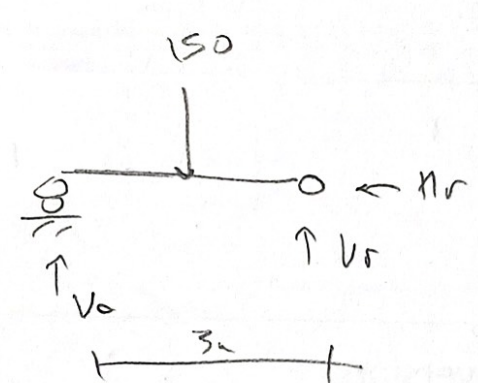
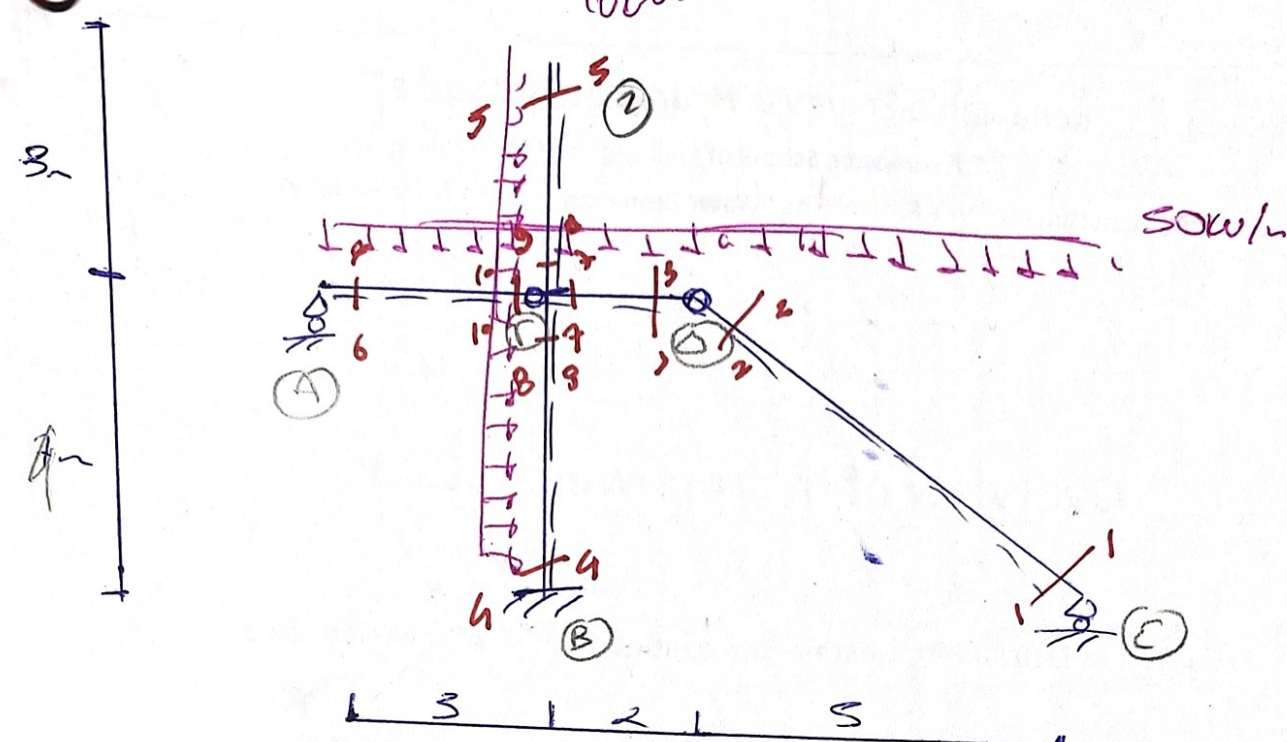


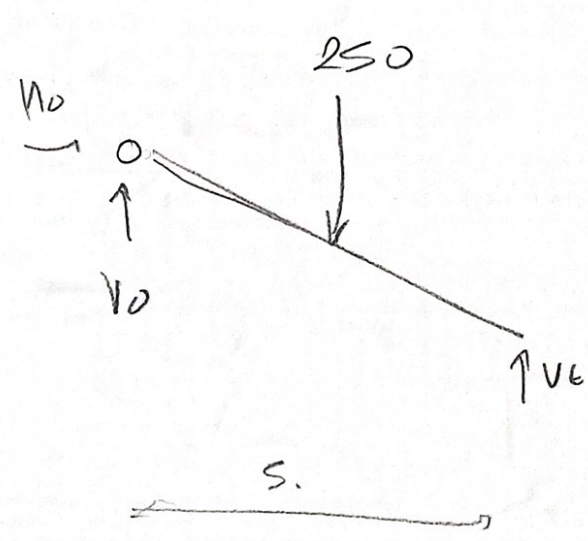
2020-2021 Karanlık 1/2 Broda

100kN

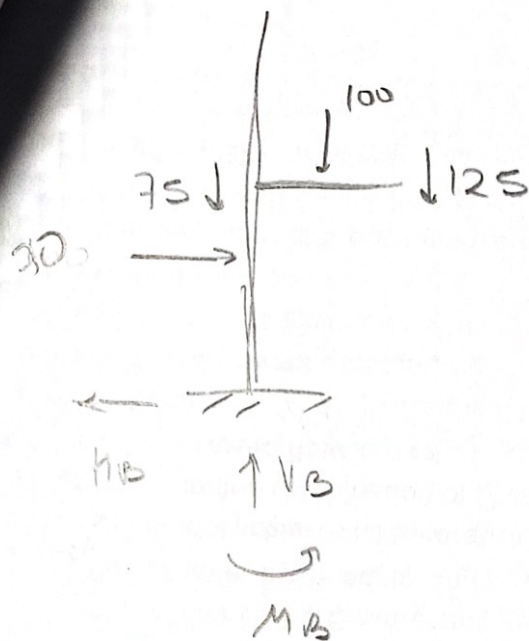
50kN/m



$$\begin{aligned}\sum F_x = 0 &\Rightarrow H_B = 0 \\ \sum F_y = 0 &\Rightarrow V_A + V_B = 150 \\ \sum M_B = 0 &\Rightarrow 150 \times 2.5 = V_A \times 5 \\ &\Rightarrow V_A = 75 \text{ kN} \checkmark \\ &\Rightarrow V_B = 75 \text{ kN}\end{aligned}$$

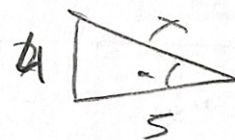
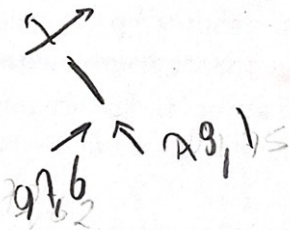
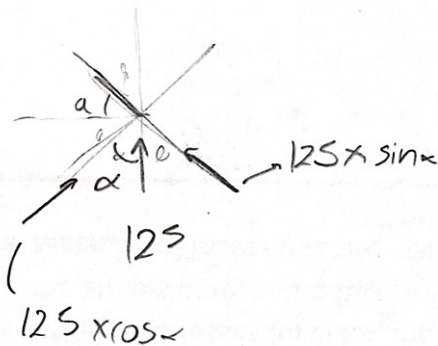


$$\begin{aligned}\sum F_x = 0 &\Rightarrow H_D = 0 \\ \sum F_y = 0 &\Rightarrow V_D + V_E = 250 \\ \sum M_D = 0 &\Rightarrow 250 \times 2.5 = V_E \times 5 \\ &\Rightarrow V_E = 125 \text{ kN} \checkmark \\ &\Rightarrow V_D = 125 \text{ kN}\end{aligned}$$



$$\begin{aligned} \sum F_x = 0 &\Rightarrow H_B = 70 \text{ kN} \\ \sum F_y = 0 &\Rightarrow V_B = 300 \text{ kN} \\ \sum M_B = 0 &\Rightarrow M_B - 70 \times 3,5 \\ &\quad - 125 \times 2 - 100 \times 1 = 0 \\ &\Rightarrow M_B = 595 \text{ kNm} \end{aligned}$$

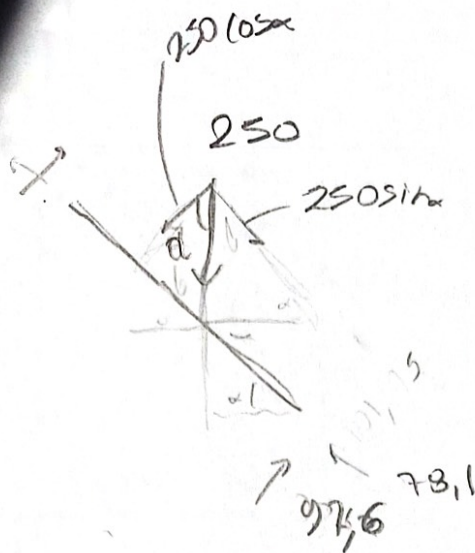
L-1



$$\begin{aligned} x^2 &= 4^2 + 5^2 \Rightarrow x = 6,403 \\ \sin \alpha &= \frac{4}{6,403} = 0,625 \\ \cos \alpha &= \frac{5}{6,403} = 0,781 \end{aligned}$$

$$\begin{aligned} M_A &= 0 \\ Q_A &= -97,6 \text{ kN} \\ N_A &= -78,1 \text{ kN} \end{aligned}$$

$$l_x = 6,403$$



$$250 \cos \alpha = 195,25$$

$$250 \sin \alpha = 156,25$$

$$Q_o^k = -97,6 + 195,25 = 97,6 \text{ kN}$$

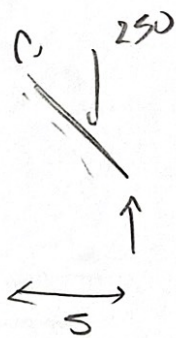
$$M_o^k = -778,1 + 156,25 \cdot 78,1 \text{ kN}$$

$$q_y = \frac{195,25}{6,403} = 30,49 \text{ kN/m}$$

$$\frac{q_x l_x}{2} = 97,6 \text{ kN}$$

$$q_x = \frac{156,25}{6,403} = 24,49 \text{ kN/m}$$

$$\frac{q_y l_x}{2} = 78,1 \text{ kN}$$



$$M_o^k = (125 \times 5) - (250 \times 2,5) = 0 \text{ OK}$$

us, l'ecce qui

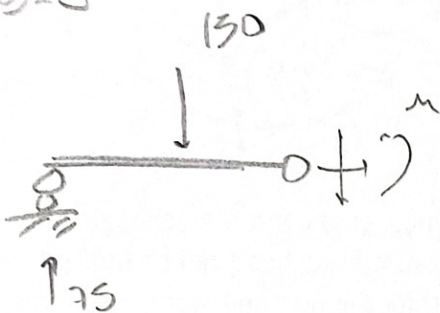
$$\frac{q l^2}{8} = \frac{30,49 \times 6,403^2}{8} = 156,2 \text{ kNm}$$

6-6



$$N_A = 0, M_A = 0, Q_A = +75 \text{ kN}$$

9-9



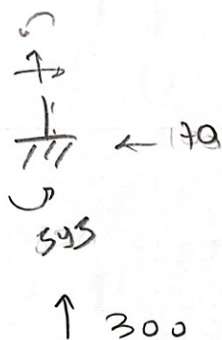
$$Q_r^9 = +75 - 150 = -75 \text{ kN}$$

$$N_r^9 = 0$$

$$M_r^9 = 150 \times 1.5 - 75 \times 3 = 0 \text{ OK}$$

$$Q_{\frac{L}{2}}^9 = 50 \times 3^2 = 56.7 \text{ kN}$$

4-4

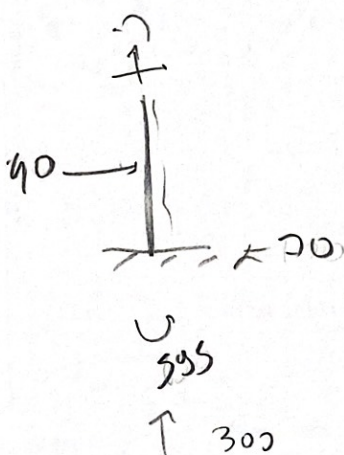


$$N_B = -300 \text{ kN}$$

$$Q_B = +170 \text{ kN}$$

$$M_B = -595 \text{ kNm}$$

8-8



$$N_r^8 = -300 \text{ kN}$$

$$Q_r^8 = +30 \text{ kN}$$

$$M_r^8 = -595 + (40 \times 4) - (40 \times 2) = -395 \text{ kNm}$$

5-5

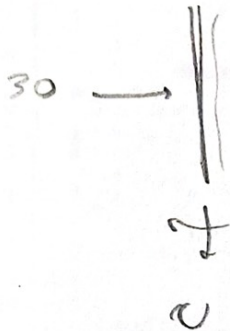
$$M_2 = 0, Q_2, N_2 = 0$$

11

4

0

9-9

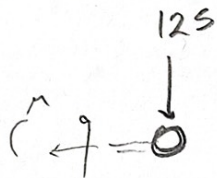


$$N_r^n = 0$$

$$Q_r^n = +30 \text{ kN}$$

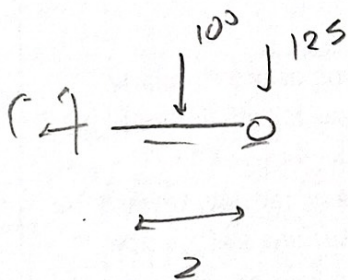
$$M_r^n = -30 \times 1.5 = -45 \text{ kNm}$$

3-3



$$M_o^a = 0, N_o^a = 0$$

$$Q_o^a = 125 \text{ kN}$$

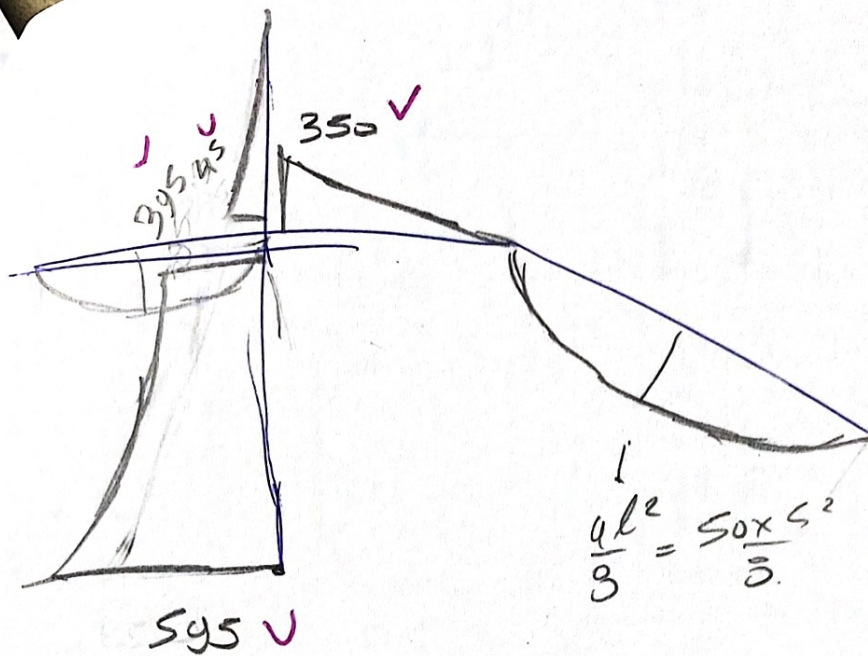


$$Q_r^s = 225$$

$$N_o^s = 0$$

$$M_r^s = (-125 \times 2) - 100$$

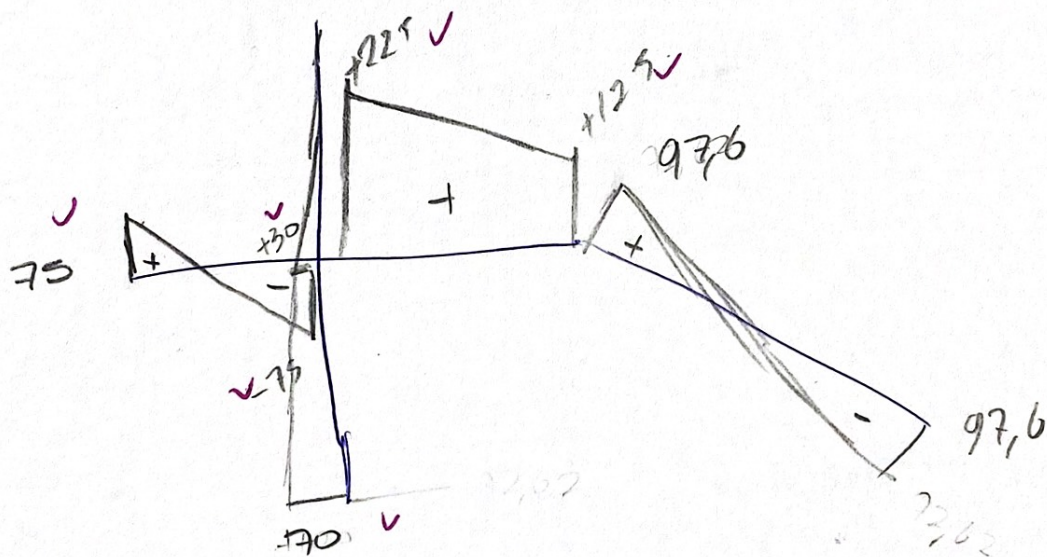
$$= -250 - 100 = -350$$



$$\begin{array}{r} 995 \\ + 350 \\ \hline 1345 \\ \hline \end{array}$$

350 + 995 = 1345

016



$$\begin{array}{r} 225 \\ + 75 \\ \hline 300 \end{array}$$

225 + 75 = 300

