Saturday, 28 July 2023 11:25 GMT

→ Torsion moment
→ Bending moment
→ Axial force
→ Shear force

① Find L and σ_{x1}
σ_{x2} & σ_{x2}

② Check equilibrium
Find σ_{x1} and σ_{x2}

$\sigma_{x1} = \frac{L + (L+L)/2}{L}$
$\sigma_{x2} = \frac{L + L + (L+L)/2}{L}$

③ Based on σ_{x1} & σ_{x2}, find σ_x distribution

Assuming,

$\sigma_{x1} = 0$
$\sigma_{x2} = 1$
$\sigma_x = 0$

$\text{Length} = L$

Find $\left[\text{length} = \max\{\sigma_x(x)\} \cdot dx\right]$ & $\left[\text{length} = \max\{\sigma_x(x)\}\right]$

$L = \sigma_x(L) \cdot L$
$L = \sigma_x(L) \cdot L$

$\sigma_x(L) = 0.5 \left(\frac{L}{L}\right) = 1$
$\sigma_x(L) = 1 - \left(\frac{L}{L}\right) = 0$

Length error

$\sigma_x(L) = 1$
$\sigma_x = \max\{\sigma_x\} = 1$

$\sigma_x(L) = 0$
$\sigma_x = \max\{\sigma_x\} = 0$

$\sigma_x(L) = 1$
$\sigma_x = \max\{\sigma_x\} = 1$

$L = 1$
$\sigma_x = \max\{\sigma_x\} = 1$

$\sigma_x(L) = 1$
$\sigma_x = \max\{\sigma_x\} = 1$

$\sigma_x(L) = 0$
$\sigma_x = \max\{\sigma_x\} = 0