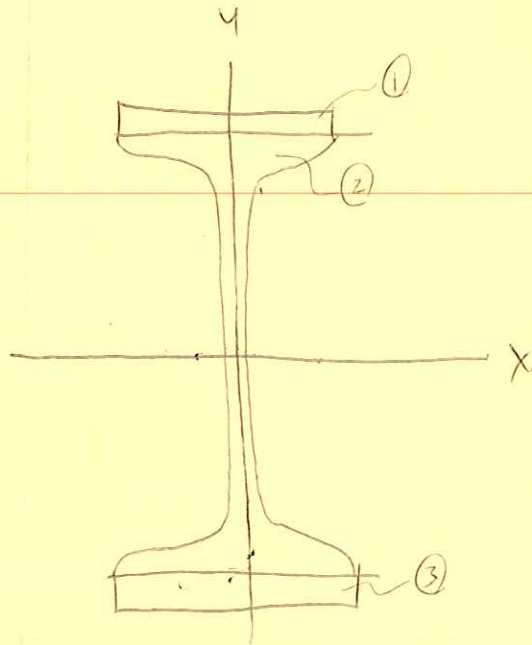


HOMEWORK #9: 9.49, 9.50, 9.51, 9.54, 9.115, 9.127

PROB. 9.49



FIND I_x, I_y

FOR I_x

$$(I_x)_1 = \bar{I}_x + Ad^2$$

$$= \frac{1}{12}bh^3 + bhd^2$$

$$= \frac{1}{12}(160\text{mm})(20\text{mm})^3 + (160)(20)\left(\frac{305}{2} + 10\right)^2$$

$$(I_x)_1 = 8.46 \times 10^7 \text{ mm}^4$$

$$(I_x)_3 = 8.46 \times 10^7 \text{ mm}^4$$

$$(I_x)_2 = 90.7 \times 10^6 \text{ mm}^4$$

$$I_x = (I_x)_1 + (I_x)_2 + (I_x)_3 = 2.6 \times 10^8 \text{ mm}^4$$

PROB. 9.49

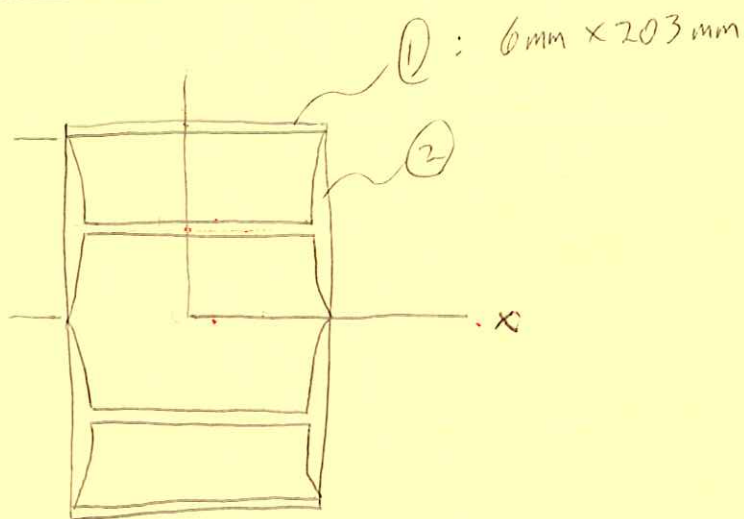
$$(I_y)_1 = \frac{1}{12} b^3 h = \frac{1}{12} (160)^3 (20) = 6.83 \times 10^6 \text{ mm}^4$$

$$(I_y)_3 = 6.83 \times 10^6 \text{ mm}^4$$

$$(I_y)_2 = 3.9 \times 10^6 \text{ mm}^4$$

$$I_y = (I_y)_1 + (I_y)_2 + (I_y)_3 = 1.76 \times 10^7 \text{ mm}^4$$

PROB. 9.50



$$(I_x)_1 = 2 \left[\frac{1}{12} b h^3 + A d^2 \right]$$

$$= 2 \left[\frac{1}{12} (203 \text{ mm}) (6 \text{ mm})^3 + (203)(6) \left(\frac{203}{2} + 3 \right)^2 \right]$$

$$(I_x)_1 = 1.03 \times 10^8 \text{ mm}^4$$

$$(I_x)_2 = 2 \left[\bar{I}_x + A d^2 \right]$$

$$= 2 \left[15.44 \times 10^6 + (5890) \left(\frac{203}{2} \right)^2 \right]$$