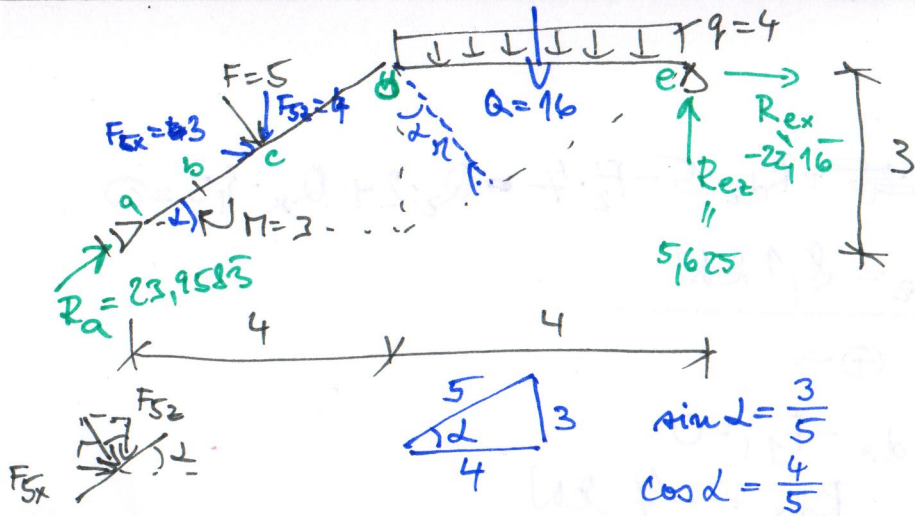




$$F_{5x} = F_5 \cdot \sin \alpha = 5 \cdot \frac{3}{5} = 3 \text{ kN}$$

$$F_{5z} = F_5 \cdot \cos \alpha = 5 \cdot \frac{4}{5} = 4 \text{ kN}$$

$$\sum M_{ei} = 0$$

$$\uparrow -R_a \cdot 4 + F_{5z} \cdot 6 + F_{5x} \cdot 1.5 + 16 \cdot 2 = 0$$

$$\frac{x}{3} = \cos \alpha \Rightarrow x = 3 \cdot \cos \alpha = \frac{12}{5} = 2.4 \text{ m}$$

$$R_a = 23.9583 \text{ kN}$$

$$\uparrow \sum M_{di} = 0$$

$$F \cdot 2.5 - M - 16 \cdot 2 + R_{ez} \cdot 4 = 0$$

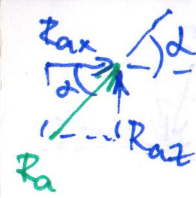
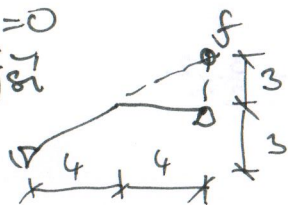
$$R_{ez} = 5.625 \text{ kN}$$

$$\uparrow \sum M_{di} = 0$$

$$-M - F \cdot 2.5 - 16 \cdot 6 + R_{ez} \cdot 8 - R_{ex} \cdot 3 = 0$$

Pozn. $\sum M_{fi} = 0$
východnější

$$R_{ex} = -22.16 \text{ kN}$$



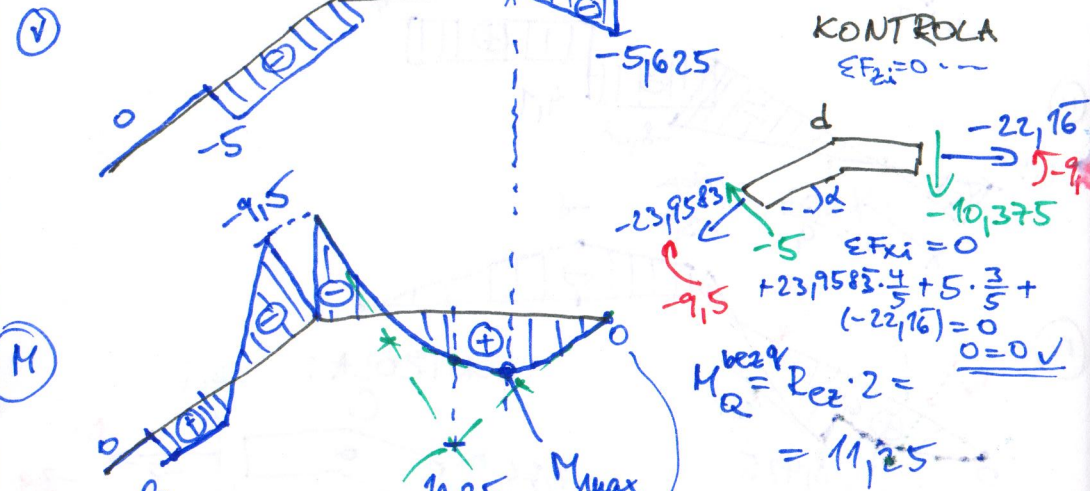
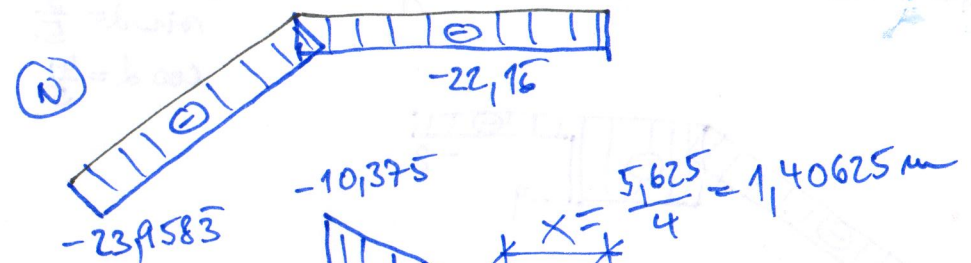
$$R_{ax} = R_a \cdot \cos \alpha = 23.9583 \cdot \frac{4}{5} = 19.16 \text{ kN}$$

$$R_{az} = R_a \cdot \sin \alpha = 23.9583 \cdot \frac{3}{5} = 14.375 \text{ kN}$$

$$\rightarrow \sum F_{xi} = 0$$

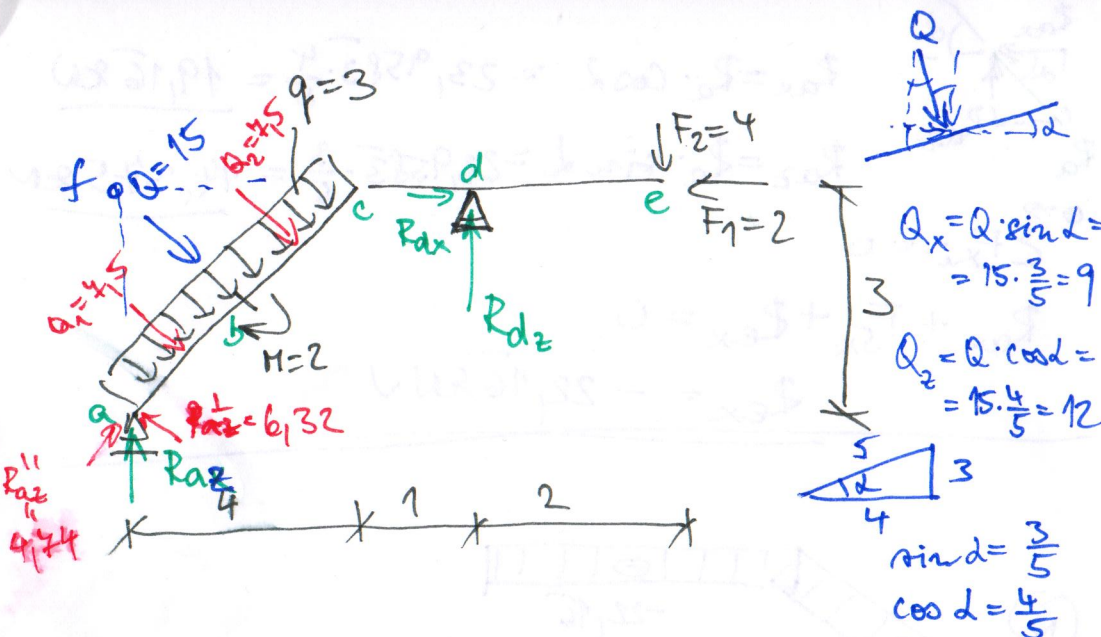
$$R_{ax} + F_{5x} + R_{ex} = 0$$

$$R_{ex} = -22.16 \text{ kN}$$



$$M_{max} = 3.955 \text{ kNm} = 0 - \frac{1}{2} \cdot 1.40625 \cdot (-5.625)$$

$$M_{max} = M(x = 1.40625) = 3.955 \text{ kNm}$$



$$\sum M_{fi} = 0$$

$$-M + \cancel{0.25} + R_{dz} \cdot 5 - F_2 \cdot 4 = Q_z \cdot 2 + Q_x \cdot 1.5 = 0$$

$$R_{dz} = 8.1 \text{ kN}$$

$$\sum F_{xi} = 0 \rightarrow$$

$$Q_x + R_{dx} - F_1 = 0$$

$$R_{dx} = -4 \text{ kN}$$

$$\sum M_{di} = 0 \oplus \uparrow$$

$$-R_{ax} \cdot 5 - M + Q_x \cdot 1.5 + Q_z \cdot 3 - F_2 \cdot 2 = 0$$

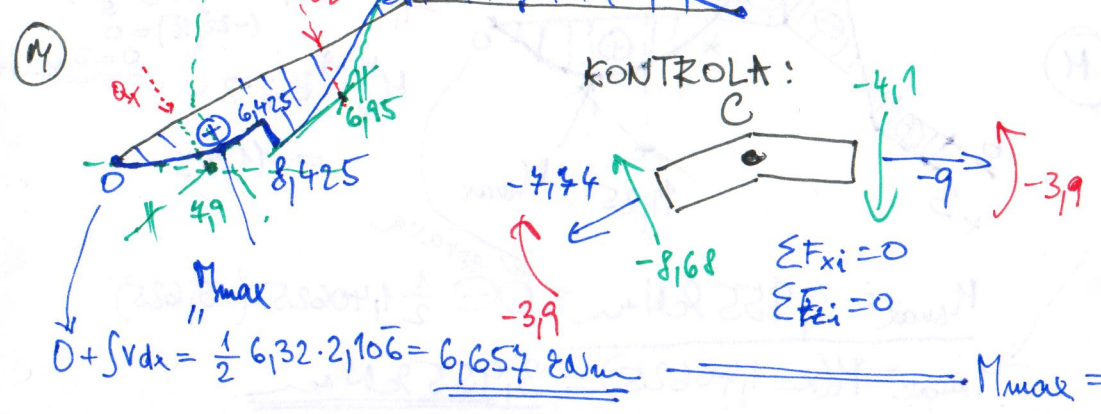
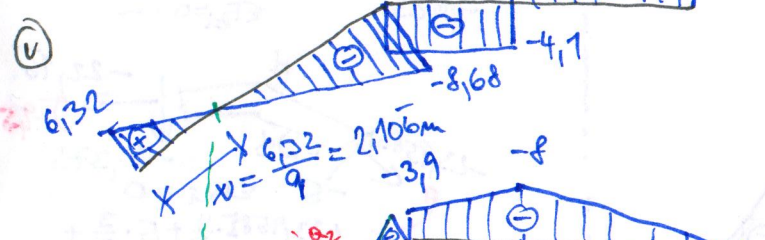
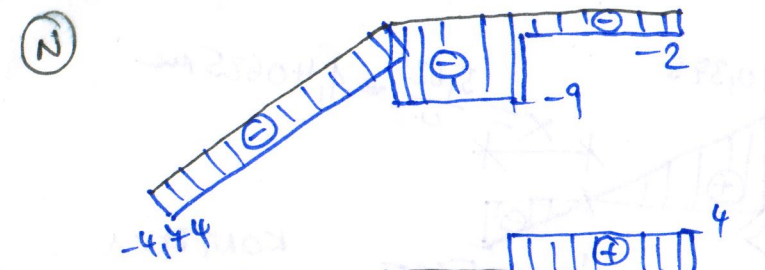
$$R_{ax} = 7.9 \text{ kN}$$

$$\sum F_{zi} = 0 \oplus \uparrow$$

$$R_{az} - Q_z + R_{dz} - F_2 = 0 \quad 0=0 \checkmark$$

$$R_{az} = R_{az} \cdot \sin \alpha = 4.74 \text{ kN}$$

$$R_{az}^\perp = R_{az} \cdot \cos \alpha = 6.32 \text{ kN}$$



$$M_{Q1}^{bezg} = R_{az} \cdot 1 = 4.9$$

$$M_Q^{bezg} = R_{az} \cdot 2 - Q_1 \cdot \frac{5}{4} = 6.425$$

$$V(x) = R_{az}^\perp - q \cdot x = 6.32 - 3x$$

$$M(x) = R_{az}^\perp \cdot x - q \frac{x^2}{2} = 6.32 \cdot x - \frac{3}{2} x^2$$

$$M(x=2.106) = 6.657 \text{ kNm}$$