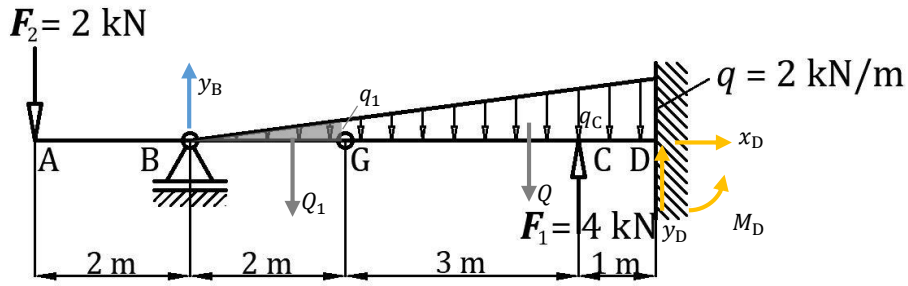
Одредити реакције у ослонцима и нацртати статичке дијаграме.



$$\frac{q_1}{2}=\frac{q}{2+3+1}\Rightarrow q_1=\frac{2q}{6}=\frac{2}{3},\qquad Q_1=\frac{1}{2}2q_1=\frac{2}{3}\text{ kN},\qquad Q=\frac{1}{2}(2+3+1)q=6\text{ kN}$$

$$\frac{q_C}{2+3}=\frac{q}{2+3+1}\Rightarrow q_C=\frac{5}{6}2=\frac{5}{3}$$

$$M_G^l=0\Rightarrow F_2\cdot 4-y_B\cdot 2+Q_1\cdot\frac{1}{3}2=0\Rightarrow \boldsymbol{y_B}=\frac{2\cdot 4+\frac{2}{3}\cdot\frac{1}{3}2}{2}=\mathbf{4,22\ kN}$$

$$\sum x_i=0\Rightarrow \boldsymbol{x_D}=\mathbf{0}$$

$$\sum y_i=0\Rightarrow -F_2+y_B-Q+F_1+y_D=0\Rightarrow \boldsymbol{y_D}=F_2-y_B+Q-F_1=2-4{,}22+6-4=\mathbf{-0,22\ kN}$$

$$\sum M_D=0\Rightarrow F_2\cdot 8-y_B\cdot 6+Q\cdot\frac{1}{3}6-F_1\cdot 1+M_D=0\Rightarrow \boldsymbol{M_D}=-2\cdot 8+4{,}22\cdot 6-6\cdot 2+4\cdot 1=\mathbf{1,33\ kNm}$$

$$F_{t_{C\boxed{L}}}=-F_2+y_B-\frac{1}{2}(2+3)q_C=-2+4{,}22-\frac{1}{2}5\frac{5}{3}=-1{,}94$$

$$M_A^l=0$$

$$M_B^l=-F_2\cdot 2=-4\text{ kNm}$$

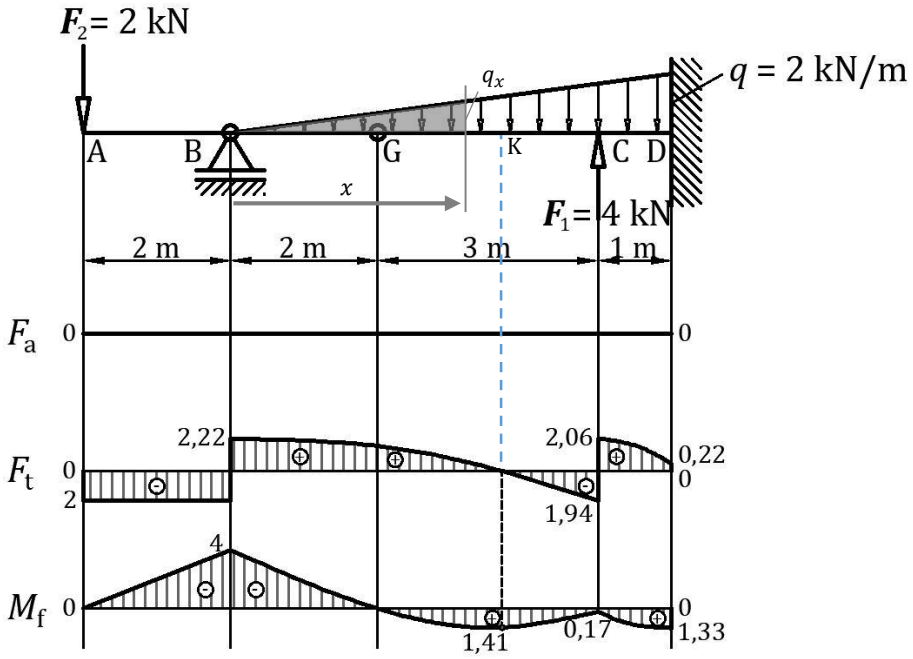
$$M_G=0$$

$$M_C^l=-F_2\cdot 7+y_B\cdot 5-\frac{1}{2}5\cdot q_C\cdot\frac{1}{3}5=-2\cdot 7+4{,}22\cdot 5-\frac{1}{2}5\cdot\frac{5}{3}\cdot\frac{1}{3}5=0{,}17\text{ kNm}$$

$$M_C^d=M_D+y_D\cdot 1-1\cdot q_C\cdot 0{,}5-\frac{1}{2}\cdot 1\cdot(q-q_C)\cdot\frac{2}{3}1=1{,}33-0{,}22-\frac{5}{6}-\frac{1}{3}\cdot\left(2-\frac{5}{3}\right)=0{,}17\text{ kNm}$$

$$M_{D\boxed{L}}^d=M_D=1{,}33\text{ kNm}$$

$$M_{D\boxed{D}}^d=0$$



Сегмент B–C

$$\frac{q_x}{x} = \frac{q}{2+3+1} \Rightarrow q_x = \frac{q}{6}x = \frac{1}{3}x$$

$$F_{t_x} = -F_2 + y_\mathrm{B} - \frac{1}{2}xq_x = -2 + 4{,}22 - \frac{1}{2}x\frac{1}{3}x = 2{,}22 - \frac{1}{6}x^2$$

$$M_{f_x} = -F_2 \cdot (2+x) + y_\mathrm{B} \cdot x - \frac{1}{2}xq_x \cdot \frac{1}{3}x = -2 \cdot (2+x) + 4{,}22 \cdot x - \frac{1}{18}x^3 = -4 + 2{,}22x - \frac{1}{18}x^3$$

У тачки K је трансферзална сила једнака нули и ту се налази екстремна вриједност функције M_{f_x}.

$$\left.\begin{aligned} F_{t_{x\mathrm{K}}} &= 2{,}22 - \frac{1}{6}x_\mathrm{K}^2 \\ F_{t_{x\mathrm{K}}} &= 0 \end{aligned}\right\} \Rightarrow 2{,}22 - \frac{1}{6}x_\mathrm{K}^2 = 0 \Rightarrow \boldsymbol{x_\mathrm{K} = 3{,}65\ \mathrm{m}}$$

$$\boldsymbol{M_{f_{x\mathrm{K}}}} = -4 + 2{,}22x_\mathrm{K} - \frac{1}{18}x_\mathrm{K}^3 = -4 + 2{,}22 \cdot 3{,}65 - \frac{1}{18}3{,}65^3 = \boldsymbol{1{,}41\ \mathrm{kNm}}$$