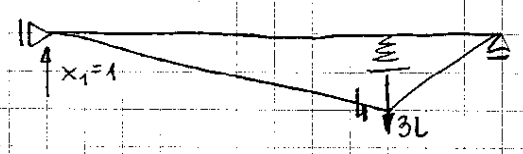
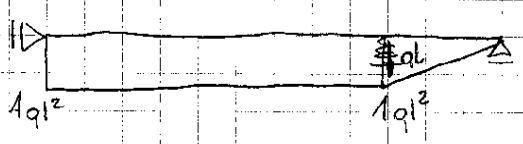


$$k = 2 \frac{EI}{l^3}$$



M_1

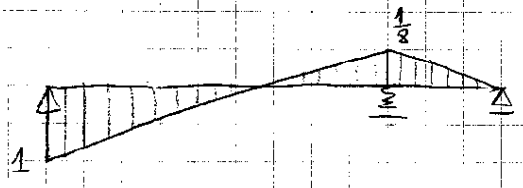
$$\delta_{M_1} = \frac{1}{EI} \left[\frac{1}{2} \cdot 3l \cdot 3l \cdot \left(\frac{2}{3} \cdot 3l\right) + \frac{1}{2} \cdot 3l \cdot l \cdot \left(\frac{2}{3} \cdot 3l\right) \right] + \frac{1}{2 \frac{EI}{l^3}} \cdot 4 \cdot 4 = 20 \frac{l^3}{EI}$$



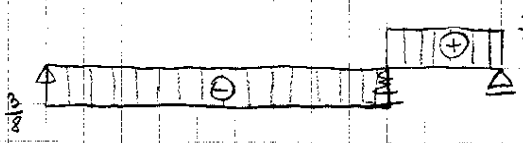
M_p

$$\Delta_{1p} = \frac{1}{EI} \left[1ql^2 \cdot 3l \cdot \left(\frac{1}{2} \cdot 3l\right) + \frac{1}{2} \cdot 1ql^2 \cdot l \cdot \left(\frac{2}{3} \cdot 3l\right) \right] + \frac{1}{2 \frac{EI}{l^3}} \cdot 4 \cdot 1ql = \frac{15}{2} \frac{ql^4}{EI}$$

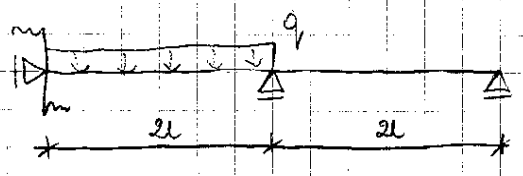
$$x_1 = - \frac{\Delta_{1p}}{\delta_{M_1}} = - \frac{15}{2} \frac{ql^4}{EI} \cdot \frac{EI}{20l^3} = - \frac{3}{8} ql$$



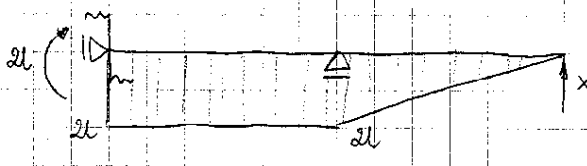
$M [ql^2]$



$T [ql]$

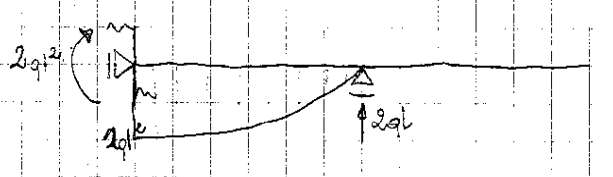


$$k = 3 \frac{EI}{l}$$



M_1

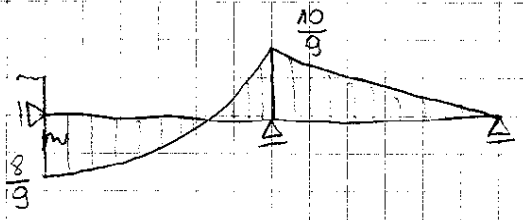
$$\delta_{M_1} = \frac{1}{EI} \left[\frac{1}{2} \cdot 2l \cdot 2l \cdot \left(\frac{2}{3} \cdot 2l\right) + 2l \cdot 2l \cdot (2l) \right] + \frac{1}{3 \frac{EI}{l}} \cdot 2l \cdot 2l = \frac{36}{3} \frac{l^3}{EI}$$



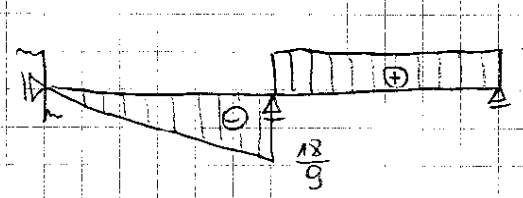
M_p

$$\Delta_{1p} = \frac{1}{EI} \left[\frac{2}{3} \cdot 2ql^2 \cdot 2l \cdot 2l \right] + \frac{1}{3 \frac{EI}{l}} \cdot 2ql^2 \cdot 2l = \frac{20}{3} \frac{ql^4}{EI}$$

$$x_1 = - \frac{\Delta_{1p}}{\delta_{M_1}} = - \frac{20}{3} \frac{ql^4}{EI} \cdot \frac{3 \frac{EI}{l}}{36 l^3} = - \frac{5}{9} ql$$



$M [ql^2]$



$T [ql]$