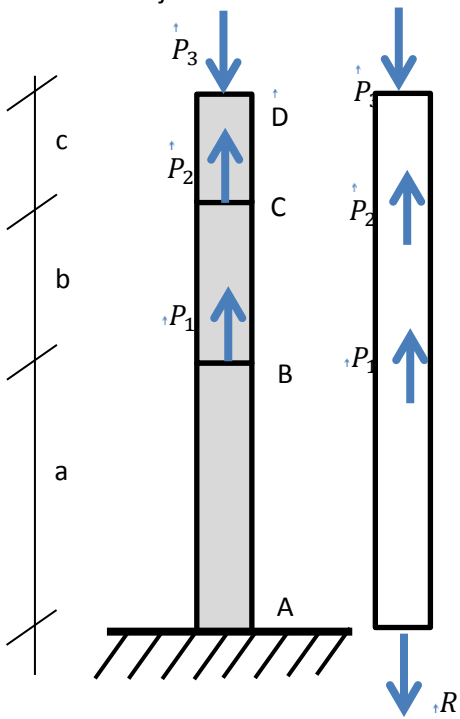
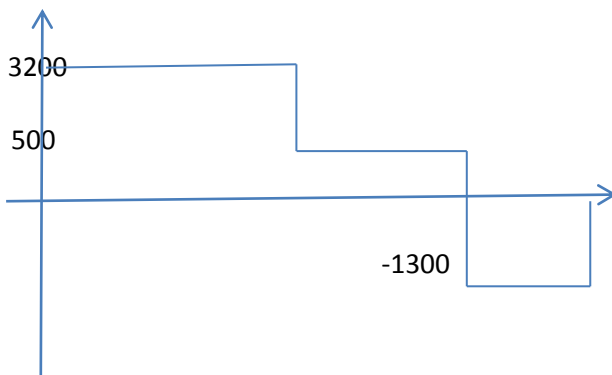


Ejercicio 2:

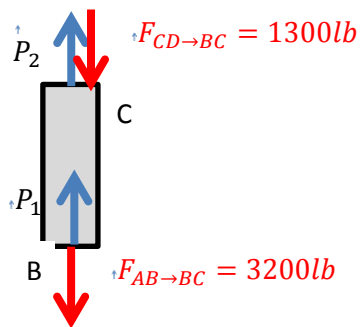


$$A) \sum F_y = 0 \rightarrow +P_1 + P_2 - P_3 - R = 0 \quad \rightarrow \quad R = +P_1 + P_2 - P_3 = 3200lb$$

C) Diagrama directa:



B)



$$D) \delta_{TOTAL} = \delta_{AB} + \delta_{BC} + \delta_{CD} = 0.0131''$$

$$\delta_{AB} = \frac{(P_1 + P_2 - P_3) * a}{E * A} = 0.016''$$

$$\delta_{BC} = \frac{(P_2 - P_3) * b}{E * A} = 0.001''$$

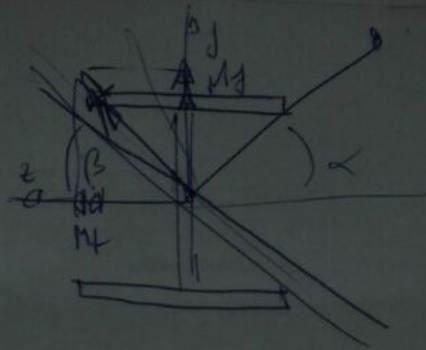
$$\delta_{CD} = \frac{(-P_3) * c}{E * A} = -0.0039''$$

$$E) \delta_{TOTAL} = 0 \rightarrow \frac{(P_1 + P_2 - P_3) * a}{E * A} + \frac{(P_2 - P_3) * b}{E * A} + \frac{(-P_3) * c}{E * A} = 0$$

$$(P_1 + P_2 - P_3) * a + (P_2 - P_3) * b + (-P_3) * c = 0$$

$$(P_1 + P_2) * a + (P_2) * b = P_3 * (a + b + c) \rightarrow P_3 = \frac{(P_1 + P_2) * a + (P_2) * b}{(a + b + c)} = 2610lb$$

d)



$$\sigma = -\frac{M_z \cdot y}{I_z} + \frac{M_y \cdot z}{I_y}$$

$$\frac{\sigma=0}{LN} \quad y = \frac{M_y}{M_z} \cdot \frac{I_z}{I_y} \cdot z + \frac{I_{xy}}{I_y} = \left(\frac{I_z}{I_y} \right) \frac{M_y A - P \cdot \cos(\alpha)}{M_z A - P \cdot \sin(\alpha)}$$

em A : $x = 0 \rightarrow \frac{y}{z} = \frac{I_z}{I_y} \cdot \frac{20,30}{120}$

$$\frac{y}{z} = y(0) = \frac{20,360,9}{6,306,6} = 3,23$$

$M_{yA} = 82,1 \text{ kcb.in.}$
 $M_{zA} = 118,1 \text{ kcb.in.}$

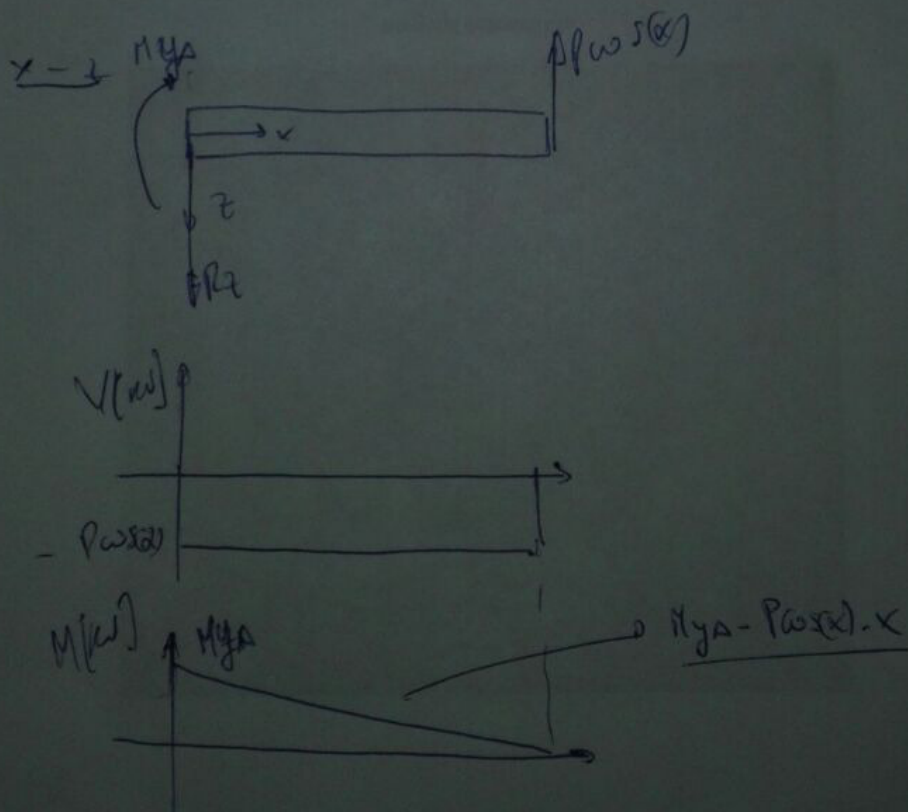
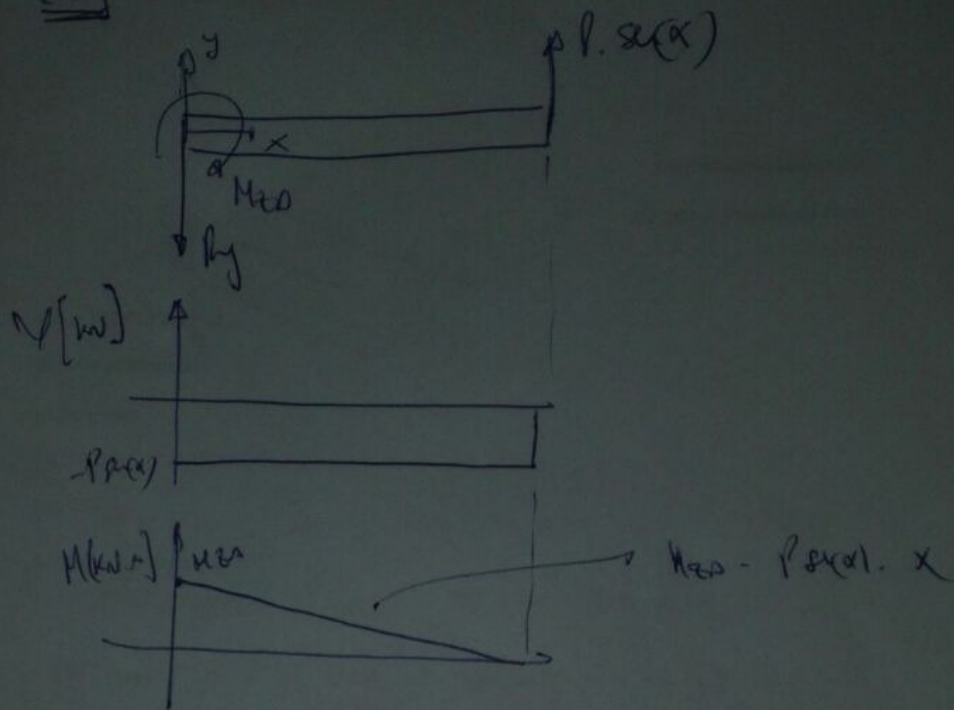
$\beta = \arctan(3,23)$
 $\beta = 72,3^\circ$

e) eif. máx de tensão em $(y, z) = (-1,05, 4,0)$

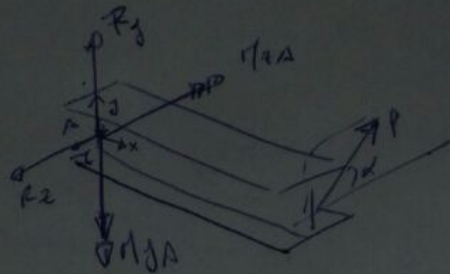
$\rightarrow \sigma = 2,405 \text{ kni} + 6,165 \text{ kni}$

$\sigma = 8,570 \text{ kni}$

c) \leftarrow



a)



EQ:

$$P \cdot \cos(\alpha) = R_2$$

$$P \cdot \sin(\alpha) = -R_y \rightarrow R_y \downarrow$$

$$\sum M_A = 0 \rightarrow -M_{jA} + P \cdot \cos(\alpha) \cdot L = 0$$

$$\rightarrow \boxed{M_{jA} = P \cos(\alpha) L}$$

$$\sum M_B = 0 \rightarrow -M_{jB} + P \cdot \sin(\alpha) \cdot L = 0$$

$$\rightarrow M_{jB} = P \sin(\alpha) L \uparrow$$

b)

DCL

