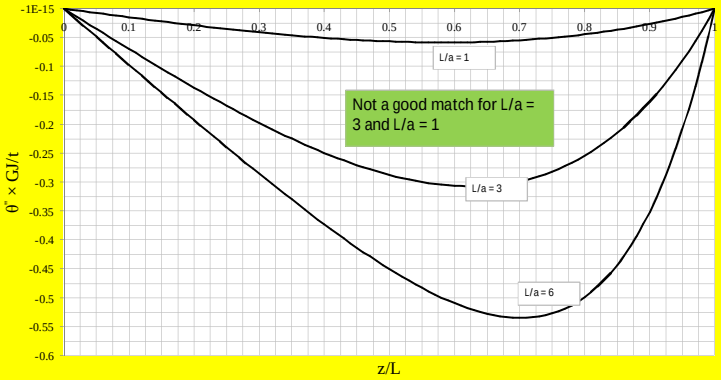
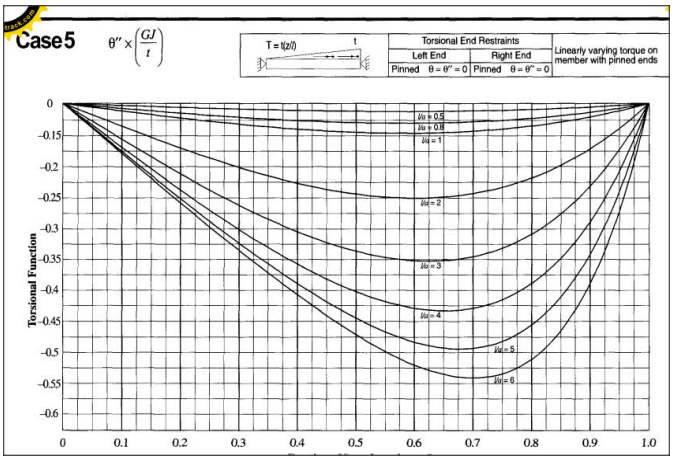
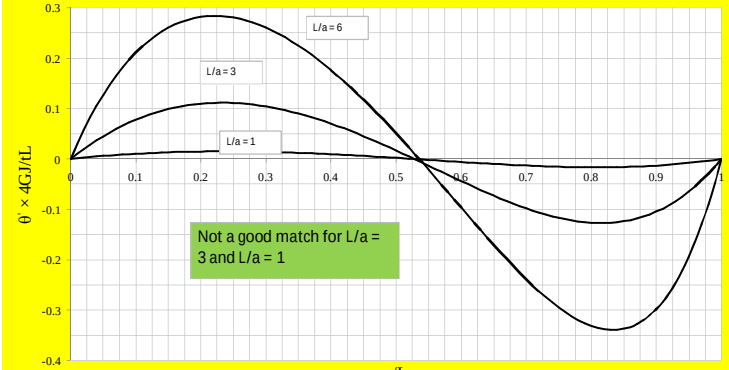
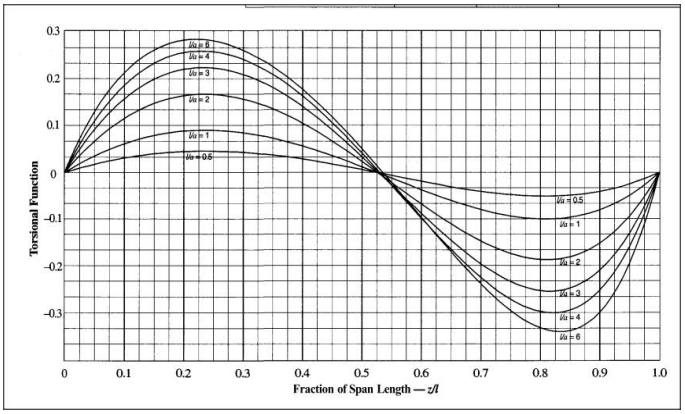
Case 5 (θ˝)
L/a = 1, L/a = 3, L/a = 6



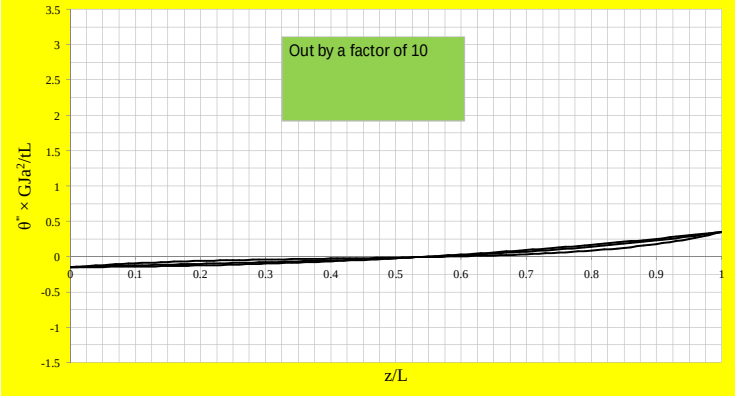


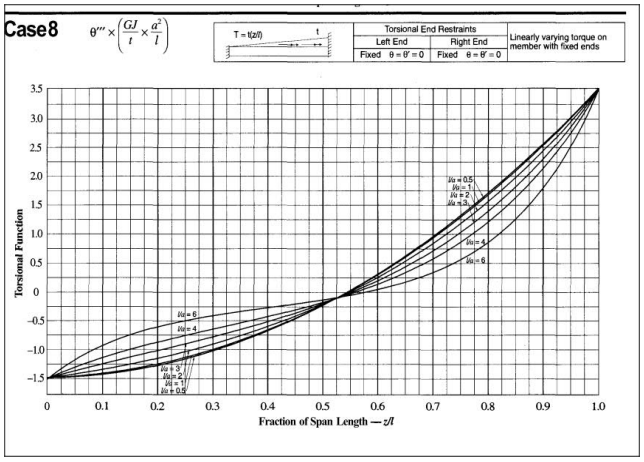
Case 8 (θ′)
L/a = 1, L/a = 3, L/a = 6



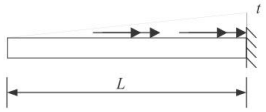


Case 8 (θ‴)
L/a = 1, L/a = 3, L/a = 6





Case 11—Linearly Varying Torque with Free and Fixed End



$$\theta = c_1\left[1.0-\frac{5L^2}{6a^2}-\left(\frac{a}{L}-\frac{L}{2a}\right)\tanh\frac{L}{a}+z\left(-\frac{1}{L}+\frac{L}{a^2}\right)+\left(\frac{a}{L}-\frac{L}{2a}\right)\left(\frac{\sinh\frac{z}{a}}{\cosh\frac{L}{a}}\right)-\frac{z^3}{6a^2L}\right]$$

$$\theta' = \frac{c_1}{a}\left[-\frac{a}{L}+\frac{L}{a}+\left(\frac{a}{L}-\frac{L}{2a}\right)\left(\frac{\cosh\frac{z}{a}}{\cosh\frac{L}{a}}\right)-\frac{z^2}{2aL}\right]$$

$$\theta'' = \frac{c_1}{a^2}\left[\left(\frac{a}{L}+\frac{L}{2a}\right)\left(\frac{\sinh\frac{z}{a}}{\cosh\frac{L}{a}}\right)-\frac{z}{L}\right]$$

$$\theta''' = \frac{c_1}{a^3}\left[\left(\frac{a}{L}-\frac{L}{2a}\right)\left(\frac{\cosh\frac{z}{a}}{\cosh\frac{L}{a}}\right)-\frac{a}{L}\right]$$

(a/L - L/2a)

where

$$c_1 = \frac{ta^2}{GJ}$$

Found error in Second Derivative