Math 1060 ~ Trigonometry

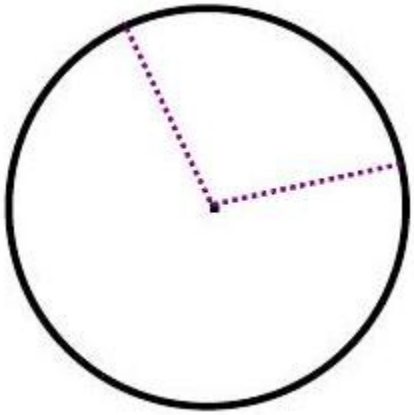
9 Applications of Radian Measure

Vocabulary

Arc

Sector

Length of a circular arc



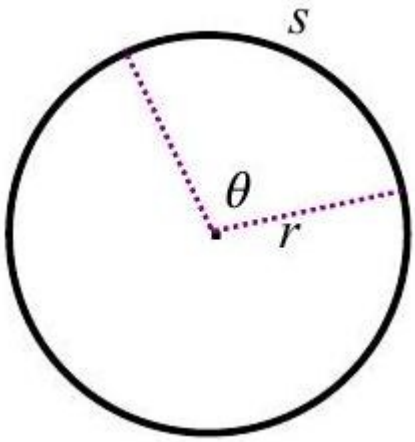
EX 1

Find the arc length along a circle of radius 10 cm subtended by an angle of 125°.

EX 2

What is the radius of a circle for which 2/3 of the circumference is 6π ft?

Area of a Sector



EX 3

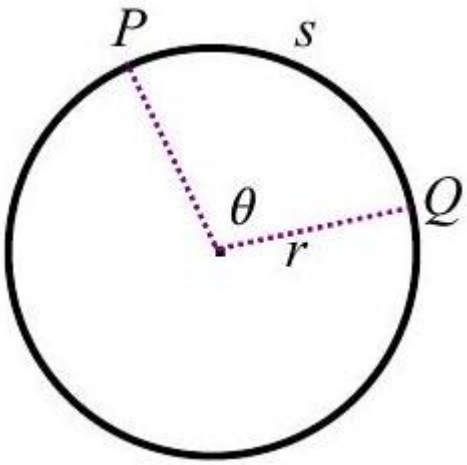
A lawn sprinkler sprays a distance of 15 feet out and rotates back and forth at a 120° angle. What is the area that the sprinkler waters?

Linear and Angular Velocity

Velocity $= \bar{v} = \frac{\text{displacement}}{\text{time}}$

Average Angular Velocity $= \bar{\omega} = \frac{\text{change in angle}}{\text{time}}$

Speed $= |\bar{v}|$



Velocity for Circular Motion

$v = r\omega$

EX 4

The giant wheel in London, known as the Millennium Wheel has a radius of 60 meters. It completes one rotation in 30 minutes. What is the linear and angular velocity of a person riding in one of the cabins on the wheel? (It does not stop to pick up passengers, they hop on and off as it moves.)