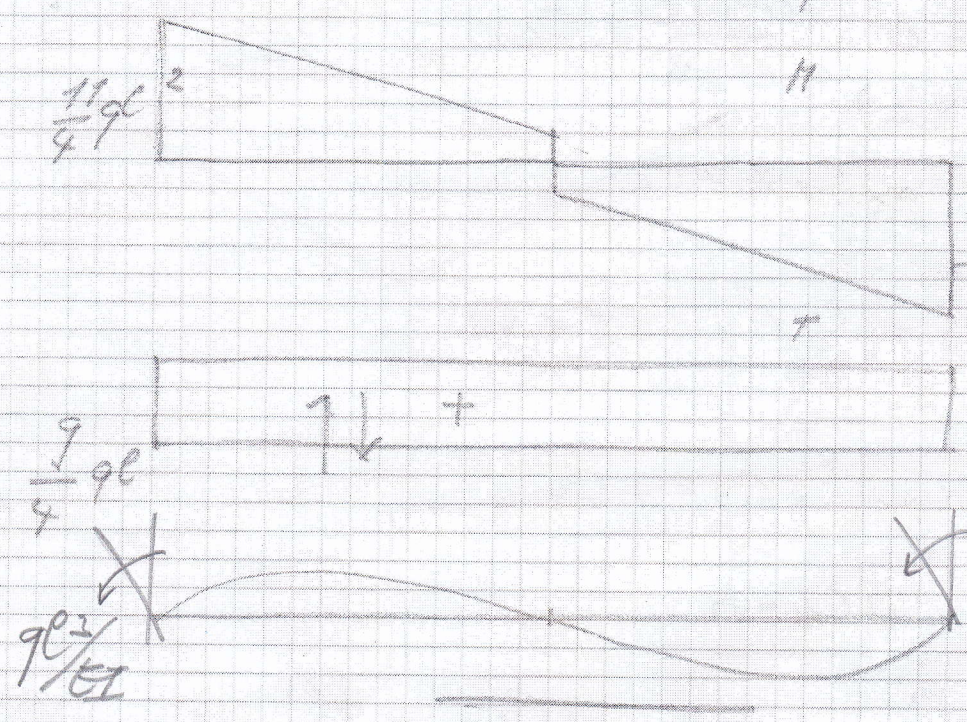
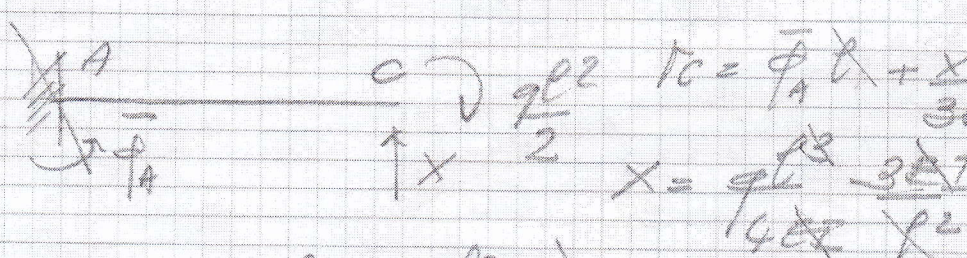
$$v(z) = -\frac{9}{24}\frac{ql}{EI}z^3 + \frac{11}{8}\frac{ql^2}{EI}z^2 - \frac{q l^3}{EI}z$$

$$\varphi(z) = \frac{9}{8}\frac{ql}{EI}z^2 - \frac{11}{4}\frac{ql^2}{EI}z + \frac{ql^3}{EI}$$

$$T(z) = -EI\,C_1 = \frac{9}{4}ql$$

$$M(z) = -EI\,(C_1 z + C_2) = \frac{9}{4}qlz - \frac{11}{4}ql^2$$





$$v_C = \varphi_A l + \frac{X l^3}{3EI} - \frac{ql^4}{4EI} = 0$$

$$X = \frac{ql^2}{4}\frac{3EI}{l^2} - \varphi_A\frac{3EI}{l^2} = \frac{3}{4}ql - \frac{ql^2}{EI}\frac{3EI}{l^2} = \frac{3}{4}ql - 3ql = -\frac{9}{4}ql$$

$$\Rightarrow \quad X = \frac{3}{4}ql \;\downarrow$$