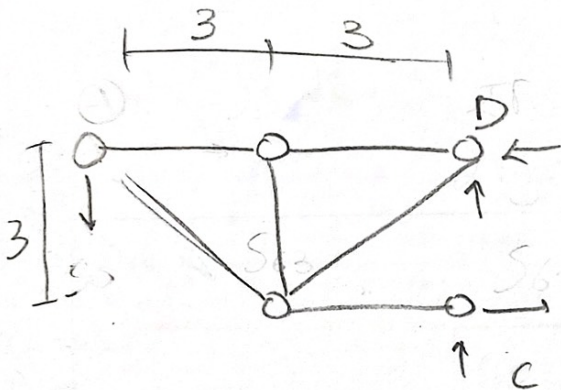
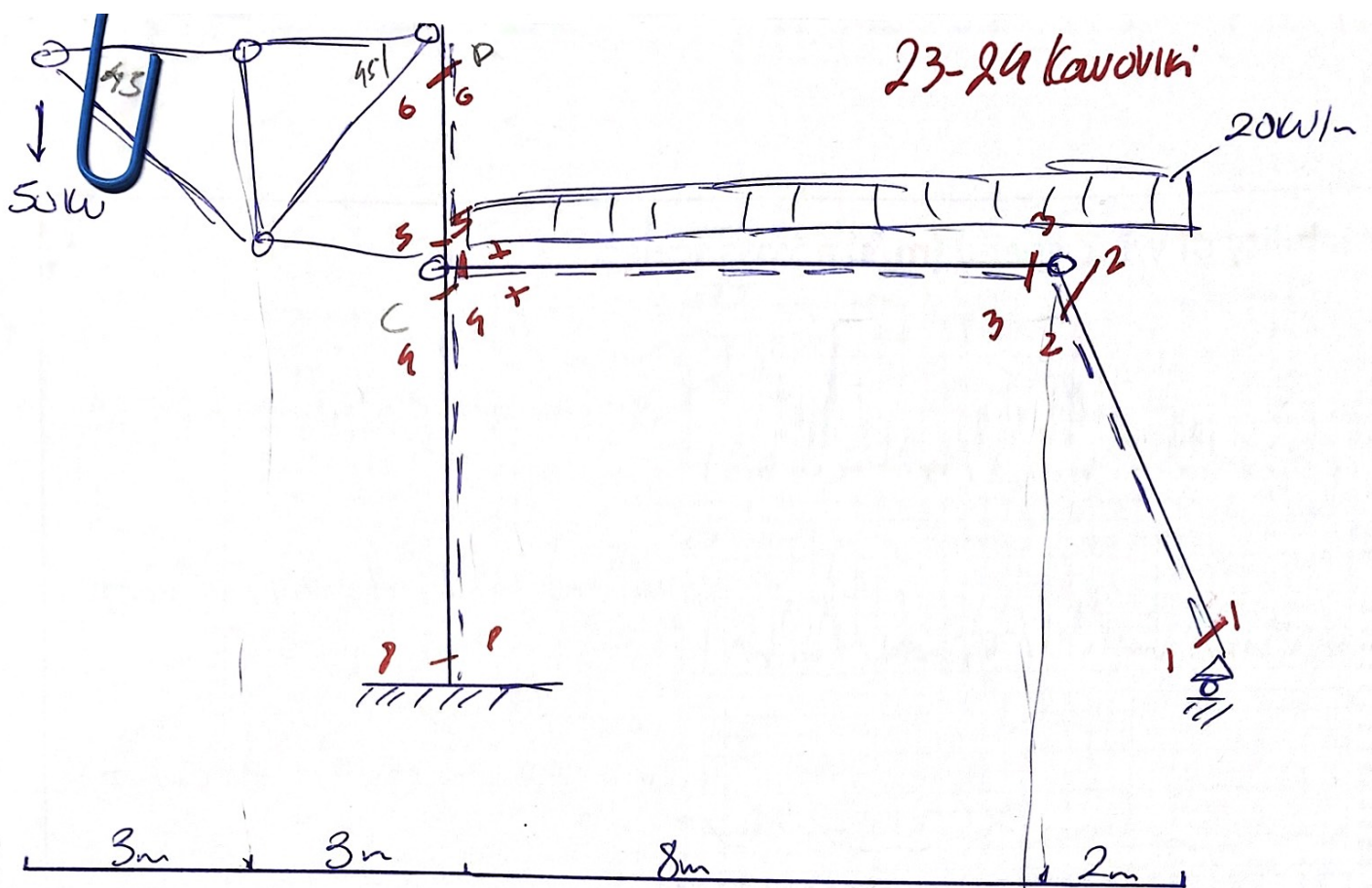




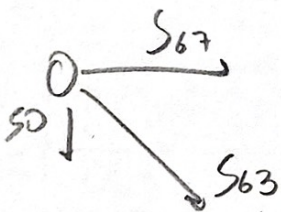
$$\sum F_x = 0 = H_D = H_C$$

$$\sum F_y = 0 = V_D + V_C = 50$$

$$\sum M_D = 0 = 6V_C + 3H_C + 6V_D = 0$$

50kN

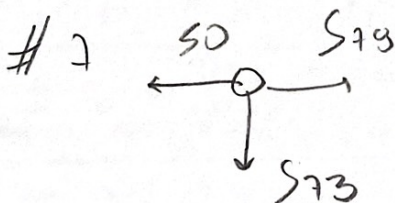
#6



$$\sum F_x = 0 = S_{67} + S_{63}x = 0$$

$$\sum F_y = 0 = S_{63}y + 50 = 0 \Rightarrow S_{63} = -10,71 \text{ kN} \checkmark$$

$$S_{67} = 50 \text{ kN} \checkmark$$



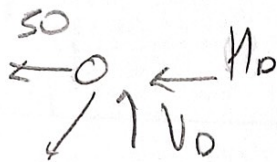
$$\sum F_y = 0 = S_{73} = 0 \checkmark$$

$$\sum F_x = 0 \Rightarrow S_{73} = 50 \text{ kN} \checkmark$$

Anopis: 2) $G_y = 20 - 50?$

2) $q_1/q_2 = 0,10/0,10$

3) $M_{\text{dip}} = 20 \text{ kN}$
 0,10 C?

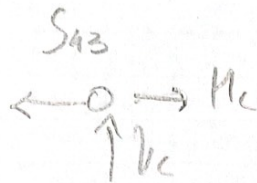


$$\sum F_x = 0 \rightarrow 110 + 50 + S_{30} \sin 45^\circ = 0$$

$$\sum F_y = 0 \rightarrow 100 = S_{30} \sin 45^\circ$$

$$\rightarrow S_{30} = +70,71 \text{ kN} \checkmark$$

#4



$$\sum F_x = 0 \rightarrow 110 = + S_{43}$$

$$\sum F_y = 0 \rightarrow 100 = 0 \checkmark$$

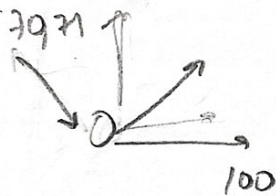
Ap: $100 = 50 \text{ kN}$

$$6 \times 50 + 3 \times 110 = 0 \rightarrow 110 = -100 \text{ kN}$$

$$110 = -100 \text{ kN} \checkmark$$

#3

$$S_{43} = +100 \text{ kN} \checkmark$$



$$\sum F_y = 0 \rightarrow S_{30} \times \cos 45^\circ = 70,71 \times \cos 45^\circ$$

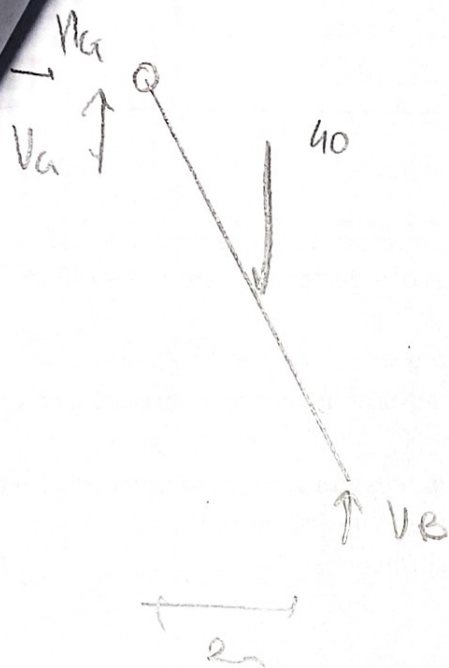
$$\rightarrow S_{30} = 70,71 \text{ kN} \checkmark$$

Membros	Forças de apoio	Reações
6-7	50 ✓	
7-8	50 ✓	
6-3		70,71 ✓
7-3		0
3-8	70,71 ✓	
3-4		100 ✓

4-8

$$70,71 \checkmark$$

(Beaufort scale)
knots
> 1

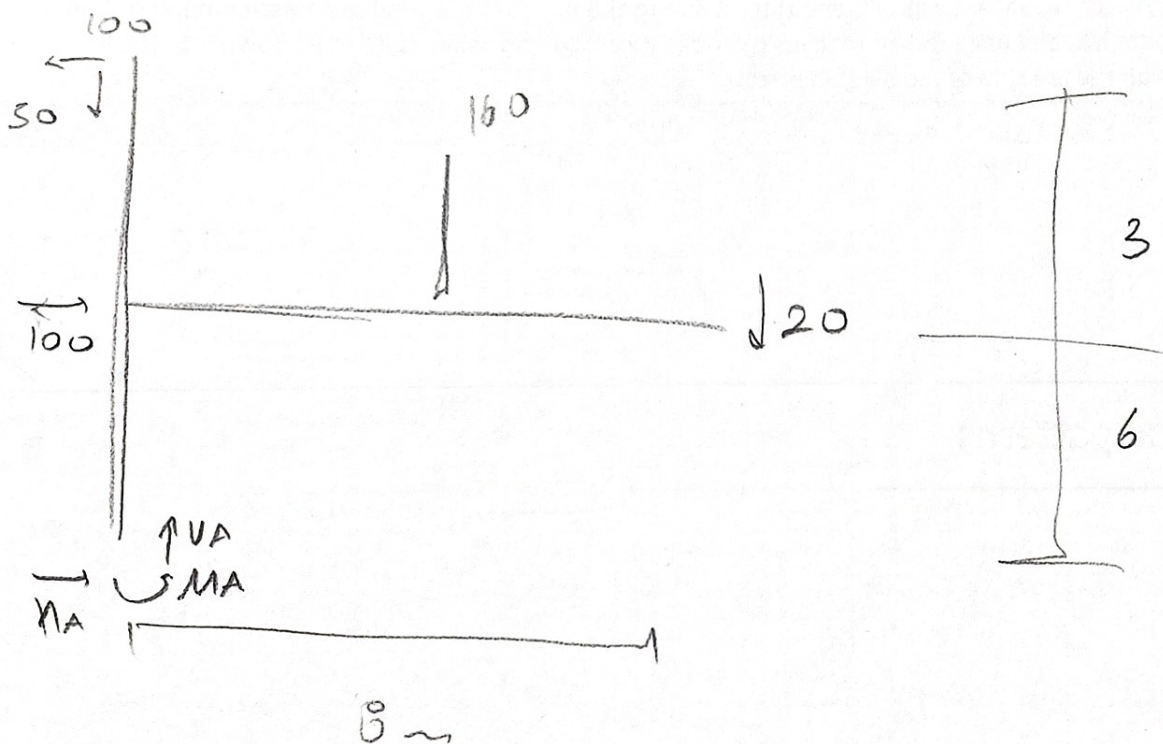


$$\sum F_x = 0 \Rightarrow H_A = 0$$

$$\sum F_y = 0 \Rightarrow V_A + V_B = 40$$

$$\sum M_A = 0 \Rightarrow 2V_B = 40 \Rightarrow V_A = 20 \text{ kN}$$

$$V_B = 20 \text{ kN}$$



$$\sum F_x = 0 \Rightarrow H_A = 0$$

$$\sum F_y = 0 \Rightarrow 50 + 160 + 20 = 230 = V_A$$

$$\sum M = 0 \Rightarrow M_0 + (100 \times 9) - (160 \times 6) - (20 \times 3)$$

$$\Rightarrow M_0 = 500 = 0 = M_B = 500 \text{ kNm}$$

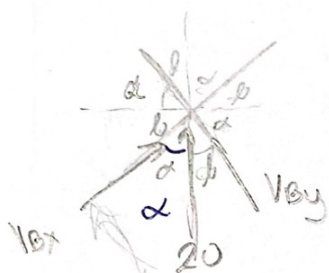


$$X^2 = 6^2 + 2^2$$

$$\Rightarrow X = 6,325$$

$$\cos \alpha = \frac{2}{6,325} = 0,316$$

$$\sin \alpha = \frac{6}{6,325} = 0,949$$



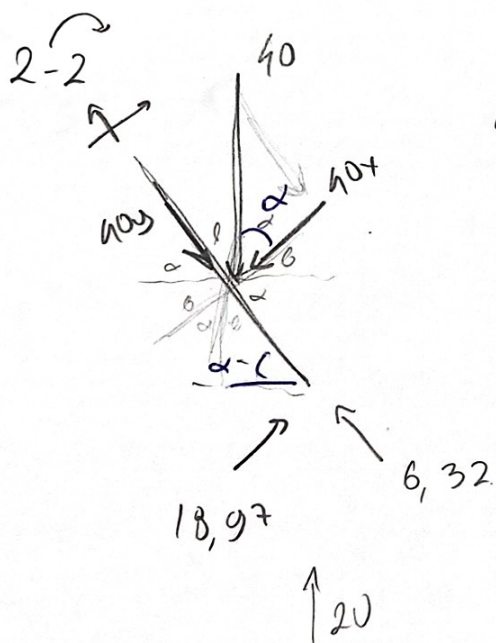
$$\sin \alpha = \frac{V_{by}}{20} \Rightarrow V_{by} = 18,97 \text{ kN}$$

$$\cos \alpha = \frac{V_{bx}}{20} \Rightarrow V_{bx} = 6,32 \text{ kN}$$

$$N^B = -18,97 \text{ kN}$$

$$M^B = 0$$

$$Q^B = -6,32 \text{ kN}$$



$$40y = 40 \times \sin \alpha = 37,96 \text{ kN}$$

$$40x = 40 \times \cos \alpha = 12,64 \text{ kN}$$

$$a_x = \frac{12,64}{6,325} = 2$$

$$a_y = \frac{37,96}{6,325} = 6 \text{ kN/m}$$

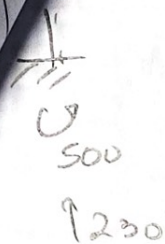
$$Q^G = -6,32 + 12,64 = 6,32 \text{ kN}$$

$$N^G = -18,97 + 37,96 = 18,97 \text{ kN}$$

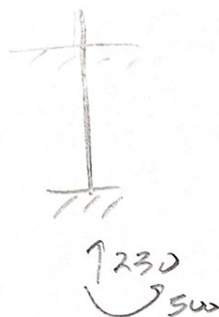
$$M^G = (-40 \times 1) + (20 \times 2) = 0$$

$$Q_A = 0, N_A = -230 \text{ kN}$$

$$M_A = -500 \text{ kNm}$$



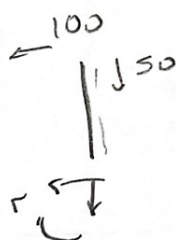
4-4



$$Q_{4-4} = 0, N_{4-4} = -230 \text{ kN}$$

$$M_{4-4} = -500 \text{ kNm}$$

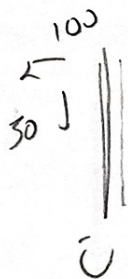
6-6



$$M_D = 0, Q_D = -100 \text{ kN}$$

$$N_D = -50 \text{ kN}$$

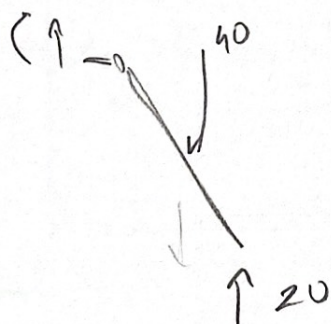
5-5



$$Q_{5-5} = -100 \text{ kN}, N_{5-5} = -50 \text{ kN}$$

$$M_{5-5} = 100 \times 3 = 300 \text{ kNm}$$

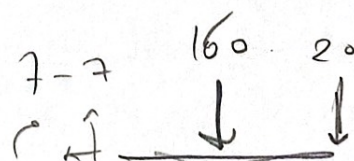
3-3



$$N_{3-3} = 0$$

$$Q_{3-3} = +20 \text{ kN}$$

$$M_{3-3} = 0$$



$$Q_{7-7} = +160 \text{ kN}$$

$$N_{7-7} = 0$$

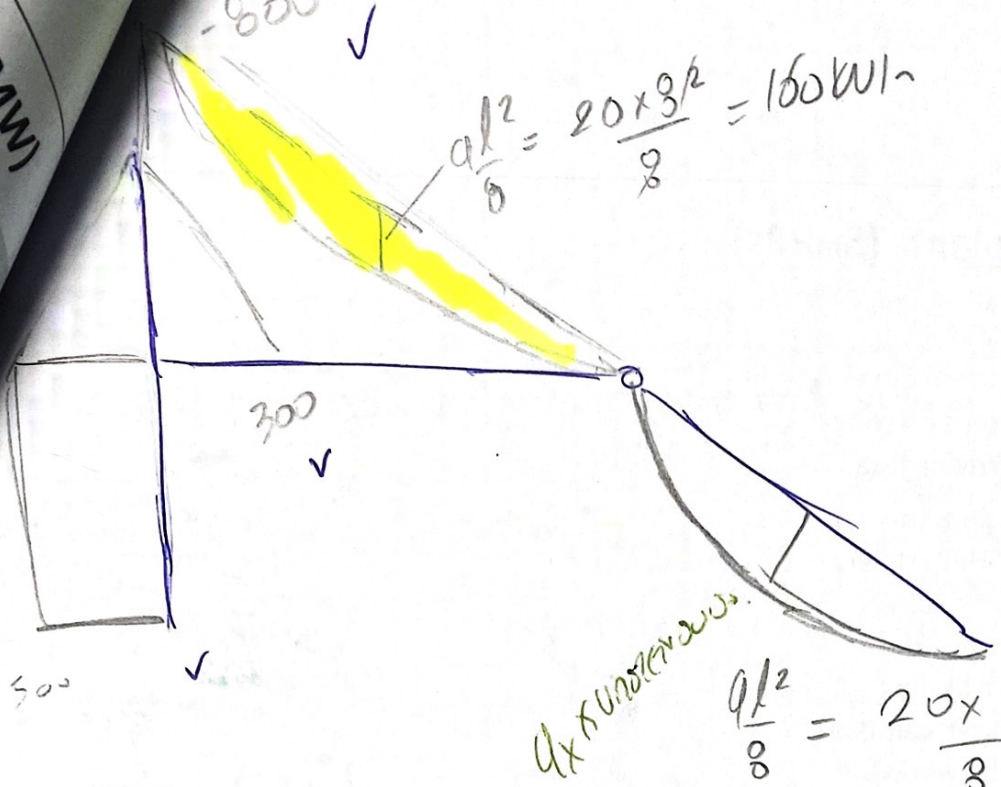
$$M_{7-7} = -160 \times 4 - 20 \times 3 = -680 \text{ kNm}$$

0.5 MW

M

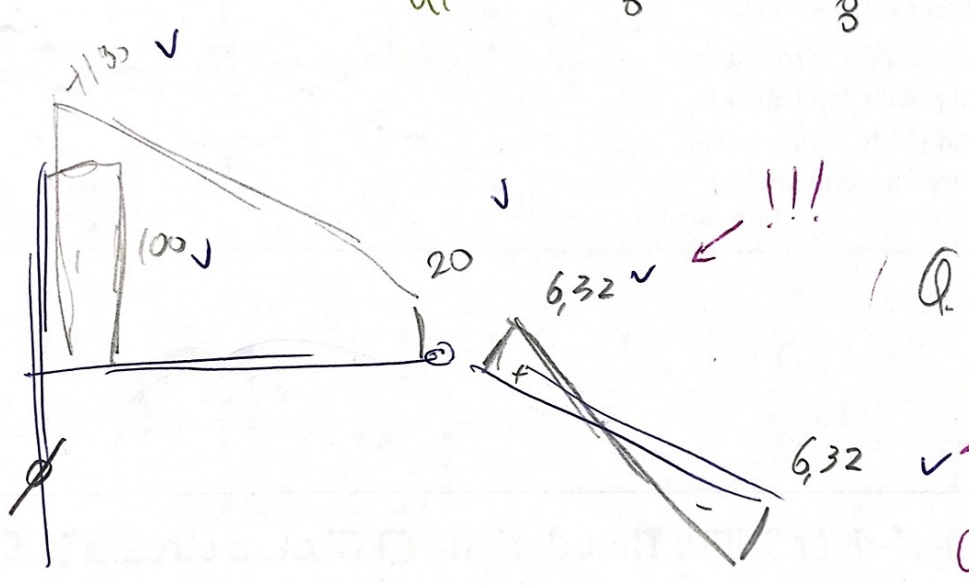
300
 500
 1000000
 300000

$$q \frac{l^2}{8} = \frac{20 \times 3^2}{8} = 160 \text{ W/m}$$

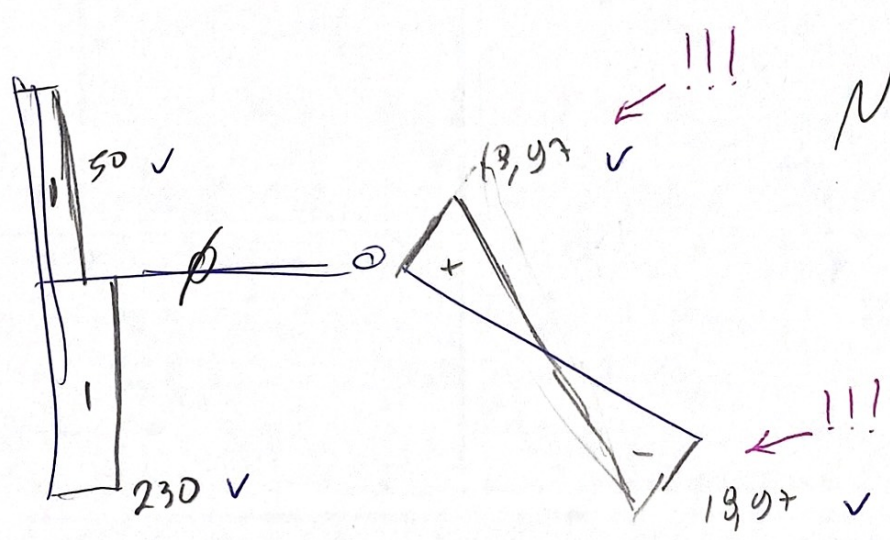


q x l^2 / 8

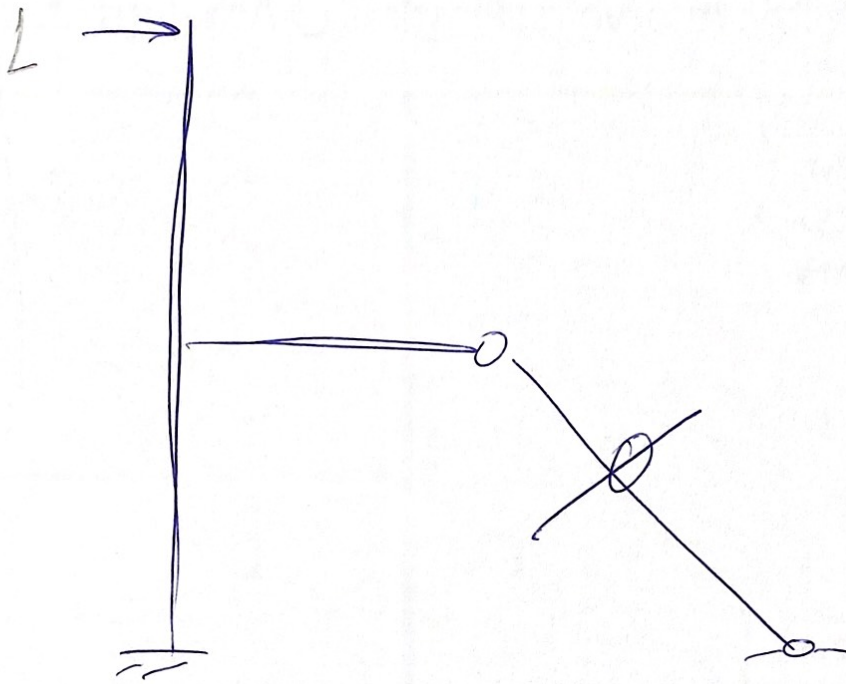
$$q \frac{l^2}{8} = \frac{20 \times 2^2}{8}$$



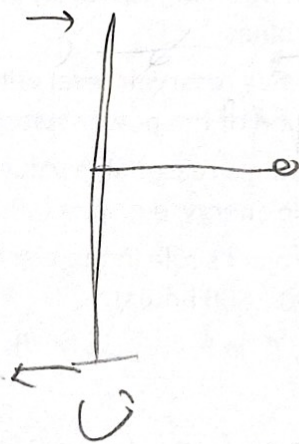
$$\frac{q \cdot l}{2} = \frac{2 \times 1.32^3}{2} = 0.32$$



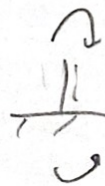
$$\frac{q \cdot l}{2} = \frac{6 \times 6.32^3}{2} = 18.97$$



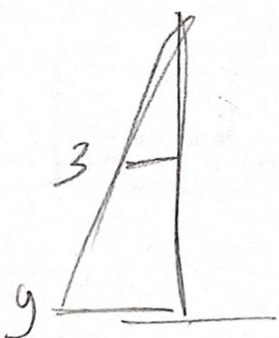
Το δοκίμιο δε αγγίζει γι ο ρόλος #9
αυτή στο πλαίσιο



$$\sum M = 0 \Rightarrow M_2 = +9k$$



$$M \rightarrow \ominus$$



$$\left(\begin{array}{c} \triangle \\ -3 \end{array} + \begin{array}{c} \triangle \\ +300 \end{array} \right) + \left(\begin{array}{c} \triangle \\ 3 \\ 9 \end{array} + \begin{array}{c} \square \\ 500 \end{array} \right)$$

$$-\frac{1}{3} \times 3 \times 300 + \frac{1}{2} \times 500 \times (3+9)$$

$$= -300 + 3000 =$$

$$= -300 \times 3 + 3000 \times 6 =$$

↙ (x2)

$$= \frac{17.100}{650.000} = 0,026 = 2,6 \text{ cm}$$

→
oppa fraktionens.