

# ZÁPOČTOVÝ TEST

Jméno a příjmení:

Skupina:

Datum: 2023

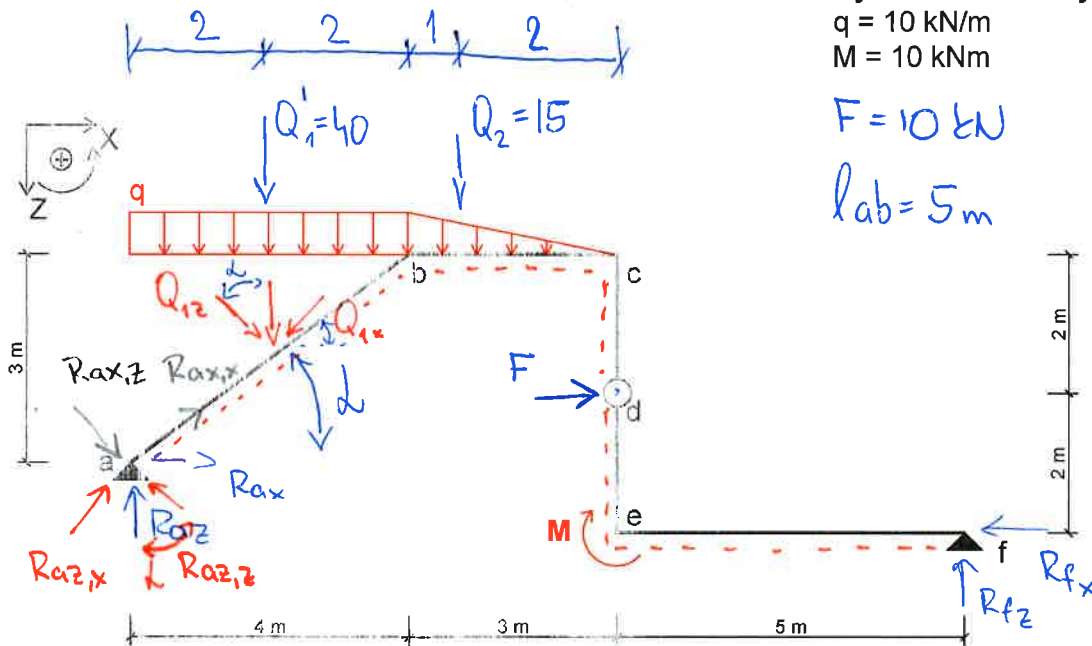
**Vyřešte vnitřní síly nosníku.**

$q = 10 \text{ kN/m}$

$M = 10 \text{ kNm}$

$F = 10 \text{ kN}$

$l_{ab} = 5 \text{ m}$



$$\sum M_d^P = 0: -M + 5 \cdot R_{fz} - 2 \cdot R_{fx} = 0$$

$$\sum M_a = 0: -2 \cdot Q_1' - 5 \cdot Q_2 - 1 \cdot F - M + 12 \cdot R_{fz} - 1 \cdot R_{fx} = 0 \quad | \cdot (-2) | +$$

$$4Q_1 + 10Q_2 + 2F + M - 19R_{fz} = 0$$

$$\underline{R_{fz} = 17,89 \text{ kN}} \Rightarrow \underline{R_{fx} = 39,73 \text{ kN}}$$

$$\sum F_{ix} = 0: R_{ax} + F - R_{fx} = 0$$

$$\underline{R_{ax} = 29,73 \text{ kN}}$$

$$\sum F_{iz} = 0: -R_{az} + Q_1' + Q_2 - R_{fz} = 0$$

$$\underline{R_{az} = 37,11 \text{ kN}}$$

$$\cos d = 0,8$$

$$\sin d = 0,6$$

$$R_{ax,x} = R_{ax} \cdot c = 23,78 \text{ kN}$$

$$R_{ax,z} = R_{ax} \cdot s = 17,84 \text{ kN}$$

$$R_{az,x} = R_{az} \cdot s = 22,27 \text{ kN}$$

$$R_{az,z} = R_{az} \cdot c = 29,69 \text{ kN}$$

$$Q_{1,x} = Q_1 \cdot s = 24 \text{ kN}$$

$$Q_{1,z} = Q_1 \cdot c = 32 \text{ kN}$$

$$q_{1,x} = 8 \cdot s = 4,8 \text{ kN/m}$$

$$q_{1,z} = 8 \cdot c = 6,4 \text{ kN/m}$$

$$Q_1' = Q_1$$

$$q_{1,z} = q \cdot 5$$

$$q = \frac{4}{5} \cdot 10 = \underline{8 \text{ kN/m}}$$

# ZÁPOČTOVÝ TEST

Jméno a příjmení:

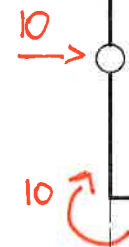
Skupina:

Datum:

(Z)

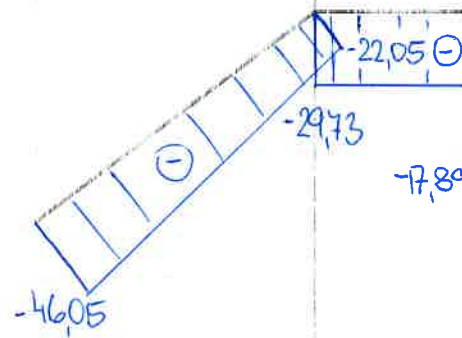
$q_{y,z} = 6,4$   
 $q_{y,x} = 4,8$   
 $46,05$   $11,85$

$Q_2 = 15$

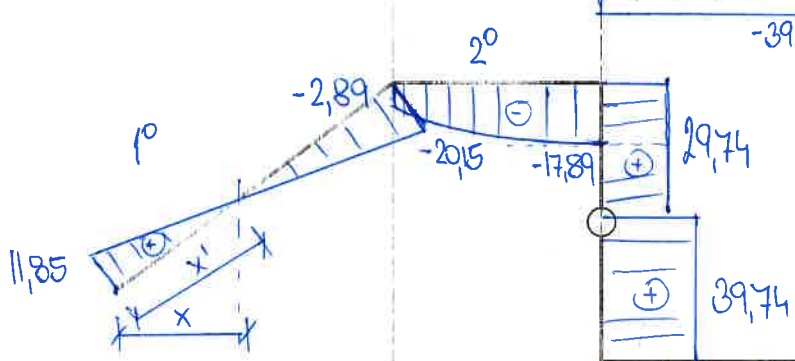


$39,73$   
 $17,89$

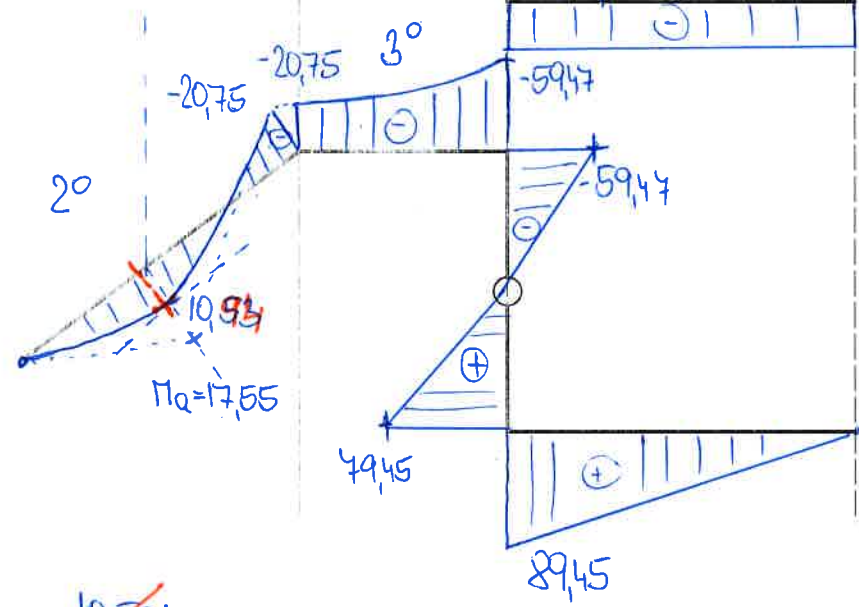
(N)



(V)



(M)



$V(x) = 0: 11,85 - q_x x' = 0$   
 $x' = 1,4825 \text{ m}$   
 $1,85 \text{ m}$

$M_{max} = x' \cdot 11,85 - 0,5 \cdot x'^2 \cdot q_{y,z} = 10,53 \text{ kNm}$   
 $10,94 \text{ kNm}$