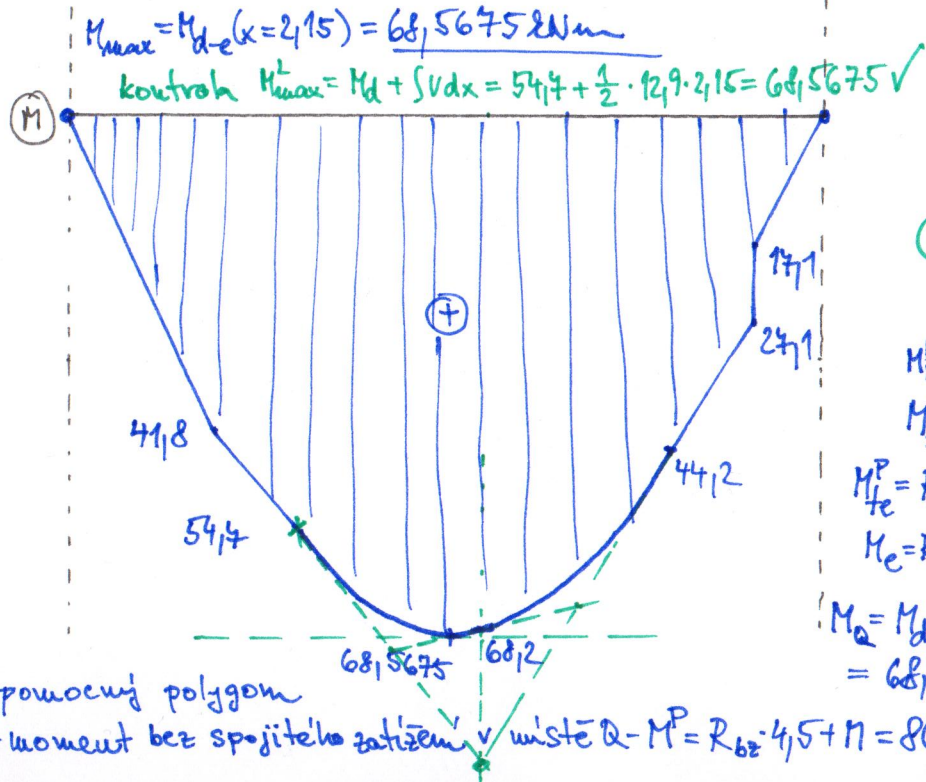
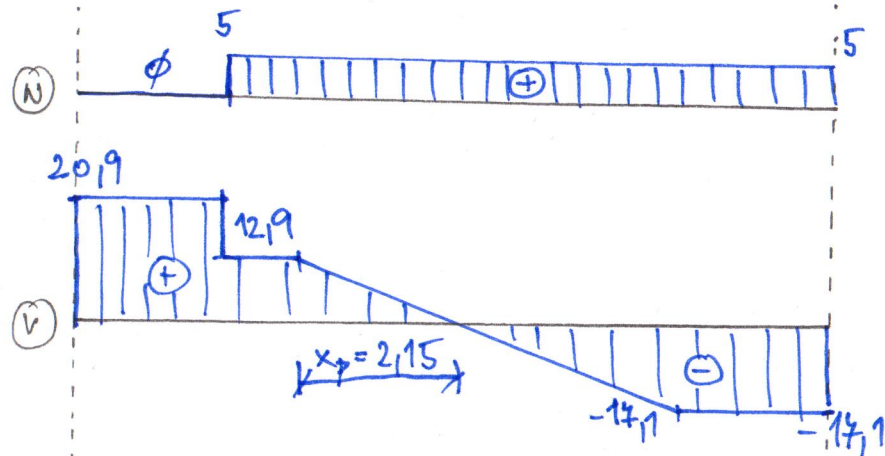
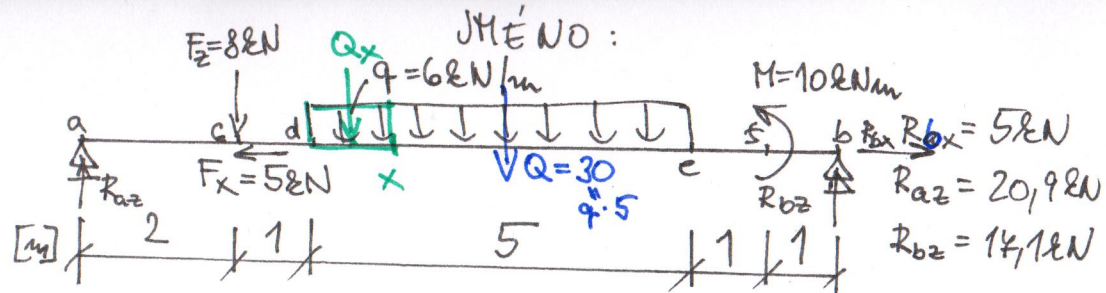




$$N_{abc} = N_{ca} = 0$$

$$N_{cd} = F_x = 5 \text{ kN}$$

$$N_{be} = F_x = 5 \text{ kN} \quad N_{be}^h = R_{bx} = 5 \text{ kN}$$

$$V_{ac} = V_{ca} = R_{az} = 20.9 \text{ kN}$$

$$V_{cd} = V_{dc} = R_{az} - F_z = 12.9 \text{ kN}$$

$$V_{d-e}(x) = R_{az} - F_z - Q_x = 12.9 - q \cdot x = 12.9 - 6x$$

$$V_{de} = V_{d-e}(x=0) = 12.9 \text{ kN} \checkmark$$

$$V_{ed} = V_{d-e}(x=5) = 12.9 - 6 \cdot 5 = -14.1 \text{ kN}$$

$$V_{eb}^P = -R_{bz} = -14.1 \text{ kN}$$

$$V_{eb}^P = V_{ed}^P = -R_{bz} = -14.1 \checkmark$$

přechodový průřez:

$$① V_{d-e}(x_p) = 0 \Rightarrow 0 = 12.9 - 6x_p \Rightarrow x_p = \frac{12.9}{6} = 2.15 \text{ m}$$

$$② x_p \text{ zleva} = \frac{V_{de}}{q} = \frac{12.9}{6} = 2.15 \text{ m} \checkmark$$

③ podobnost trojúhelníků x_p

$$\left\{ \begin{array}{l} 12.9 + 14.1 = 30 \\ \frac{30}{5} = \frac{12.9}{x_p} \Rightarrow \\ \Rightarrow x_p = \frac{12.9 \cdot 5}{30} = 2.15 \text{ m} \checkmark \end{array} \right.$$

$$M_b^P = 0$$

$$M_{fb}^P = R_{bz} \cdot 1 = 14.1 \text{ kNm}$$

$$M_{fe}^P = R_{bz} \cdot 1 + M = 24.1 \text{ kNm}$$

$$M_e = R_{bz} \cdot 2 + 11 = 44.2 \checkmark$$

$$M_a = M_{d-e}(x=2.5) = 68.2 \text{ kNm}$$

$$M_a = 0$$

$$M_c = R_{az} \cdot 2 = 20.9 \cdot 2 = 41.8 \text{ kNm}$$

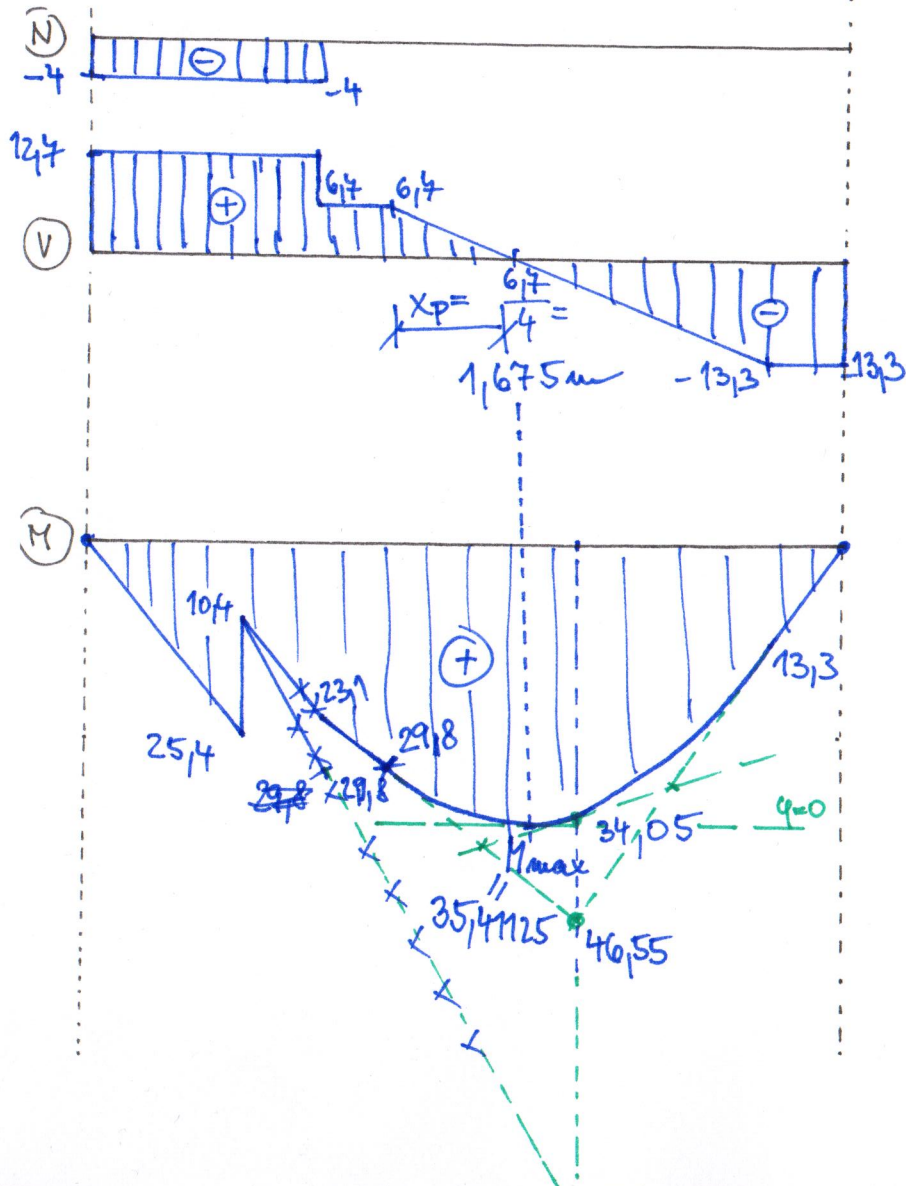
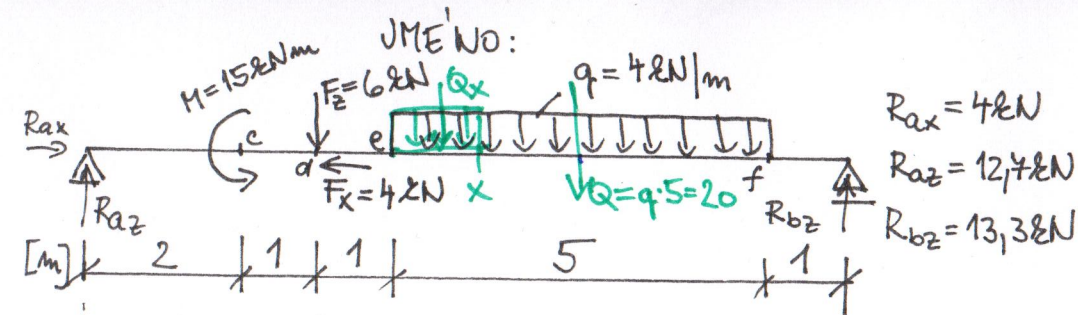
$$M_d = R_{az} \cdot 3 - F_z \cdot 1 = 20.9 \cdot 3 - 8 \cdot 1 = 54.7 \text{ kNm}$$

$$M_{d-e}(x) = R_{az} \cdot (3+x) - F_z \cdot (1+x) - Q_x \cdot \frac{x}{2} =$$

$$= 20.9 \cdot 3 + 20.9x - 8 - 8x - 3x^2 = 54.7 + 12.9x - 3x^2$$

$$M_d = M_{d-e}(x=0) = 54.7 \checkmark$$

$$M_e = M_{d-e}(x=5) = 54.7 + 12.9 \cdot 5 - 3 \cdot 5^2 = 44.2 \text{ kNm}$$



$$V(x) = R_{az} - F_z - Q_x = 12,7 - 6 - 4x = 6,7 - 4x$$

$$V(x=0) = 6,7 \checkmark \quad V(x=5) = -13,3 \checkmark$$

kontrola přes derivační integraci...

$$M_{\max} = M_e + \int V dx = 29,8 + \frac{1}{2} \cdot 6,7 \cdot 1,675 = 35,41125 \text{ kNm}$$

$$M_a = 0$$

$$M_{ca} = R_{az} \cdot 2 = 12,7 \cdot 2 = 25,4 \text{ kNm}$$

$$M_{cd} = R_{az} \cdot 2 - M = 12,7 \cdot 2 - 15 = 10,4 \text{ kNm}$$

$$M_d = R_{az} \cdot 3 - M = 23,1 \text{ kNm}$$

$$M_e = R_{az} \cdot 4 - M - F_z \cdot 1 = 29,8 \text{ kNm}$$

$$M_b^P = 0$$

$$M_f^P = R_{bz} \cdot 1 = 13,3 \text{ kNm}$$

$$P_{M_{\max}} = R_{bz} \cdot 3,5 = 46,55 \text{ kNm}$$

$$M(x) = R_{az} \cdot (4+x) - M - F_z(1+x) - Q_x \cdot \frac{x}{2} = 12,7 \cdot 4 + 12,7 \cdot x - 15 - 6 - 6x - 2x^2 = 29,8 + 6,7x - 2x^2$$

$$M(x=0) = 29,8 = M_e \checkmark$$

$$M(x=5) = M_f = 29,8 + 6,7 \cdot 5 - 2 \cdot 5^2 = 13,3 \checkmark$$

$$M_{\max} = M(x=1,675) = 35,41125 \text{ kNm}$$

$$M_Q = M(x=2,5) = 34,05$$