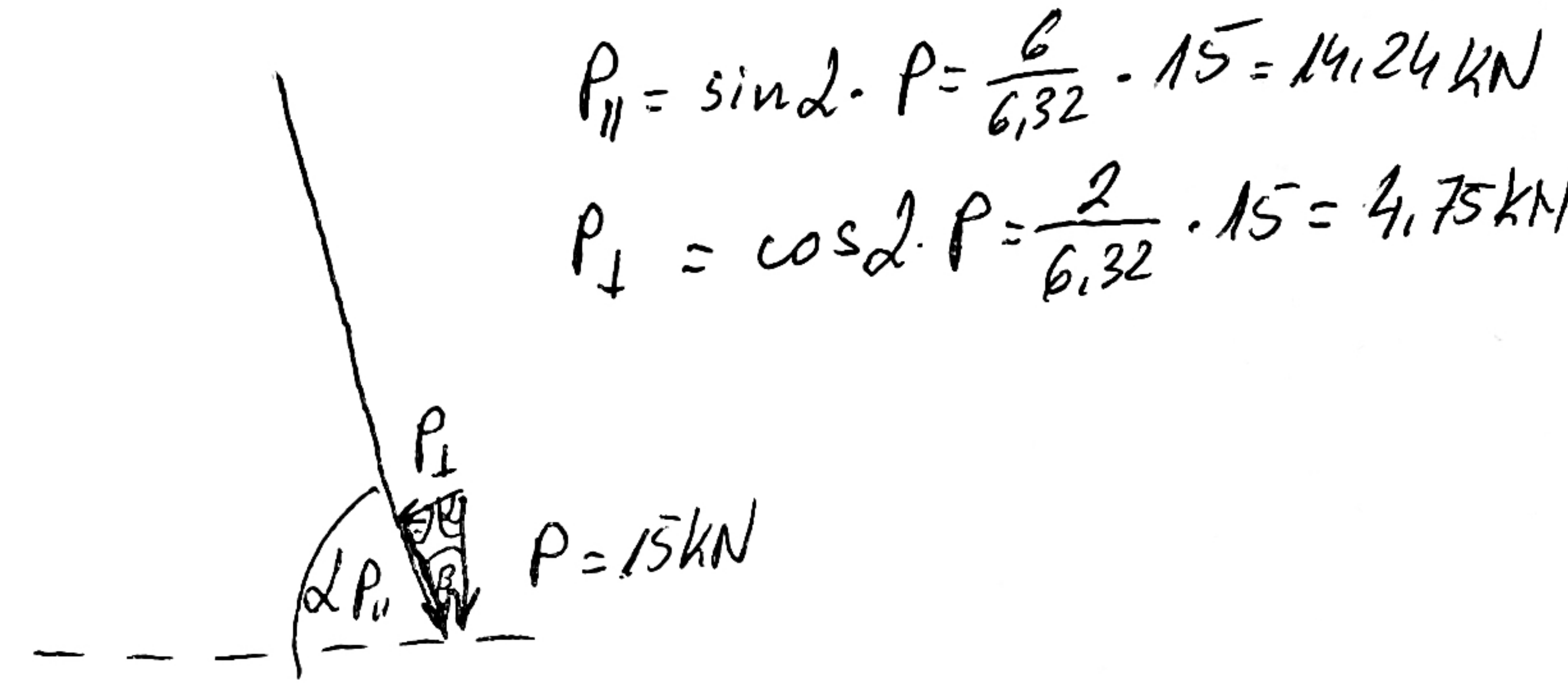
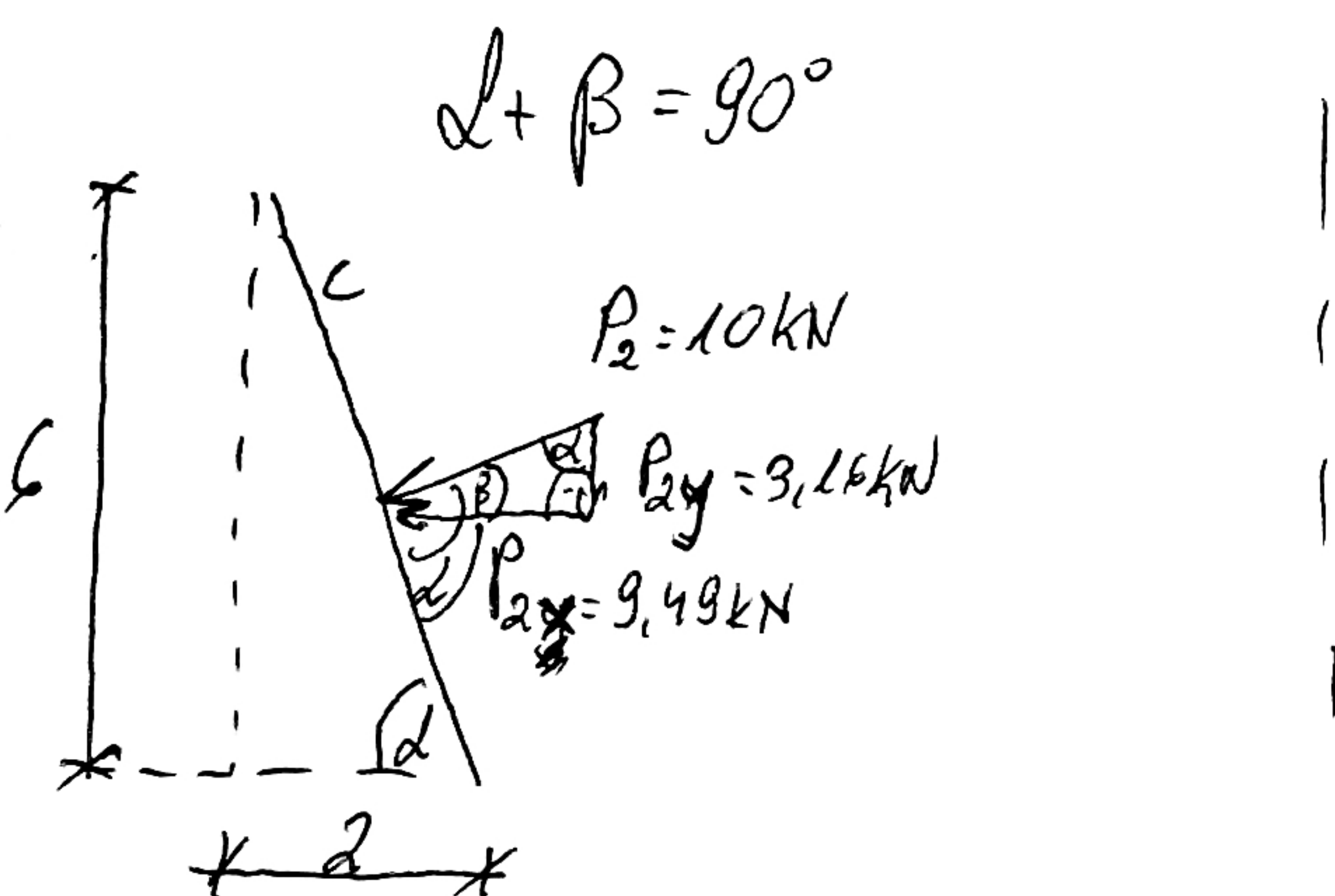


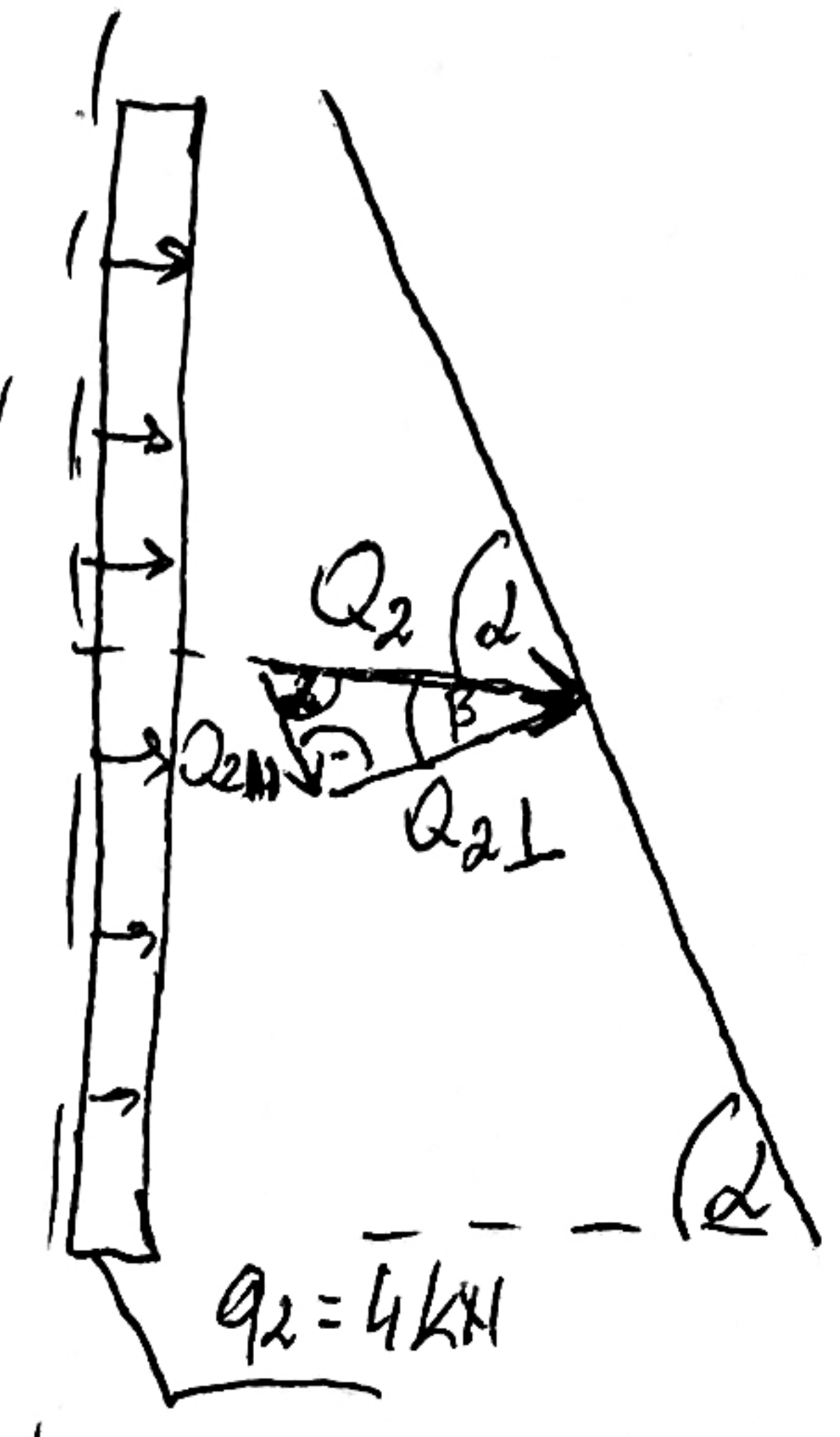
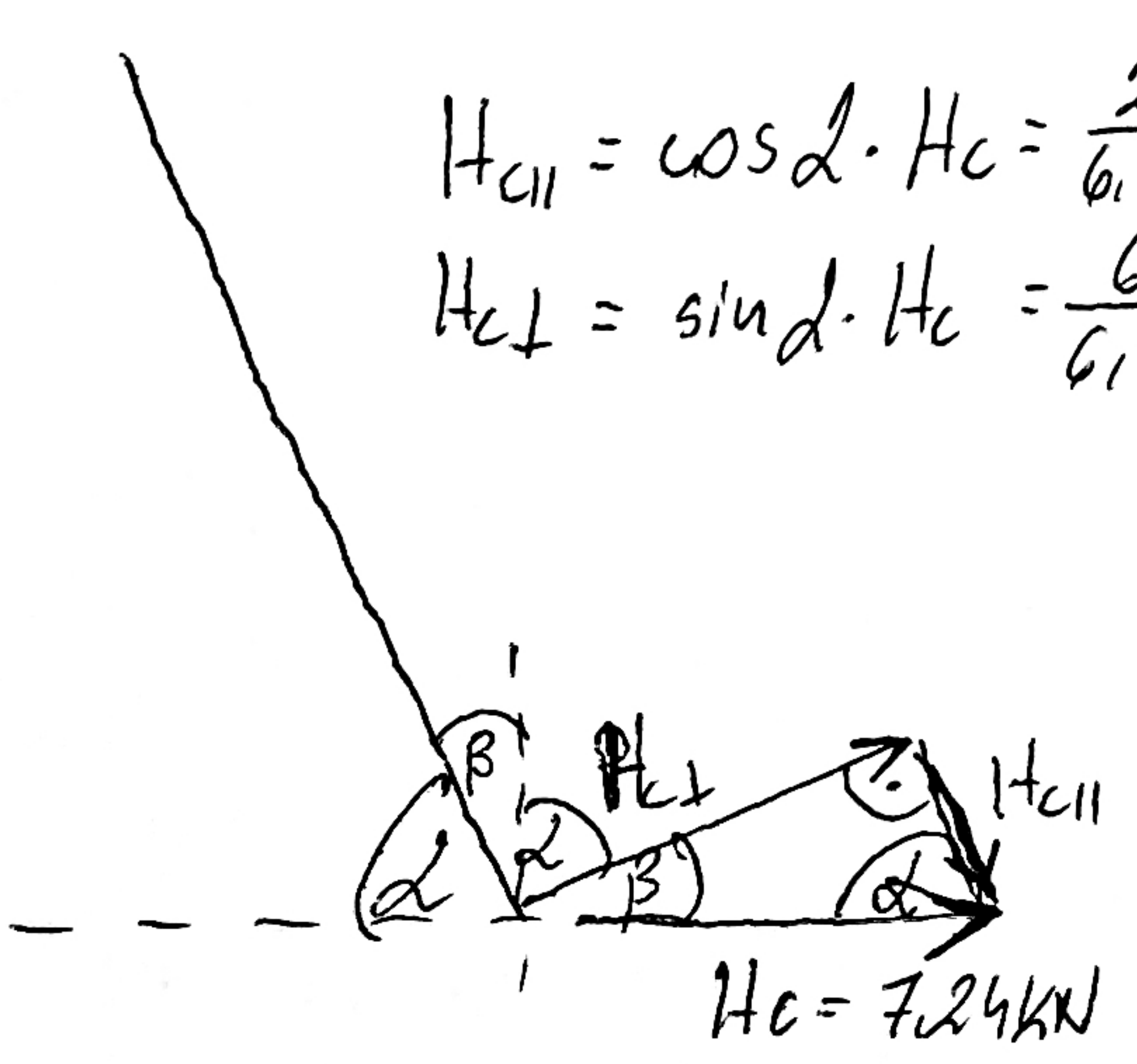
$$\begin{aligned} \sum R_y &= -3 \cdot 6 + V_A - 15 - 3,16 = 0 \\ V_A &= 36,16 \text{ kN} \\ \sum M_B^P &= 10 \cdot 3,16 - 4 \cdot 6 \cdot 3 + 15 \cdot 8 - H_c \cdot 11 = 0 \\ H_c &= 7,24 \text{ kN} \\ \sum R_x &= 4 \cdot 6 - 9,49 - H_A + 7,24 = 0 \\ H_A &= 21,75 \text{ kN} \\ \sum M_B^G &= 12 + 3 \cdot 6 \cdot 1 + M_A - 36,16 \cdot 8 = 0 \\ M_A &= 259,28 \text{ kNm} \\ \text{spr: } \sum M_A &= 259,28 - 3 \cdot 6 \cdot 7 + 12 \\ &\quad - 3,16 \cdot 7 + 9,49 \cdot 3 - 4 \cdot 6 \cdot 3 \\ &\quad - 7,24 \cdot 11 = -0,01 \approx 0 \end{aligned}$$



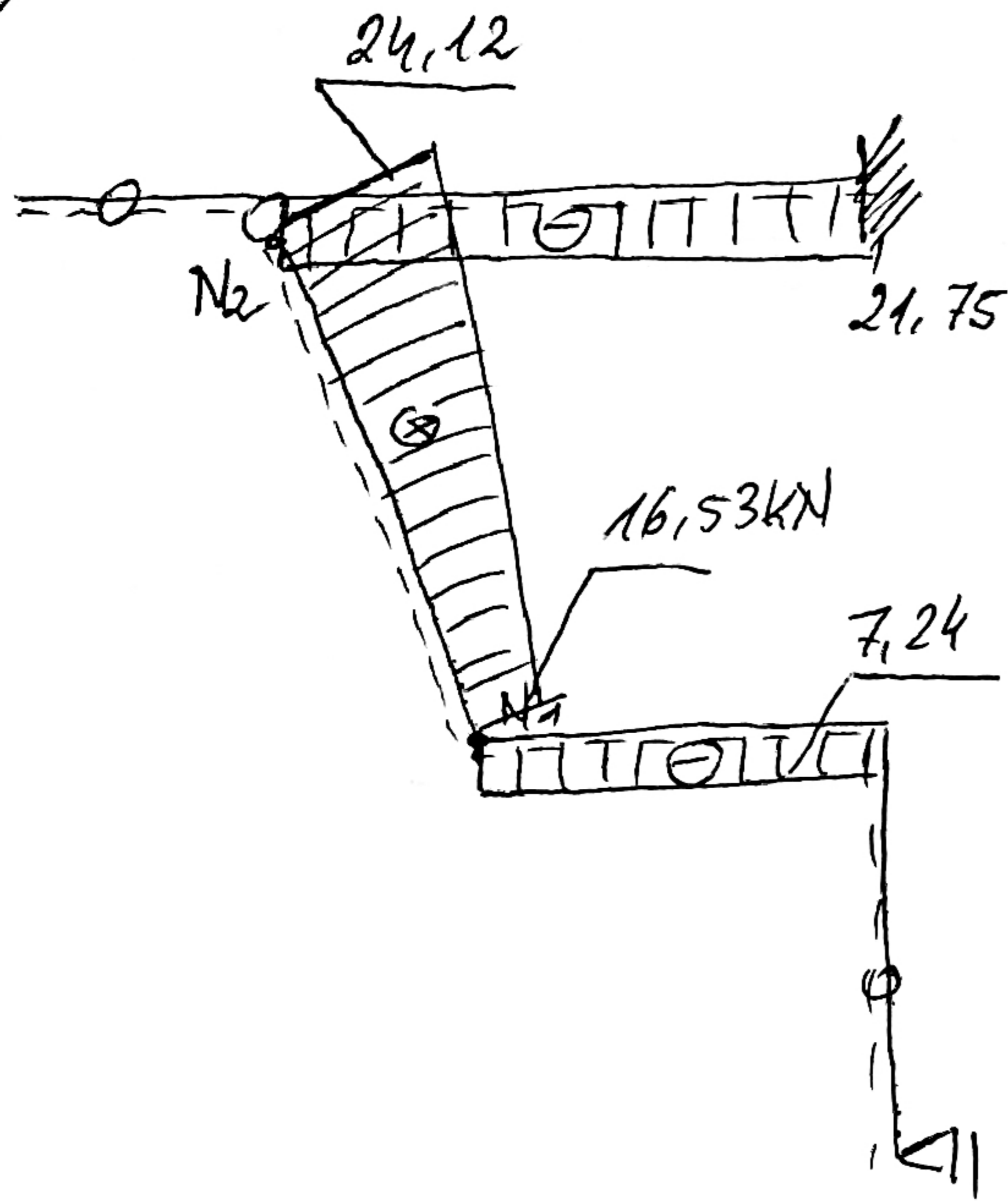
$$\begin{aligned} c &= \sqrt{2^2 + 6^2} = 6,32 \text{ m} \\ P_{2x} &= \sin \alpha \cdot P_2 = \frac{6}{6,32} \cdot 10 = 9,49 \text{ kN} \\ P_{2y} &= \cos \alpha \cdot P_2 = \frac{2}{6,32} \cdot 10 = 3,16 \text{ kN} \end{aligned}$$

$$\begin{aligned} Q_2 &= q_2 \cdot 6 = 4 \cdot 6 = 24 \text{ kN} \\ Q_{2||} &= Q_2 \cdot \cos \alpha = 24 \cdot \frac{2}{6,32} = 7,59 \text{ kN} \\ Q_{2\perp} &= Q_2 \cdot \sin \alpha = 24 \cdot \frac{6}{6,32} = 22,78 \text{ kN} \end{aligned}$$

$$\begin{aligned} H_{c||} &= \cos \alpha \cdot H_c = \frac{2}{6,32} \cdot 7,24 \text{ kN} = 2,29 \text{ kN} \\ H_{c\perp} &= \sin \alpha \cdot H_c = \frac{6}{6,32} \cdot 7,24 \text{ kN} = 6,87 \text{ kN} \end{aligned}$$



(N) [kN]



N_1 - na podstawie rozbić ze str. 1

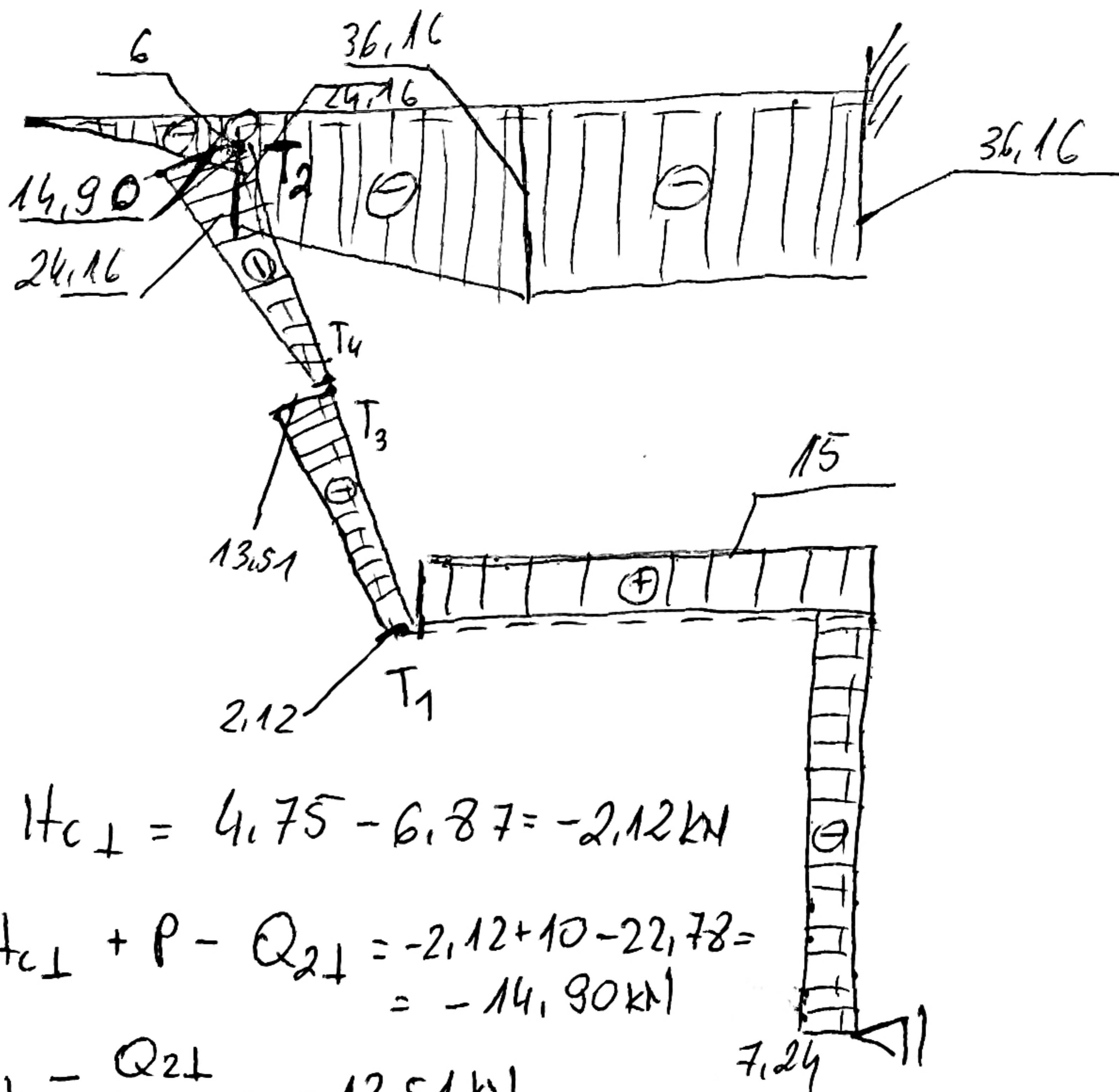
$$N_1 = P_{II} + H_{cII} = 14,24 + 2,29 = 16,53 \text{ kN}$$

N_2 - można znnowu rozbić siły pionowe i poziome dla górnej części belki albo dodać siłę normalną pochodzącą od obc. q_2

N_2 : obciążenie q_2 , P i reakcje H_c przesunięte do punktu N_2 dają siłę normalną na kierunku od N_2 do N_1 , a więc trzeba je dodać:

$$N_2 = P_{II} + H_{cII} + Q_{2II} = 16,53 + 7,59 = 24,12 \text{ kN}$$

(T) [kN]



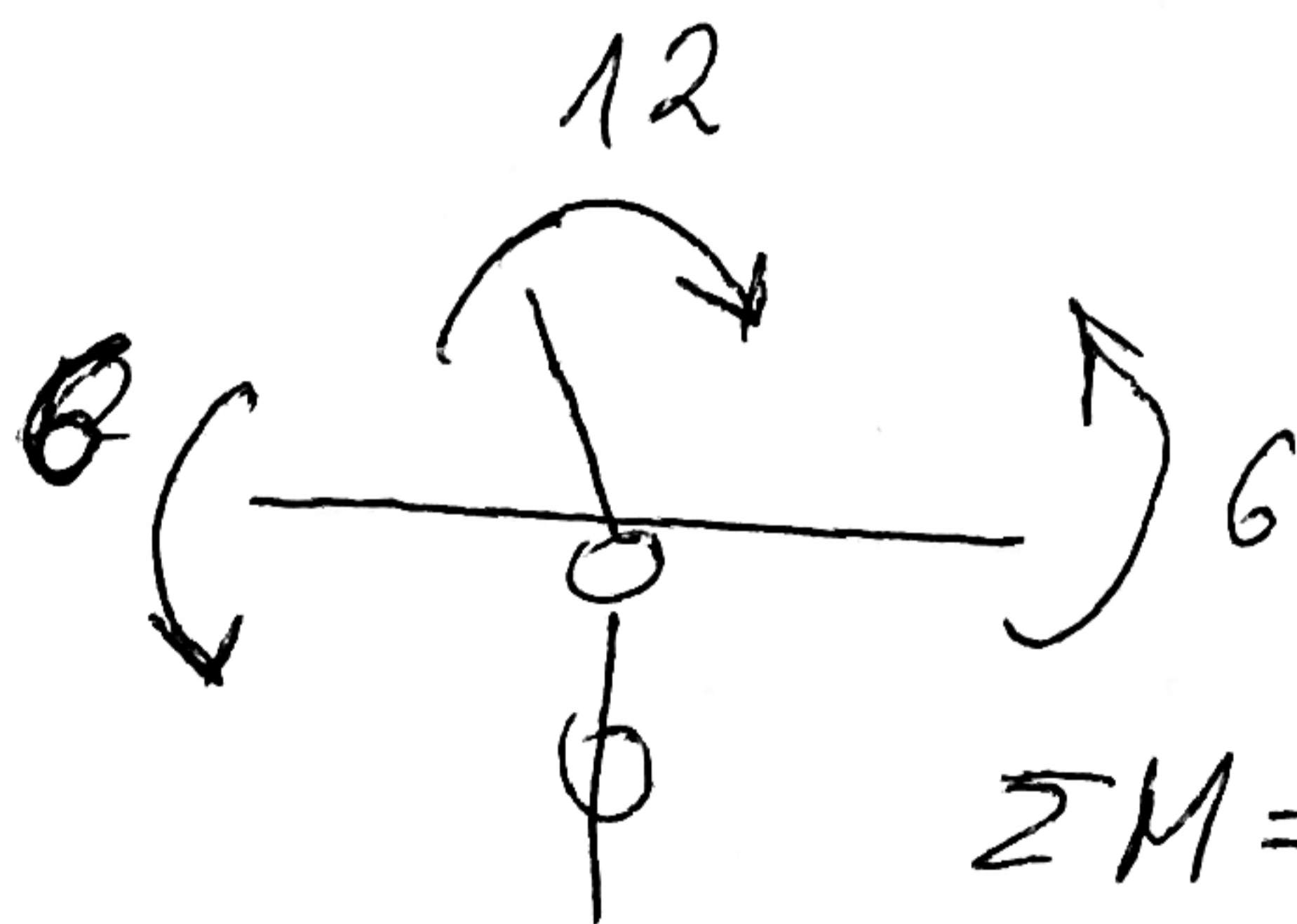
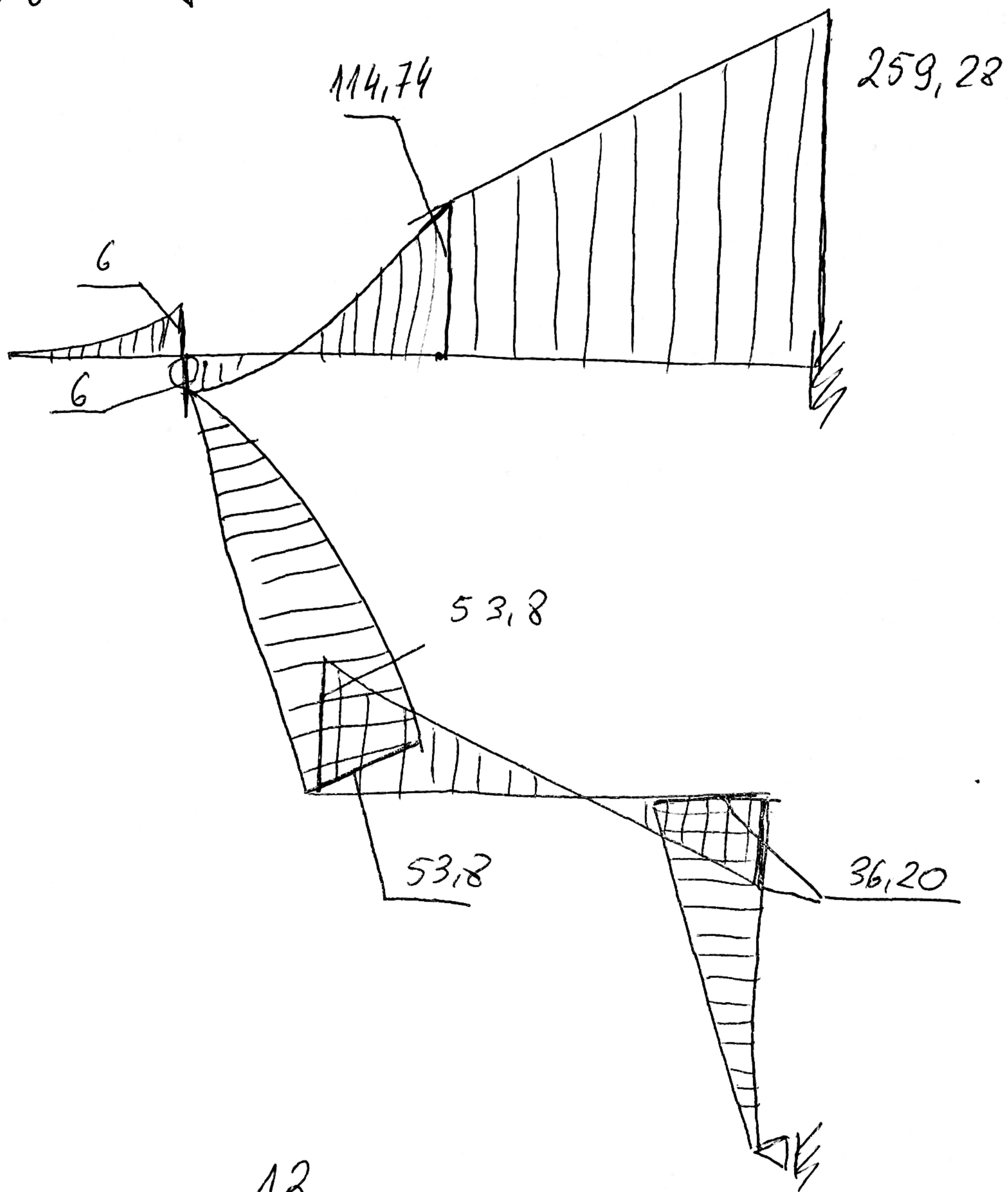
$$T_1 = P_{\perp} - H_{c\perp} = 4,75 - 6,87 = -2,12 \text{ kN}$$

$$T_2 = P_{\perp} - H_{c\perp} + P - Q_{2\perp} = -2,12 + 10 - 22,78 = -14,90 \text{ kN}$$

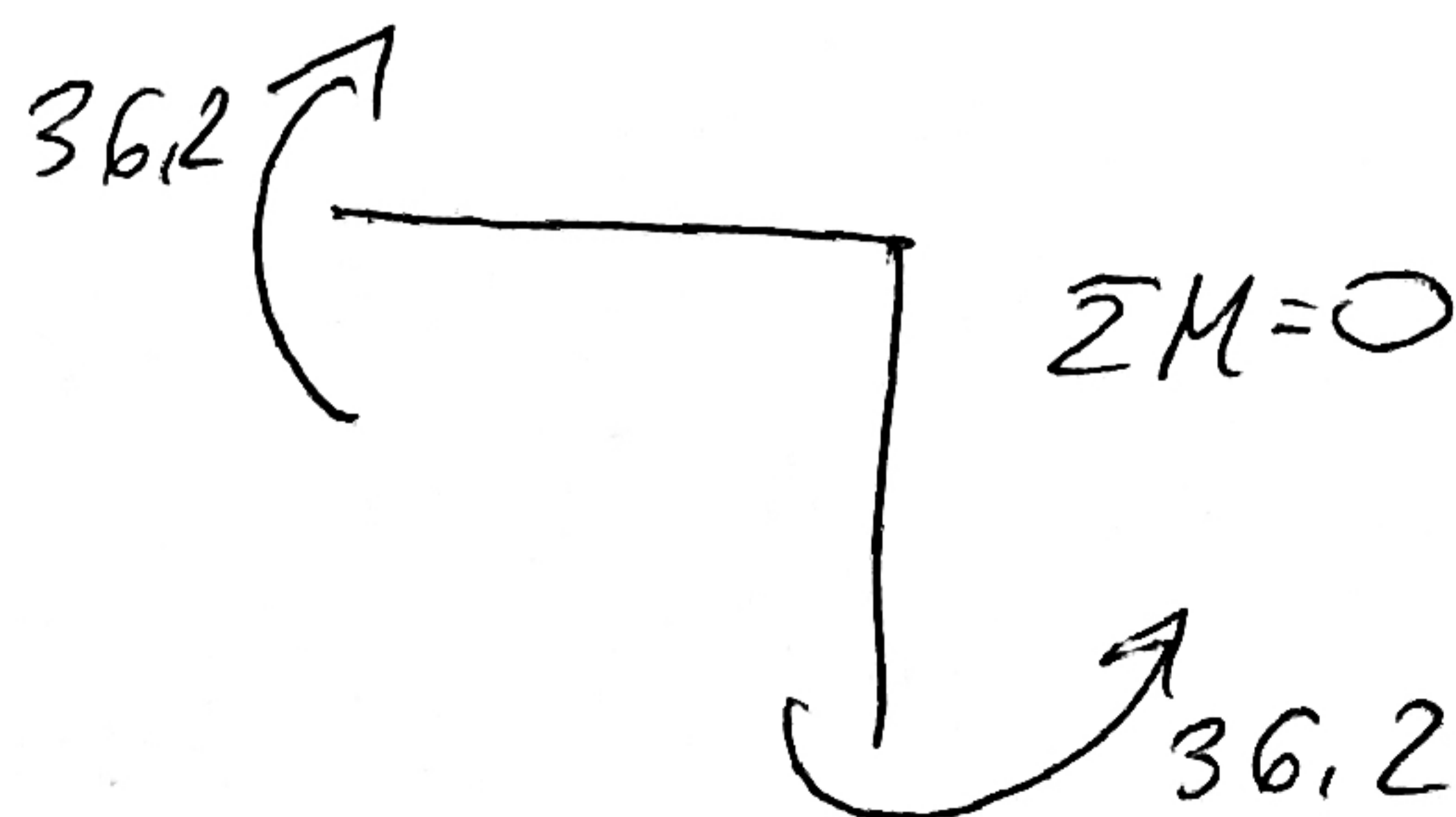
$$T_3 = P_{\perp} - H_{c\perp} - \frac{Q_{2\perp}}{2} = -13,51 \text{ kN}$$

$$T_4 = P_{\perp} - H_{c\perp} - \frac{Q_{2\perp}}{2} + 10 = -3,51 \text{ kN}$$

M [kNm]



$$\sum M = -6 + 6 + 12 = 0$$



$$\sum M = 0$$

