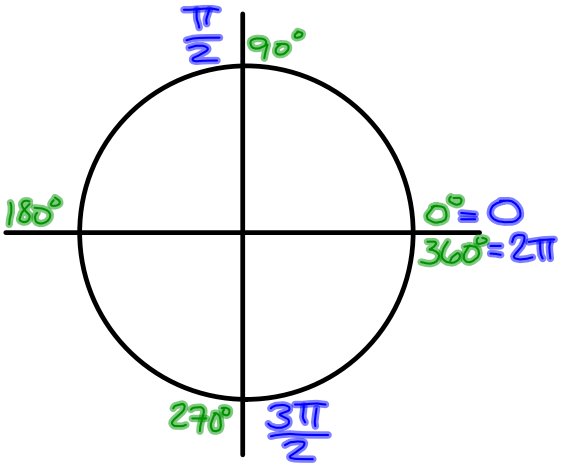
Converting Angle Measure

A radian is just another way to measure an angle. A radian is associated with the radius length of a circle.

click dot and scroll down for ***Radian Animation*** :

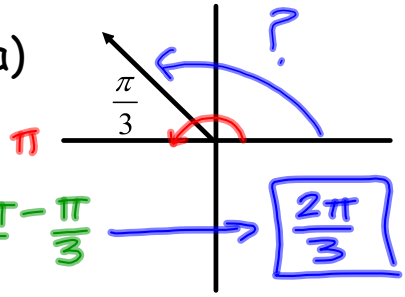
A circle has 360 degrees or 2π radians, which is approximately 6.28 radians.

$\frac{\pi + 2\pi}{2} = \frac{3\pi}{2}$



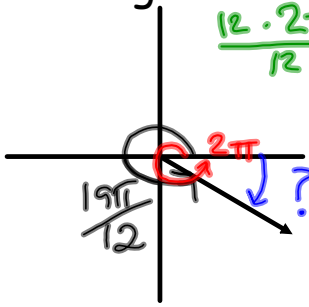
Examples: Find the measure of each angle.

a)



$\frac{3\pi}{3} - \frac{\pi}{3}$ → $\frac{2\pi}{3}$

b)

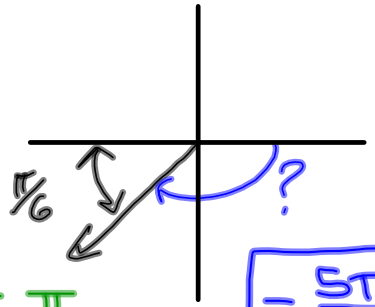


$\frac{12 \cdot 2\pi}{12} - \frac{19\pi}{12}$

$\frac{24\pi - 19\pi}{12}$

$-\frac{5\pi}{12}$

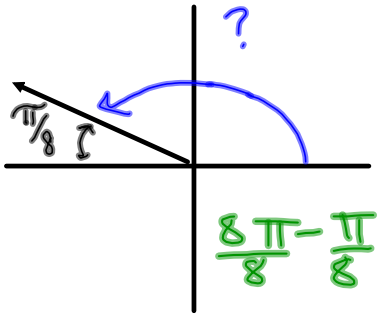
c)



$\frac{6\pi}{6} - \frac{\pi}{6}$

$-\frac{5\pi}{6}$

d)



$\frac{8\pi}{8} - \frac{\pi}{8} = \frac{7\pi}{8}$

Converting Angle Measures

degrees to radians	radians to degrees
$r = d \cdot \frac{\pi}{180^\circ}$ (the fraction $\frac{\pi}{180^\circ} = 1$)	$d = r \cdot \frac{180^\circ}{\pi}$

We always leave π as π when converting ...

do NOT evaluate for π !

Examples:

a) Convert 30° to radians.

$$30^\circ \cdot \frac{\pi}{180^\circ} = \frac{30\pi}{180} = \frac{\pi}{6}$$

b) Convert $\frac{4\pi}{9}$ to degrees.

$$\frac{4\pi}{9} \cdot \frac{180^\circ}{\pi} = \frac{720^\circ}{9} = 80^\circ$$