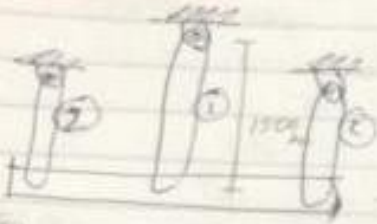
02 Normal Si

Ejercicio 1:

Fue el quiz.

Ejercicio 2:



① $\epsilon = \frac{\delta}{L}$

$1200 \times 10^{-6} (1.500\,m) = \delta$

$\delta = 1.8 \times 10^{-3}\ m$

a) $\epsilon = \frac{1.8 \times 10^{-3} m}{900 m} = 2 \times 10^{-3}$

La deformación unitaria es igual en ambos.

b) $\delta = 1.8 \times 10^{-3} m + .0005\,m$

$\delta = 1.3 \times 10^{-3}\ m$

$\epsilon = \frac{1.3 \times 10^{-3} m}{900 m} = 1.44 \times 10^{-5}$

Como tiene ese acero más, no va a aumentar tanto así que se lo quitamos

Ejercicio 3:

$\epsilon = -1800 \times 10^{-6}$

$\epsilon = \frac{\delta}{L}$

$\delta = (-1800 \times 10^{-6})(.600m)$

$\delta = -1.08 \times 10^{-3}$

indica que es una compresión

$\delta_D = .001\,5\,m + 1.08 \times 10^{-3} = 2.58 \times 10^{-3}\,m$

lo que dice ahí

sacas porque son distintas alturas

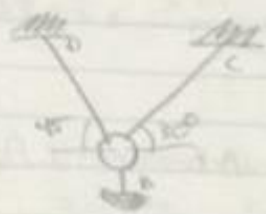
② Si

$\frac{\delta_D}{\delta_B} = \frac{.600m}{1180m} \rightarrow \delta_B = 2.064 \times 10^{-3}\,m$

$\epsilon = \frac{\delta}{L} = \frac{2.064 \times 10^{-3}\,m}{1.200\,m} = \boxed{1.72 \times 10^{-3}}$

Ejercicio 4:

$P = 50\,lb$



① Sacamos Áreas

$A = \pi r^2$

$A_B = \pi \left(\frac{.35}{2}\right)^2 = .096211\,m^2$

$A_D = \pi \left(\frac{.3}{2}\right)^2 = .0706\,m^2$

$A_C = \pi \left(\frac{.25}{2}\right)^2 = .04908\,m^2$

② $\sigma_B = \frac{50\,lb}{.096211\,m^2} = $ 519.[illegible] lb/[illegible]

Necesitamos sacar las fuerzas que aplican en las otras barras

$\Sigma F_x = 0$

$-F_B \cos 45 + F_C \cos 30 = 0$

$\Sigma F_y = 0$

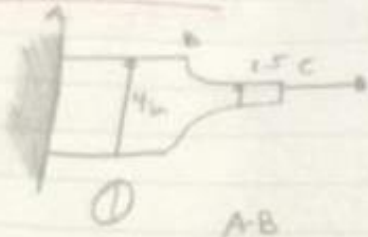
$F_B \sin 45 + F_C \sin 30 - 50 = 0$

$F_B = 44.82\ lb$

$F_C = 36.6\ lb$

$\sigma_{BC} = \frac{44.82\ lb}{.0706\ in^2} = 634.84\ \frac{lb}{in^2}$ $\quad \sigma_{AC} = \frac{36.6\ lb}{.04908\ in^2} = 745.7\ \frac{lb}{in^2}$

Ejercicio 5:



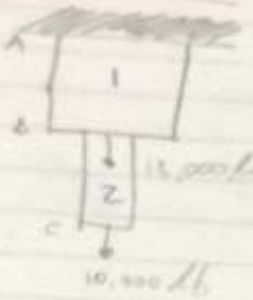
AB $\quad A_{AB} = \pi r^2 = \pi \left(\frac{4}{2}\right)^2 = 12.5\ in^2$

$\sigma_{AB} = \frac{95{,}000\ lb}{12.5\ in^2} = 7.56 \times 10^3\ \frac{lb}{in^2}$ $\quad A_{AB} = \frac{\pi (4)^2}{4} = 12.56\ in^2$

$A_{BC} = \pi \left(\frac{2.5\ in}{2}\right)^2 = 4.908\ in^2$

$\sigma_{BC} = \frac{95{,}000\ lb}{4.908\ in^2} = 1.935 \times 10^4\ \frac{lb}{in^2}$

Ejemplo 6:



(2) $\sigma_{allow} = \frac{P}{A}$

$25{,}000 \frac{lb}{in^2} = \frac{10{,}000\ lb}{\pi r^2}$

sobre el cuadrado $r = \sqrt{\frac{10{,}000}{25{,}000\pi}}$

$r = .3568$ in

$\boxed{d = .7136 \text{ in}}$

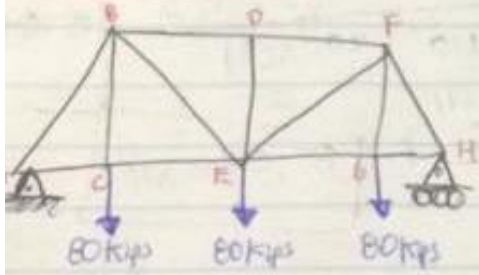
(1)

$F = 12{,}000 + 10{,}000 = 22{,}000\ lb$

$r = \sqrt{\frac{22{,}000}{25{,}000\pi}} = .52$

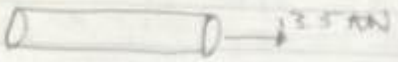
$\boxed{d_1 = 1.05 \text{ in}}$

Ejemplo 7:



Necesito cuaderno de agutrre, no me acuerdo bien.

Example 8:



① $A = \pi r^2 = \pi \left(\frac{.013m}{2}\right)^2$

$A = 1.327 \times 10^{-4}$

$\sigma = \frac{13500N}{1.327 \times 10^{-4}} = 101.733 \text{ MPa}$

②

$\delta = \frac{PL}{AE} = \frac{(13500)(1m)}{1.327 \times 10^{-4}(200 \times 10^9)} = 5.086 \times 10^{-3} m$

$\epsilon = \frac{\delta}{L} = \frac{5.086 \times 10^{-3}}{1m} = 5.086 \times 10^{-3}$