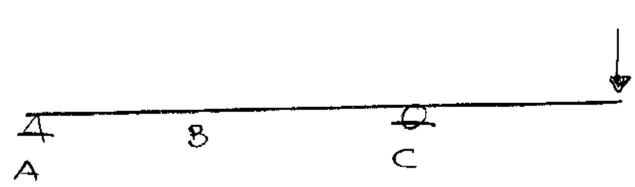
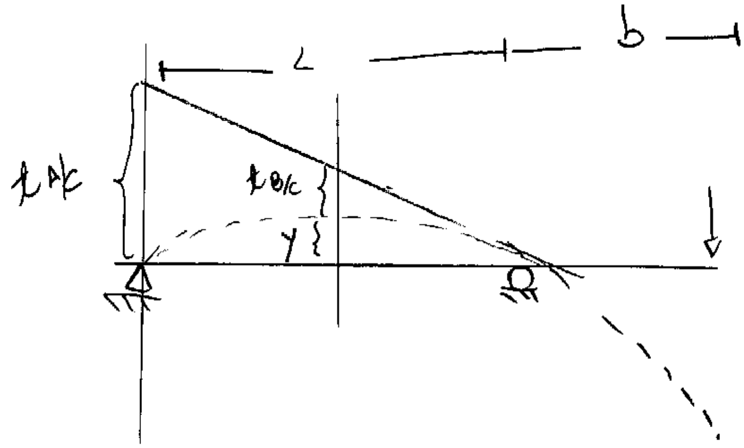
1



$$R_A + R_C = P$$

$$R_C = \frac{P(L+b)}{L}$$

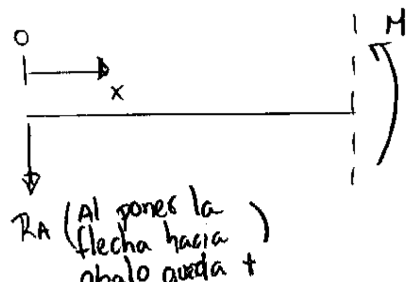
$$R_A = \frac{-Pb}{L}$$



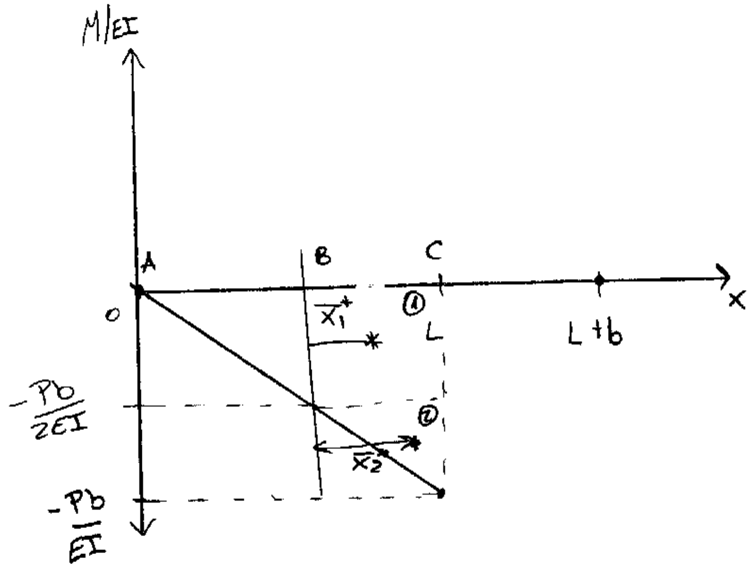
$$\frac{t_{A/C}}{\cancel{L}} = \frac{Y + t_{B/C}}{\cancel{L}/2}$$

$$\boxed{\frac{t_{A/C}}{2} - t_{B/C} = Y}$$

Cortando:



$$\Rightarrow M = -R_A \cdot x = -\frac{Pbx}{L}$$



$$t_{A/C} = \text{Area} \cdot \bar{x}$$

$$= -\frac{Pb}{EI} \cdot \frac{L}{\cancel{2}} \cdot \frac{\cancel{2}L}{3}$$

$$= -\frac{PbL^2}{3EI}$$

$$t_{B/C} = \text{Area}_{BC} \cdot \bar{x}_{BC}$$

$$= \text{Area}_{BC} \cdot \frac{\sum A_i \cdot \bar{x}_i^*}{\sum A_i}$$

$$= \cancel{\sum A_i} \cdot \frac{\sum A_i \bar{x}_i^*}{\cancel{\sum A_i}}$$

$$t_{B/C} = \sum A_i \cdot \bar{x}_i$$

$$t_{B/C} = \underbrace{\left(-\frac{Pb}{2EI}\right)\left(\frac{L}{2}\right)}_{A_①} \cdot \underbrace{\left(\frac{L}{4}\right)}_{\bar{x}_①^*} + \underbrace{\left(-\frac{Pb}{2EI} \cdot \frac{L}{4}\right)}_{A_②} \cdot \underbrace{\left(\frac{\cancel{2}}{3} \frac{L}{\cancel{2}}\right)}_{\bar{x}_②^*}$$

$$= -\frac{PbL^2}{16EI} - \frac{PbL^2}{24EI} = -\frac{5PbL^2}{48EI}$$

$$\Rightarrow \boxed{Y = -\frac{1}{16} \frac{PbL^2}{EI}}$$

$$t_{A/C} = \int_0^L -\frac{Pbx^2}{EI}\,dx = -\frac{PbL^2}{3EI}$$

$$t_{B/C} = \int_{L/2}^{L} -\frac{Pbx}{EI}\left(x-\frac{L}{2}\right)dx = \int_{L/2}^{L} -\frac{Pb}{EI}\left\{x^2 - \frac{xL}{2}\right\}dx$$

$$= -\frac{Pb}{LEI}\left\{\frac{x^3}{3} - \frac{x^2L}{4}\right\}\Bigg|_{L/2}^{L} = -\frac{Pb}{LEI}\left\{\frac{L^3}{3} - \frac{L^3}{4} - \frac{L^3}{24} + \frac{L^3}{16}\right\}$$

$$\Rightarrow t_{B/C} = -\frac{5PbL^2}{48EI}$$

$$\Rightarrow \boxed{y = -\frac{1}{16}\frac{PbL^2}{EI}}$$

$$\therefore \quad t_{B/C} = \int_B^C \frac{M}{EI}(x-B)\,dx$$

para tomar tramos que comienzan fuera de $x=0$ se debe desplazar el x de la integral.