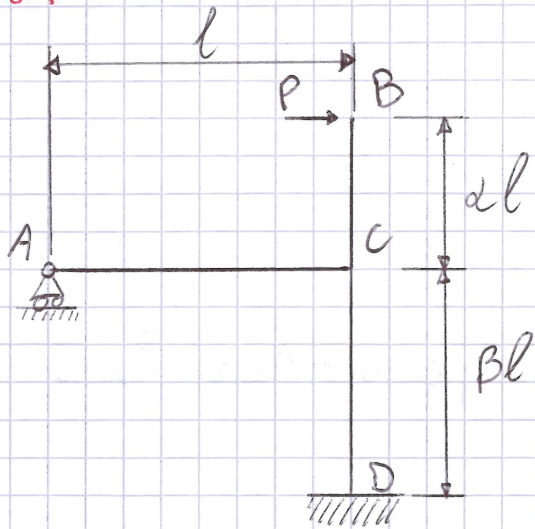
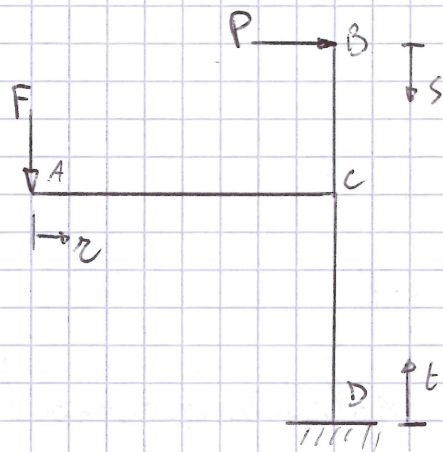


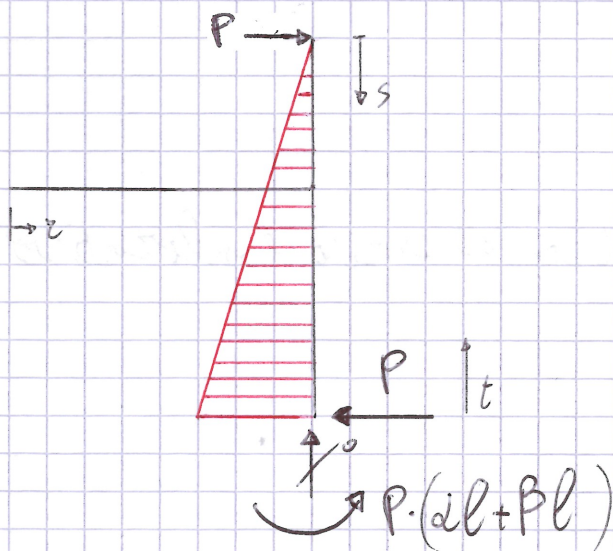
Esercizio 2.08.



Considero la struttura principale:



Considero la sola forza applicata P e calcolo reazioni vincolari e H_f .



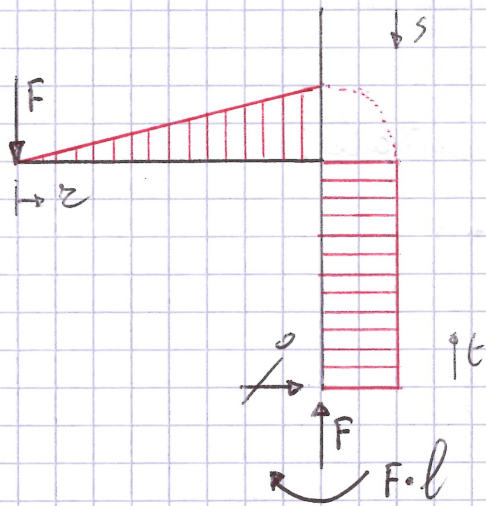
Devo stabilire una convenzione sui segni e poi rispettarla:
 H_f positivo a sinistra del tratto BD e opposto il tratto AC.

$$M_{f_p}(z) = 0$$

$$M_{f_p}(s) = P \cdot s$$

$$M_{f_p}(t) = P \cdot (\alpha + \beta) l - P \cdot t$$

Considero la sola reazione iperstatica F e calcolo reazioni vincolari e M_f .



Devo usare la stessa convenzione stabilita prima!

$$M_{f_F}(z) = F \cdot z$$

$$M_{f_F}(s) = 0$$

$$M_{f_F}(t) = -F \cdot l$$

Mi serve anche M_{f_1} (con il carico esplorativo), usogli M_{f_F} .

$$M_{f_1}(z) = 1 \cdot z$$

$$M_{f_1}(s) = 0$$

$$M_{f_1}(t) = -1 \cdot l$$

Ora applico il PLV.

$$h_e = h_i; \quad h_e = 1 \cdot 0 = 0$$

$$\begin{aligned} d_i = & \int_0^l \frac{1}{ES} (M_{f_P}(z) + M_{f_F}(z)) \cdot M_{f_1}(z) dz + \int_0^{dl} \frac{1}{ES} (M_{f_P}(s) + M_{f_F}(s)) \cdot M_{f_1}(s) ds + \dots \\ & + \dots \int_0^{Bl} \frac{1}{ES} (M_{f_P}(t) + M_{f_F}(t)) \cdot M_{f_1}(t) dt \end{aligned}$$

$$\begin{aligned} d_i = & \int_0^l \frac{1}{ES} (0 + F \cdot z) \cdot z dz + \int_0^{dl} \frac{1}{ES} (P \cdot s + 0) \cdot 0 ds + \int_0^{Bl} \frac{1}{ES} (P(\alpha + \beta) \cdot l - P \cdot t - F \cdot l) \cdot (-l) dt = \\ = & \frac{1}{ES} \left[F \cdot \frac{l^3}{3} - P(\alpha + \beta) l^2 \cdot \beta l + P \cdot l \cdot \frac{\beta^2 l^2}{2} + F \cdot l^2 \cdot \beta l \right] = 0 \end{aligned}$$

$$\Rightarrow F \left(\frac{1}{3} + \beta \right) = + P(\alpha + \beta) \cdot \beta - P \cdot \frac{\beta^2}{2}$$

$$F = \frac{(2P\alpha\beta + 2P\beta^2 - P\beta^2) \cdot 3}{2(3\beta + 1)} = \frac{6P\alpha\beta + 3P\beta^2}{6\beta + 2}$$