

Exercise 2

A central angle in a circle of radius 8 is subtended by an arc of length 10π . Find the angle's radian and degree measures.

Solution

The formula relating arc length, central angle, and radius is

$$s = r\theta,$$

where θ is in radians. Plug in the given quantities and solve for θ .

$$10\pi = 8\theta$$

$$\frac{10\pi}{8} = \theta$$

Therefore,

$$\begin{aligned}\theta &= \frac{5\pi}{4} \\ &= \frac{5\pi}{4} \times \frac{180^\circ}{\pi} \\ &= 225^\circ.\end{aligned}$$