



$$\bar{x} = \bar{x} = \frac{\sum x_i A_i}{\sum A_i} = \frac{(100t)(50) + (150t)(0)}{(250t)}$$

$$= 20 \text{ mm}$$

$$\bar{y} = \frac{\sum y_i A_i}{\sum A_i} = \frac{(100t)(0) + (150t)(75)}{250t}$$

$$\bar{y} = 45 \text{ mm}$$

Need to know J for weld group.

$$J = I_x + I_y$$

look @ each arm of weld separately.

longer

$$J_L = [I_x] + [I_y] + d_1^2$$

$$= \left[\frac{L^3 t}{12} + Lt (75-45)^2 \right] + [Lt (20)^2]$$

$[I_x = \frac{1}{12} AL^2]$

$$J = 476250 t$$

shorter

$$J = I_x + I_y$$

$$= [(100t)(45)^2] + \left[\frac{100^3 t}{12} + (100t)(50-20)^2 \right]$$

d_2^2

$$J_s = 375833 t$$

$$J_{TOTAL} = (375833 + 476250) t$$

$$= \underline{852083 t}$$