II} = 0:$

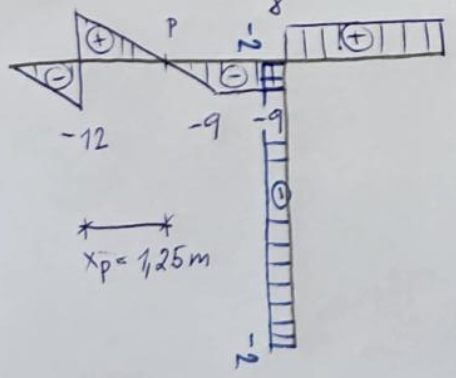
$-F_z \cdot 3 + R_x \cdot 3 + M_r + R_z \cdot 1 = 0$

$-8 \cdot 3 + 2 \cdot 3 + 1 + 17 \cdot 1 = 0$ ✓

(N)

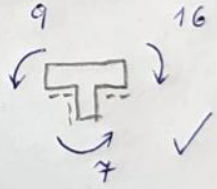


(V)



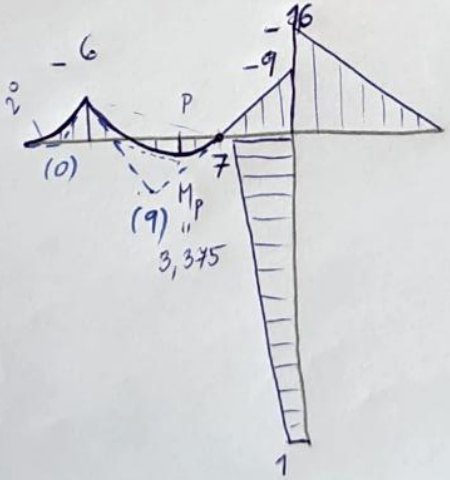
$M_p = -6 + \frac{1}{2} \cdot 15 \cdot 1,25 = 3,375\,kNm$

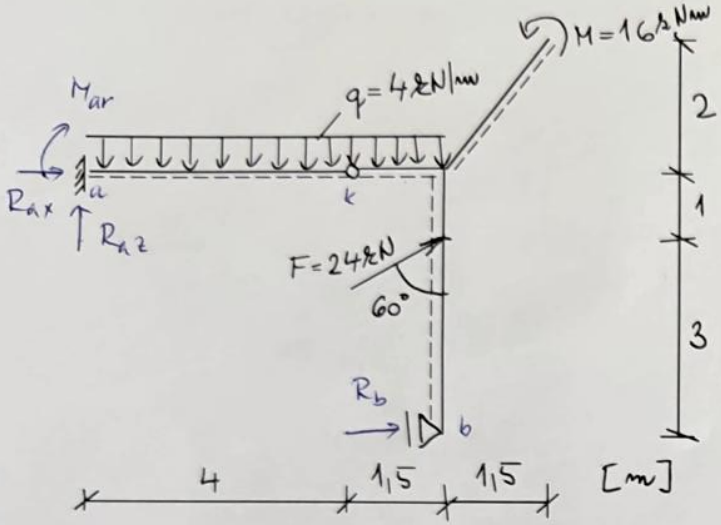
$= M_a + \int_a^P V\,dx$

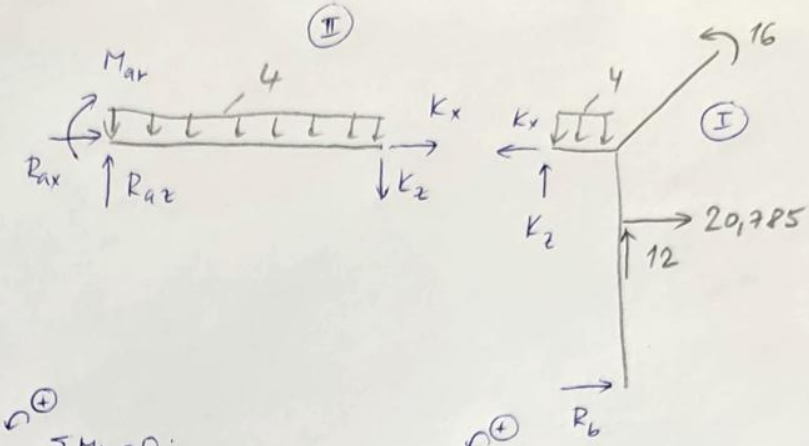


✓

(M)







$\oplus$ $\Sigma M_{ia} = 0$:

$R_b \cdot 4 + 20,785 \cdot 1 + 12 \cdot 5,5 + M - q \cdot 5,5 \cdot 2,75 - M_{ar} = 0$

$M_{ar} = -8\,kNm$

$\Sigma F_{iz} = 0$: $R_a - q \cdot 5,5 + 12 = 0$

$R_{az} = 10\,kN$

$\oplus$ $\Sigma M_{ib} = 0$:

$-M_{ar} - R_{ax} \cdot 4 - R_{az} \cdot 5,5 + q \cdot 5,5 \cdot 2,75 + M - 20,785 \cdot 3 = 0$

$R_{ax} = -8,21375\,kN$

$\Sigma M_{ic}^{I} = 0$:

$-4 \cdot 1,5 \cdot 0,75 + 16 + 20,785 \cdot 1 + 12 \cdot 1,5 + R_b \cdot 4 = 0$

$R_b = -12,57125\,kN$

KO: $\Sigma F_{ix} = 0$

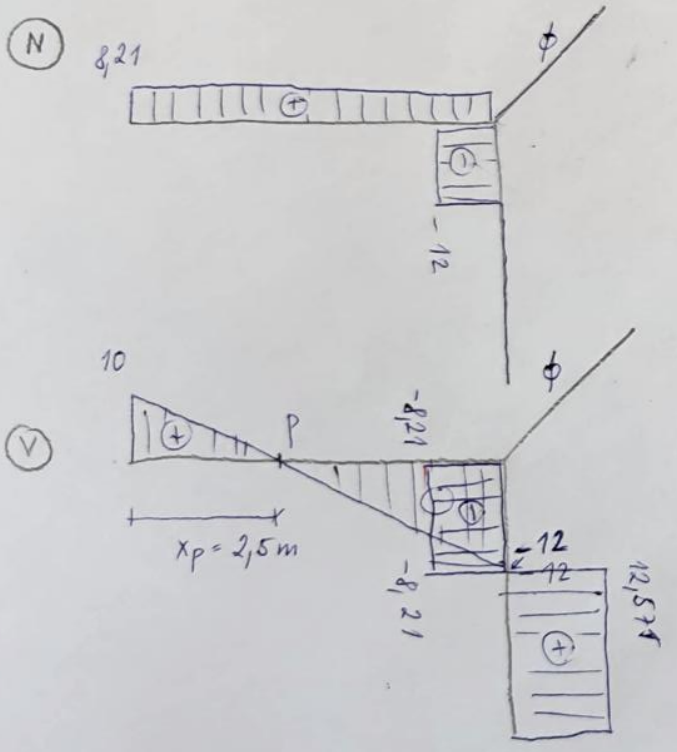
$R_{ax} + 20,785 + R_b = 0$

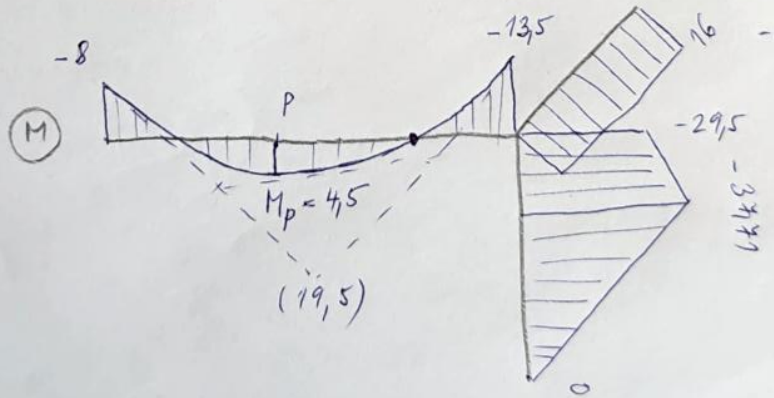
$-8,21375 + 20,785 - 12,57125 = 0$ ✓

KO: $\oplus$ $\Sigma M_{ik}^{II} = 0$:

$-M_{ar} - R_{az} \cdot 4 + 4 \cdot 4 \cdot 2 = 0$

$R_{az} = [-(-8) + 32] \cdot \frac{1}{4} = 10\,kN$





$M_p = M_a + \int_a^P V\,dx = -8 + \frac{1}{2} \cdot 10 \cdot 2,5 = 4,5\,kNm$