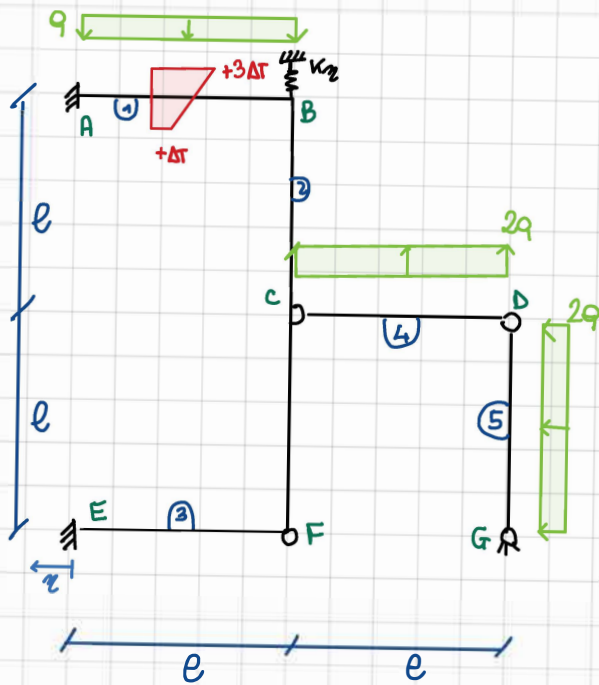




$$K_2 = \frac{2EI}{e^3}$$

$$q = \frac{1}{6} \frac{EI}{e^3}$$

$$d\Delta T = \frac{1}{3} \frac{EI}{e^3}$$

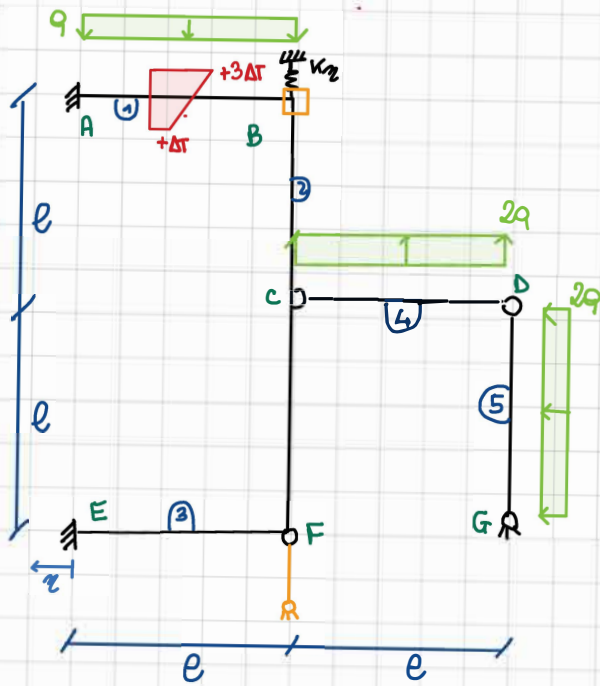
$$\frac{d\Delta T}{H} = \frac{1}{6} \frac{EI}{e^3}$$

① ANALISI CINEMATICA

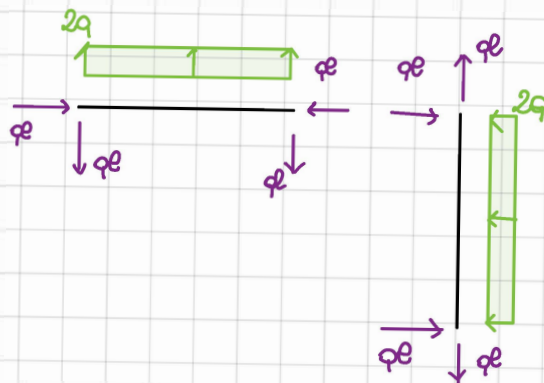
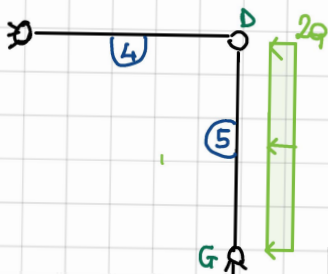
$$GdV = 15$$

$$GdL = 12$$

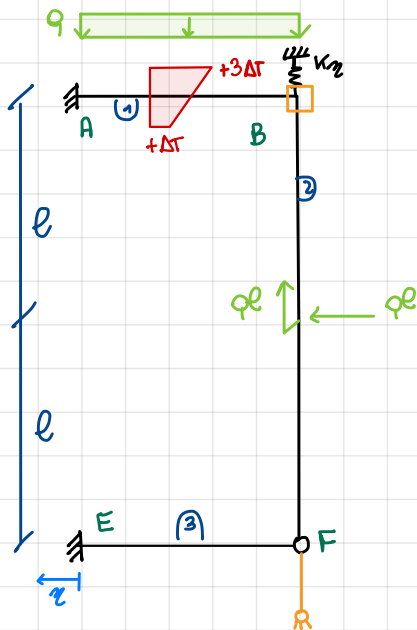
Struttura a mech spostabile



② APPENDICE ISOSTATICA



③ RISOLVO LA STRUTTURA



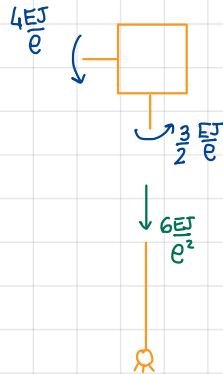
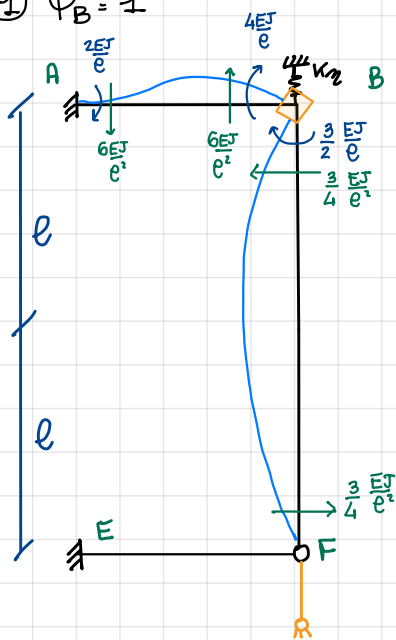
SISTEMA RISOLVENTE

$$\begin{cases} m_{BB} \varphi_B + m_{BF} \eta_F + m_{BO} = 0 \\ h_{zB} \varphi_B + h_{zF} \eta_F + h_{zO} = 0 \end{cases}$$

CONVENZIONE:



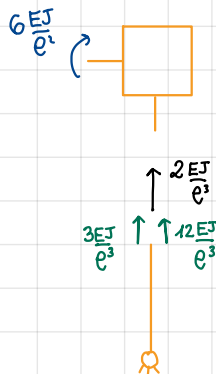
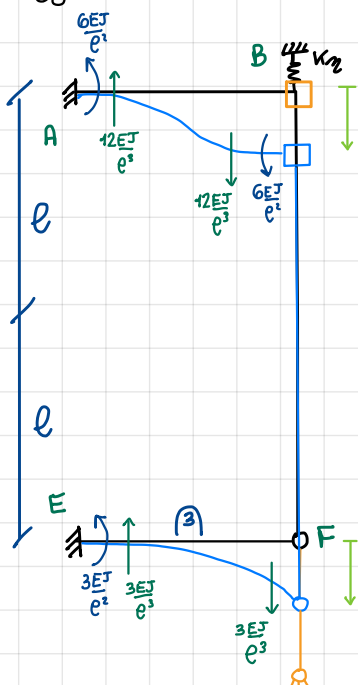
① $\varphi_B = 1$



$$\varphi_{BB} = \frac{11}{2} \frac{EJ}{l}$$

$$h_{zB} = -6 \frac{EJ}{l^2}$$

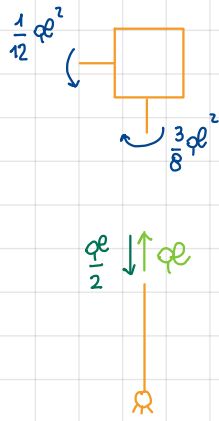
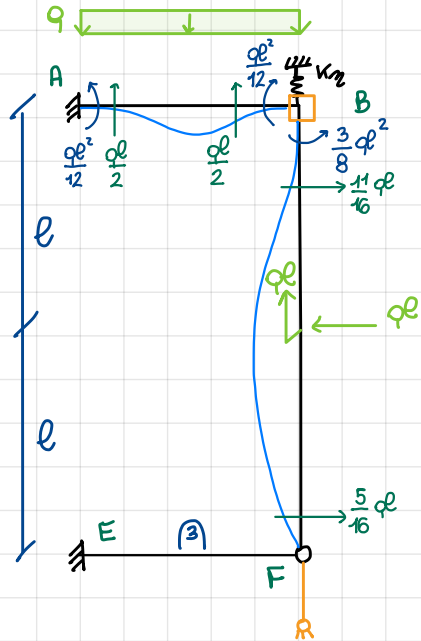
② $\eta_C = 1$



$$\varphi_{BB} = -6 \frac{EJ}{l}$$

$$h_{zB} = 17 \frac{EJ}{l^2}$$

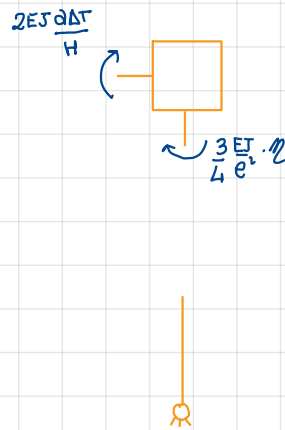
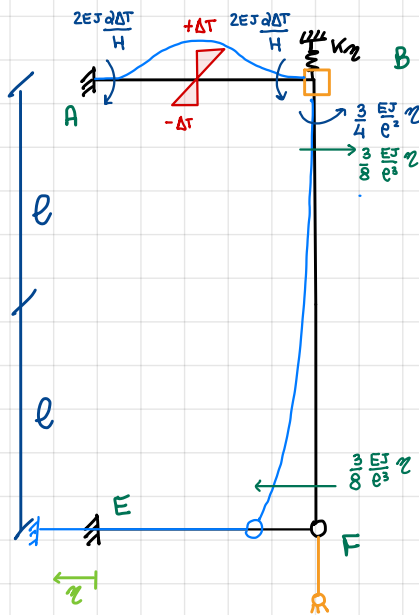
③ $q \neq 0$



$$\varphi_{B,1} = -\frac{7}{24} q l^2$$

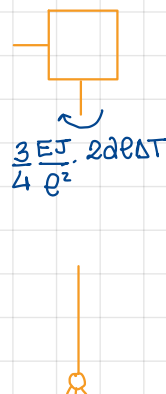
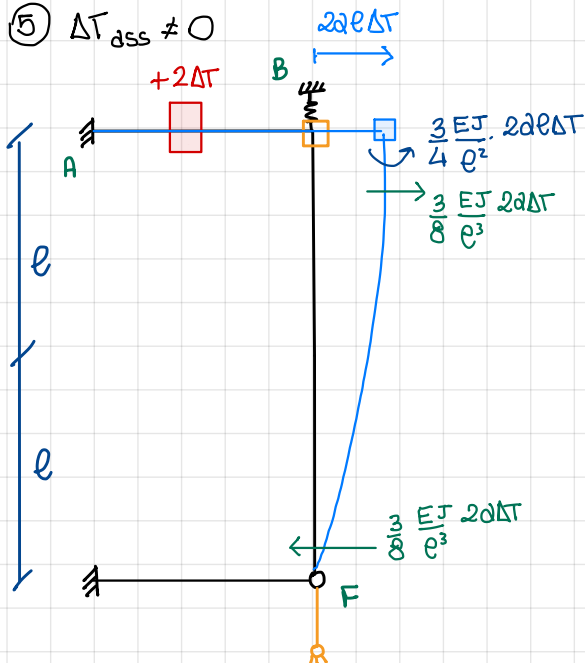
$$h_{\eta,1} = \frac{1}{2} q l$$

④ $\eta \neq 0, \Delta T_{\text{press}} \neq 0$



$$\varphi_{B,2} = -2 \cdot \frac{13}{6} q l^2 - \frac{3}{4} \cdot \frac{1}{6} q l^2 = -\frac{107}{24} q l^2$$

⑤ $\Delta T_{\text{dss}} \neq 0$



$$\varphi_{B,3} = -\frac{3}{4} \frac{E J}{l^2} \cdot 2 \cdot \frac{1}{3} \frac{q l^3}{E J} = -\frac{1}{2} q l^2$$

SISTEMA RISOLVENTE

$$\begin{cases} m_{BB} \varphi_B + m_{BF} \eta_F + m_{B0} = 0 \\ h_{BB} \varphi_B + h_{BF} \eta_F + h_{B0} = 0 \end{cases}$$

$$\begin{cases} \frac{11}{2} \frac{EJ}{e} \varphi_B - \frac{6EJ}{e^2} \eta_F + \left(-\frac{7}{24} - \frac{107}{24} - \frac{1}{2}\right) \varphi l^2 = 0 \\ -6 \frac{EJ}{e^2} \varphi_B + \frac{17EJ}{e^3} \eta_F + \frac{1}{2} \varphi l = 0 \end{cases}$$

$$\begin{cases} \frac{11}{2} \frac{EJ}{e} \varphi_B - \frac{6EJ}{e^2} \eta_F - \frac{21}{4} \varphi l^2 = 0 \\ -6 \frac{EJ}{e^2} \varphi_B + \frac{17EJ}{e^3} \eta_F + \frac{1}{2} \varphi l = 0 \end{cases}$$

$$\rightarrow \begin{cases} \frac{11}{2} \frac{EJ}{e} \varphi_B - \frac{6EJ}{e^2} \eta_F - \frac{21}{4} \varphi l^2 = 0 \\ \varphi_B = \frac{\frac{17EJ}{e^3} \eta_F + \frac{1}{2} \varphi l}{\frac{6EJ}{e^2}} = \frac{17}{6} \frac{\eta_F}{e} + \frac{1}{12} \frac{\varphi l^3}{EJ} \end{cases}$$

$$\begin{cases} \frac{11}{2} \frac{EJ}{e} \left[\frac{17}{6} \frac{\eta_F}{e} + \frac{1}{12} \frac{\varphi l^3}{EJ} \right] - \frac{6EJ}{e^2} \eta_F - \frac{21}{4} \varphi l^2 = 0 \\ // \end{cases}$$

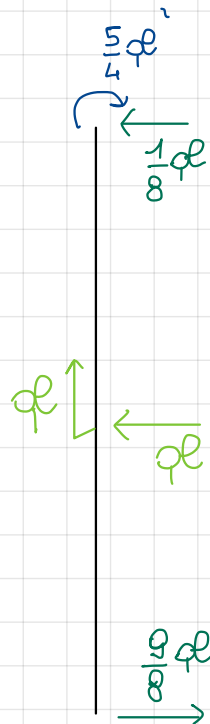
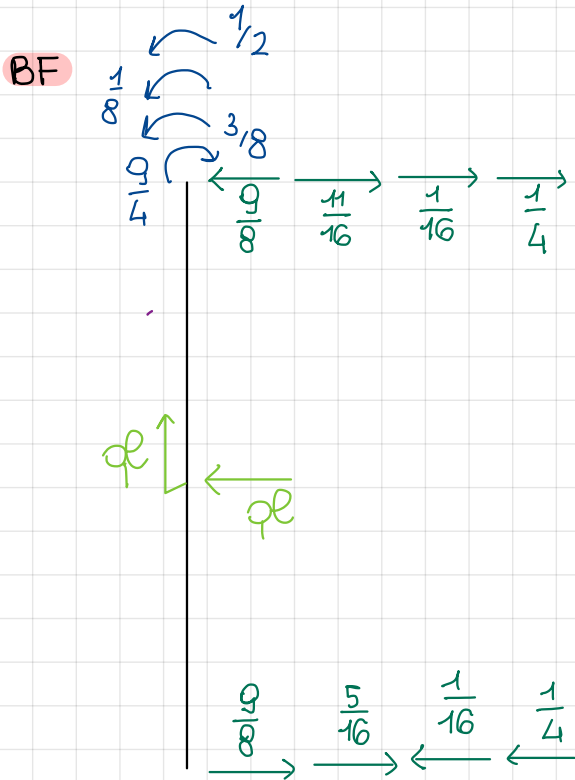
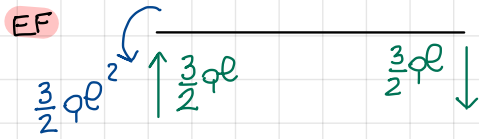
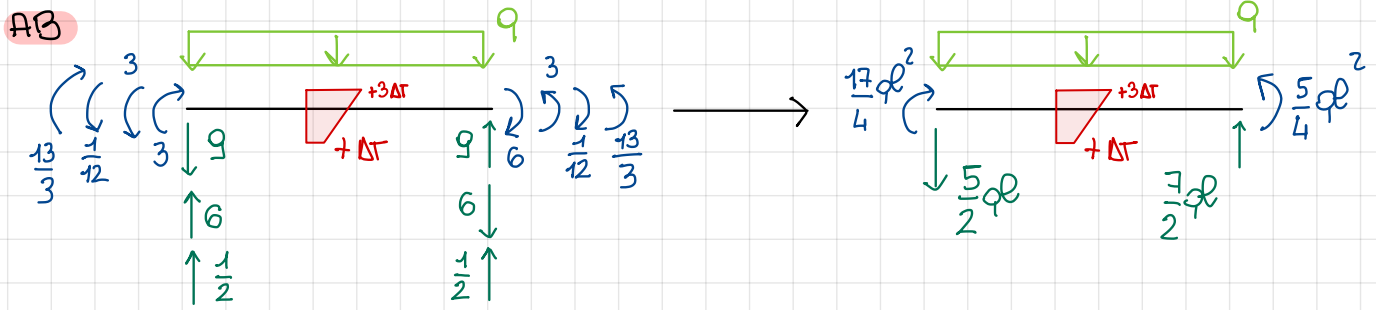
$$\begin{cases} \frac{187}{12} \frac{EJ}{e^2} \eta_F + \frac{11}{24} \varphi l^2 - \frac{6EJ}{e^2} \eta_F - \frac{21}{4} \varphi l^2 = 0 \\ // \end{cases}$$

$$\begin{cases} \frac{115}{12} \frac{EJ}{e^2} \eta_F - \frac{115}{24} \varphi l^2 = 0 \\ // \end{cases}$$

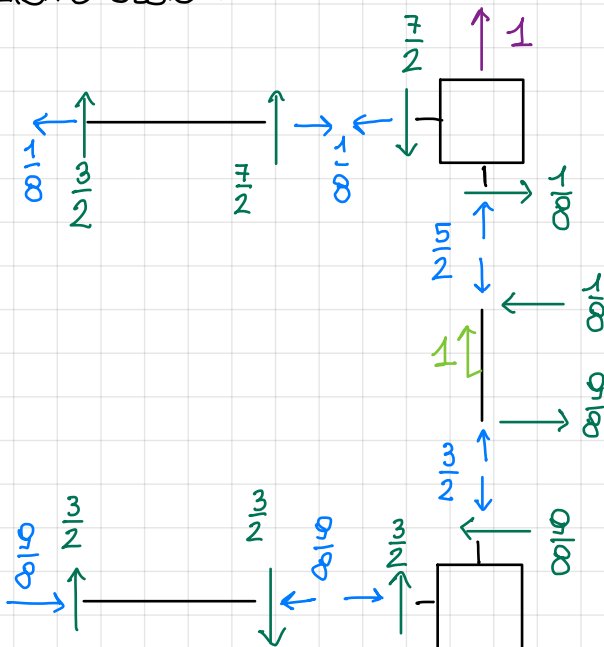
$$\begin{cases} \eta_F = \frac{1}{2} \frac{\varphi l^4}{EJ} \\ \varphi_B = \frac{17}{6} \frac{EJ}{e} \cdot \frac{1}{2} \frac{\varphi l^4}{EJ} + \frac{1}{12} \frac{\varphi l^3}{EJ} = \frac{3}{2} \frac{\varphi l^3}{EJ} \end{cases}$$

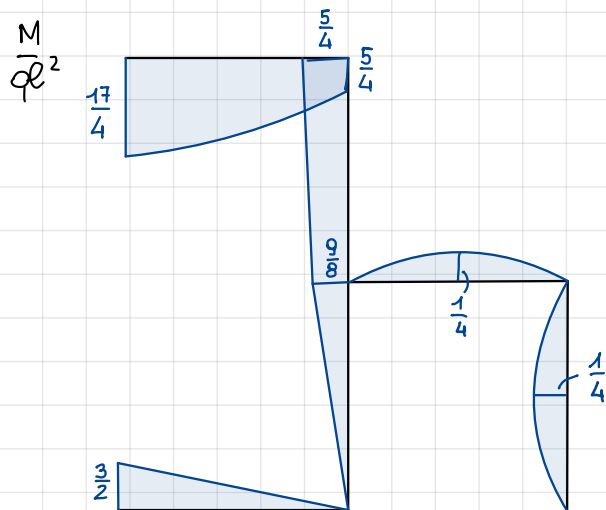
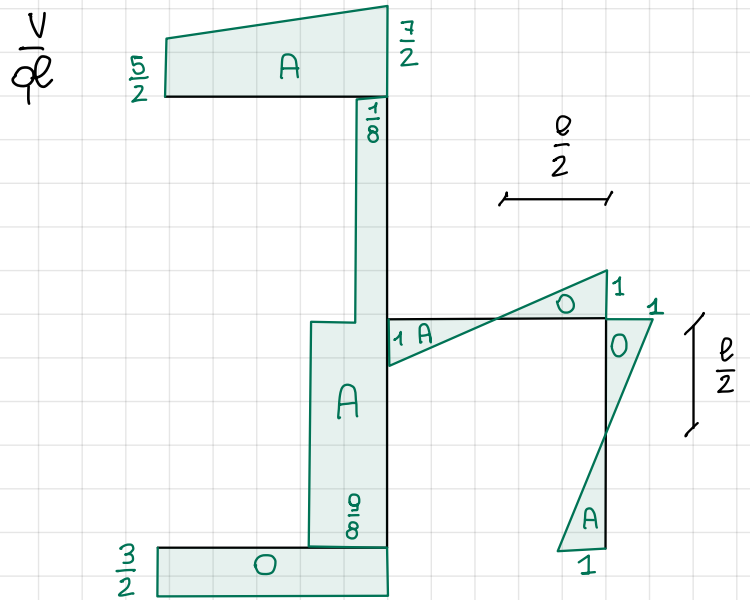
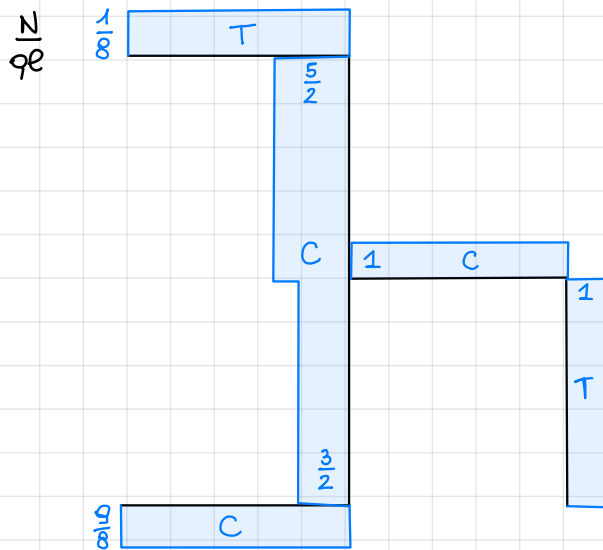
→

$$\begin{cases} \eta_F = \frac{1}{2} \frac{\varphi l^4}{EJ} \\ \varphi_B = \frac{3}{2} \frac{\varphi l^3}{EJ} \end{cases}$$

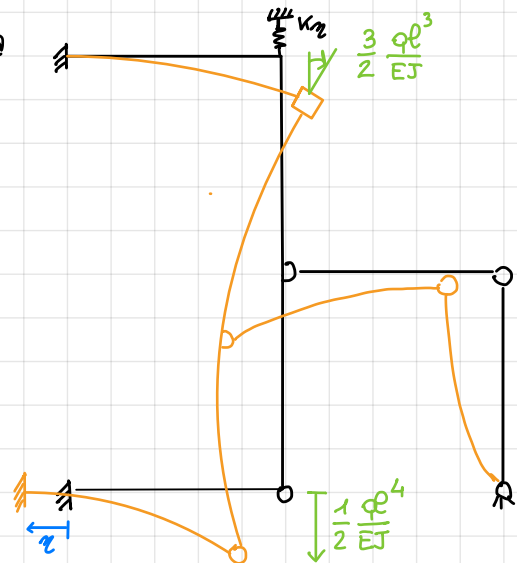


Azione assiale

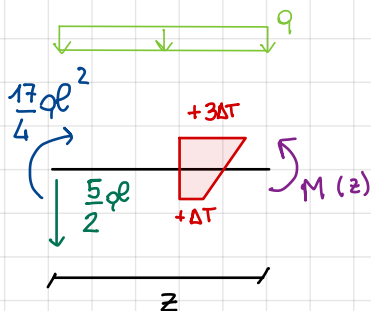




Deformata



Linea elastica asto AB:



(+)

$$M(z) = \frac{17}{4} q z^2 - \frac{5}{2} q z - \frac{q z^3}{2}$$

$$y'' = -\frac{M}{EJ} + \frac{2q\Delta T}{H} = \left[-\frac{17}{4} q z^2 + \frac{5}{2} q z + \frac{13}{3} q z^2 + \frac{q z^2}{2} \right] \frac{1}{EJ} = \left[q z^2 + \frac{5}{2} q z + \frac{1}{12} q z^2 \right] \frac{1}{EJ}$$

$$y'' \geq 0 \longrightarrow y_1 = -0,03e \longrightarrow y \leq -4,97e \vee y \geq -0,03e$$

$$y_2 = -4,97e$$



curvatura sempre positiva