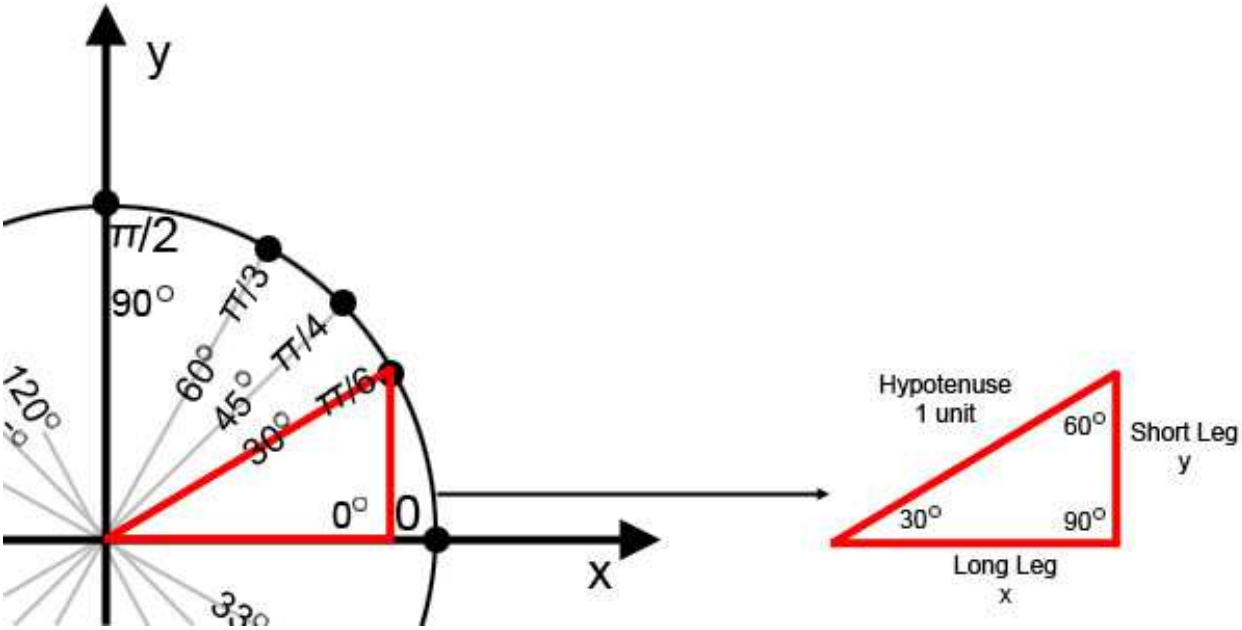
T-Unit Circle Assignment
Total Points = 64
Each missing coordinate is worth 2 points.

Please fill in the cosine and sine values for all the given angles. Make sure to show your work for each of the calculations.

Work through the following example, and then complete the assignment.

1. Draw a right triangle at the given angle. Label sides x and y.



2. What special right triangle is this similar to? What is the ratio of the sides of this special right triangle?

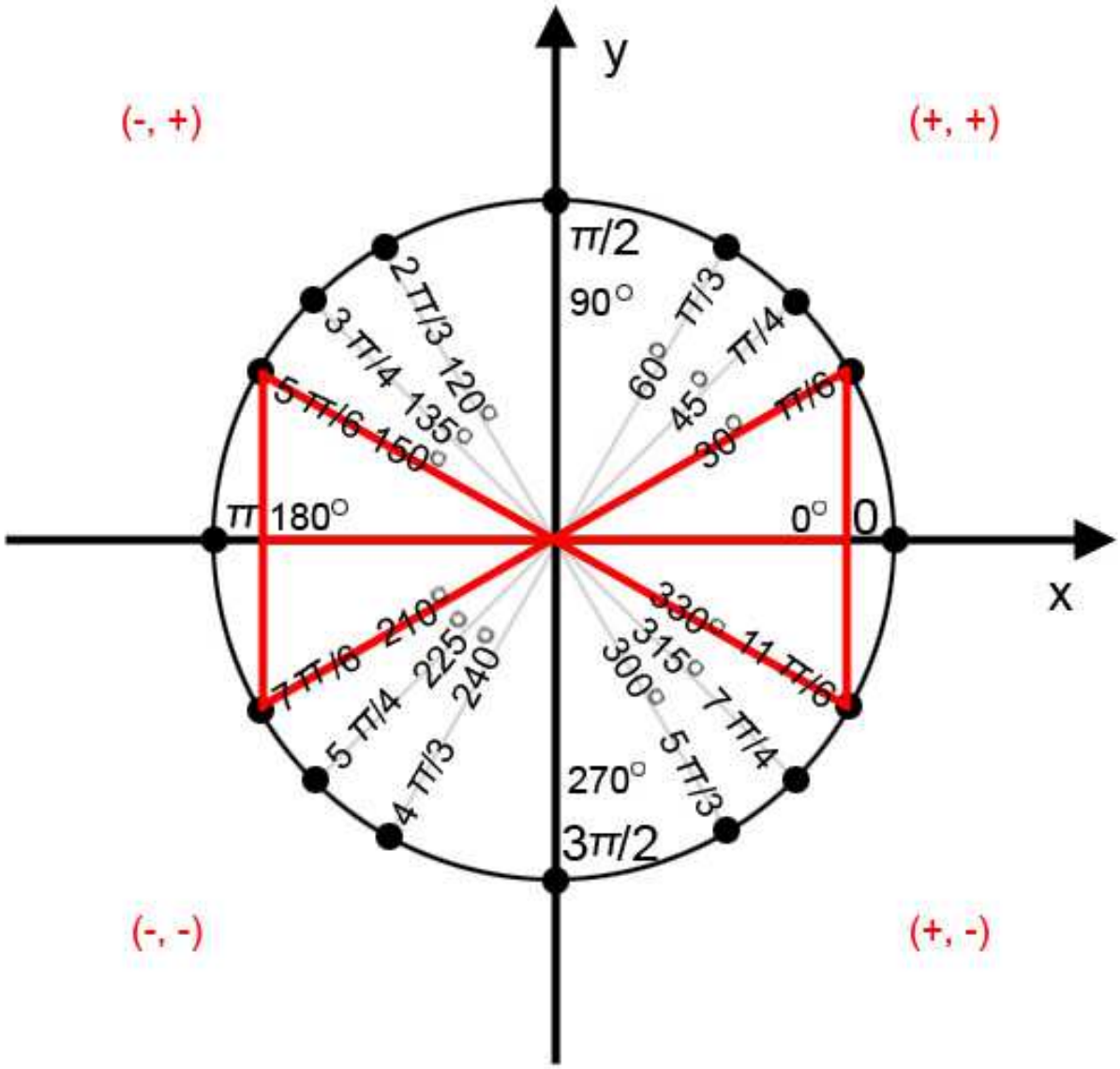
This is similar to the 30°-60°-90° right triangle.
The ratio of the sides is short leg : long leg : hypotenuse = $1 : \sqrt{3} : 2$.

3. Use the ratio to find the side lengths of the triangle (values of x and y).

$$\frac{Long\ Leg}{Hypotenuse}: \quad \frac{\sqrt{3}}{2} = \frac{x}{1}$$
$$1\sqrt{3} = 2x$$
$$x = \frac{\sqrt{3}}{2}$$

$$\frac{\textit{Short Leg}}{\textit{Hypotenuse}}: \quad \frac{1}{2}=\frac{y}{1}$$
$$1=2y$$
$$y=\frac{1}{2}$$

4. Translate the values to all four quadrants.



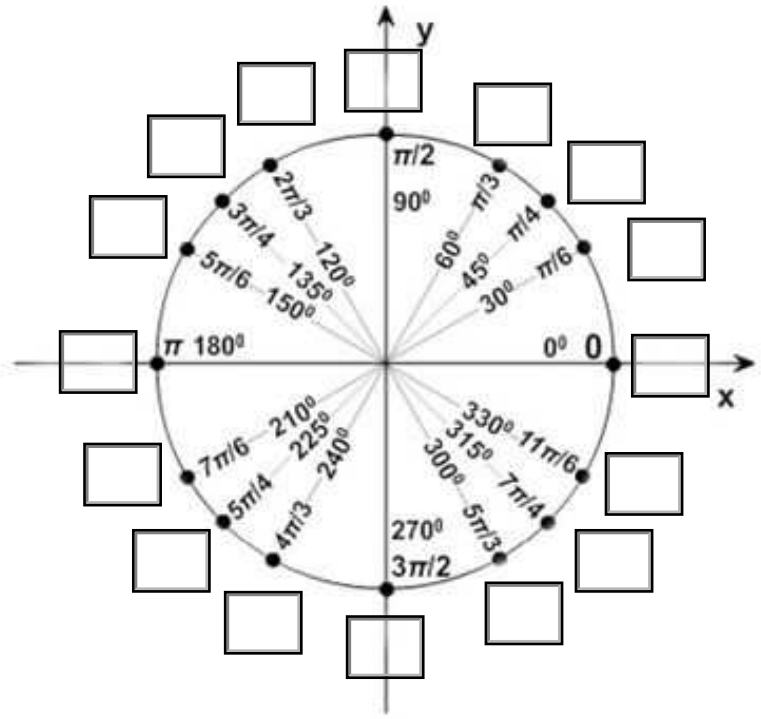
Quadrant I: 30° $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

Quadrant II: 150° $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

Quadrant III: 210° $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

Quadrant IV: 330° $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

Use the following Unit Circle to complete this assignment:



Use the space provided below to show your work for each of the problems.