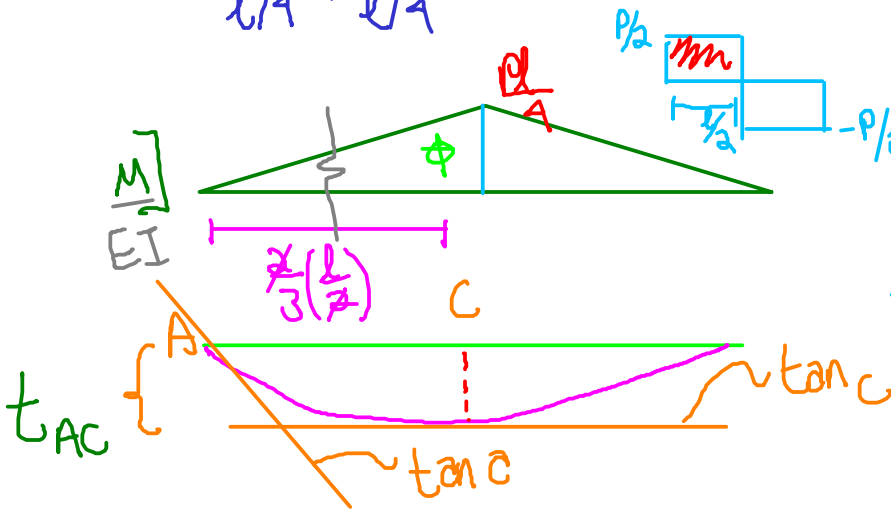
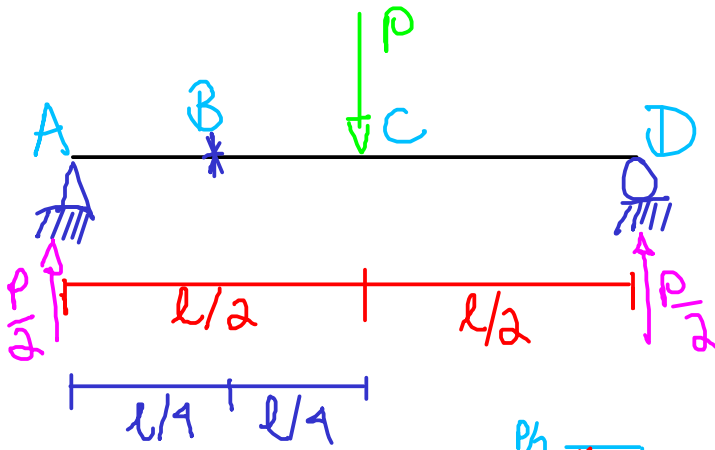


La viga soporta una carga concentrada P en el centro del claro (punto C). Calcule las deflexiones en los puntos B y C.

Asimismo, calcule la pendiente en A.

EI es constante.



Rotación en A

$$\theta_A = \theta_C + \Delta\theta_{CA}$$

$$EI\theta_A = 0 + \int_A^C \frac{M}{EI} dx$$

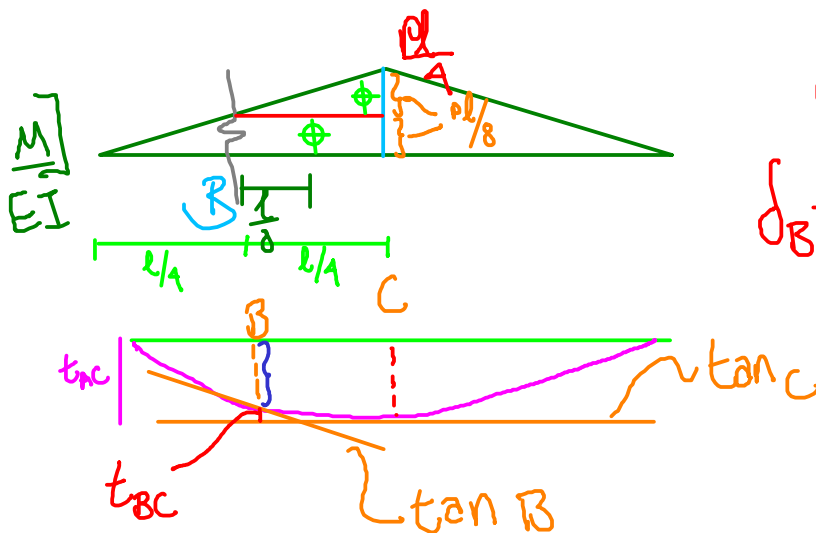
$$EI\theta_A = \frac{1}{2} \left(\frac{l}{2} \right) \left(\frac{Pl}{4} \right) = \frac{Pl^2}{16}$$

$$\theta_A = \frac{Pl^2}{16EI} \text{ radianes}$$

Deflexión en C

$$t_{AC} = \delta_C = \int_A^C \frac{M}{EI} x dx = \frac{1}{2} \left(\frac{l}{2} \right) \left(\frac{Pl}{4} \right) \left(\frac{2}{3} \cdot \frac{l}{2} \right) = \frac{Pl^3}{48EI}$$

Deflexión en B



$$\delta_B = \delta_C - t_{BC}$$

$$\delta_B = \frac{Pl^3}{48EI} - \left(\frac{l}{4} \right) \left(\frac{Pl}{8EI} \right) \left(\frac{l}{8} \right)$$

$$= \frac{Pl^3}{48EI} - \frac{1}{2} \left(\frac{l}{4} \right) \left(\frac{Pl}{8EI} \right) \left(\frac{2}{3} \cdot \frac{l}{4} \right)$$

$$= \frac{11Pl^3}{768EI}$$