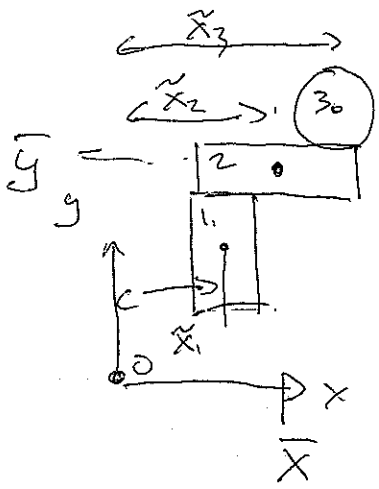
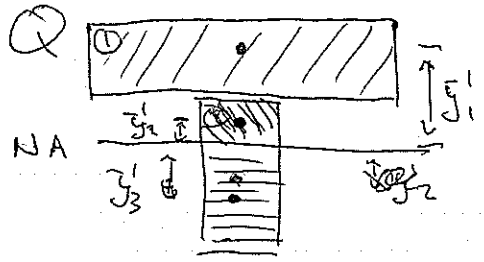


$$\bar{x}\sum w = \sum \tilde{x} w$$

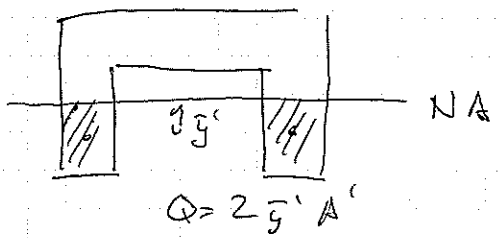
$$\bar{x} = \frac{\tilde{x}_1 w_1 + \tilde{x}_2 w_2 + \tilde{x}_3 w_3}{w_1 + w_2 + w_3}$$

CENTROID

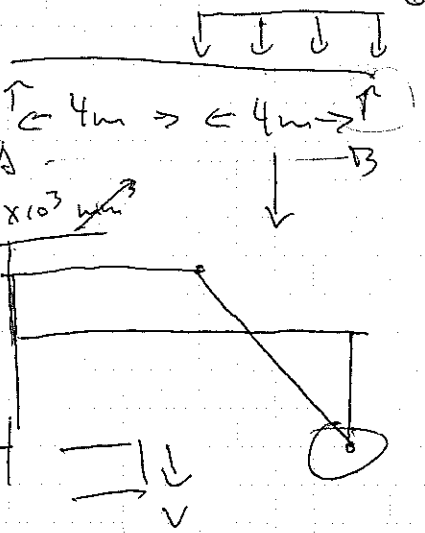


1. CENTROID

2. $Q = \sum \bar{y}' A'$



7.1



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

$$= \frac{-19.5\,kN \; 202.5 \times 10^3 \, mm^3}{123.5 \times 10^6 \, mm^4 \times 6.5 \; mm}$$

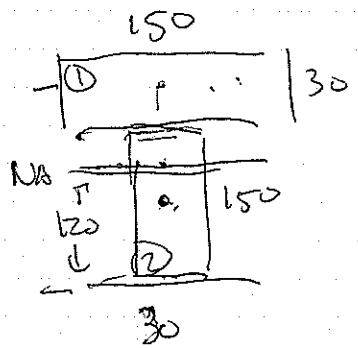
$$A + B = 26\ kN$$

$$\sum M_A = 0 = -6(26) + 8B$$

$$B = 6(26)/8$$

$$= 19.5\ kN$$

$$A = 6.5\ kN$$



$$\bar{y} = \frac{75(30)(150) + 165(30)(150)}{2(30)(150)}$$

$$\bar{y} = 120\ mm$$

$$I = I_1 + I_2 = 123.5 \times 10^6\ mm^4$$

$$I_1 = 150(30)^3 + 150(30)45^2$$

$$I_2 = 30(150)^3 + 150(30)45^2$$

$$Q = 150(30)(45)$$

$$= 202.5 \times 10^3\ mm^3$$