

## Signs of Trigonometric Functions

$$\begin{array}{c|c} \text{S} & \text{A} \\ \hline \text{T} & \text{C} \end{array}$$

## Inverse Trigonometric Functions

Suppose  $A$  is an acute angle.

$$\begin{array}{lll} \sin(A) = N & \cos(A) = N & \tan(A) = N \\ \text{implies} & \text{implies} & \text{implies} \\ A = \sin^{-1}(N) & A = \cos^{-1}(N) & A = \tan^{-1}(N) \end{array}$$

## Reference Angles

If  $\theta$  is an angle in standard position, then the *reference angle*  $\alpha$  of  $\theta$  is the acute angle that the terminal side of  $\theta$  makes with the  $x$ -axis.

Suppose  $\theta$  is an angle in standard position, and  $\alpha$  is the reference angle of  $\theta$ .  
( $|x|$  = the absolute value of  $x$ )

$$\begin{array}{ll} \sin(\alpha) = |\sin(\theta)| & \csc(\alpha) = |\csc(\theta)| \\ \cos(\alpha) = |\cos(\theta)| & \sec(\alpha) = |\sec(\theta)| \\ \tan(\alpha) = |\tan(\theta)| & \cot(\alpha) = |\cot(\theta)| \end{array}$$

$$\alpha = \sin^{-1}(|\sin(\theta)|)$$

$$\alpha = \cos^{-1}(|\cos(\theta)|)$$

$$\alpha = \tan^{-1}(|\tan(\theta)|)$$

Suppose  $\theta$  is an angle in standard position,  $0^\circ \leq \theta < 360^\circ$ , and  $\alpha$  is the reference angle of  $\theta$ .

Quadrant of $\theta$	
I	$\theta = \alpha$
II	$\theta = 180^\circ - \alpha$
III	$\theta = 180^\circ + \alpha$
IV	$\theta = 360^\circ - \alpha$