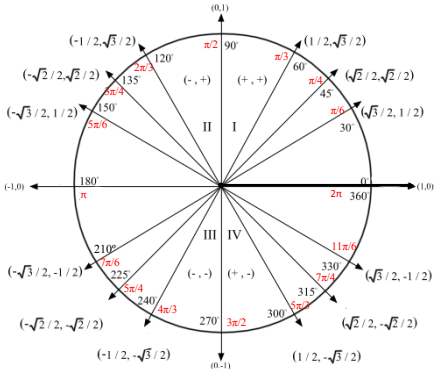
Trig 1.2 part 2 ~ The Trigonometric Functions

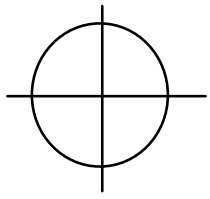
You will

* Evaluate trigonometric functions using the unit circle.
* Use the domain and period to evaluate sine and cosine functions.
* Identify the reference angle of any angle on the unit circle.
* Use a calculator to evaluate trigonometric functions.

The Unit Circle



Trigonometric functions



Sine t =

Cosecant t =

Cosine t =

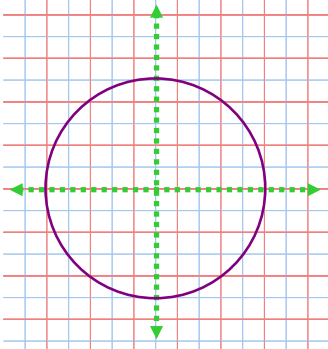
Secant t =

Tangent t =

Cotangent t =

Other points on the unit circle: radius = 1.

Equation:_____



Complete these ordered pairs:

a. (0.6, ?)

b. (? , 0.5)

c. (-0.8, ?)

d. (?, 0.1)

Periodic means what??

Back to the unit circle -- Answer each of these and come up with a conjecture.

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

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

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

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

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

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

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

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

Exercise 1:

a. Evaluate the six trigonometric functions of t if $t = -5\pi/6$.

b. Evaluate the six trigonometric functions of t if $t = 2\pi/3$.

Practice these:

Exercise 2:

If $\sin t = -0.5$ and $\pi < t < 3\pi/2$, determine the other five trigonometric functions of t.

Exercise 3:

If $\sec t = -5/3$ and t is in the third quadrant, determine the other five trigonometric functions of t.

One more thing - A reference angle is

Positive
Acute
Shares the terminal side with the original angle and has one side on the x-axis.
If the angle is in radians, the reference angle is in radians.
If the angle is in degrees, the reference angle is in degrees.

Every angle θ has a reference angle θ'.

Note: The quadrant angles have no reference angle.

Examples:

$\theta = 5\pi/4 \Rightarrow \theta' =$ $\theta = -2\pi/3 \Rightarrow \theta' =$

$\theta = 140^\circ \Rightarrow \theta' =$ $\theta = -800^\circ \Rightarrow \theta' =$

Exercise 4:

Of course a calculator will provide approximate answers in decimal form and approximate answers for "unfriendly" angles.

$\sin(3\pi/4) =$

$\tan(5\pi/6) =$

$\cos(2\pi/3) =$

$\sec(5\pi/4) =$

$\sin(0.24) =$