Formulas

$$\delta = \frac{PL}{AE}$$

$$\tau = G\gamma$$

$$\sigma = E\varepsilon$$

$$\phi = \frac{TL}{JG}$$

$$\tau_x = \frac{Ty}{\Sigma(x^2 + y^2)A}$$

$$\tau_y = \frac{Tx}{\Sigma(x^2 + y^2)A}$$

$$\sigma = -\frac{My}{I}$$

$$M_Y = \frac{I}{c}\sigma_Y$$

$$M_P = ZF_Y$$

$$M_P = SF_Y$$

$$\tau = \frac{VQ}{It}$$

$$\sigma = \frac{pr}{2t} \text{ (longitudinal, axial)}$$

$$\sigma = \frac{pr}{t} \text{ (hoop)}$$

Will also include section properties and materials table.

$$\varepsilon_x = \frac{\sigma_x}{E} - \frac{\nu\sigma_y}{E} - \frac{\nu\sigma_z}{E}$$

$$G = \frac{E}{2(1 + \nu)}$$

$$\tau = \frac{Tc}{J}$$

$$P = T\omega = 2\pi f T$$

$$F_x = \frac{Ty}{\Sigma(x^2 + y^2)}$$

$$F_y = \frac{Tx}{\Sigma(x^2 + y^2)}$$

$$M_P = \frac{3}{2} M_Y \left(1 - \frac{1y_Y^2}{3c^2}\right)$$

$$q = \frac{VQ}{I}$$

$$\frac{d^2y}{dx^2} = \frac{M(x)}{EI}$$

$$\sigma_{cr} = \frac{\pi^2 E}{(L_e / r)^2}$$

$$P_{cr} = \frac{\pi^2 EI}{(L_e)^2} = \frac{\pi^2 EI}{(KL)^2}$$