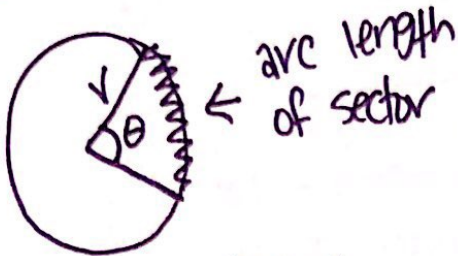


6.5: Arc Length & Area of Sectors

Circumference

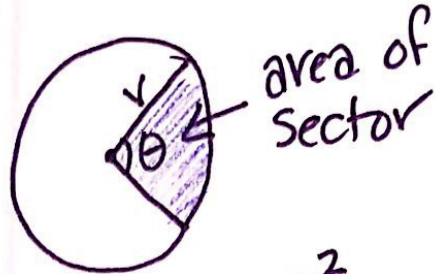
of a circle: $C = 2\pi r$



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

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

area of circle: πr^2



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

Ex 1) for a circle with radius 3ft , find the arc length for the sector if central angle is $\frac{95^\circ}{\theta}$.

$$S = \frac{95}{360} \cdot 2\pi(3)$$

$$S = 4.974 \text{ ft}$$

← rounded answer,
decimal answer,
approximate answer

$$S = \frac{19\pi}{12} \text{ ft}$$

← exact answer, in terms of π

Ex 2) For a circle with radius 6cm, find the area of a sector with central angle of $\frac{200}{\theta}$.

$$A = \frac{200}{360} \pi (6)^2$$

$$A = 62.832 \text{ cm}^2$$

$$A = 20\pi \text{ cm}^2$$

Ex 3) The area of a sector is $\frac{22\pi}{A} \text{ in}^2$. If the central angle is $\frac{300}{\theta}$, determine the radius.

$$\frac{22\pi}{\pi} = \frac{300}{360} \cdot \pi r^2$$

$$\frac{360}{300} \cdot 22 = \frac{300}{360} \cdot r^2 \cdot \frac{360}{300}$$

$$\pm \sqrt{\frac{132}{5}} = \pm \sqrt{r^2}$$

$$\pm 5.138 = r$$

$$r = 5.138$$