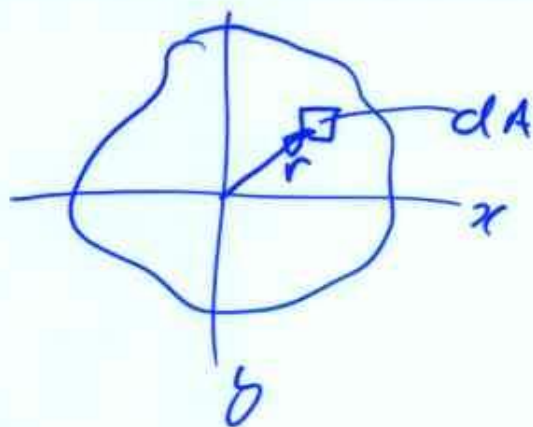


$$J = \int r^2 dA$$

$$r^2 = x^2 + y^2$$

$$J = \int x^2 + y^2 dA$$

$$= I_x + I_y$$



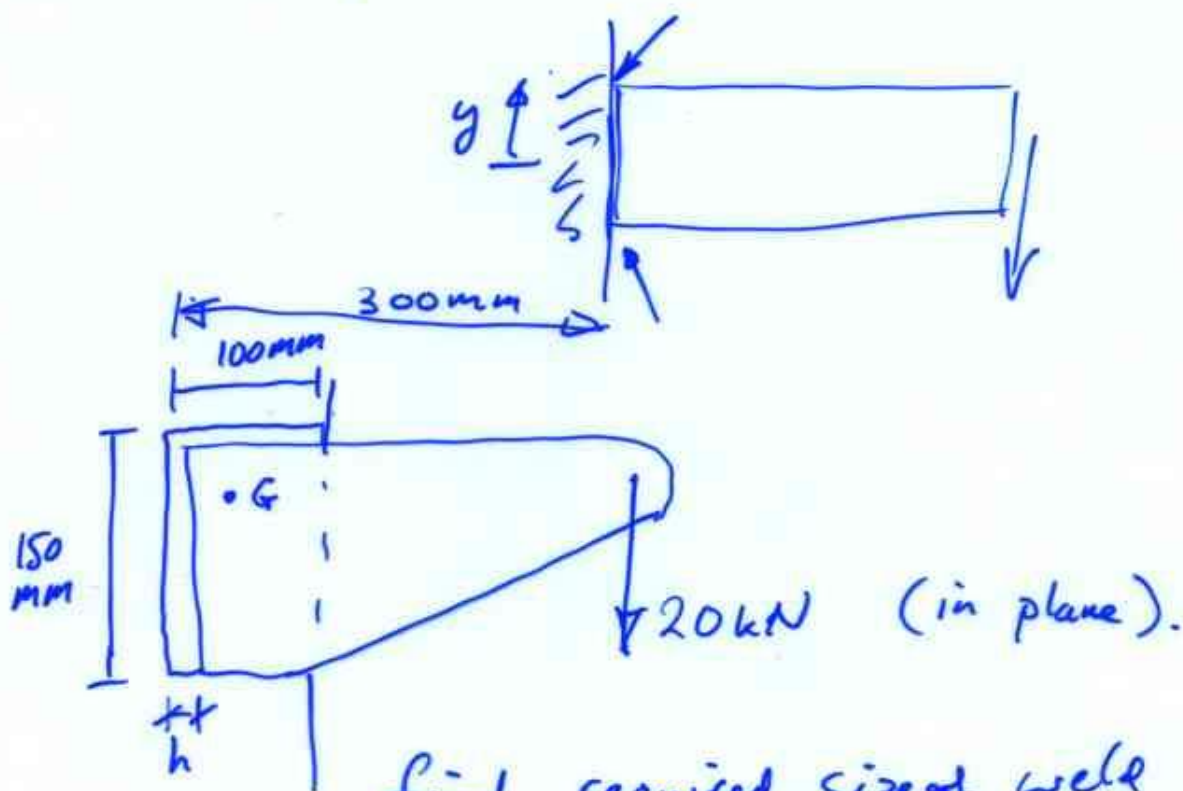
TORSION

BENDING

Direct shear $\frac{P}{A}$ \rightarrow same

Torsion induced shear $\frac{T r}{J}$

Bending induced shear stress $= \frac{M y}{I}$



find required size of weld
for $S_y = 345 \text{ MPa}$
F.S. = 2.5