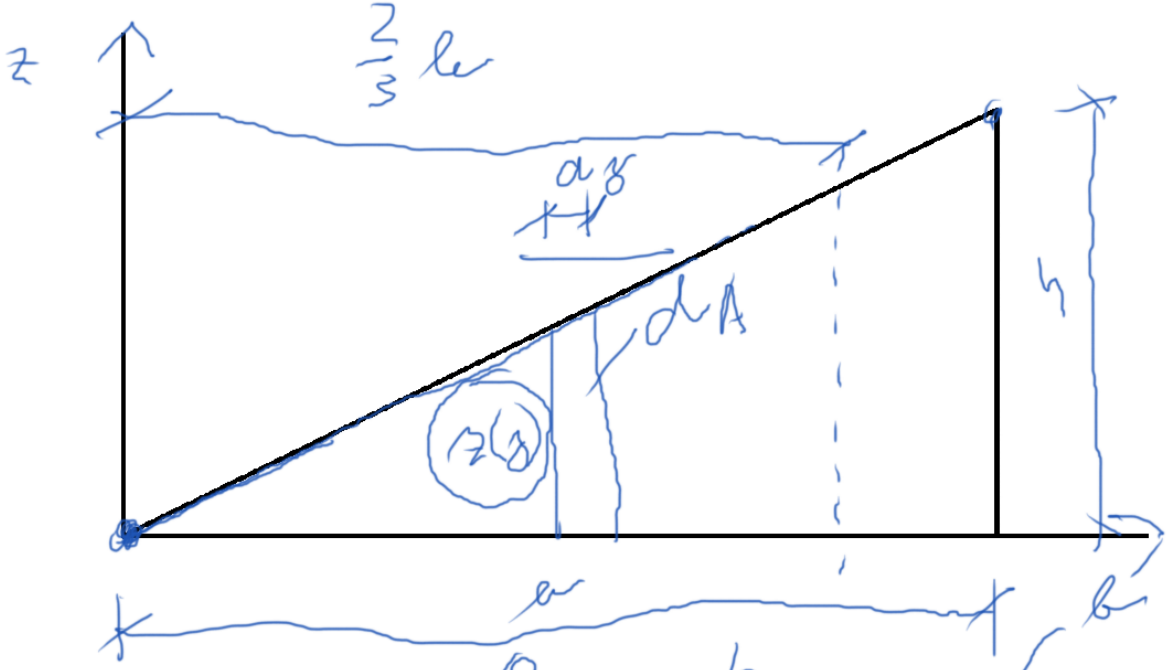


$$\gamma_T = \frac{S_z}{A}$$

$$= \frac{\int_{(A)} y\,dA}{\int_{(A)} dA}$$

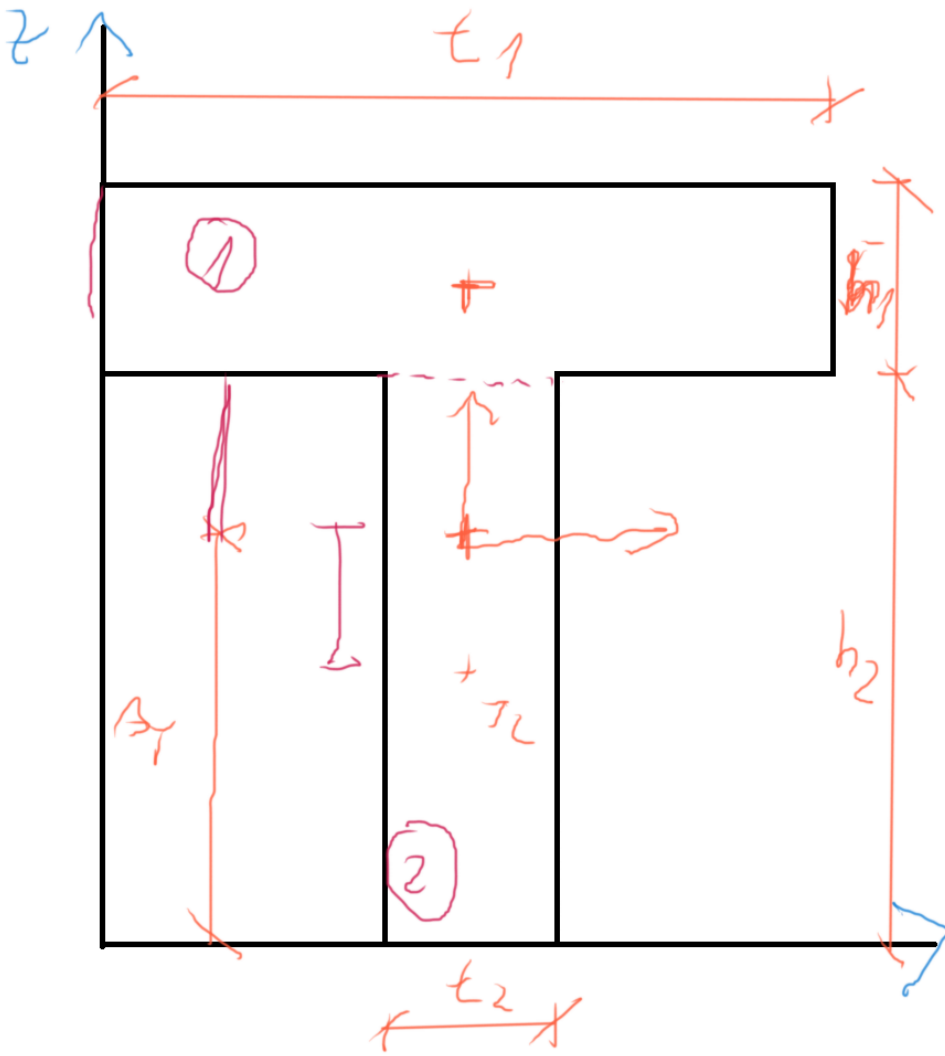
$\frac{2}{3}b$

$A = \frac{b}{2}y + y = 0$

$\hookrightarrow \frac{h}{b}$

$z(y) = \frac{h}{b}\cdot y$

$$= \frac{\int_0^b y \cdot \frac{h}{b} y\,dy}{\int_0^b \frac{h}{b}\cdot y\,dy} = \frac{\frac{h}{b}\left[\frac{y^3}{3}\right]_0^b}{\frac{h}{b}\left[\frac{y^2}{2}\right]_0^b} = \frac{\frac{b^3}{3}}{\frac{b^2}{2}}$$



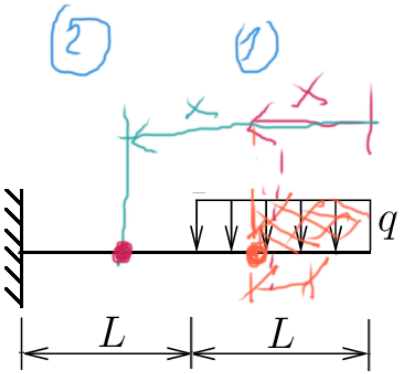
Gdzie z_T i I_y

$$z_T = \frac{t_1 \cdot h_1 \cdot \left(h_2 + \frac{h_1}{2}\right) + h_2 \cdot t_2 \cdot \frac{h_2}{2}}{t_1 \cdot h_1 + t_2 \cdot h_2}$$

$$I_{1+2y} = I_{1y} + I_{2y}$$

$$I_{1y} = \frac{1}{12} t_1 \cdot h_1^3 + \left(\frac{h_1}{2} + h_2 - z_T\right)^2 t_1 \cdot h_1$$

$$I_{2y} = \frac{1}{12} t_2 \cdot h_2^3 + \left(z_t - \frac{h_2}{2}\right)^2 \cdot h_1 \cdot t_2$$



$x \in \langle 0; \ell \rangle$

$T(x) = q \cdot x$

$M(x) = -q \cdot x \frac{x}{2}$

$M(0) = 0$

$M(\ell) = -\frac{1}{2} q \ell^2$

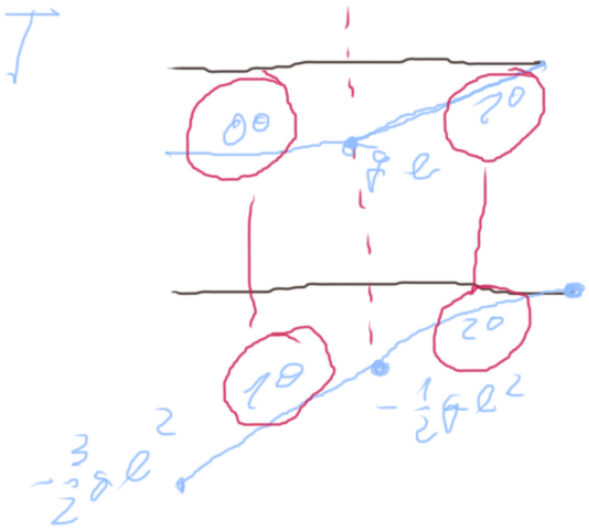
$x \in \langle \ell; 2\ell \rangle$

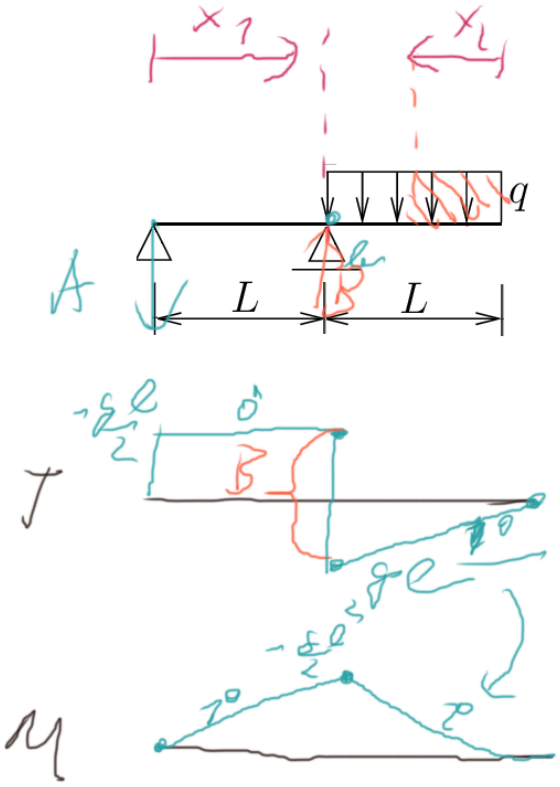
$T(x) = q \cdot \ell$

$M(x) = -q \cdot \ell \left(x - \frac{\ell}{2} \right)$

$M(2\ell) = -\frac{3}{2} q \ell^2$

T





$$\curvearrowleft_B \quad A \cdot l - q \cdot l \frac{l}{2} = 0$$

$$A = q\frac{l}{2}$$

$x_1 \in \langle 0; l \rangle$

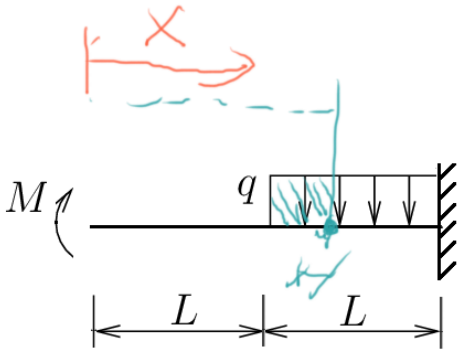
$$T(x_1) = -A = -\frac{ql}{2}$$

$$M(x_1) = -A \cdot x_1 = -\frac{ql}{2} \cdot x_1 \qquad M(l) = -\frac{ql^2}{2}$$

$x_2 \in \langle 0; l \rangle$

$$T(x_2) = q \cdot x_2 \qquad T(x_2 = l) = ql$$

$$M(x_2) = -q \cdot x_2 \frac{x_2}{2} \qquad M(l) = -\frac{ql^2}{2}$$



$x \in (0; l)$

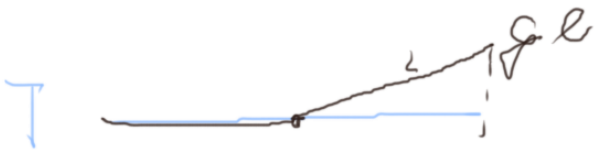
$T(x) = 0$

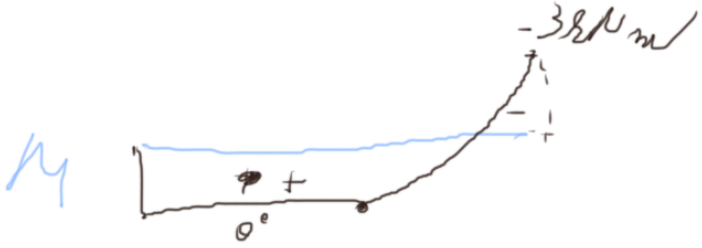
$M(x) = M$

$M = 32\,kNm$

$l = 2\,m$

$g = 32\,kN/m$





$x \in (l; 2l)$

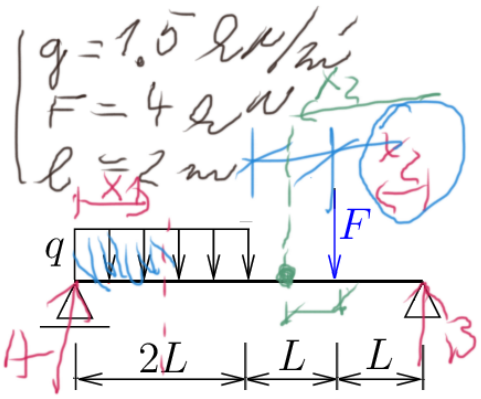
$T(x) = -(x-l)\cdot g$

$M(x) = -\frac{(x-l)^2 \cdot g}{2} + M$

$q = 1{,}5\ kN/m$

$F = 4\ kN$

$l = 2\ m$



$\sum M_A$

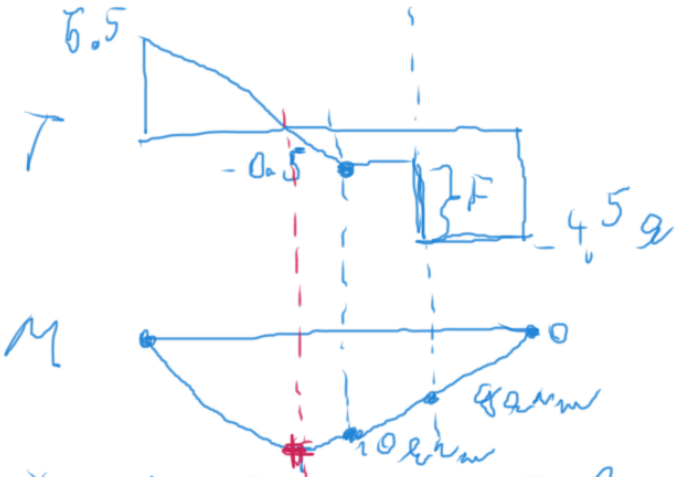
$B \cdot 4l - F \cdot 3l - 2lg \cdot l = 0$

$B = \frac{3}{4}F + \frac{1}{2}gl$

$\sum M_B$

$A \cdot 4l - 2lg \cdot 3l - F \cdot l = 0$

$A = \frac{1}{4}F + \frac{3}{2}gl$



x_2 $M(2l) = B \cdot 2l - F \cdot l$

$x_1 \in (0; 2l)$

$T(x_1) = A - g \cdot x_1$

$M(x_1) = A \cdot x_1 - g \cdot x_1 \frac{x_1}{2}$

$x_2 \in (0; l)$

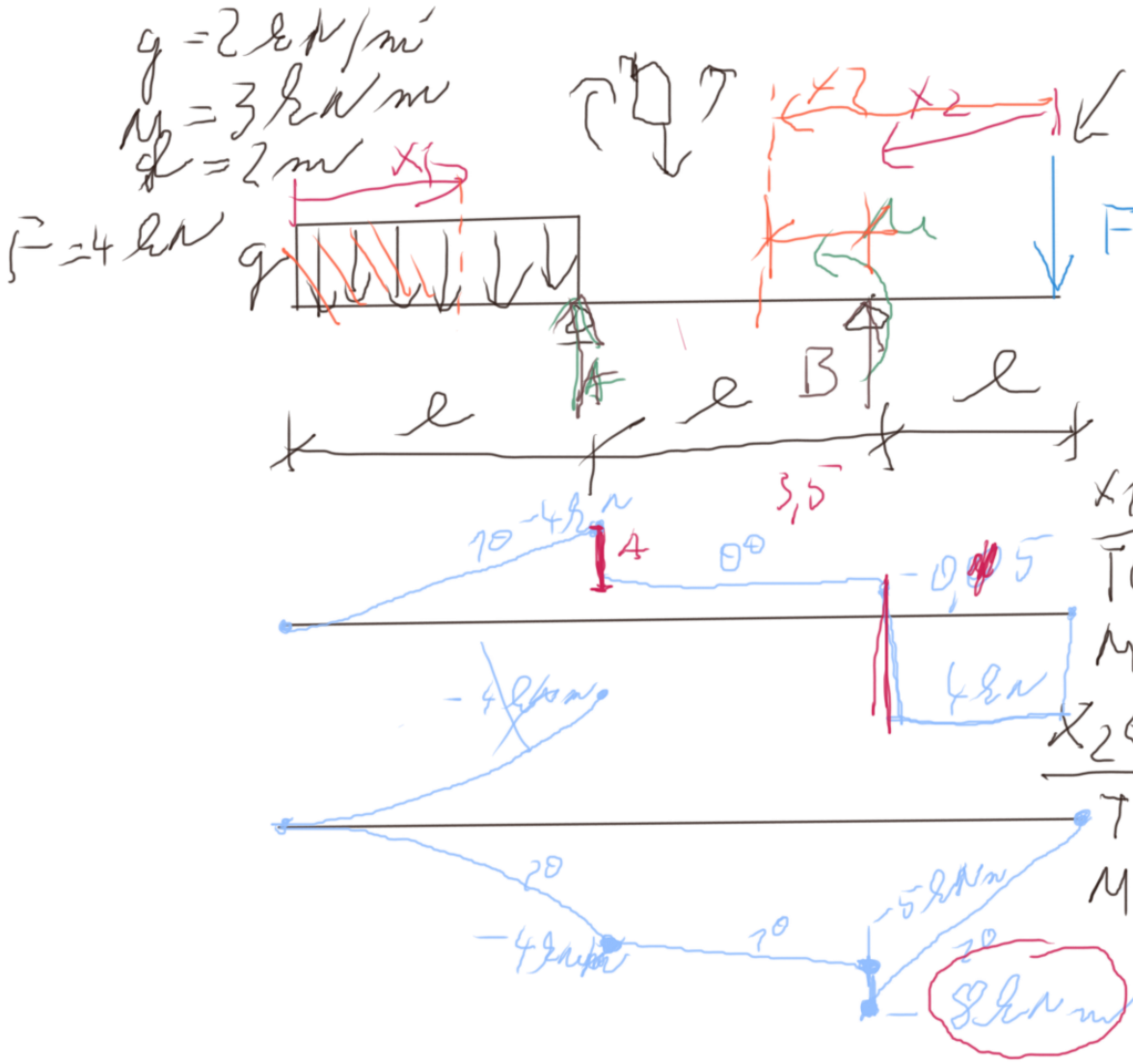
$T(x_2) = -B$

$M(x_2) = B \cdot x_2$

$x_2 \in (l; 2l)$

$T(x_2) = -B + F$

$M(x_2) = B \cdot x_2 - F \cdot (x_2 - l)$



a) $-F2l + M + B \cdot l + q l \frac{l}{2} = 0$

$B = -\frac{ql}{2} + 2F - \frac{M}{l}$

b) $-F \cdot l + M - A \cdot l + q l \frac{3}{2} l = 0$

$A = -F + \frac{M}{l} + \frac{3}{2} q l$

$x_1 \in \langle 0; l \rangle$

$T(x_1) = -q \cdot x_1$

$M(x_1) = -q \cdot x_1 \frac{x_1}{2}$

$x_2 \in \langle 0; l \rangle$

$T(x_2) = F$

$M(x_2) = -F \cdot x_2$

$x_2 \in \langle l; 2l \rangle$

$T(x_2) = F - B$

$M(x_2) = -F \cdot x_2 + M + B(x_2 - l)$