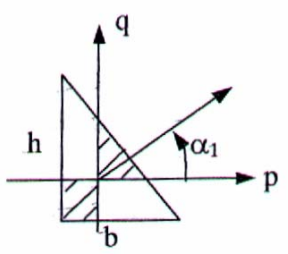
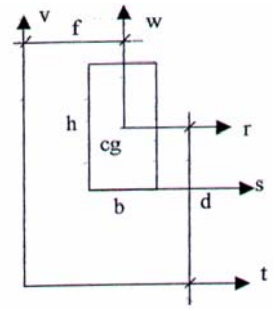
Formulário:

$$I_{1,2} = \frac{I_p + I_q}{2} \pm \sqrt{\frac{I_p + I_q}{2} + I_{pq}{}^2}$$

$$tg\,\alpha_1 = \frac{I_p - I_1}{I_{pq}} \quad , \quad tg\,\alpha_2 = \frac{I_p - I_2}{I_{pq}}$$

$$triângulo \;: I_{pq} = -\frac{b^2 h^2}{72}$$





$$I_r = \frac{bh^3}{12} \qquad I_t = I_r + d^2 A$$

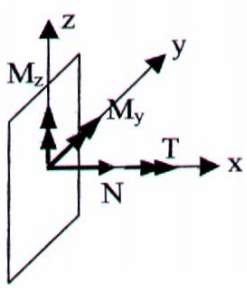
$$I_s = \frac{bh^3}{3} \qquad I_{tv} = I_{rw} + d.f.A$$

$$I_{rw} = \int_A rwdA$$

$$\tau_v = \frac{VS_0}{t.I}$$

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

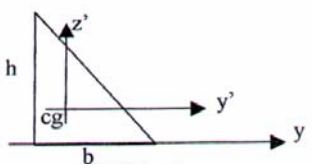
$$\tau_T = \frac{T}{I_P} r \qquad \tau_T = \frac{T}{2.t.A_{med}}$$



$$I_{y'\_triang} = \frac{bh^3}{36}$$

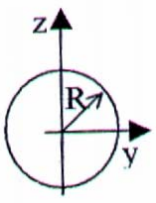
$$I_{y\_triang} = \frac{bh^3}{12}$$

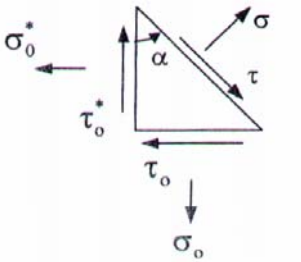
$$v'' = -\frac{M}{EI}$$



$$I_{y\_circ} = \frac{\pi R^4}{4}$$

$$I_P = \frac{\pi R^4}{2}$$





$$\sigma_{1,2} = \frac{\sigma_0^* + \sigma_0}{2} \pm \sqrt{\left(\frac{\sigma_0^* - \sigma_0}{2}\right)^2 + \left(\tau_0^*\right)^2}$$

$$tg\,\alpha_1 = \frac{\sigma_1 - \sigma_0^*}{\tau_0^*} \qquad tg\,\alpha_2 = \frac{2.\tau_0^*}{\sigma_0^* - \sigma_0}$$