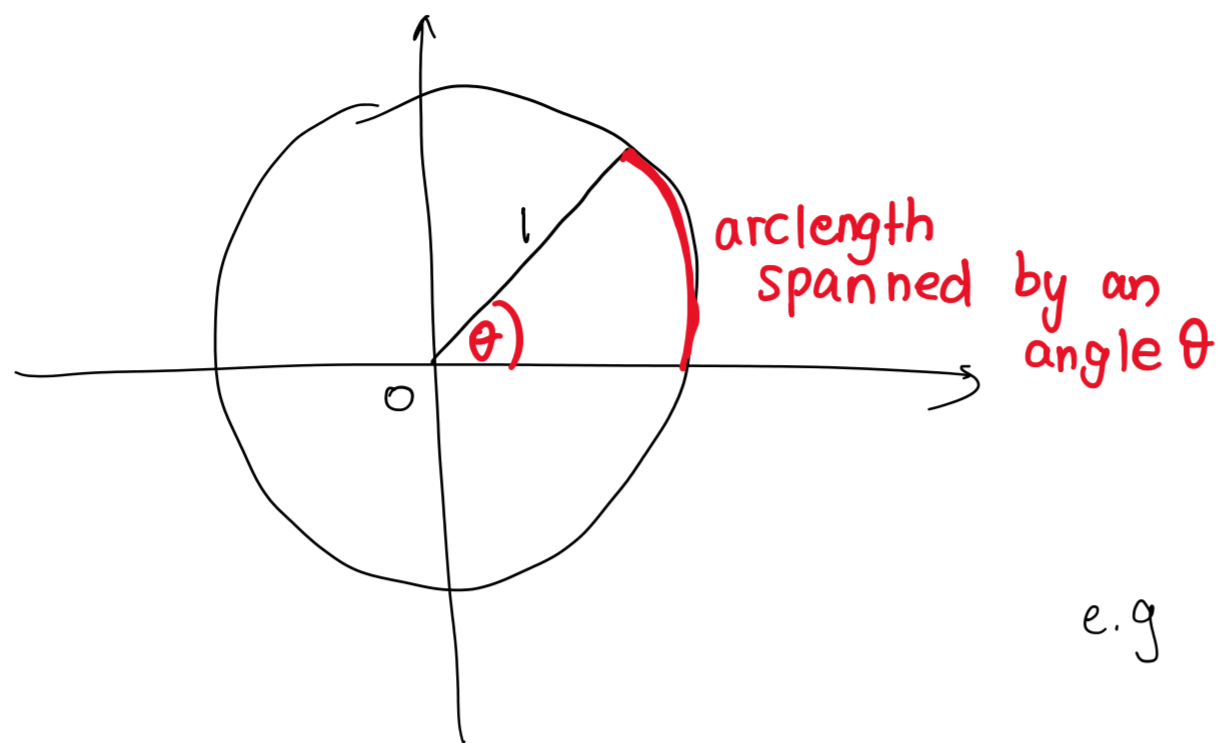


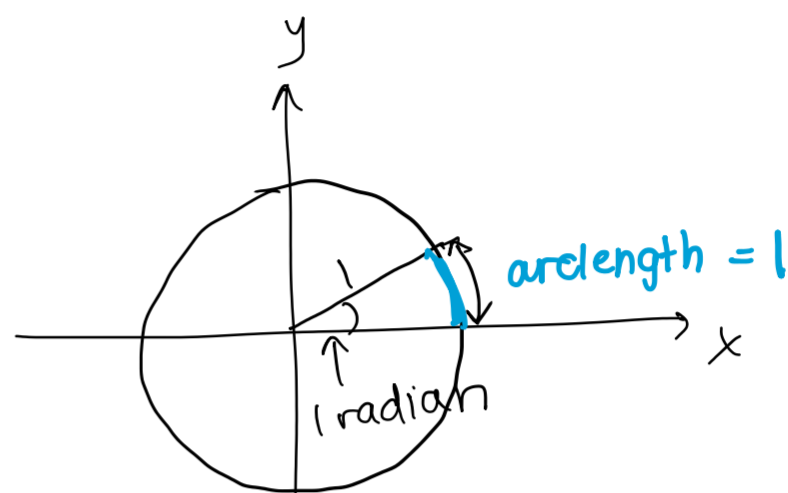
# Radians (sec 7.3)

Thursday, November 12, 2020 4:51 PM

An angle of 1 radian is defined to be the angle, in the counterclockwise direction, at the center of a unit circle, which spans an arc of length 1



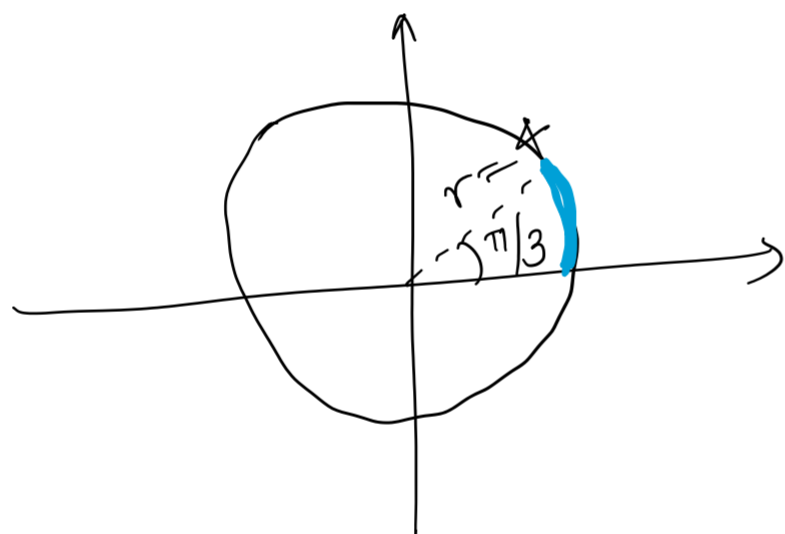
e.g



The arclength,  $s$ , spanned in a circle of radius  $r$  by angle  $\theta$  in radians is

$$s = r\theta$$

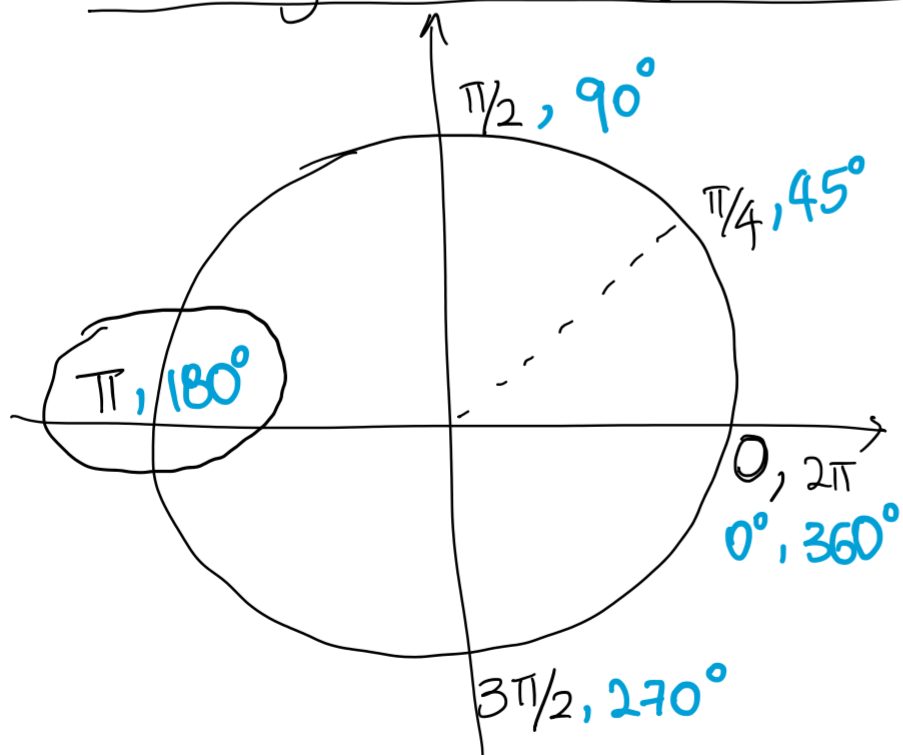
Example What is the arc length of an arc cut off by angle of  $\pi/3$  radians on a circle of radius 4cm?



$$s = r\theta$$

$$s = 4 \frac{\pi}{3} \text{ cm}$$

## Converting between degrees and radians



To convert from radians to degrees: multiply by  $\frac{180}{\pi}$

e.g.

$$\frac{\pi}{3} \times x = \text{unknown}$$

$$\cancel{\pi} x = 180 \left( \frac{\cancel{\pi}}{3} \right)$$

$$x = \frac{180}{3}$$

$$x = 60^\circ$$

To convert from degrees to radians multiply by  $\frac{\pi}{180}$

$$45^\circ \times \frac{\pi}{180^\circ} = \frac{\pi}{4} \text{ radians}$$