

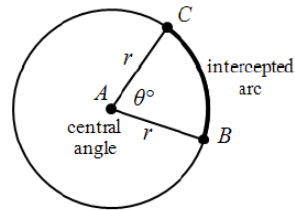
Secondary Math 3

Converting Radians and Degrees Notes

VOCABULARY

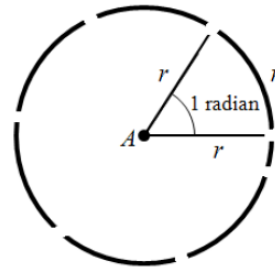
An angle with its vertex at the center of the circle is called a **central angle**.

An **intercepted arc** is the portion of a circle with endpoints on the sides of the central angle and remaining points within the interior of the angle.



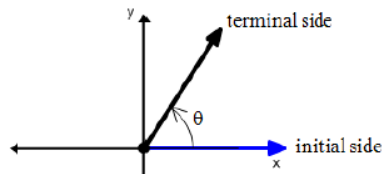
A **radian** is the measure of the central angle that intercepts an arc with length equal to the radius of the circle. You can see that it takes 6 radians and a little more (about 0.28) to complete the entire circle. Mathematically, $\frac{C}{r} = \frac{2\pi r}{r} = 2\pi$. Therefore, there are about 6.28 radii around a circle or exactly 2π radians.

A radian, much like an angle in degrees, measures the amount of rotation from the initial side to the terminal side of an angle in terms of the radius.

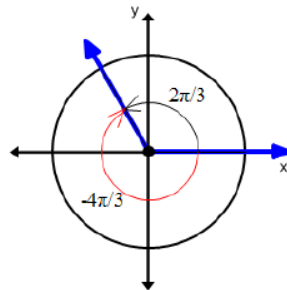


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An angle is in **standard position** when the vertex is at the origin and the initial side is on the positive x -axis.



Coterminal angles are angles with the same initial and terminal sides, but different measures.



For example $\frac{\pi}{6}$ and $-\frac{11\pi}{6}$ are coterminal angles, as well as $\frac{\pi}{2}$ and $\frac{5\pi}{2}$.

Converting Between Radians and Degrees

To convert degrees to radians, multiply the angle by $\frac{\pi \text{ radians}}{180^\circ}$.

To convert radians to degrees, multiply the angle by $\frac{180^\circ}{\pi \text{ radians}}$.

Examples

Convert each degree measure into radians.

1) 210°

2) -135°

3) -570°

Convert each radian measure into degrees.

4) $\frac{4\pi}{3}$

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

6) $\frac{5\pi}{4}$