

## Lesson 7-1 notes

Definition: 1 radian = radius of a circle

Let  $\theta$  be the measure of the central angle. (remember the central angle equals the measure of the arc)

If  $s$  = length of an arc and  $\theta = \frac{s}{r}$  radians,

therefore  $\theta = \frac{s}{r} = \frac{2\pi r}{r} = 2\pi$  radians for one revolution of a circle.

So one revolution is  $360^\circ$  or  $2\pi$  radians.

How many radians is  $180^\circ$ ?

Let's fill out the unit circle in radians.

$$1 \text{ radian} = \frac{180}{\pi} \text{ degrees}$$

Or

$$1 \text{ degree} = \frac{\pi}{180} \text{ radians}$$

1. a. Convert  $45^\circ$  to radians in terms of  $\pi$  and decimals.

b.  $200^\circ$

2. a. Convert  $\frac{3}{2}\pi$  radians to degrees.

b.  $-\frac{7}{4}\pi$

Definitions to know:

- 1) The *radian measure* of the central angle is the number of radius units in the length of an arc.
  
- 2) When an angle is shown in a coordinate plane, it usually appears in *standard position*, with its vertex at the origin and its initial ray along the x-axis.
  
- 3) *Initial rays* and *terminal rays* of an angle.
  
- 4) Two angles in standard position are called *coterminal angles* if they have the same terminal ray.
  
- 5) Positive angles open counterclockwise and negative angles open clockwise.