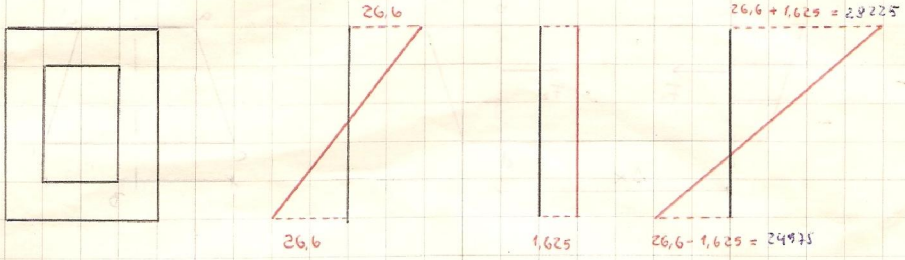
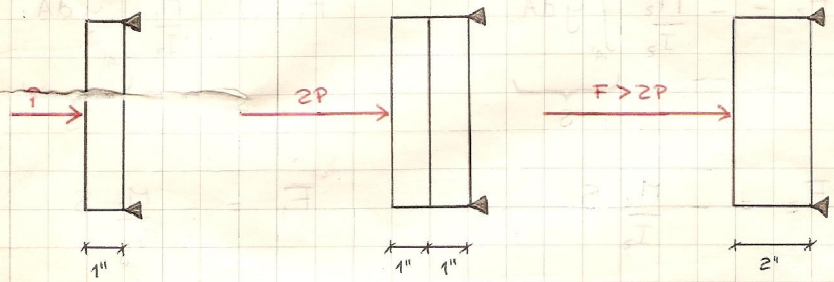


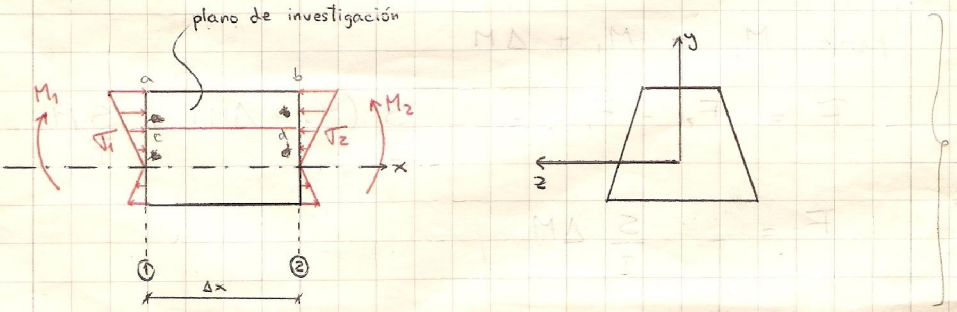
clase cátedra.

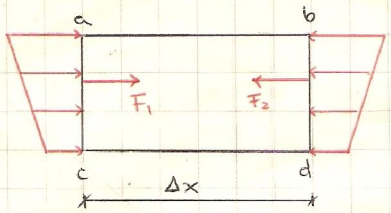
JU 140587

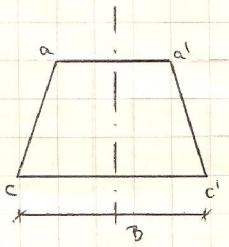
★ Esfuerzos de corte producidos por la flexión.
(Debidos a la fuerza de corte).

FORMULA DE JOURASKY :









si $M_2 > M_1$ entonces $\sigma_2 > \sigma_1$

$\Rightarrow F_2 > F_1$

$\exists F$ tq $\Sigma F_x = 0 \rightsquigarrow F = F_2 - F_1$

$$F_2 = \int_{A'} \sigma_2 \, dA \qquad F_1 = \int_{A'} \sigma_1 \, dA$$

$$F_2 = -\int_{A'} \frac{M_2}{I_z} y \, dA \qquad F_1 = -\int_{A'} \frac{M_1}{I_z} y \, dA$$

$$F_2 = -\frac{M_2}{I_z} \underbrace{\int_{A'} y \, dA}_{S} \qquad F_1 = -\frac{M_1}{I_z} \underbrace{\int_{A'} y \, dA}_{S}$$

$$F_2 = -\frac{M_2}{I_z} S \qquad F_1 = -\frac{M_1}{I_z} S$$

pero $M_2 = M_1 + \Delta M$

$$F = F_2 - F_1 = -\frac{S}{I}(M_1 + \Delta M) + \frac{S}{I} M_1$$

$$F = -\frac{S}{I} \Delta M$$

Esfuerzo de corte $cc' - dd'$

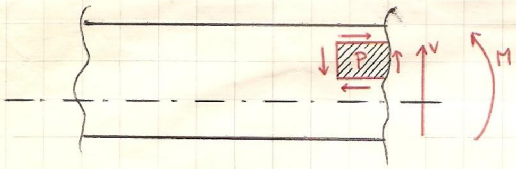
$$\tau = \frac{F}{\text{superficie}} = -\frac{F}{\Delta x \cdot B}$$

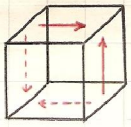
$$\tau = -\frac{\Delta M}{\Delta x}\cdot\frac{S}{B I_z}$$

$$\boxed{\tau = \frac{V S}{B I_z}}$$

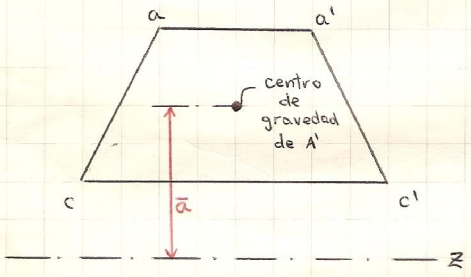
$$S = \int_{A'} y\, dA$$

Gráficamente:





punto P



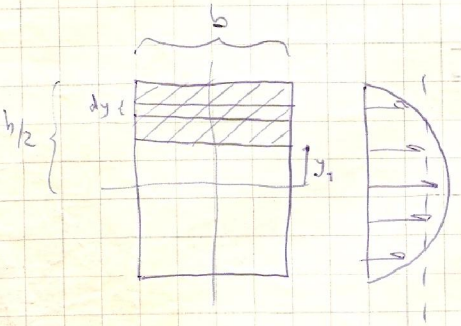
$$S = \int_{A'} y\, dA$$

$$\boxed{S = \bar{a} A'}$$

En general $\tau = \tau(x, y)$

$$\tau = \frac{VS}{Ib} = \frac{V}{Ib}\int_{A'} y\,dA = \frac{V}{Ib}\int_{y_1}^{h/2} b\,y\,dy$$

$$\tau = \frac{V}{I}\left\{\frac{y^2}{2}\right\}\Big|_{y_1}^{h/2} = \frac{V}{2I}\left[\left(\frac{h}{2}\right)^2 - y_1^2\right]$$



$$\tau_{MAX} = \tau(y_1 = 0) = \frac{Vh^2}{8I} = \frac{3V}{2bh}$$

$$\tau_{MED} = V/A$$