

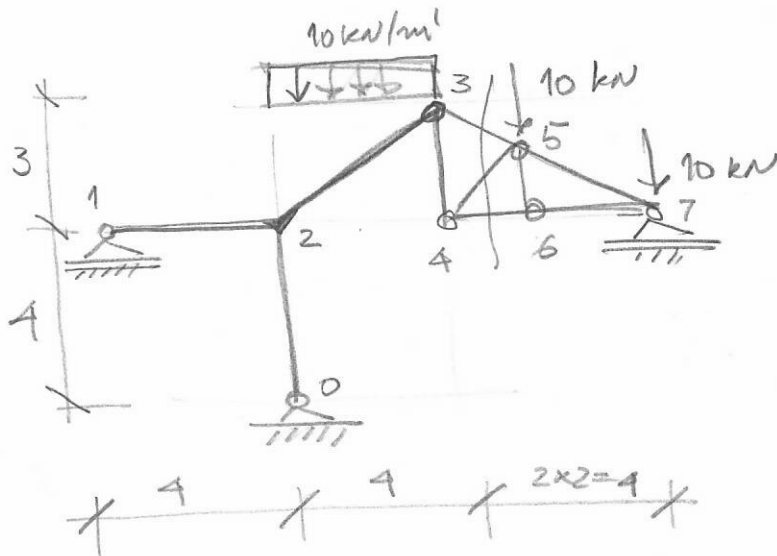
UNIVERZITET U BANSJALUCI

ARHITEKTONSKO-GRADJEVINSKO-GEODEZSKI FAKULTET
KATEDRA ZA MEHANIKU I TEORIJU KONSTRUKCIJA
STUDIJSKI PROGRAM GRADJEVINARSTVO

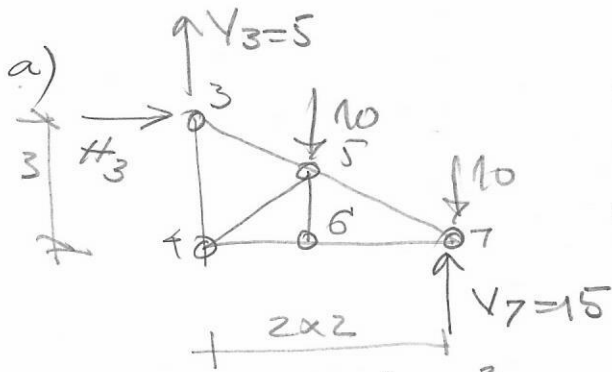
02.07.2021

TEHNIČKA MEHANIKA 1

ZA NOSAČ I OPTEREĆENJE NA SKICI TREBA:



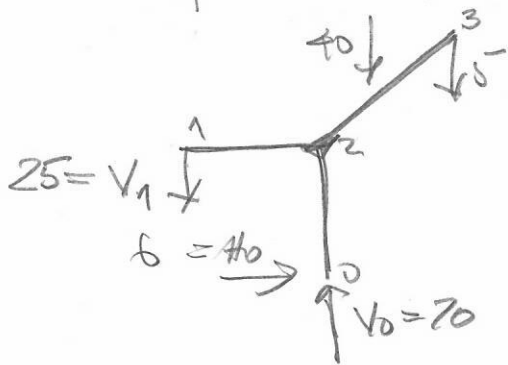
- ODREDITI REAKCIJE OSNOVACA I SILE VEŽA IZMEĐU KRUTIH PLOŠA
- NA DELU NOSAČA 2-3 ISPISATI FUNKCIJE PRESEČNIH SILA $M_x(z)$, $T_y(z)$ I $N(z)$
- NA PUNOM DELU NOSAČA NACRTATI DIAGRAME PRESEČNIH SILA M , T , N
- ZA REŠETKASTI DEO NOSAČA ODREDITI SILE U STAPOVIMA S_{35} , S_{45} I S_{46} METODAMA PRESEKA, A ZA SVE STAPOVE METODOM ČVOROVA
- VERTIKALNU REAKCIJU V_1 ODREDITI METODOM VIRTUELNOG RADA



$$\sum H = H_3 = 0$$

$$\sum M_3 = 4V_7 - 10(4+2) = 0 \quad V_7 = 15$$

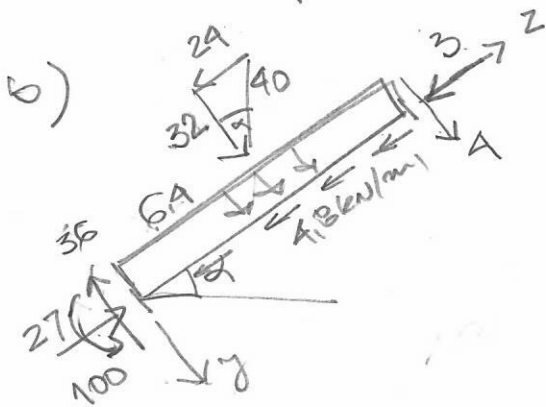
$$\sum V = V_3 + 15 - 2 \cdot 10 = 0 \quad V_3 = 5$$



$$\sum H = H_0 = 0$$

$$\sum M_0 = 4V_1 - 2 \cdot 40 - 4 \cdot 15 = 0 \quad V_1 = 25$$

$$\sum V = V_0 - 40 - 15 - 25 = 0 \quad V_0 = 70$$



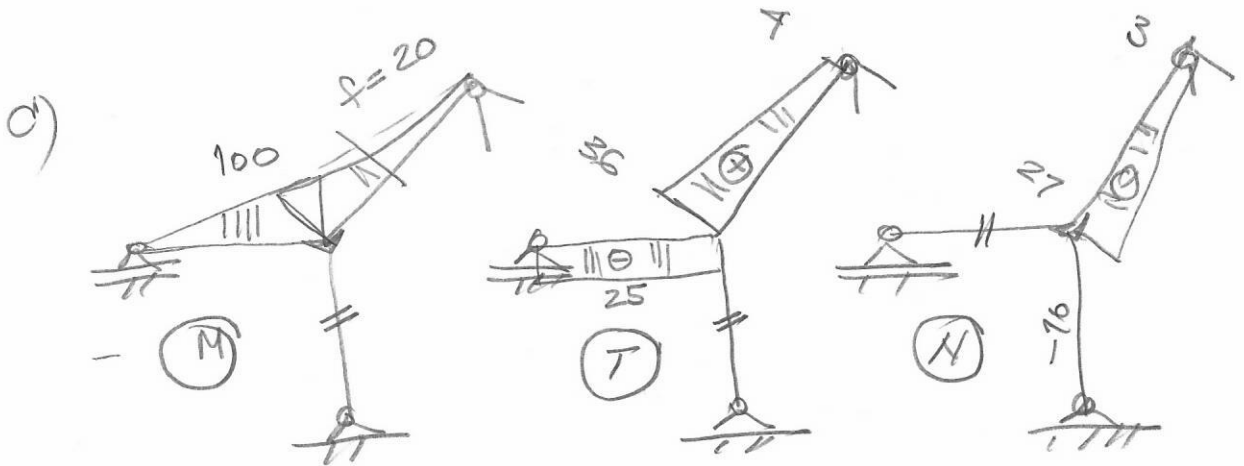
$$M_x(z) = -100 + 36z - 3,2z^2$$

$$T_y(z) = 36 - 6Az$$

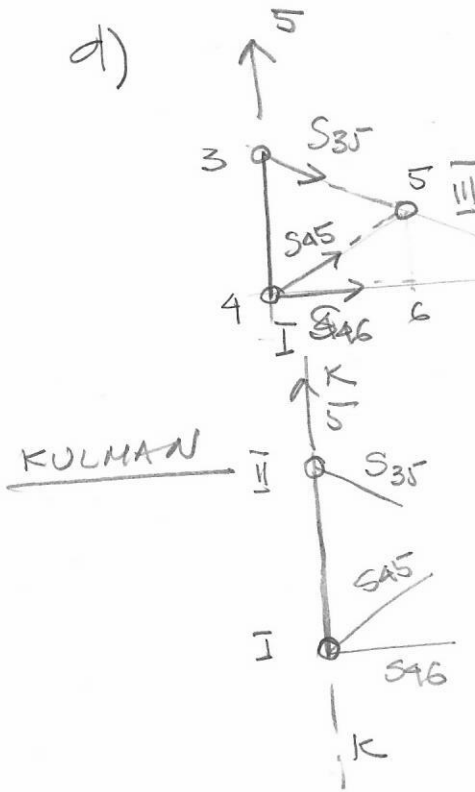
$$N(z) = -27 + 4,8z$$

$$T_y(z_0) = 36 - 6,4z_0 = 0 \quad z_0 = 5,625 \text{ m}$$

$$z_0 > 5 \text{ m}$$



d)



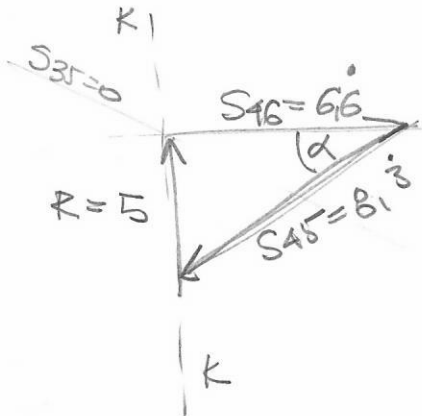
RITER

$$\sum M_I = 3 \cdot S_{35} \cdot 0,8 = 0 \quad \underline{S_{35} = 0}$$

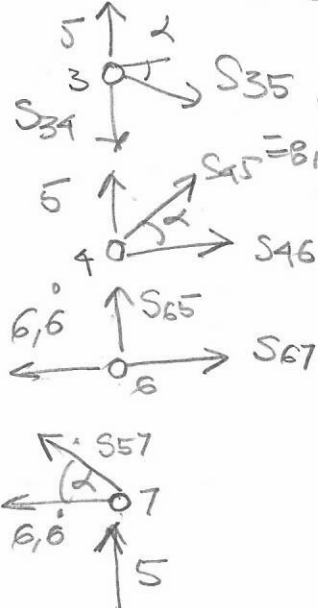
$$\sum M_{II} = 4(S_{45} \cdot 0,6 + 5) = 0 \quad \underline{S_{45} = -8,3}$$

$$\sum M_{III} = 1,5 S_{46} - 2 \cdot 5 = 0 \quad \underline{S_{46} = 6,6}$$

KULMAN



СВОБОДЫ



$$\sum H = S_{35} \cdot 0,8 = 0 \quad \underline{S_{35} = 0}$$

$$\sum V = S_{34} - 5 = 0 \quad \underline{S_{34} = 5}$$

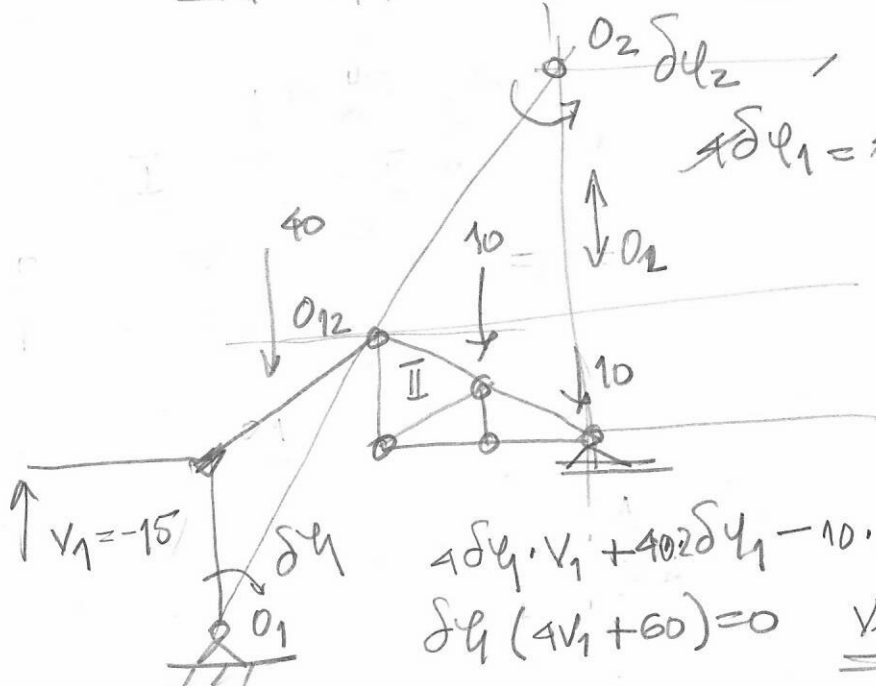
$$\sum V = 5 + S_{45} \cdot 0,6 = 0 \quad \underline{S_{45} = -8,3}$$

$$\sum H = S_{46} - 8,3 \cdot 0,8 = 0 \quad \underline{S_{46} = 6,6}$$

$$\sum V = S_{65} = 0 \quad \sum H = S_{67} - 6,6 = 0 \quad \underline{S_{67} = 6,6}$$

$$\sum H = 6,6 + S_{57} \cdot 0,8 = 0 \quad \underline{S_{57} = -8,3}$$

e)



$$4 \delta \varphi \cdot V_1 + 40 \delta \varphi_1 - 10 \cdot 2 \delta \varphi_2 = 0$$

$$\delta \varphi (4V_1 + 60) = 0 \quad \underline{V_1 = -15 \text{ kN}}$$