

$$J_{11} = \frac{1}{EJ} \left[\frac{1}{2} \cdot l \cdot l \cdot \left(\frac{2}{3} l \right) + l \cdot 2l \cdot (l) + l \cdot l \cdot \left(\frac{3}{2} l \right) + \frac{1}{2} \cdot l \cdot l \cdot \left(\frac{5}{3} l \right) \right] = \frac{14}{3} \frac{l^3}{EJ}$$

$$J_{12} = \frac{1}{EJ} \left[\frac{1}{2} \cdot 2l \cdot 2l \cdot (l) + 2l \cdot l \cdot \left(\frac{3}{2} l \right) \right] = 5 \frac{l^3}{EJ}$$

$$J_{21} = \frac{1}{EJ} \left[l \cdot 2l \cdot (l) + l \cdot l \cdot 2l + \frac{1}{2} \cdot l \cdot l \cdot 2l \right] = 5 \frac{l^3}{EJ}$$

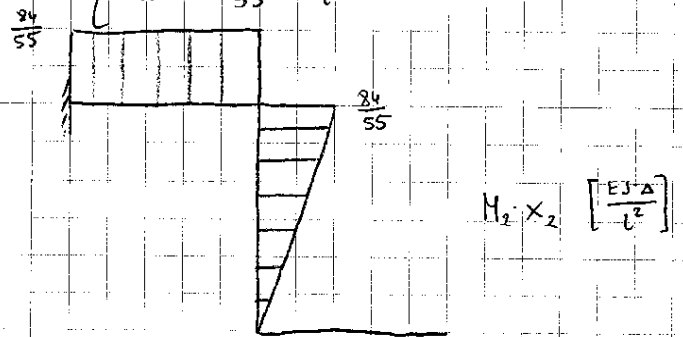
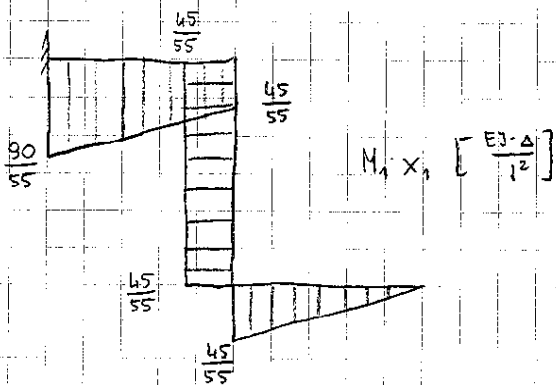
$$J_{22} = \frac{1}{EJ} \left[\frac{1}{2} \cdot 2l \cdot 2l \cdot \left(\frac{4}{3} l \right) + 2l \cdot l \cdot 2l \right] = \frac{20}{3} \frac{l^3}{EJ}$$

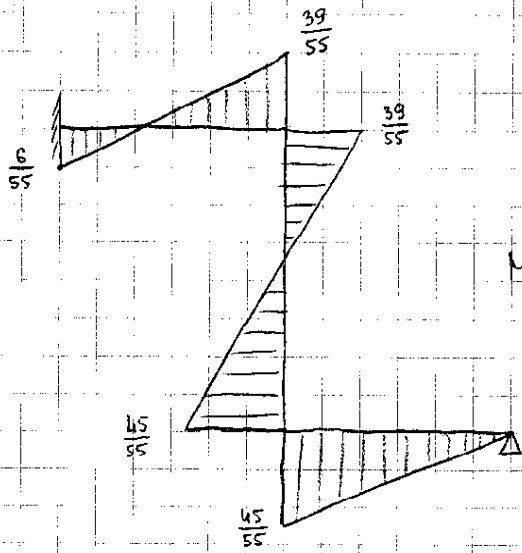
$$\Delta_{1P} = - \left(1 \cdot 2\Delta - 2l \cdot \frac{\Delta}{l} \right) = 0$$

$$\Delta_{2P} = - \left(1 \cdot \Delta - 2l \cdot \frac{\Delta}{l} \right) = \Delta$$

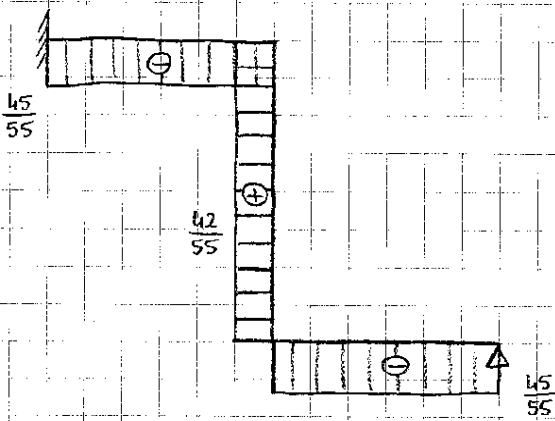
$$\begin{cases} \frac{14}{3} \frac{l^3}{EJ} \cdot x_1 + 5 \frac{l^3}{EJ} \cdot x_2 = 0 \\ 5 \frac{l^3}{EJ} \cdot x_1 + \frac{20}{3} \frac{l^3}{EJ} \cdot x_2 + \Delta = 0 \end{cases} \Rightarrow$$

$$\begin{cases} x_1 = \frac{9}{11} \frac{EJ \cdot \Delta}{l^3} = \frac{45}{55} \frac{EJ \cdot \Delta}{l^3} \\ x_2 = - \frac{42}{55} \frac{EJ \cdot \Delta}{l^3} \end{cases}$$

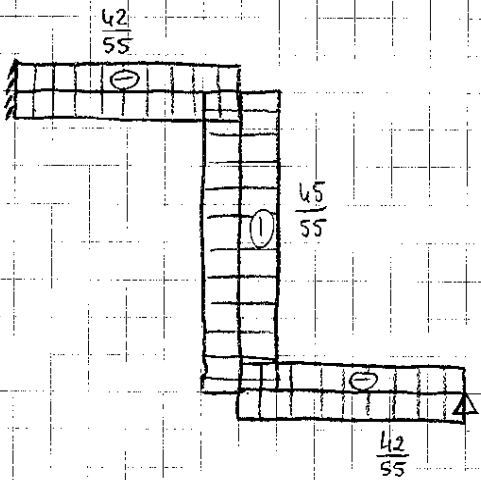




$$M \left[\frac{EJ \cdot \Delta}{l^2} \right]$$



$$T \left[\frac{EJ \cdot \Delta}{l^3} \right]$$



$$N \left[\frac{EJ \cdot \Delta}{l^3} \right]$$