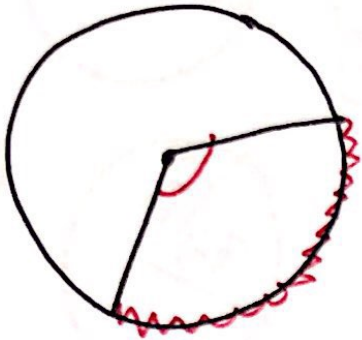


6.1: Arc length & Area of a sector



$$\text{Circumference} = 2\pi r$$

$$S = \frac{\theta}{360} \cdot 2\pi r \quad \theta = \text{"theta" central angle}$$

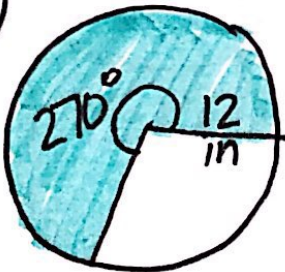
$$S = \frac{\theta \pi r}{180}$$

$$\text{Area of } \odot = \pi r^2$$

$$A = \frac{\theta}{360} \cdot \pi r^2$$

$$A = \frac{\theta \pi r^2}{360}$$

Ex 1) A)



$$S = \frac{\theta \pi r}{180}$$

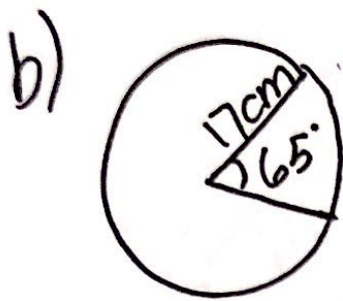
$$S = \frac{270 \pi \cdot 12}{180}$$

$$S = 56.55 \text{ in}$$

$$A = \frac{\theta \pi r^2}{360}$$

$$A = \frac{270 \pi \cdot 12^2}{360}$$

$$A = 339.29 \text{ in}^2$$

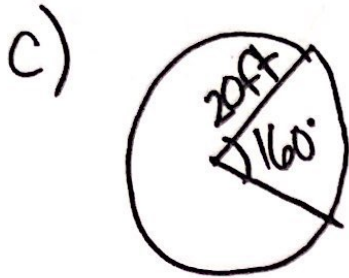


$$S = \frac{65\pi \cdot 17}{180}$$

$$S = 19.29 \text{ cm}$$

$$A = \frac{65\pi \cdot 17^2}{360}$$

$$A = 163.93 \text{ cm}^2$$



$$S =$$

$$A =$$

d)



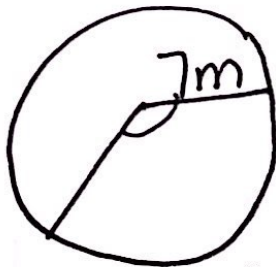
$$S =$$

$$A =$$

e) $r = 15 \text{ in}$ & $\theta = 210^\circ$. Find arc length.

$$S = \frac{210\pi \cdot 15}{180} = 54.98 \text{ in}$$

EX 2) a)



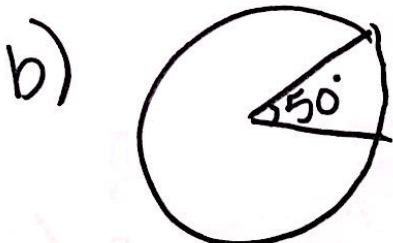
$$S = 15.87 \text{ m}$$

$$180 \cdot 15.87 = \frac{\theta \pi \cdot 7}{180}$$

$$\frac{2856.6}{7} = \frac{\theta \pi}{7}$$

$$\frac{408.09}{\pi} = \frac{\theta}{\pi}$$

$$\theta = 129.90^\circ$$



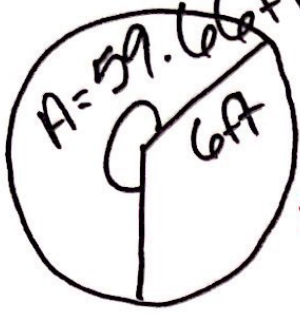
$$S = 9.6 \text{ cm}$$

$$180 \cdot 9.6 = \frac{50\pi \cdot r}{180}$$

$$\frac{1728}{50} = \frac{50\pi r}{50}$$

$$\frac{34.56}{\pi} = \frac{\pi r}{\pi} \quad \boxed{r = 11 \text{ cm}}$$

Ex 3) a)



$$A = \frac{\theta \pi r^2}{360}$$

$$360 \cdot 59.66 = \frac{\theta \pi 6^2}{360} \cdot 360$$

$$\frac{21477.6}{36\pi} = \frac{\theta \pi 36}{36\pi}$$

$$\boxed{\theta = 189.9^\circ}$$

Ex 4) a)



$$A = 153.86$$

find s.

$$360 \cdot 153.86 = \frac{90 \pi r^2}{360} \cdot 360$$

$$\frac{55389.6}{90\pi} = \frac{90\pi r^2}{90\pi}$$

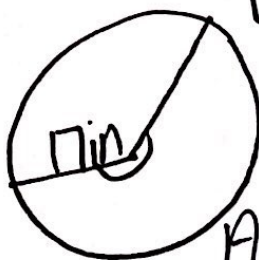
$$\sqrt{195.90} = \sqrt{r^2}$$

$$r = 14$$

$$s = \frac{90\pi 14}{180}$$

$$\boxed{s = 22}$$

b)



$$A = 529.35 \text{ in}^2$$

Find s

ans: 62.28 in