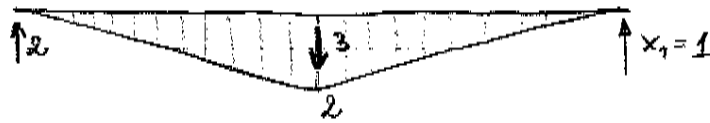


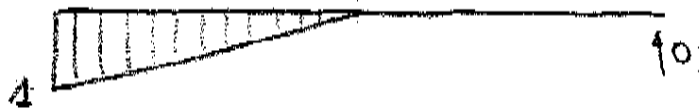
$$k = \frac{1}{2} \frac{EI}{l^3}$$

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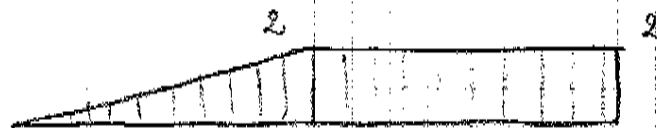
$$\delta_{ij} = \frac{1}{EI} \int M_i \cdot M_j + \frac{1}{k} \cdot R_i \cdot R_j$$



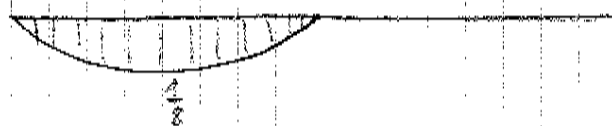
$M_1 [l]$



$M_2 [-]$



$M_{pq} [ql^2]$



$M_{pq} [ql^2]$

$$\delta_{11} = \frac{1}{EI} \left[\frac{1}{2} \cdot 2l \cdot l \cdot \left(\frac{2}{3} \cdot 2l \right) + \frac{1}{2} \cdot 2l \cdot 2l \cdot \left(\frac{2}{3} \cdot 2l \right) \right] + 2 \frac{l^3}{EI} \cdot 1 \cdot 1 = 6 \frac{l^3}{EI}$$

$$\delta_{12} = \frac{1}{EI} \left[\frac{1}{2} \cdot 1 \cdot l \cdot \left(\frac{1}{3} \cdot 2l \right) \right] + 2 \frac{l^3}{EI} \cdot 1 \cdot 0 = \frac{1}{3} \frac{l^3}{EI}$$

$$\delta_{21} = \frac{1}{EI} \left[\frac{1}{2} \cdot 2l \cdot l \cdot \left(\frac{1}{3} \cdot 1 \right) \right] + 2 \frac{l^3}{EI} \cdot 0 \cdot 1 = \frac{1}{3} \frac{l^3}{EI}$$

$$\delta_{22} = \frac{1}{EI} \left[\frac{1}{2} \cdot 1 \cdot l \cdot \left(\frac{2}{3} \cdot 1 \right) \right] + 2 \frac{l^3}{EI} \cdot 0 \cdot 0 = \frac{1}{3} \frac{l^3}{EI}$$

$$\Delta_{1P} = \frac{1}{EI} \left[\frac{1}{2} \cdot 2ql^2 \cdot l \cdot \left(-\frac{2}{3} \cdot 2l \right) + 2ql^2 \cdot 2l \cdot \left(-\frac{1}{2} \cdot 2l \right) + \frac{2}{3} \cdot \frac{1}{2} ql^2 \cdot l \cdot \left(\frac{1}{2} \cdot 2l \right) \right] = -\frac{63}{12} \frac{ql^4}{EI}$$

$$\Delta_{2P} = \frac{1}{EI} \left[\frac{1}{2} \cdot 2ql^2 \cdot l \cdot \left(-\frac{1}{3} \cdot 1 \right) + \frac{2}{3} \cdot \frac{1}{2} ql^2 \cdot l \cdot \left(\frac{1}{2} \cdot 1 \right) \right] = -\frac{7}{24} \frac{ql^4}{EI}$$

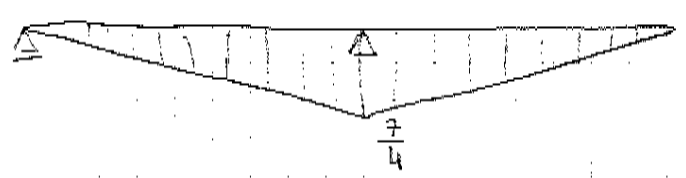
$$\begin{cases} \delta_{11} \cdot X_1 + \delta_{12} \cdot X_2 + \Delta_{1P} = 0 \\ \delta_{21} \cdot X_1 + \delta_{22} \cdot X_2 + \Delta_{2P} = 0 \end{cases}$$

$$\begin{cases} 6 \frac{l^3}{EJ} \cdot X_1 + \frac{1}{3} \frac{l^2}{EJ} \cdot X_2 - \frac{63}{12} \frac{ql^4}{EJ} = 0 \\ \frac{1}{3} \frac{l^2}{EJ} \cdot X_1 + \frac{1}{3} \frac{l}{EJ} \cdot X_2 - \frac{7}{24} \frac{ql^3}{EJ} = 0 \quad / \cdot (-1) \\ 6 \frac{l^3}{EJ} \cdot X_1 + \frac{1}{3} \frac{l^2}{EJ} \cdot X_2 - \frac{63}{12} \frac{ql^4}{EJ} = 0 \\ -\frac{1}{3} \frac{l^2}{EJ} \cdot X_1 - \frac{1}{3} \frac{l^2}{EJ} \cdot X_2 + \frac{7}{24} \frac{ql^4}{EJ} = 0 \end{cases}$$

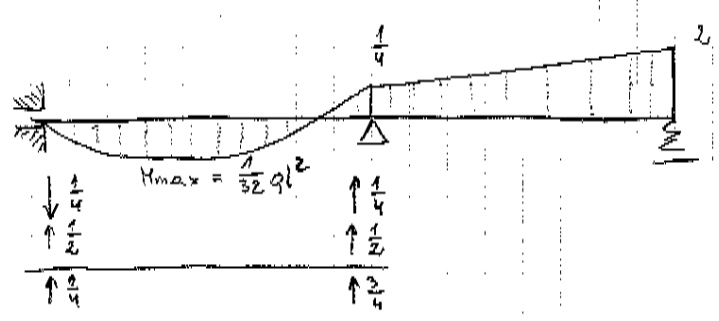
$$\frac{17}{3} \frac{l^3}{EJ} \cdot X_1 - \frac{119}{24} \frac{ql^4}{EJ} = 0$$

$$X_1 = \frac{119}{24} \frac{ql^4}{EJ} \cdot \frac{8}{17} \frac{EJ}{l^3} = \frac{119}{136} ql = \frac{7}{8} ql$$

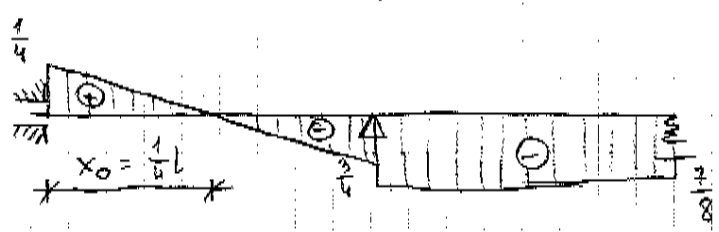
$$X_2 = 0$$



$M_1 \cdot X_1 [ql^2]$



$M [ql^2]$



$T [ql]$

$$H_{max} = \frac{1}{4} ql \cdot \frac{1}{4} l - q \cdot \frac{1}{4} l \cdot \frac{1}{2} \cdot \frac{1}{4} l = \frac{1}{16} ql^2 - \frac{1}{32} ql^2 = \frac{1}{32} ql^2$$