

Warm Up

Use your table to find:

$$1. \sin(210^\circ) = -\frac{1}{2} = \frac{y}{r}$$

$$2. \cot(225^\circ) = 1 = \frac{x}{y}$$

$$3. \sec(5\pi/3) = 2 = \frac{r}{x}$$

Objective: SWBAT evaluate trig functions using coterminal and reference angles.

Agenda:

- Warm Up
- Notes
- Practice
- Reflection

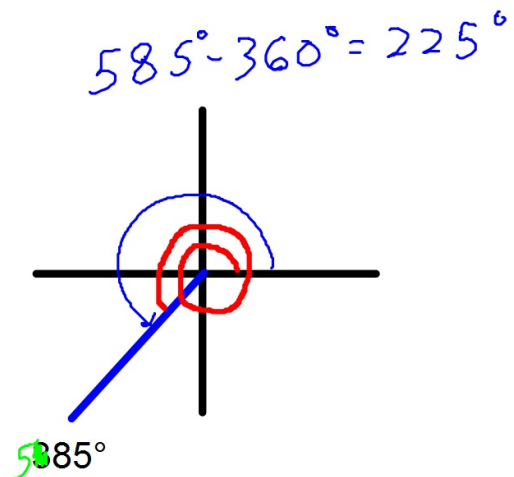
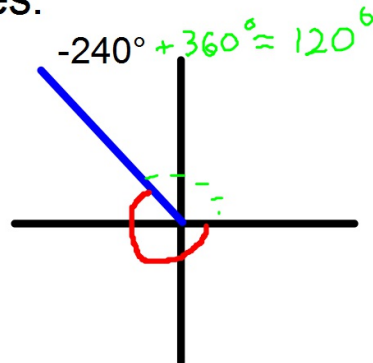
Notes

Coterminal angles are angles in standard position and have the same terminal side (they end in the same place)

How can we find them?

if θ is not in $[0, 360]$, add or subtract 360° until it is

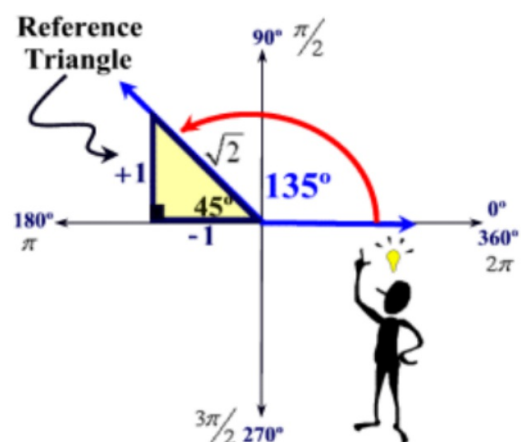
examples:



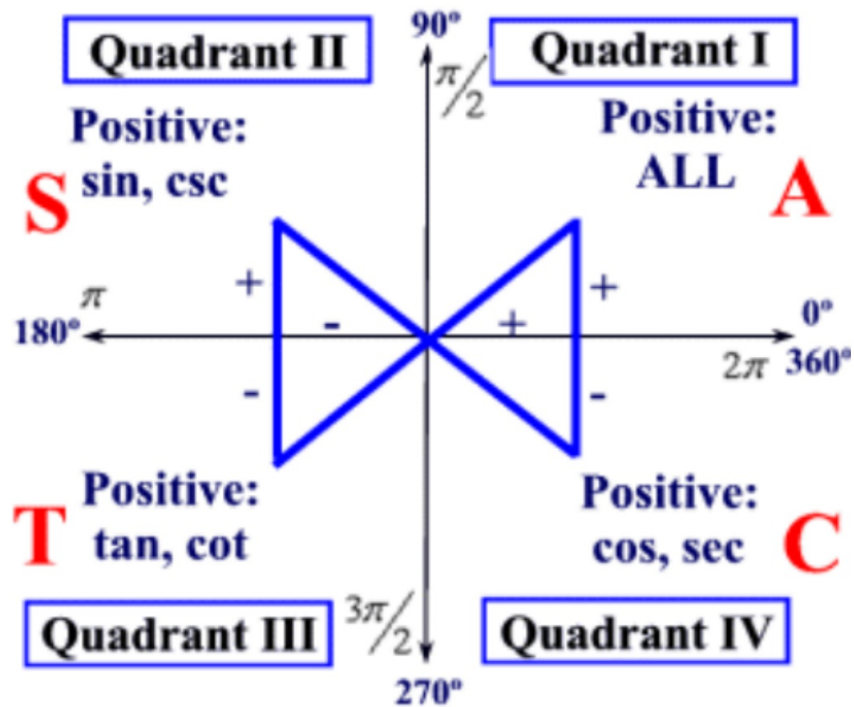
Notes: Reference Angles

A reference angle is an *acute* angle from the x-axis to the terminal side of the given angle.

- draw the angle
- find and label the reference angle
- find x and y coordinates
- evaluate the desired trig function



What are the signs?



Examples

Find $\sin\theta$ and $\cos\theta$ for:

1. $\theta = 135^\circ$

Q: 2

$$\sin(135^\circ) = \frac{\sqrt{2}}{2}$$

$$\cos(135^\circ) = -\frac{\sqrt{2}}{2}$$

$$\sin(135^\circ) = \sin(45^\circ)$$

$$\cos(135^\circ) = -\cos(45^\circ)$$

2. $\theta = 4\pi/3$

Q: 3

ref: $\pi/3$

$$\sin\left(\frac{4\pi}{3}\right) = -\frac{\sqrt{3}}{2}$$

$$\cos\left(\frac{4\pi}{3}\right) = -\frac{1}{2}$$

$$\sin\left(\frac{4\pi}{3}\right) = -\sin\left(\frac{\pi}{3}\right)$$

$$\cos\left(\frac{4\pi}{3}\right) = -\cos\left(\frac{\pi}{3}\right)$$

Notes: Finding Angles From Trig

Although the calculator can do inverses of trig functions, the answer is not unique.

To find the others, look in our table for entries that have the same number.

ex) find all angles in $[0, 2\pi]$ that satisfy the equation

$$\sin\theta = \frac{\sqrt{3}}{2} \rightarrow \theta = 60^\circ, 120^\circ$$

Practice

Exact Trig Values and the practice from yesterday

Reflection

How are coterminal angles different from reference angles?