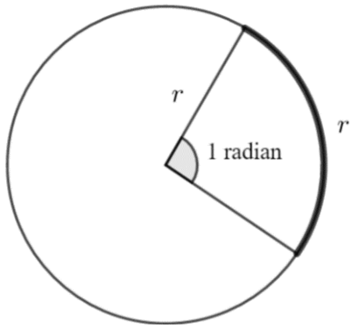
Radians, Arc Length and Sector Area

Radians



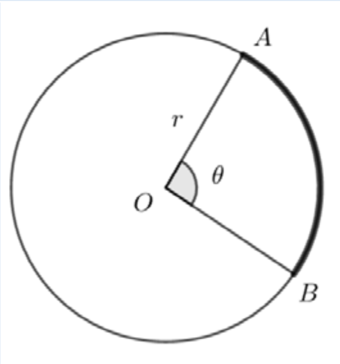
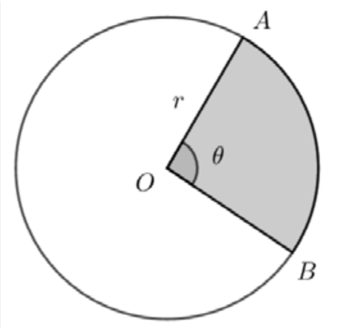
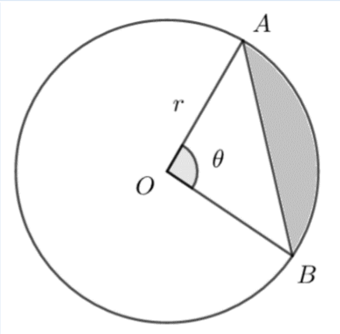
Radians is a useful measure for angles. Formulae for arc length and sector area are easier to work with. We use radians when doing Calculus with trigonometric functions.

The definition of a radian is the angle subtended by an arc of length of the radius of the circle

There are $\boldsymbol{\pi}$ **radians** in a full turn.

To convert between radians and degrees, remember that $\mathbf{180°} = \boldsymbol{\pi}$ **radians**

Arc Length, Sector Area and Segment Area

	θ **in degrees**	θ **in radians**
	Arc Length $= \frac{\theta}{360} \times 2\pi r$	Arc Length $= r\theta$
	Sector Area $= \frac{\theta}{360} \times \pi r^2$	Sector Area $= \frac{1}{2} r^2 \theta$
	Segment Area $= \frac{\theta}{360} \times \pi r - \frac{1}{2} r^2 \sin\theta$	Segment Area $= \frac{1}{2} r^2 \theta - \frac{1}{2} r^2 \sin\theta$

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