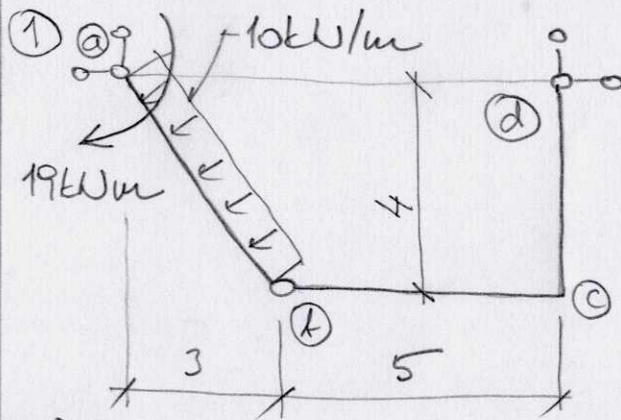
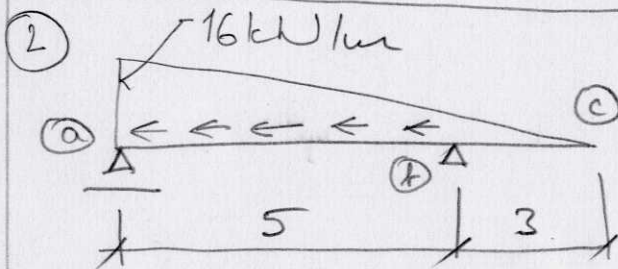
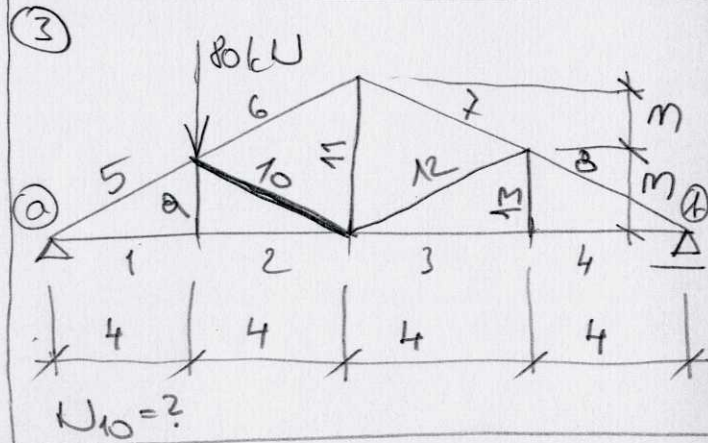




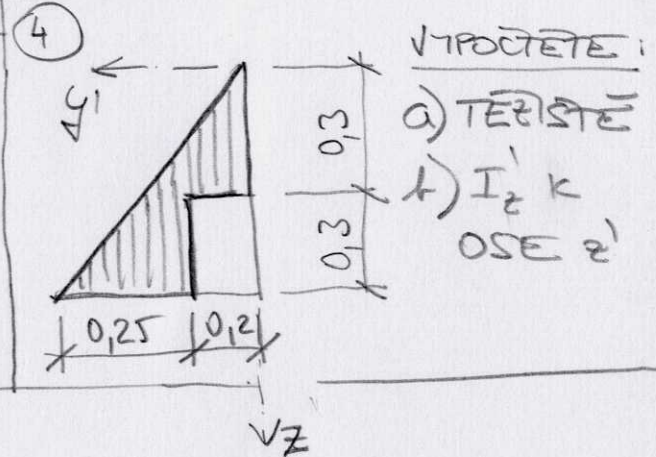
PRŮBĚHY VNIT. SIL = ?



PRŮBĚHY VNIT. SIL = ?

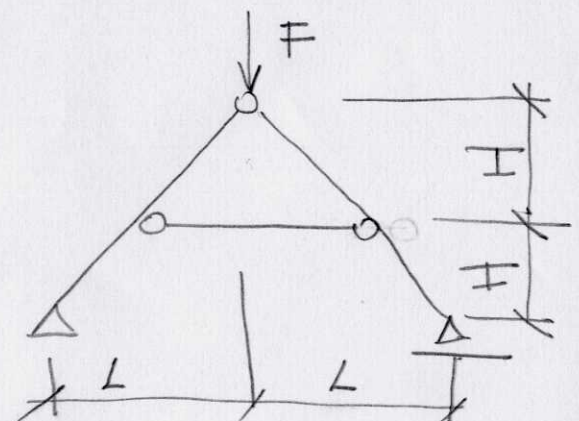
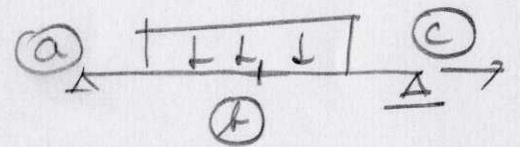
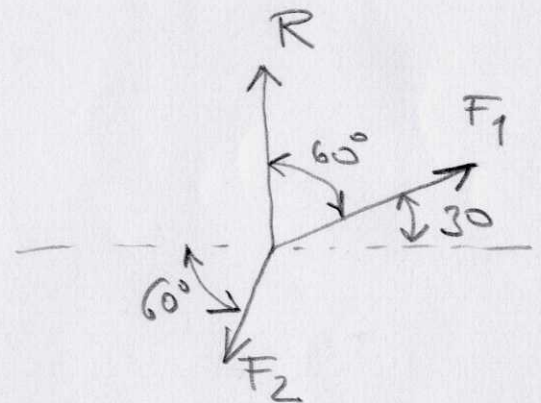


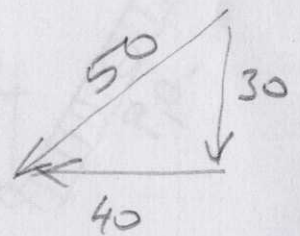
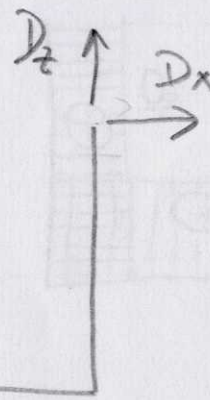
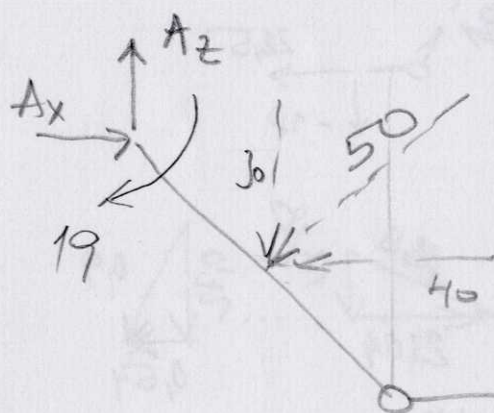
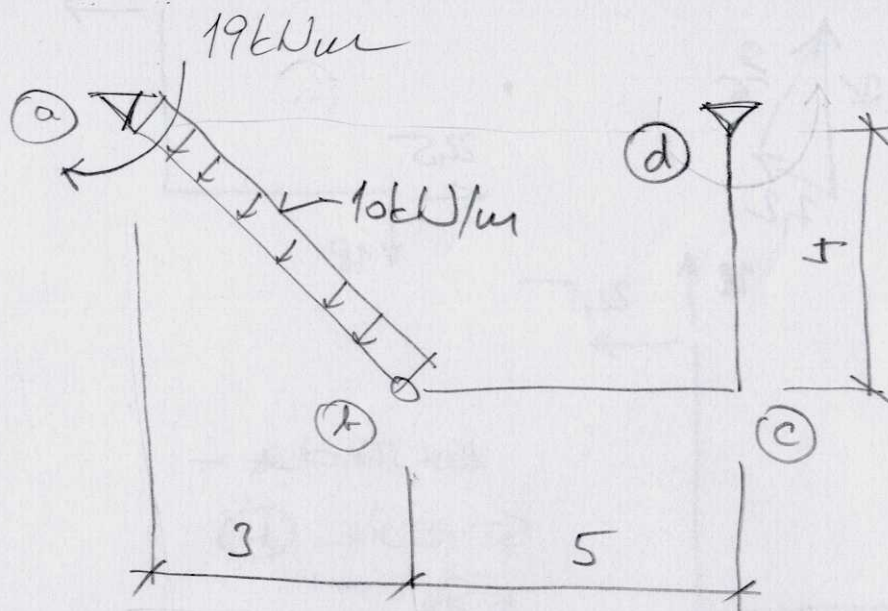
$N_{10} = ?$



TEORIE:

- 1) CO JSOU HLAVNÍ MOMENTY SETRVAČNOSTI PRŮŘEZU? JAK SE ZÍSKAJÍ? VLASTNOSTI.
- 2) POMOCI PODMÍNEK EKVIVALENCE ROZKLÁDETE SÍLU R DO SLOŽEK F_1 A F_2
- 3) DEFINUJTE VNITŘNÍ SÍLY V BODĚ (d). CO VYJADŘUJÍ? CO ZANESUJÍ?
- 4) NARÝSŮJTE ŘEŠENÍ REAKCI A SÍLY VTAHLE A TLAČLOUB. RAMU S TÁHLETI DLE OBRÁZKU.





$$\sum M_{i@} = 0:$$

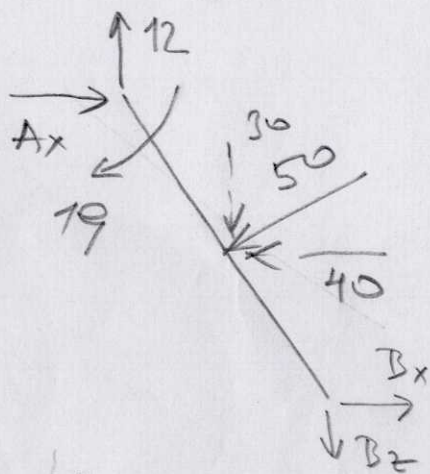
$$D_z \cdot 8 - 50 \cdot 2,5 - 19 = 0$$

$$D_z = 18 \text{ kN}$$

$$\sum M_{i@} = 0:$$

$$+ A_z \cdot 8 + 19 - 30 \cdot 6,5 + 40 \cdot 2 = 0$$

$$A_z = 12 \text{ kN}$$

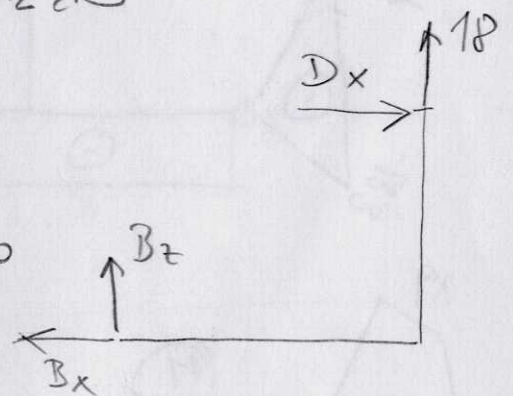


$$\sum M_{i@} = 0$$

$$- 12 \cdot 3 - A_x \cdot 4$$

$$+ 30 \cdot 2,5 - 19 = 0$$

$$A_x = 17,5$$



$$\sum M_{i@} = 0$$

$$18 \cdot 5 - D_x \cdot 4 = 0 \quad D_x = 22,5$$

$$\sum F_{ix} = 0:$$

$$B_x + A_x - 40 = 0 \quad B_x = 22,5$$

$$\sum F_{iz} = 0:$$

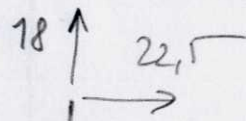
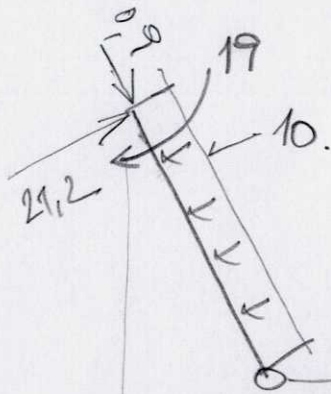
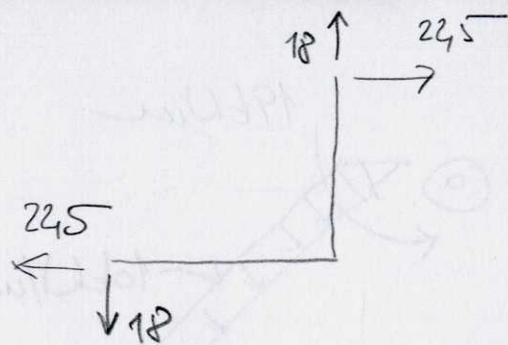
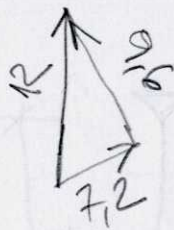
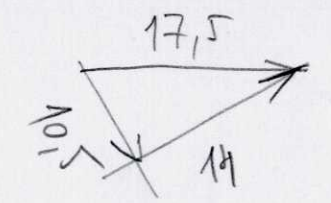
$$B_z - 12 + 30 = 0 \quad B_z = -18$$

$$\sum F_{ix}^P = 0: D_x + B_x = 0$$

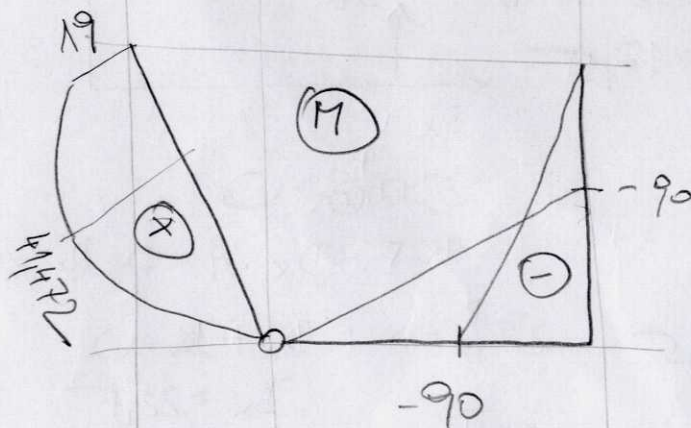
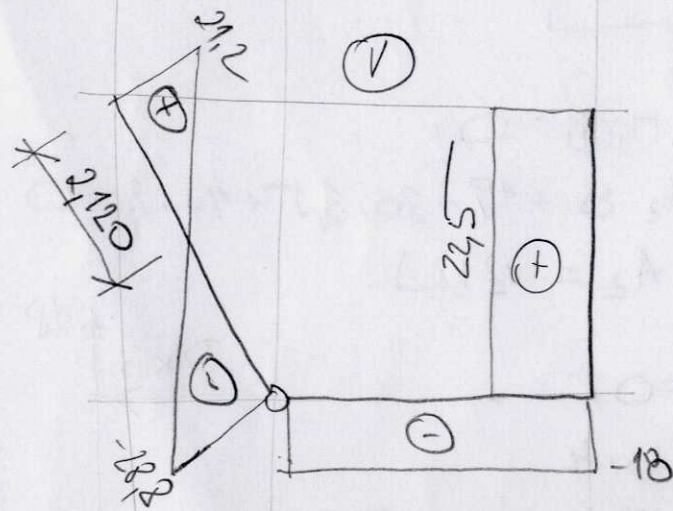
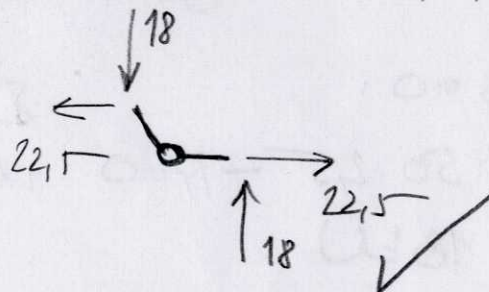
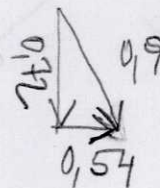
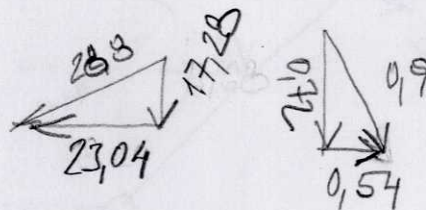
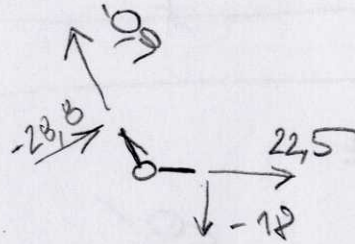
$$B_x = -22,5$$

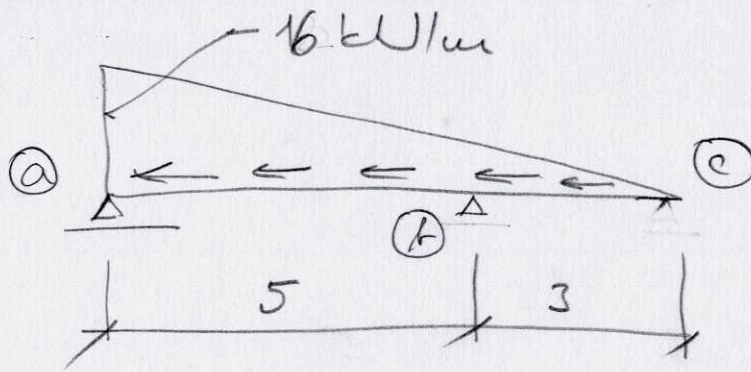
$$\sum F_{iz}^P = 0: 18 + B_z = 0$$

$$B_z = -18$$

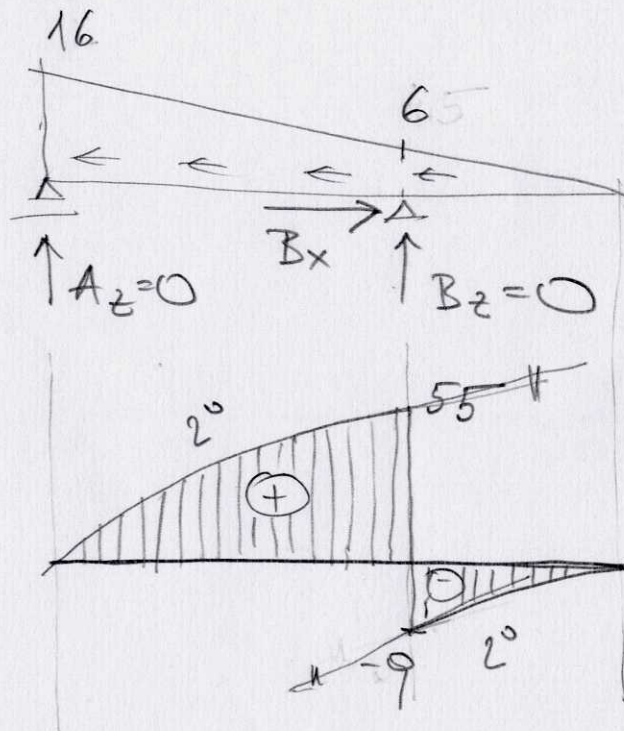


KONTROLA -
STROJNIK (+)





ВЫПОЧТЕТЕ А НАЧЕРТАЙТЕ ПРОБЕЖИ ВНИТ СИЛ.

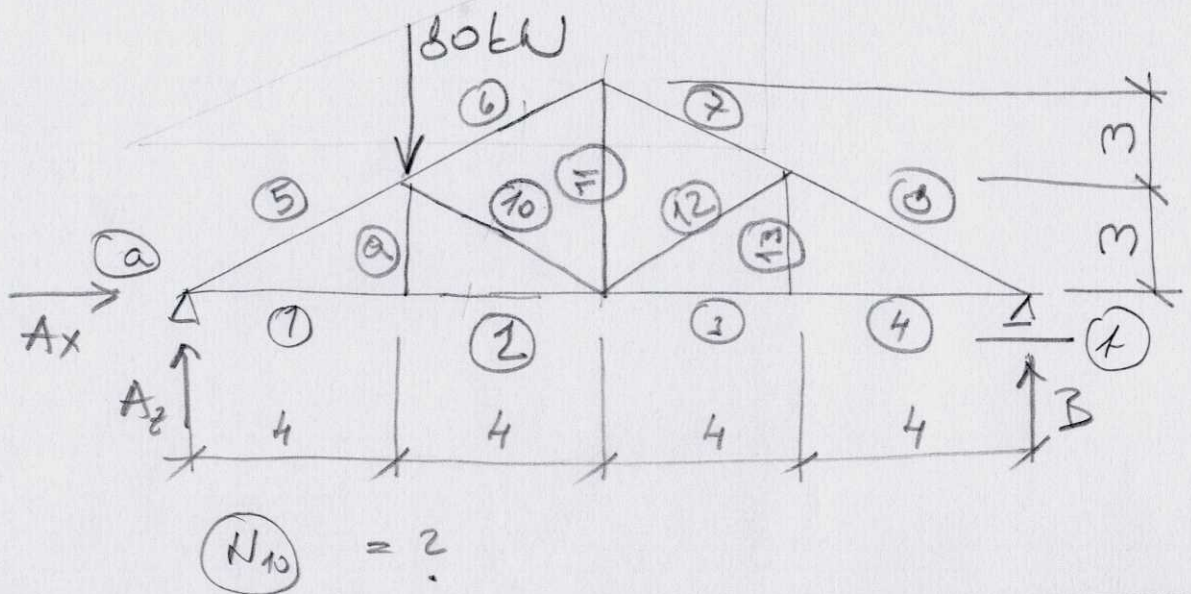


$$\sum F_{ix} = 0:$$

$$B_x - \frac{1}{2} \cdot 16 \cdot 8 = 0$$

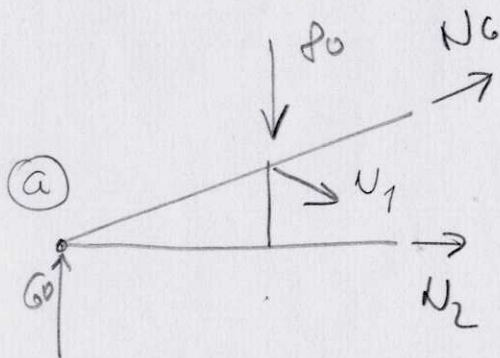
$$B_x = 64 \text{ kN}$$

(1)



$$A_x = 0$$

$$\sum \pi_i \text{ (at } \textcircled{A} \text{)} = 0 : A_y \cdot 4 - 80 \cdot 3 = 0 \Rightarrow A_y = 60 \text{ kN}$$

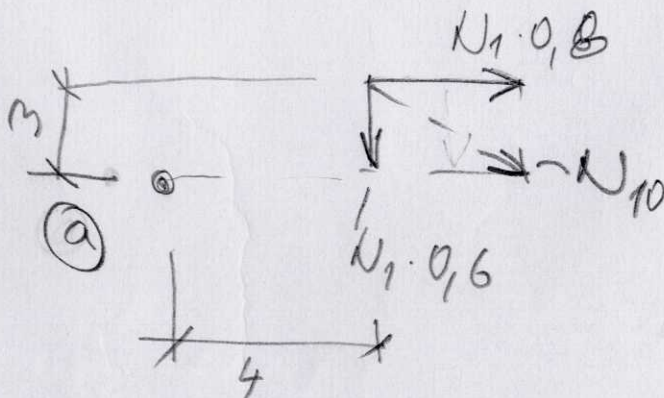


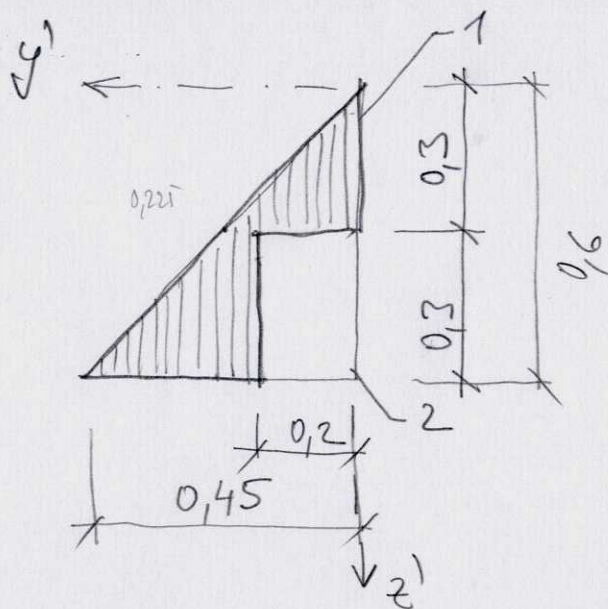
$$\sum \pi_i \text{ (at } \textcircled{A} \text{)} = 0 :$$

$$80 \cdot 4 + N_1 \cdot 0,8 \cdot 3 + N_1 \cdot 0,6 \cdot 4 = 0$$

$$320 + 4,8 \cdot N_{10} = 0$$

$$N_{10} = -66,667 \text{ kN}$$





PRO ZADANÍ PRŮŘEZ

a) VYPOČTETE TĚŽISŤE

b) VYPOČTETE I_z'
K OSE z'

$$A_1 = \frac{1}{2} \cdot 0,45 \cdot 0,6 = 0,135 \text{ m}^2$$

$$A_2 = -0,2 \cdot 0,3 = -0,06 \text{ m}^2$$

$$A = 0,075 \text{ m}^2$$

$$S_{1y}' = 0,135 \cdot 0,4 = 0,054 \text{ m}^3$$

$$S_{2y}' = -0,06 \cdot 0,45 = -0,027 \text{ m}^3$$

$$S_y' = 0,027 \text{ m}^3$$

$$z_t = \frac{S_y'}{A} = 0,36 \text{ m}$$

$$S_{1z}' = 0,135 \cdot 0,15 = 0,02025 \text{ m}^3$$

$$S_{2z}' = -0,06 \cdot 0,1 = -0,006 \text{ m}^3$$

$$S_z' = 0,01425 \text{ m}^3$$

$$y_t = \frac{S_z'}{A} = 0,19 \text{ m}$$

$$I_{z,1}' = \frac{1}{36} 0,6 \cdot 0,45^3 + 0,135 \cdot 0,15^2 = 1,51875 \cdot 10^{-3} + 3,0375 \cdot 10^{-3}$$

$$I_{z,1}' = 4,55625 \cdot 10^{-3} \text{ m}^4$$

$$I_{z,2}' = -\left(\frac{1}{12} \cdot 0,3 \cdot 0,2^3 + 0,06 \cdot 0,1^2\right) = -(2 \cdot 10^{-4} + 6 \cdot 10^{-4})$$

$$I_{z,2}' = -8 \cdot 10^{-4} \text{ m}^4$$

$$I_z' = 3,75625 \cdot 10^{-3} \text{ m}^4$$