

Today's Plan:

Learning Target (standard): I will evaluate the trigonometric values of common angles. I will use these to evaluate trigonometric expressions.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

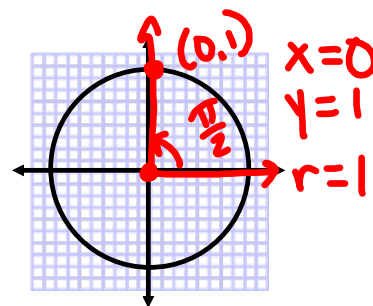
Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

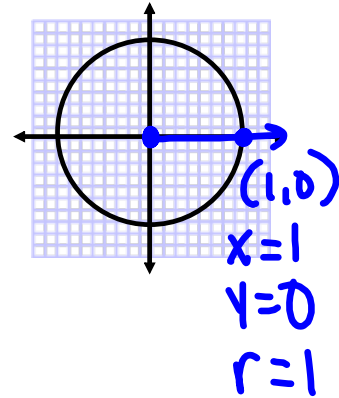
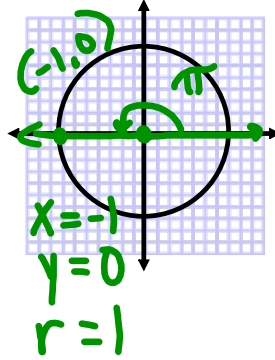
Find the exact value.

$$\begin{aligned} & \csc \frac{\pi}{2} + \cot \frac{\pi}{2} \\ &= 1 + 0 \\ &= 1 \end{aligned}$$



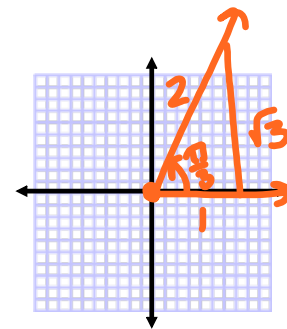
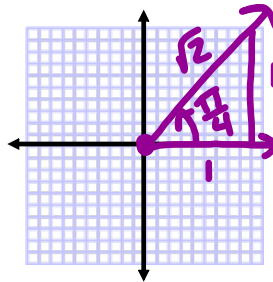
Find the exact value.

$$\begin{aligned} & \tan \pi - \cos 0 \\ &= 0 - 1 \\ &= -1 \end{aligned}$$



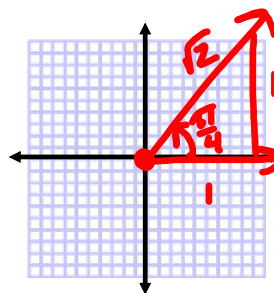
Find the exact value.

$$\begin{aligned} & 2 \sec \frac{\pi}{4} + 4 \cot \frac{\pi}{3} \\ &= 2(\sqrt{2}) + 4\left(\frac{\sqrt{3}}{3}\right) \\ &= 2\sqrt{2} + \frac{4\sqrt{3}}{3} \\ &= \frac{6\sqrt{2} + 4\sqrt{3}}{3} \end{aligned}$$



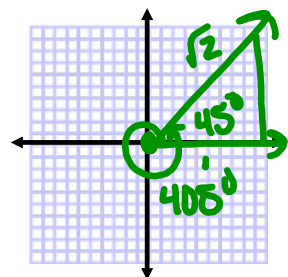
Find the exact value.

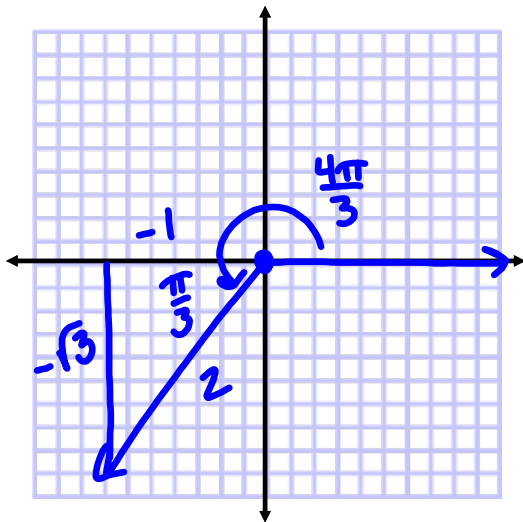
$$\begin{aligned}\sin \frac{\pi}{4} - \cos \frac{\pi}{4} \\ &= \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} \\ &= 0\end{aligned}$$



Find the exact value.

$$\sin 405^\circ = \frac{\sqrt{2}}{2}$$



Find the trigonometric values for $\frac{4\pi}{3}$ 

$$\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$$

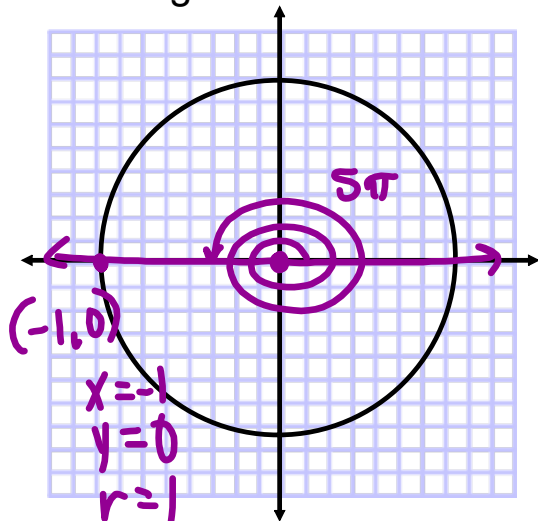
$$\csc \frac{4\pi}{3} = -\frac{2\sqrt{3}}{3}$$

$$\cos \frac{4\pi}{3} = -\frac{1}{2}$$

$$\sec \frac{4\pi}{3} = -2$$

$$\tan \frac{4\pi}{3} = \sqrt{3}$$

$$\cot \frac{4\pi}{3} = \frac{\sqrt{3}}{3}$$

Find the trigonometric values for 5π 

$$\sin 5\pi = 0$$

$$\csc 5\pi = -$$

$$\cos 5\pi = -1$$

$$\sec 5\pi = -1$$

$$\tan 5\pi = 0$$

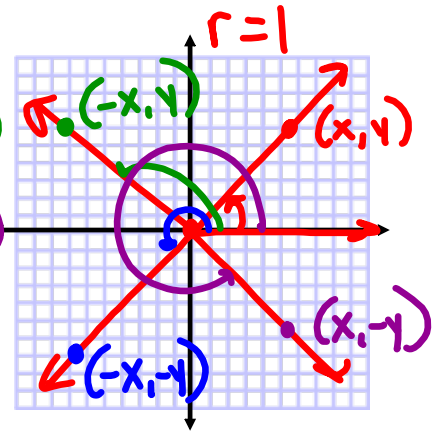
$$\cot 5\pi = -$$

Name the quadrant in which the angle lies. Why?

$$\sin \theta > 0 \quad \sin \theta = \frac{y}{r} > 0 \quad y(+)$$

$$\cos \theta < 0 \quad \cos \theta = \frac{x}{r} < 0 \quad x(-)$$

*r is always positive because it is the radius



$$\sin \theta = \frac{y}{r} > 0$$

$$\cos \theta = \frac{x}{r} < 0$$

Since $r = \sqrt{x^2 + y^2}$, r is always positive. In order for $\sin \theta > 0$, the y -value must be positive. In order for $\cos \theta < 0$, the x -values must be negative. This happens in QII.

Find the exact value of the remaining trig functions.

$$\sin \theta = -\frac{1}{3} = \frac{-y}{r}$$

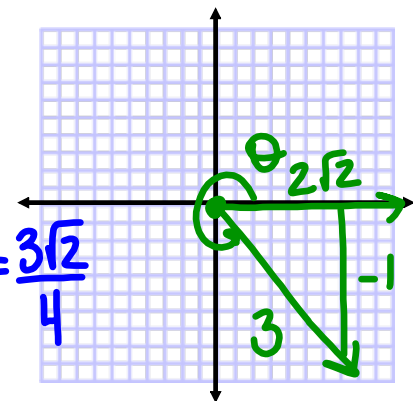
$$\csc \theta = -3$$

$$\cos \theta = \frac{2\sqrt{2}}{3} = \frac{x}{r}$$

$$\sec \theta = \frac{3}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{4}$$

$$\tan \theta = \frac{-\frac{1}{3}}{\frac{2\sqrt{2}}{3}} = -\frac{\sqrt{2}}{4}$$

$$\cot \theta = -2\sqrt{2}$$



Even or Odd Function?

$$\sin(-\theta) = -\sin\theta$$

$$\sin 30^\circ = \frac{1}{2} \quad \therefore \text{odd}$$

$$\sin(-30^\circ) = -\frac{1}{2}$$

$$\cos(-\theta) = \cos\theta$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2} \quad \therefore \text{even}$$

$$\cos(-30^\circ) = \frac{\sqrt{3}}{2}$$

$$\tan(-\theta) = -\tan\theta$$

$$\tan 30^\circ = \frac{\sqrt{3}}{3} \quad \therefore \text{odd}$$

$$\tan(-30^\circ) = -\frac{\sqrt{3}}{3}$$

Even:
Symmetry w/ y-axis
 $f(-x) = f(x)$

Odd:
Symmetry w/ origin
 $f(-x) = -f(x)$

Even or Odd Function?

$$\csc(-\theta) = -\csc\theta$$

$$\therefore \text{odd}$$

$$\sec(-\theta) = \sec\theta$$

$$\therefore \text{even}$$

$$\cot(-\theta) = -\cot\theta$$

$$\therefore \text{odd}$$

Complementary Angle Theorem: add up to 90°

$$\sin 30^\circ = \frac{1}{2}$$

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 60^\circ = \frac{1}{2}$$

$$\tan 30^\circ = \frac{\sqrt{3}}{3}$$

$$\tan 60^\circ = \sqrt{3}$$

$$\csc 30^\circ = 2$$

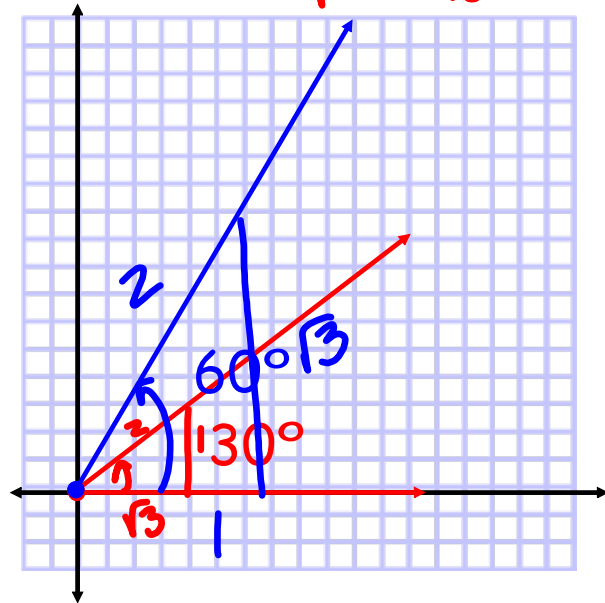
$$\csc 60^\circ = \frac{2\sqrt{3}}{3}$$

$$\sec 30^\circ = \frac{2\sqrt{3}}{3}$$

$$\sec 60^\circ = 2$$

$$\cot 30^\circ = \sqrt{3}$$

$$\cot 60^\circ = \frac{\sqrt{3}}{3}$$



Assignment:

p.404 #4-64 (by 4)

- #20 & 24 - explain why
- #52 - 64 - find normally using a diagram

* Draw ALL appropriate diagrams *