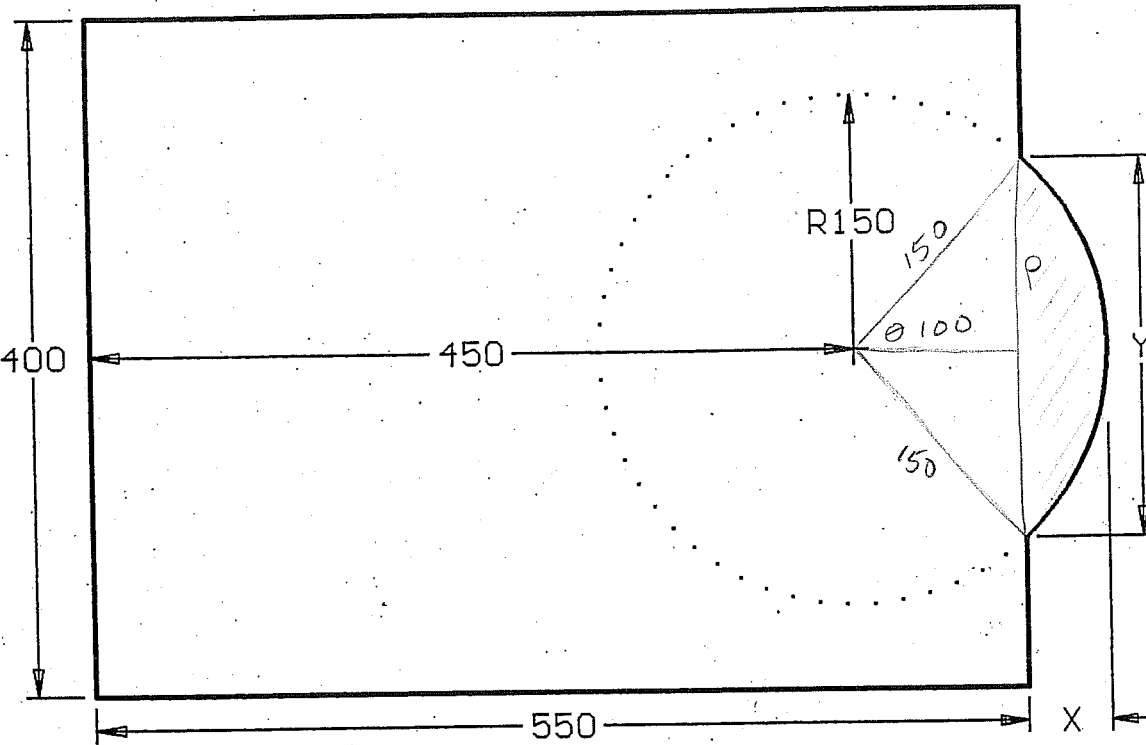


Quiz 8

Question 1. (10 marks) For the following floorplan find X, Y, the circumference, area and volume.

FIG. 15(m)

THICKNESS=0.25



$$X = 450 + 150 - 550 = 50m$$

$$p^2 + 100^2 = 150^2$$

$$p^2 = 12500$$

$$= 111.8033989m$$

$$\cos \theta = \frac{100}{150} = 0.6$$

$$\therefore \theta = \cos^{-1}(0.6) = 48.1896851^\circ$$

$$Y = 2(111.8033989)$$

$$= 223.6067977m$$

SHADED AREA = AREA OF SECTOR - AREA OF TRIANGLE

$$= \frac{1}{2} (2 \cdot 48.1896851^\circ) \left(\frac{\pi}{180^\circ} \right) (150)^2 - \frac{1}{2} (223.6067977) (100)$$

$$= 18924.04469 - 11180.33989 = 7743.704805$$

$$\therefore \text{AREA} = (400)(550) + 7743.704805 = 227743.773m^2$$

$$\text{VOLUME} = (227743.705)(0.25) = 56935.94325m^3$$

$$\text{ARC LENGTH} = \theta r = (2.48189685) \left(\frac{\pi}{180^\circ} \right) (150) \\ = 252.3205959$$

$$\therefore \text{CIRCUMFERENCE} = 400 + 2(550) + (400 - 223.60679977) \\ + 252.3205959 \\ = 1928.713796\text{m}$$