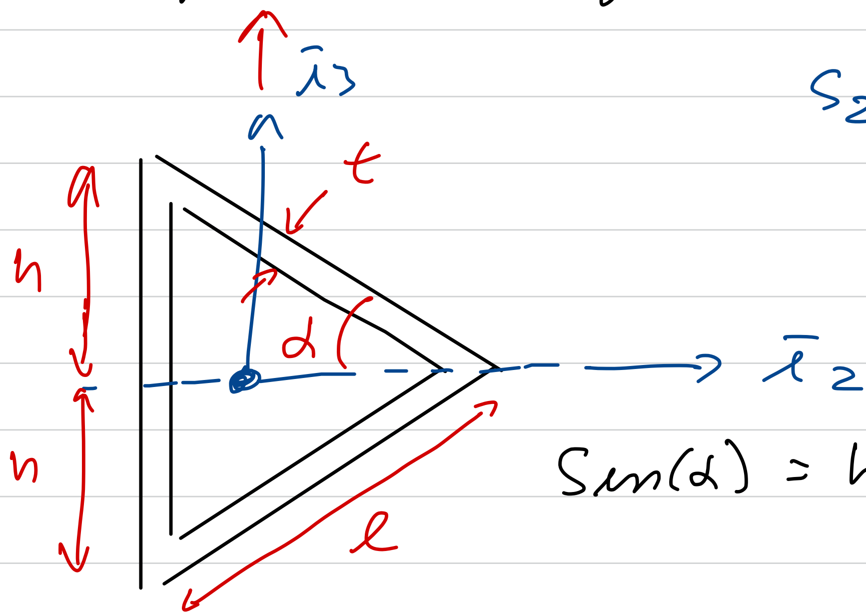
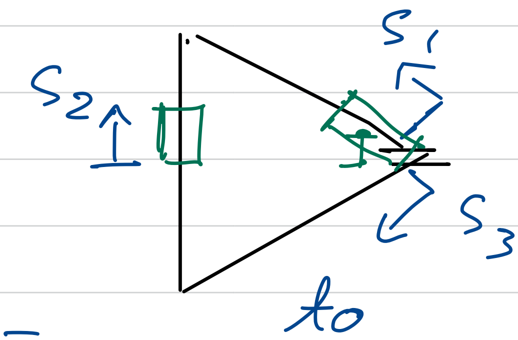
Example: Triangular Section.





$\sin(\alpha) = h/\ell$

* Load V_3 applied ($V_2 = 0$)

* Due to symmetry, $H_{23}^c = 0$

$$f_0(s) = C - Q_2(s)\frac{V_3}{H_{22}^c}$$

$$H_{22}^c = Et\left(\frac{2}{3}h^3 + \frac{2}{3}\ell h^2\right)$$

$$f_0(s_1) = 0 - E(ts_1)\frac{s_1}{2}\sin(\alpha)\frac{V_3}{H_{22}^c}$$

$$f_0(s_2) = C_2 - E(ts_2)\frac{s_2}{2}\frac{V_3}{H_{22}^c}$$

$$t_1(s_1 = \ell) = -t_2(s_2 = h)$$

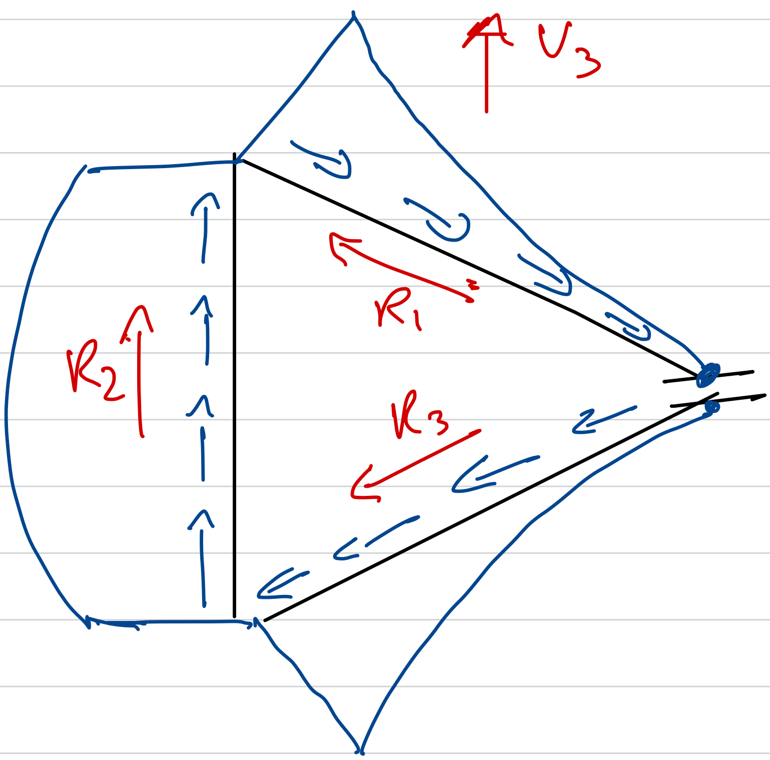
$$-\frac{E t \ell^2}{2} \operatorname{Sen}(\alpha) \frac{V_3}{H_{22}^c} = -C_2 + \frac{E t h^2}{2} \frac{V_3}{H_{22}^c}$$

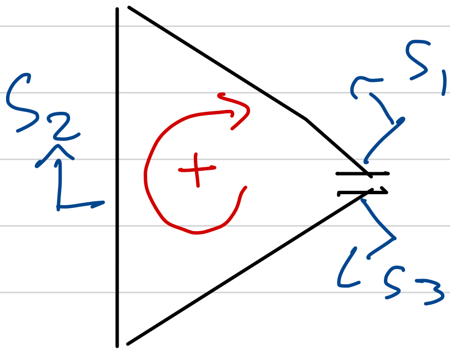
$$C_2 = E t \frac{V_3}{H_{22}^c}\left(\frac{h^2}{2} + \frac{\ell^2}{2}\operatorname{Sen}(\alpha)\right)$$

$$C_2 = E t \frac{V_3}{H_{22}^c}\left(\frac{h^2}{2} + \frac{\ell h}{2}\right)$$

$$t_0(s_2) = E t \frac{V_3}{H_{22}^c}\left(\frac{h^2}{2} + \frac{\ell h}{2} - \frac{s_2^2}{2}\right)$$

$$t_0(s_3) = 0 + E(t s_3)\frac{s_3}{2}\operatorname{Sen}(\alpha)\frac{V_3}{H_{22}^c}$$





$$t_c = \frac{-\int_{C_1'} \frac{t_0(s)}{\cancel{Gt}}\, ds}{\underbrace{\int_{C_1'} \frac{ds}{\cancel{Gt}}}_{2\ell+2h}}$$

$$\int_{C_1'} t_0(s)\,ds = -\underbrace{\int_0^{\ell} t_0(s_1)\,ds_1}_{R_1}$$

$$+\underbrace{\int_{-h}^{h} t_0(s_2)\,ds_2}_{R_2}$$

$$+\underbrace{\int_0^{\ell} t_0(s_3)\,ds}_{R_3}$$

$$t_0(s_1) = -Et\,\frac{s_1^2}{2}\,\frac{h}{\ell}\,\frac{V_3}{H_{22}^c}$$

$$t_0(s_2) = Et\left(\frac{h^2}{2} + \frac{\ell h}{2} - \frac{s_2^{\,2}}{2}\right)\frac{V_3}{H_{22}^c}$$

$$t_0(s_3) = Et\,\frac{s_3^2}{2}\,\frac{h}{\ell}\,\frac{V_3}{H_{22}^c}$$

$$R_1 = \int_0^{\ell} -Et\,\frac{s_1^2}{2}\,\frac{h}{\ell}\,\frac{V_3}{H_{22}^c}\,ds_1$$

$$\rightarrow R_1 = -Et\,\frac{\ell^3}{6}\,\frac{h}{\ell}\,\frac{V_3}{H_{22}^c} = -Et\,\frac{\ell^2 h}{6}\,\frac{V_3}{H_{22}^c}$$

$$R_2 = \int_{-h}^{h} Et\left(\frac{h^2}{2} + \frac{\ell h}{2} - \frac{s_2^2}{2}\right) ds_2\,\frac{V_3}{H_{22}^c}$$

$$= Et\left[\frac{h^2}{2}s_2 + \frac{\ell h}{2}s_2 - \frac{s_2^3}{6}\right]_{-h}^{h}\frac{V_3}{H_{22}^c}$$

$$= Et\left[\frac{h^3}{2}\cdot 2 + \frac{\ell h^2}{2}\cdot 2 - \frac{h^3}{6}\cdot 2\right]\frac{V_3}{H_{22}^c}$$

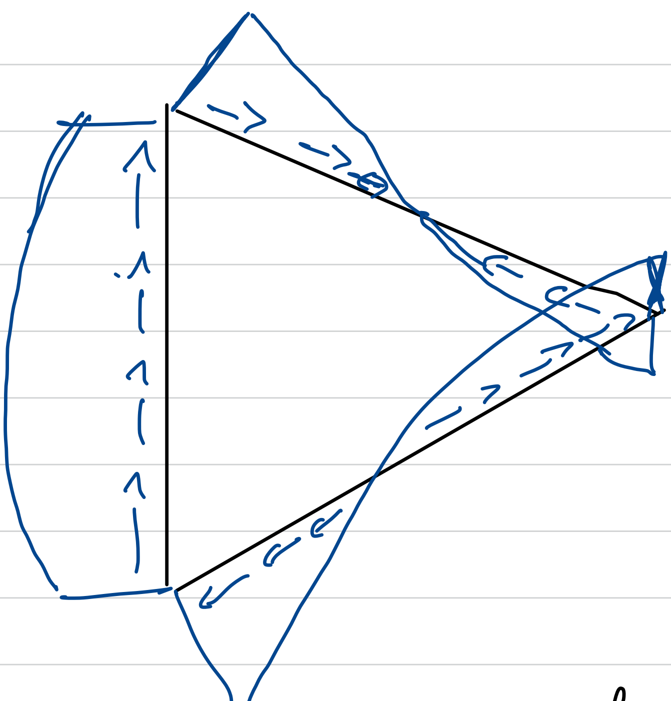
$$\rightarrow R_2 = Et\left(\frac{2}{3}h^3 + \ell h^2\right)\frac{V_3}{H_{22}^c}$$

$$\rightarrow R_3 = -R_1 = Et\,\frac{\ell^2 h}{6}\,\frac{V_3}{H_{22}^c}$$

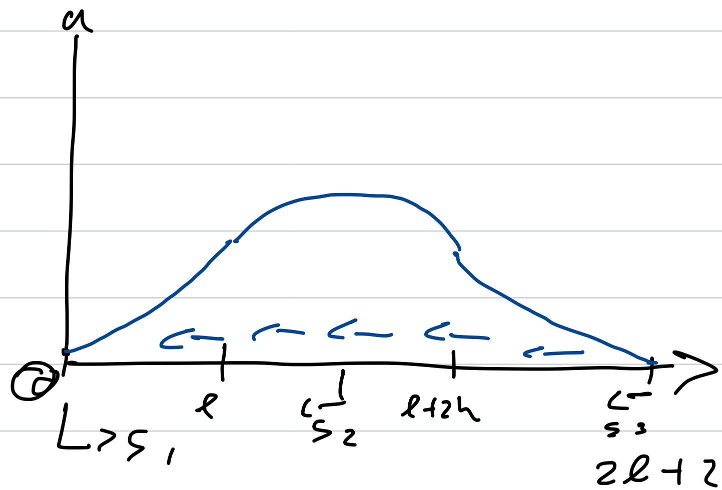
$$t_C = \frac{-Et\,\frac{V_3}{H_{22}^c}\left(\frac{\ell^2 h}{6} + \frac{2}{3}h^3 + \ell h^2 + \frac{\ell^2 h}{6}\right)}{2(h+\ell)}$$

$$H_{22}^{c} = Et\left(\frac{2}{3}h^3 + \frac{2}{3}\ell h^2\right)$$

$$\rightarrow t_c = -\frac{\left(\frac{2}{3}h^3 + \ell h^2 + \frac{1}{3}\ell^2 h\right)\cdot V_3}{\left(\frac{2}{3}h^2 + \frac{2}{3}\ell^2 h\right)2(h+\ell)}$$



$t_0(s)$



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