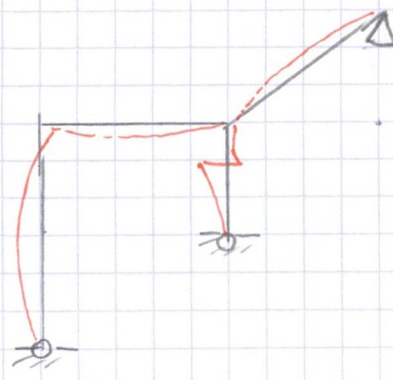
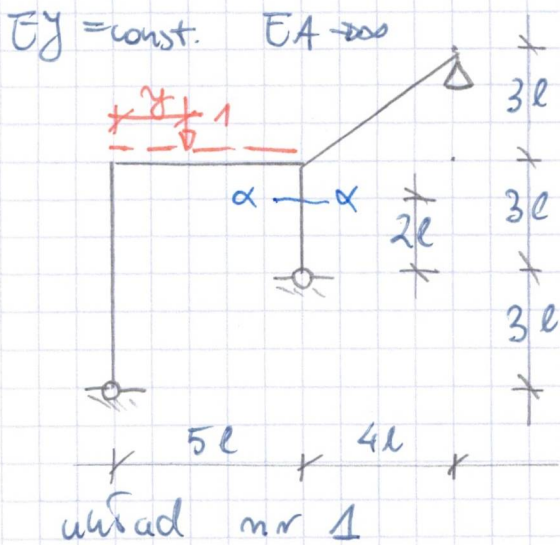


2. tw. Bettiego



$$L_{12} = 1 \cdot w^{(2)}(y) + T_{\alpha}(-1)$$

$$L_{21} = 0$$

$$L_{12} = L_{21}$$

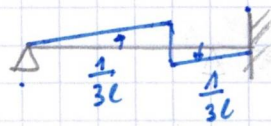
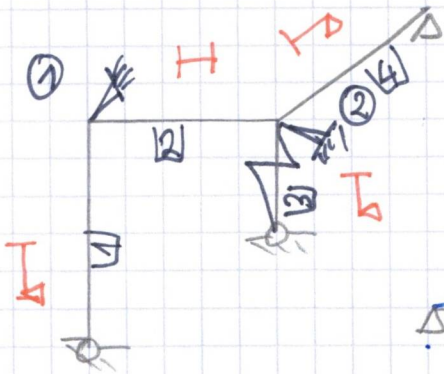
$$T_{\alpha}(y) = w^{(2)}(y)$$

Deformacja układu nr 2

$$\Phi_1^{(1)} + \Phi_1^{(2)} = 0 \quad (1)$$

$$\Phi_2^{(2)} + \Phi_2^{(3)} + \Phi_2^{(4)} = 0 \quad (2)$$

Momenty wywołane w pręcie 3.  
nawrotna



$$\Phi_2^{(3)} = \frac{3EY}{2l} \left[ \frac{1}{3l} \right] = \frac{1}{3} \frac{EY}{l^2}$$

WT

$$1 \quad \downarrow \quad \Phi_1^{(1)} = \frac{3EY}{5l} [\varphi_1] = \frac{EY}{l} \left[ \frac{1}{2} \varphi_1 \right] \quad \left| \begin{array}{l} 2 \\ \uparrow \end{array} \right. \quad \Phi_1^{(2)} = \frac{2EY}{5l} [2\varphi_1 + \varphi_2] = \frac{EY}{l} \left[ \frac{4}{5} \varphi_1 + \frac{2}{5} \varphi_2 \right]$$

$$3 \quad \downarrow \quad \Phi_2^{(3)} = \frac{3EY}{2l} [\varphi_2] + \frac{1}{3} \frac{EY}{l^2} \quad \left| \begin{array}{l} 2 \\ \uparrow \end{array} \right. \quad \Phi_2^{(2)} = \frac{EY}{l} \left[ \frac{2}{5} \varphi_1 + \frac{4}{5} \varphi_2 \right]$$

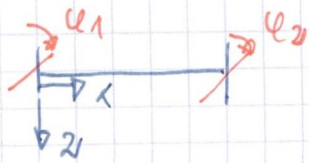
$$4 \quad \downarrow \quad \Phi_2^{(4)} = \frac{3EY}{5l} [\varphi_2] = \frac{EY}{l} \left[ \frac{3}{5} \varphi_2 \right]$$

układ r-m

$$\frac{EY}{l} \begin{bmatrix} 1,3 & 0,4 \\ 0,4 & 2,4 \end{bmatrix} \begin{bmatrix} \varphi_1 \\ \varphi_2 \end{bmatrix} = \frac{EY}{l^2} \begin{bmatrix} 0 \\ -0,333 \end{bmatrix}$$

$$\varphi_1 = 0,045 \frac{1}{l} \quad \varphi_2 = -0,146 \frac{1}{l}$$

Linha ugiçcia preta mr 2



$$w(x) = C_0 + C_1 x + C_2 x^2 + C_3 x^3$$

$$\varphi(x) = \frac{dw(x)}{dx} = C_1 + 2C_2 x + 3C_3 x^2$$

$$w(0) = 0 \Rightarrow C_0 = 0$$

$$\varphi(0) = \varphi_1 \Rightarrow C_1 = 0,045 \frac{1}{\ell}$$

$$w(5\ell) = 0 \Rightarrow 0,045 \frac{1}{\ell} \cdot 5\ell + C_2 \cdot 25\ell^2 + C_3 \cdot 125\ell^3 = 0$$

$$\varphi(5\ell) = -0,146 \frac{1}{\ell} \Rightarrow 0,045 \frac{1}{\ell} + 2C_2 \cdot 5\ell + 3C_3 \cdot 25\ell^2 = -0,146 \frac{1}{\ell}$$

$$C_2 = 0,0112 \frac{1}{\ell^2}$$

$$C_3 = -0,00404 \frac{1}{\ell^3}$$

$$w(x) = 0,045 \frac{x}{\ell} + 0,0112 \frac{x^2}{\ell^2} - 0,00404 \frac{x^3}{\ell^3}$$

$$T_\alpha(y) = w(y)$$