

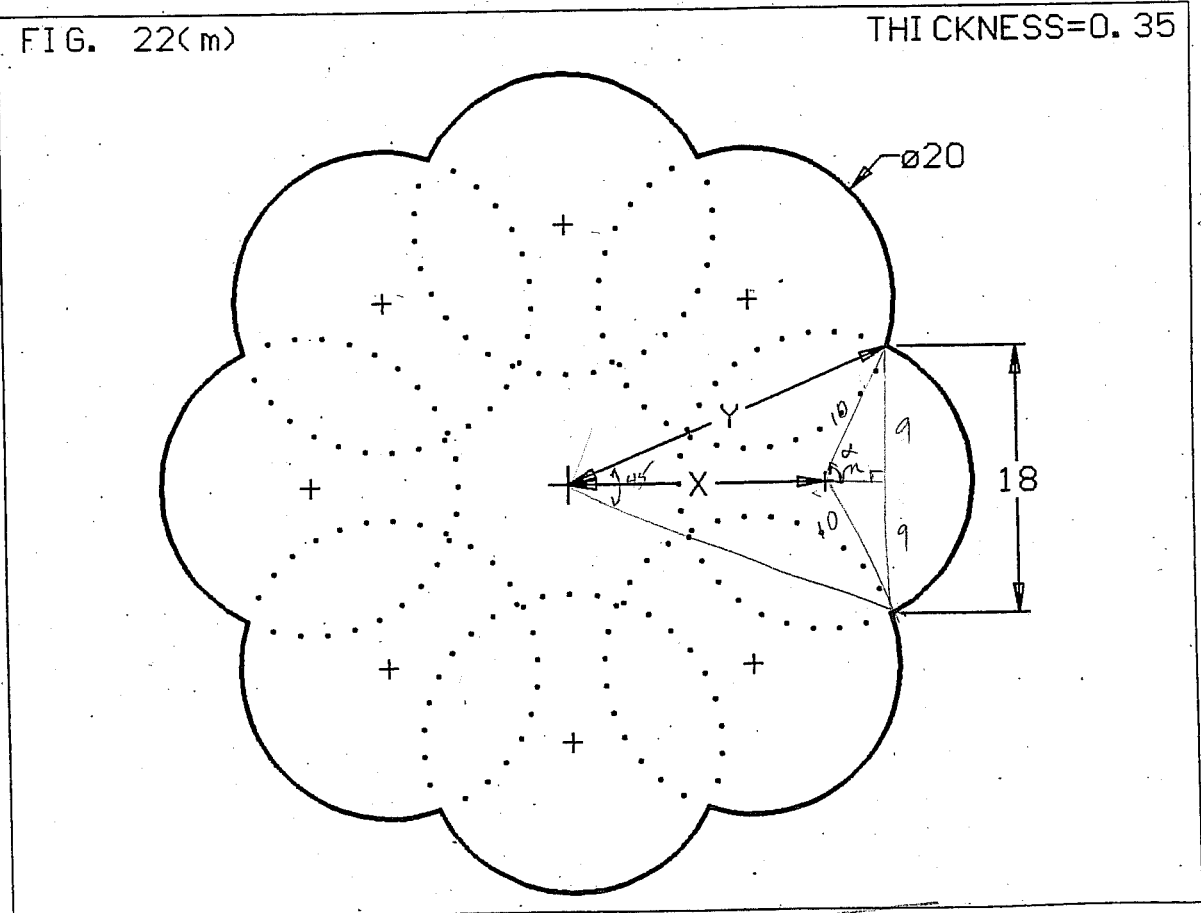
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Quiz 6

Question 1. (10 marks) Find the circumference area and volume for the following floor plan:



$$2\theta = 180^\circ - 45^\circ$$

$$\theta = 67.5^\circ$$

$$\sin 22.5^\circ = \frac{9}{y}$$

$$\therefore y = \frac{9}{\sin 22.5^\circ}$$

$$= \underline{23.518m}$$

$$m = \sqrt{10^2 - 9^2} = \sqrt{19} \Rightarrow x + \sqrt{19} = \sqrt{23.518^2 - 9^2} = 21.7279 \Rightarrow x = \underline{17.369m}$$

$$\sin \alpha = \frac{9}{10} \Rightarrow \alpha = \sin^{-1}\left(\frac{9}{10}\right) = 64.158^\circ \Rightarrow 2\alpha = 128.316^\circ$$

$$\text{CIRCUMFERENCE} = 8 \left[128.316^\circ \left(\frac{\pi}{180^\circ} \right) (10) \right] = 8(22.395) = 179.163$$

$$\text{AREA} = 8 \left[\underbrace{18 \left(\frac{21.7279}{2} \right)}_{\text{AREA OF BIG } \Delta} - \underbrace{\frac{18\sqrt{19}}{2}}_{\text{AREA OF SMALL } \Delta} + \underbrace{\frac{1}{2} \cdot 128.316 \left(\frac{\pi}{180^\circ} \right) (10)^2}_{\text{AREA OF SECTOR.}} \right]$$

$$= 8 [195.5511 - 39.2301 + 111.9768] = 8 [268.2978]$$

$$= \underline{2146.383m^2}$$

$$\text{VOLUME} = (2146.383)(0.35) = \underline{751.23m^3}$$