

The Other Trig Functions

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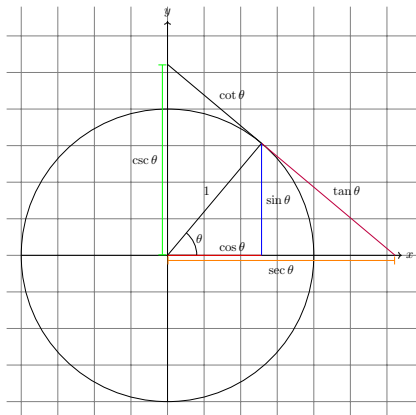
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Announcements

- 1 Homework in M.O.M.
- 2 Quiz due tonight
- 3 Office hours today: 10am - 11am

The Other Trig Functions



If (x, y) is the point on the unit circle associated with the angle θ , then:

- 1 $\tan(\theta) =$
- 2 $\cot(\theta) =$
- 3 $\sec(\theta) =$
- 4 $\csc(\theta) =$

Examples

Find all of the trig functions evaluated at $\theta = \frac{\pi}{6}$ radians.

Examples

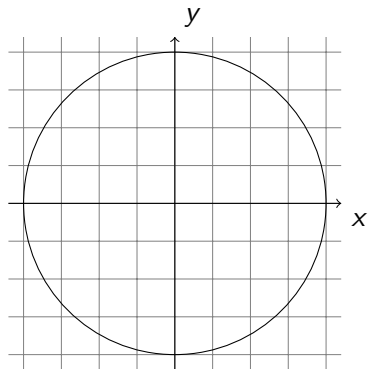
Find all of the trig functions evaluated at $\alpha = \frac{\pi}{4}$ radians.

The Trig Functions in Quadrant I

θ	0 or 0°	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$ or 90°
$\sin(\theta)$					
$\cos(\theta)$					
$\tan(\theta)$					
$\cot(\theta)$					
$\sec(\theta)$					
$\csc(\theta)$					

Using Reference Angles

To find the trig functions in the other quadrants, just remember to use reference angles and that: **All Students Take Calculus**



Example

Find:

① $\sec(120^\circ)$

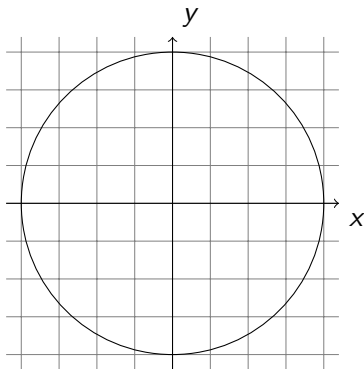
② $\csc\left(\frac{7\pi}{6}\right)$

③ $\tan\left(\frac{7\pi}{4}\right)$

④ $\cot(390^\circ)$

Example

Even and Odd Functions



Even and Odd Functions

A function $f(x)$ is called _____ if $f(-x) = f(x)$.

A function $f(x)$ is called _____ if

$f(-x) = -f(x)$.

The following trig functions are even:

The following trig functions are odd:

Example

Suppose $\cos(\beta) = \frac{3}{7}$. Then what is $\cos(-\beta)$?

Fundamental Identities

It's important to recognize how the trig functions are all related to each other: They really are all based off of $\sin(\theta)$ and $\cos(\theta)$!

Fundamental Identities

① $\tan \theta =$ _____

② $\cot \theta =$ _____

③ $\sec \theta =$ _____

④ $\csc \theta =$ _____

Example

Suppose $\sin(\gamma) = \frac{1}{3}$, and $\frac{\pi}{2} \leq \gamma \leq \pi$. Find the other 6 trig functions at γ .

Example

Example

Suppose $\sec(\theta) = -10$ and $\pi \leq \theta \leq \frac{3\pi}{2}$. Find the other 6 trig functions at θ .