

EJERCICIO:

Determinar, para la sección IPB 200 graficada, las coordenadas del CP y el valor de N.

F Compuesta y oblicua.

DATOS del IPB 200
(Tabla CIRSOC)

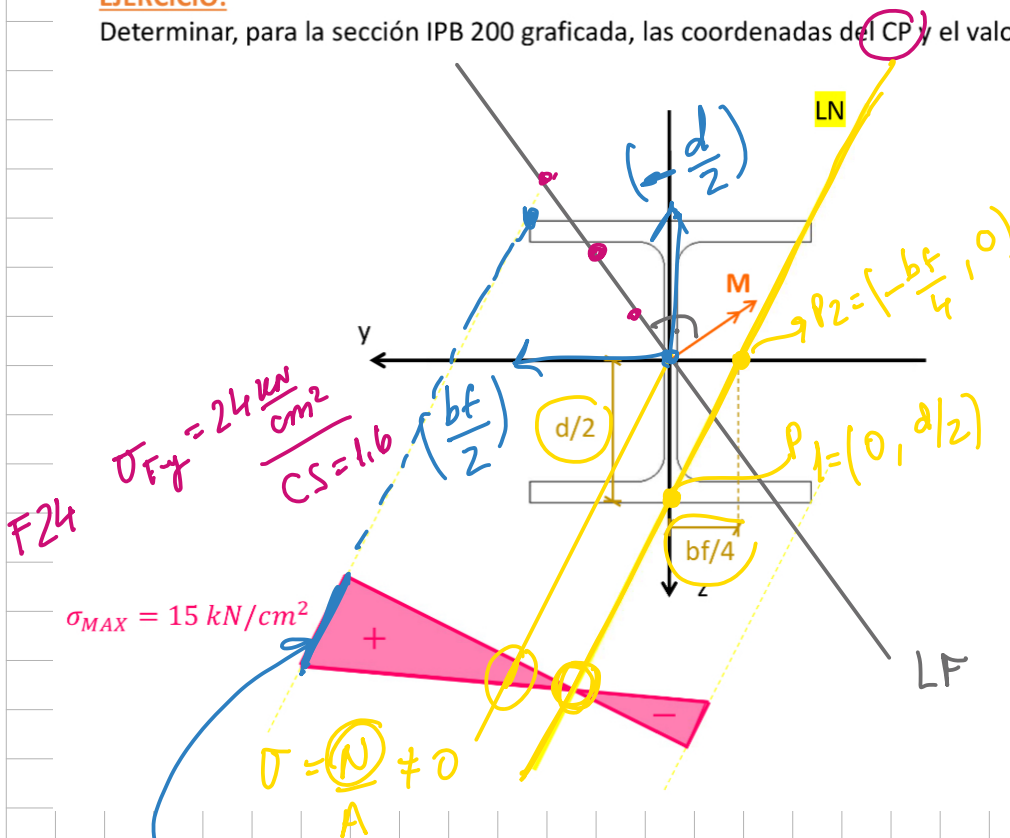
$$d = 200 \text{ mm}$$

$$bf = 200 \text{ mm}$$

$$A = 78,1 \text{ cm}^2$$

$$J_y = 5700 \text{ cm}^4$$

$$J_z = 2000 \text{ cm}^4$$



$$\sigma = \frac{N}{A} + \frac{M_y}{J_y} z - \frac{M_z}{J_z} y$$

$$\left. \begin{aligned} e_y &= -M_z/N \\ e_z &= M_y/N \end{aligned} \right\}$$

$$\sigma = \frac{N}{A} + \frac{N e_z}{J_y} z + \frac{N e_y}{J_z} y$$

$$\sigma = \frac{N}{A} \left(1 + \frac{e_z}{J_y} z + \frac{e_y}{J_z} y \right) \rightarrow \text{si estoy sobre la LN} \Rightarrow \sigma = 0$$

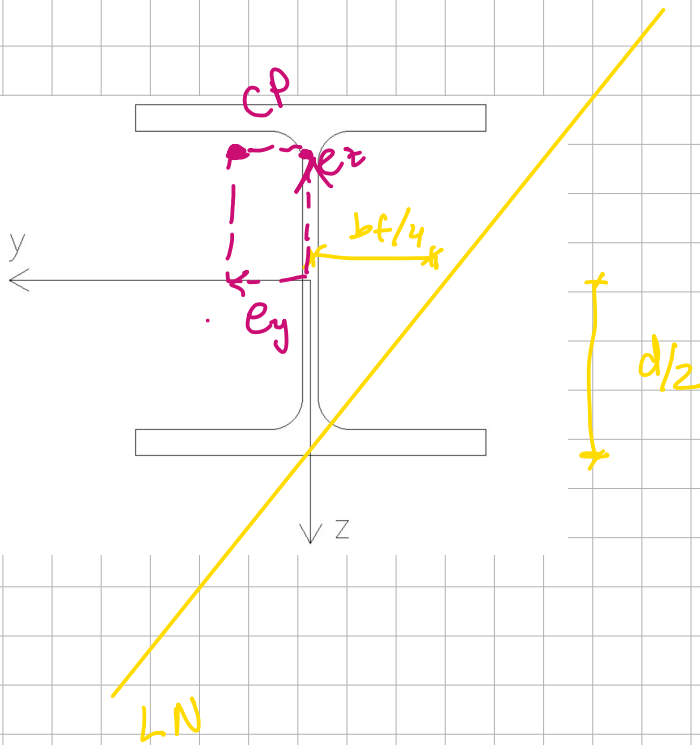
para LN $\neq 0$ $= 0$

Punto 1 $(0; d/2)$

$$0 = \frac{1}{A} + \frac{e_z}{J_y} \frac{d}{2} \Rightarrow e_z = -\frac{J_y}{A} \frac{2}{d} = -7,3 \text{ cm}$$

Punto 2 $(-bt/4; 0)$

$$0 = \frac{1}{A} + \frac{e_y}{J_z} (-bt/4) \Rightarrow e_y = + \frac{J_z}{A} \frac{4}{(bt)} = 5,12 \text{ cm}$$



$$\frac{15 \text{ kN}}{\text{cm}^2} = \sigma = \frac{N}{A} + \frac{N e_z}{J_y} z + \frac{N e_y}{J_z} y$$

$$N = \frac{15 \text{ kN/cm}^2}{\frac{1}{A} + \frac{e_z (-d/2)}{J_y} + \frac{e_y bt/2}{J_z}}$$

$$N = 292,07 \text{ kN}$$

$$S_y = \frac{J_y}{z_{\max}}$$

$$S_z = \frac{J_z}{y_{\max}}$$