

**Objective:** To evaluate trigonometric identities and quadrantals.

**Warm Up:** Evaluate each of the following:

$$\sin(30^\circ) =$$

$$\cos(120^\circ) =$$

**Trig Function Definitions:**

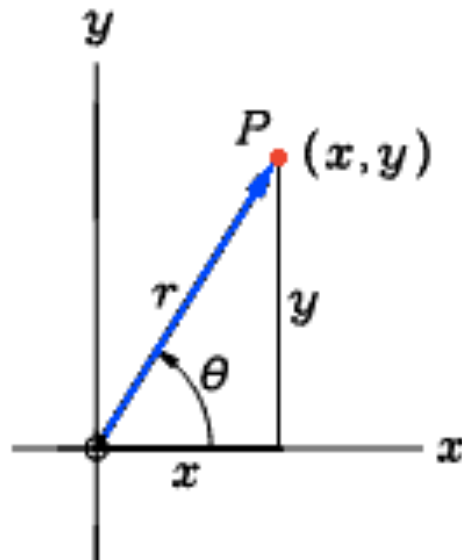
$$\sin \theta =$$

$$\cos \theta =$$

$$\tan \theta =$$

**On the unit circle:**

$$(x, y) \rightarrow ( \quad , \quad )$$



**Quotient Identities:**

$$\tan \theta =$$

$$\cot \theta =$$

## Explore:

a) Using the diagram to the right, write an equation that relates  $a$ ,  $b$ , and  $c$ .

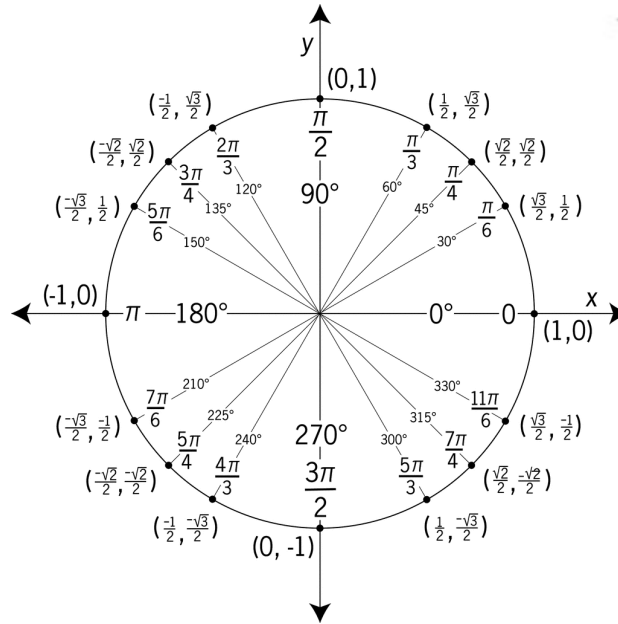
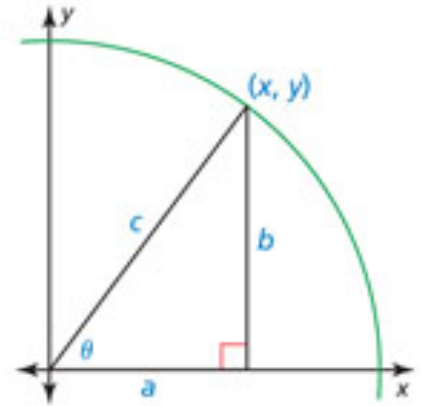
b) Write expressions for the sine and cosine of  $\theta$ .

$$\sin \theta =$$

$$\cos \theta =$$

c) Use your answers from parts a and b to find the sum of  $\sin^2 \theta$  and  $\cos^2 \theta$

$$\sin^2 \theta + \cos^2 \theta = \underline{\hspace{2cm}}$$



d) Fill in the table.

| $\theta$    | $\sin \theta$        | $\sin^2 \theta$ | $\cos \theta$ | $\cos^2 \theta$ | $\sin^2 \theta + \cos^2 \theta$ |
|-------------|----------------------|-----------------|---------------|-----------------|---------------------------------|
| $60^\circ$  | $\frac{\sqrt{3}}{2}$ | $\frac{3}{4}$   | $\frac{1}{2}$ | $\frac{1}{4}$   |                                 |
| $210^\circ$ |                      |                 |               |                 |                                 |

## Vocabulary:

**Quadrantal** – when the angle we need to evaluate has a terminal side that falls on an axis

**Example 2:** Evaluate each of the following trigonometric functions.

$$\sin(90^\circ) =$$

$$\cos(180^\circ) =$$

$$\cos(270^\circ) =$$

$$\sin(0^\circ) =$$

$$\tan(90^\circ) =$$

$$\tan(-180^\circ) =$$