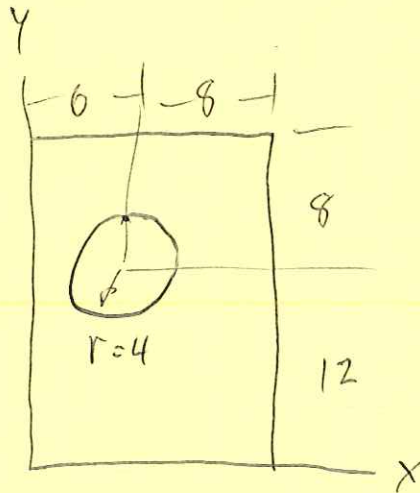


IN-CLASS #6: PROB. 5.3

Given: Schematic

FIND CENTROID.



RECTANGLE:

$$\bar{X}_1 = \frac{14}{2} = 7 \text{ IN}$$

$$\bar{Y}_1 = \frac{20}{2} = 10 \text{ IN}$$

$$A_1 = (14)(20) = 280 \text{ IN}^2$$

$$\bar{X}_1 A_1 = (7)(280) = 1960 \text{ IN}^3$$

$$\bar{Y}_1 A_1 = (10)(280) = 2800 \text{ IN}^3$$

CIRCLE:

$$\bar{X}_2 = \frac{6}{2} = 3 \text{ IN}$$

$$\bar{Y}_2 = \frac{12}{2} = 6 \text{ IN}$$

$$A_2 = -\pi r^2 = -\pi (4 \text{ IN})^2 = -50.3 \text{ IN}^2$$

$$\bar{x}_2 A_2 = \left(\frac{6}{12}\right)(-50.3) = \overset{-302}{-1960} \text{ in}^3$$

$$\bar{y}_2 A_2 = \left(\frac{12}{6}\right)(-50.3) = \overset{-603}{-1960} \text{ in}^3$$

$$\bar{x} = \frac{\sum \bar{x}_i A_i}{\sum A_i} = \frac{(1960) + (\overset{-302}{-1960})}{(280) + (-50.3)}$$

$\bar{x} = \text{EQUATION}$ 7.22 in

$$\bar{y} = \frac{\sum \bar{y}_i A_i}{\sum A_i} = \frac{(2800) + (\overset{-603}{-1960})}{(280) + (-50.3)}$$

$\bar{y} = \text{EQUATION}$ 9.56 in