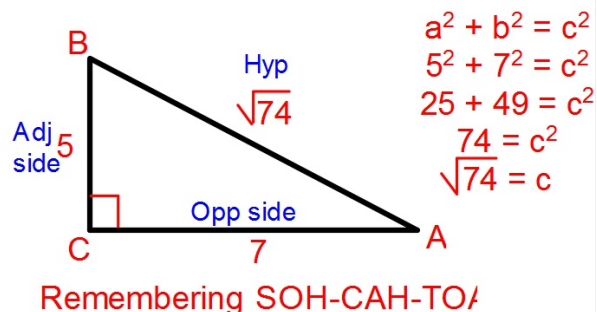


Bellwork

1. Evaluate the 6 trigonometric functions for the triangle using Angle B when $a = 5$ & $b = 7$:

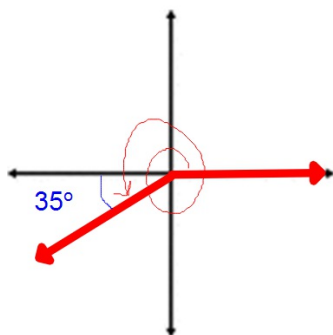
$$\begin{aligned} \sin B &= \frac{7 \cdot \sqrt{74}}{\sqrt{74} \cdot \sqrt{74}} = \frac{7\sqrt{74}}{74} & \csc B &= \frac{\sqrt{74}}{7} \\ \cos B &= \frac{5 \cdot \sqrt{74}}{\sqrt{74} \cdot \sqrt{74}} = \frac{5\sqrt{74}}{74} & \sec B &= \frac{\sqrt{74}}{5} \\ \tan B &= \frac{7}{5} & \cot B &= \frac{5}{7} \end{aligned}$$



2. Draw the given angles in standard position and find the reference angle:

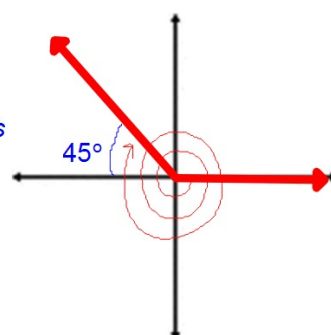
A. 575°

$$\begin{array}{r} 575^\circ \\ - 360^\circ \text{ 1 rotation} \\ \hline 215^\circ \text{ Extra} \end{array}$$



B. -945°

$$\begin{array}{r} - 945^\circ \\ + 360^\circ \text{ 1 rotation} \\ \hline - 585^\circ \\ + 360^\circ \text{ 2 rotations} \\ \hline - 225^\circ \text{ Extra} \end{array}$$



Reference Angles

Definition:

The smallest angle that the terminal side of a given angle makes with the x-axis.

Key things to remember:

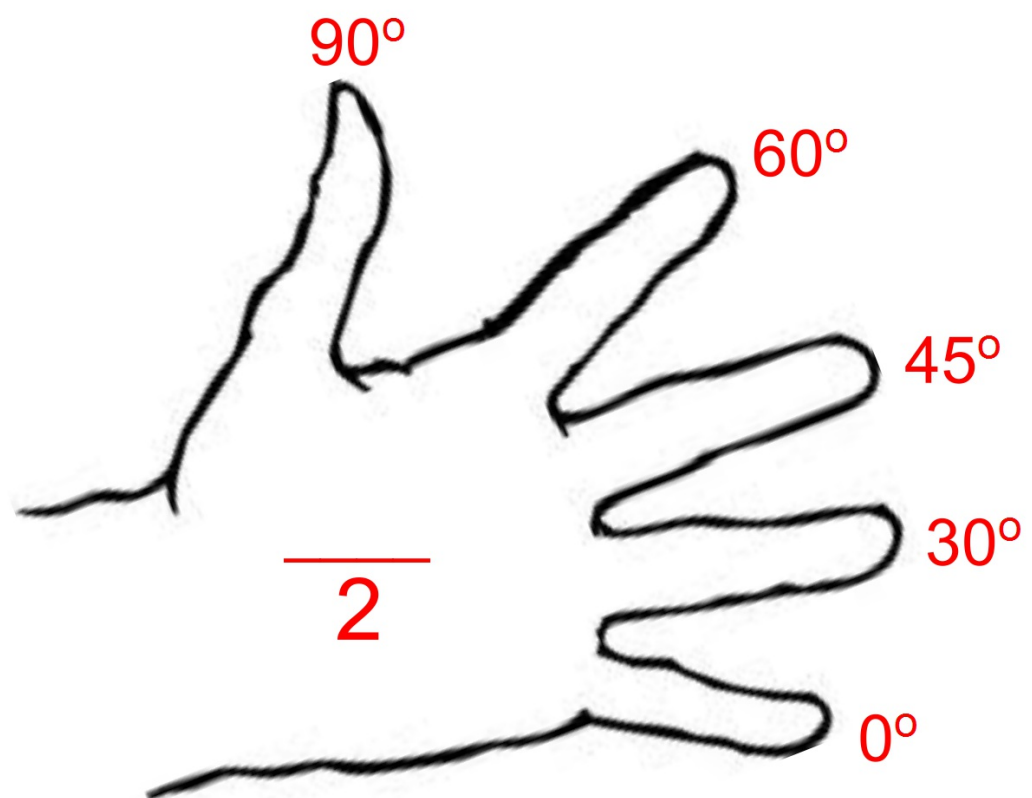
1. ALWAYS positive!
2. ALWAYS less than OR equal to 90°

Finding Reference Angles

Procedure:

1. Draw the angle in standard position.
2. Drop a line from the terminal side:
 - A. Straight down to the x-axis if the terminal side is in Quadrant I or II.
 - B. Straight up to the x-axis if the terminal side is in Quadrant III or IV.
3. Find the measure of the angle **BETWEEN** the x-axis and the terminal side.

Evaluating Trigonometric Functions: The Hand Trick



Trigonometric Functions: Finding the EXACT value of the given function.

Procedure:

1. Find the reference angle of given angle.
**IF the reference angle is 0° , 30° , 45° , 60° , or 90° ,
Then proceed...**
2. Identify the Quadrant that the terminal side is located in.
This will tell you the sign on the answer:

If sin, look at the y-values.

If cos, look at the x-values.

$$\tan A = \frac{\sin A}{\cos A}$$

**NOTE: To remember the
positive functions remember:
All Students Take Calculus**

$\sin +$	$\sin +$
$\cos -$	$\cos +$
$\tan -$	$\tan +$
$\sin -$	$\sin -$
$\cos -$	$\cos +$
$\tan +$	$\tan -$

Continued on the next page...

Trigonometric Functions: Finding the EXACT value of the given function.

Procedure Continued:

3. Holding your left hand out, recall the angles as given on slide 4.
4. Lay down the finger that is represented by the reference angle to the given angle.
5. Now to find the value of the function:

A.
$$\sin A = \frac{\sqrt{\text{Number of Fingers BELOW}}}{2}$$

B.
$$\cos A = \frac{\sqrt{\text{Number of Fingers ABOVE}}}{2}$$

C.
$$\tan A = \frac{\sqrt{\text{Number of Fingers BELOW}}}{\sqrt{\text{Number of Fingers ABOVE}}}$$

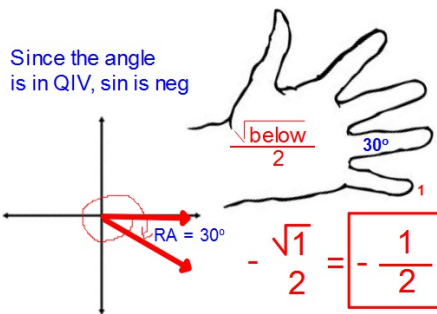
Important Items

1. Be sure to attach the sign that identifies with the angle in standard position.
2. If there is a square root in the DENOMINATOR of the fraction be sure that you rationalize the fraction!
3. DO NOT GIVE A DECIMAL ANSWER!
4. Check your answer using a calculator.

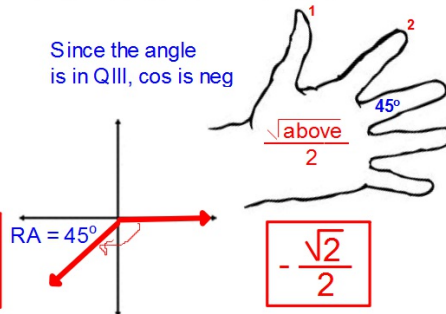
Examples

Give the EXACT value of the given trigonometric function:

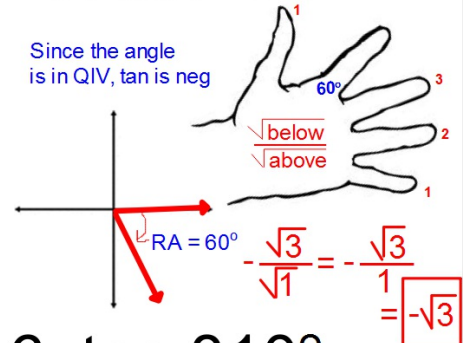
1. $\sin -390^\circ$



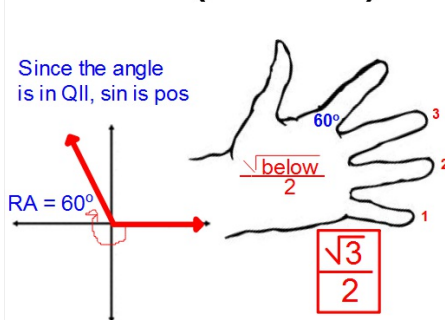
2. $\cos -135^\circ$



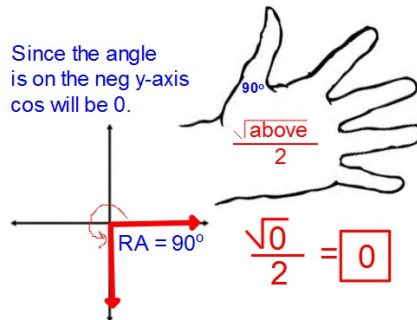
3. $\tan -60^\circ$



4. $\sin (-240^\circ)$



5. $\cos 270^\circ$



6. $\tan 810^\circ$

