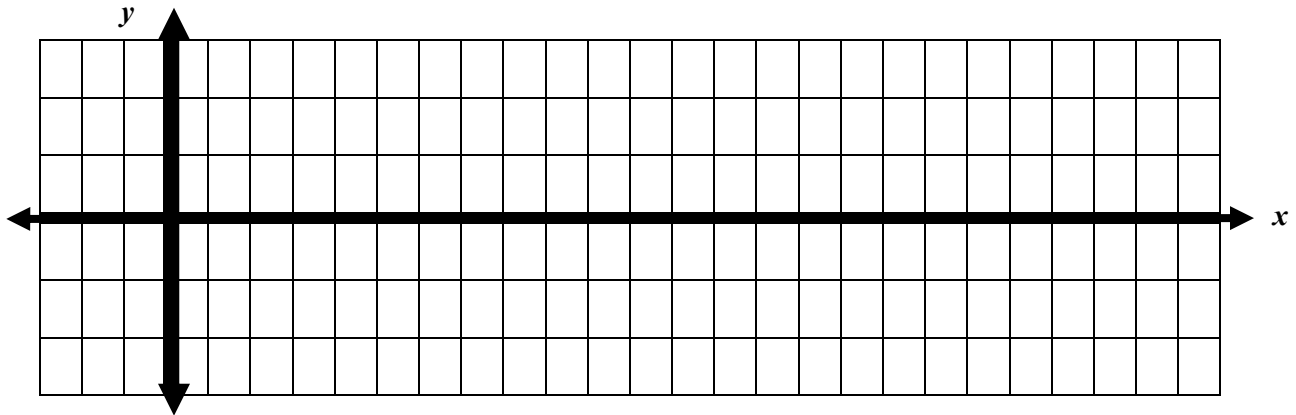


3.4.2a Graph of Trigonometric Functions in Radians

1. Graph $y=\sin(x)$ using radians.

(x-axis is in increments of $\frac{\pi}{12}$, y-axis is in increments of 0.5)



Characteristics:

Max. value: _____

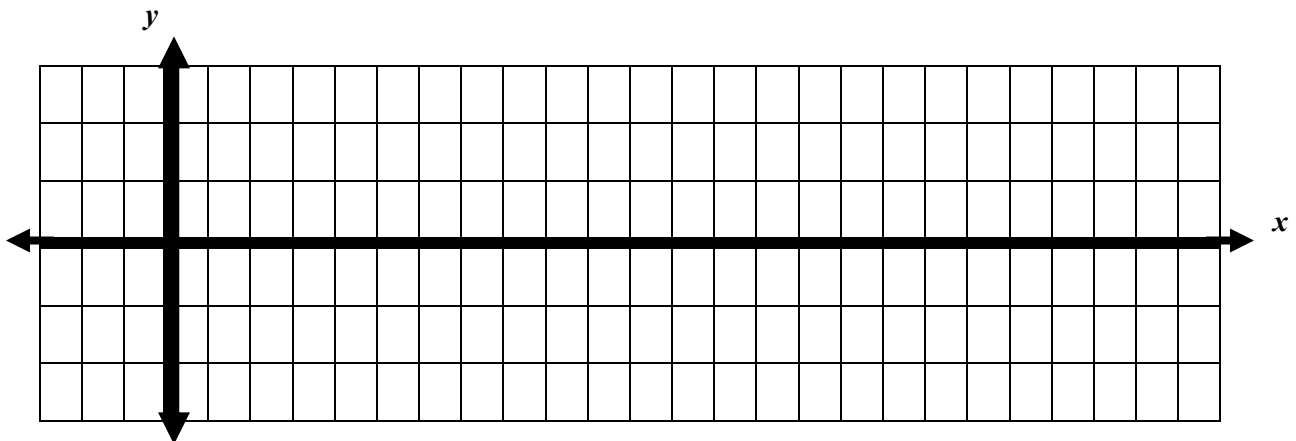
Min. value: _____

y intercept: _____

x intercept (zeros): _____

2. Graph $y=\cos(x)$ using radians.

(x-axis is in increments of $\frac{\pi}{12}$, y-axis is in increments of 0.5)



Characteristics:

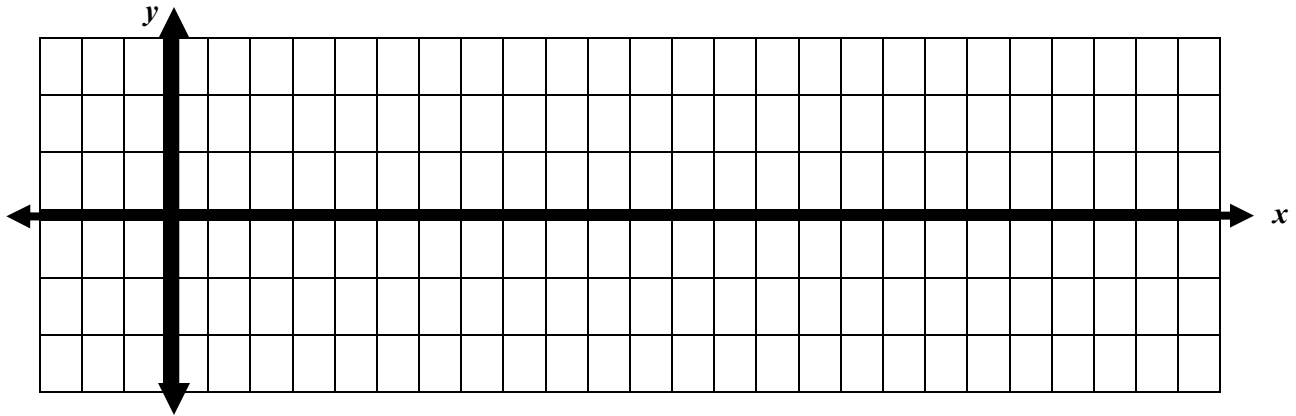
Max. value: _____

Min. value: _____

y intercept: _____

x intercepts (zeros): _____

3. Graph $y=\csc(x)$ using radians. Use your trigonometric values table as a reference. (x-axis is in increments of $\frac{\pi}{12}$, y-axis is in increments of 0.5)



Characteristics:

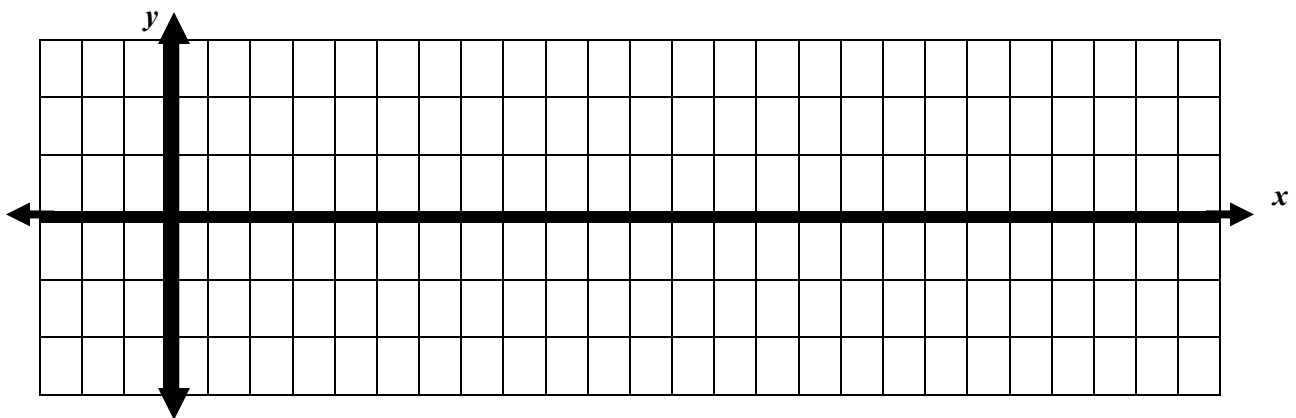
Max. value: _____

Min. value: _____

y intercept: _____

x intercept (zeros): _____

4. Graph $y=\sec(x)$ using radians. Use your trigonometric values table as a reference. (x-axis is in increments of $\frac{\pi}{12}$, y-axis is in increments of 0.5)



Characteristics:

Max. value: _____

Min. value: _____

y intercept: _____

x intercepts (zeros): _____

5. Summarize the properties of Trigonometric Functions and their reciprocals in the following table : (Remember to use radians where required)

	SINX	CSCX	COSX	SECX
Maximum Points				
Minimum Points				
Amplitude				
Period				
Zeros				
Y-Intercept				

6. What do you notice about $\csc 0$, $\csc \pi$, $\csc 2\pi$, $\sec \frac{\pi}{2}$, $\sec \frac{3\pi}{2}$?

Why does this happen?

What occurs on the graphs of the reciprocals at those points?

State the restrictions of the secant and cosecant functions:

Secant:

Cosecant:

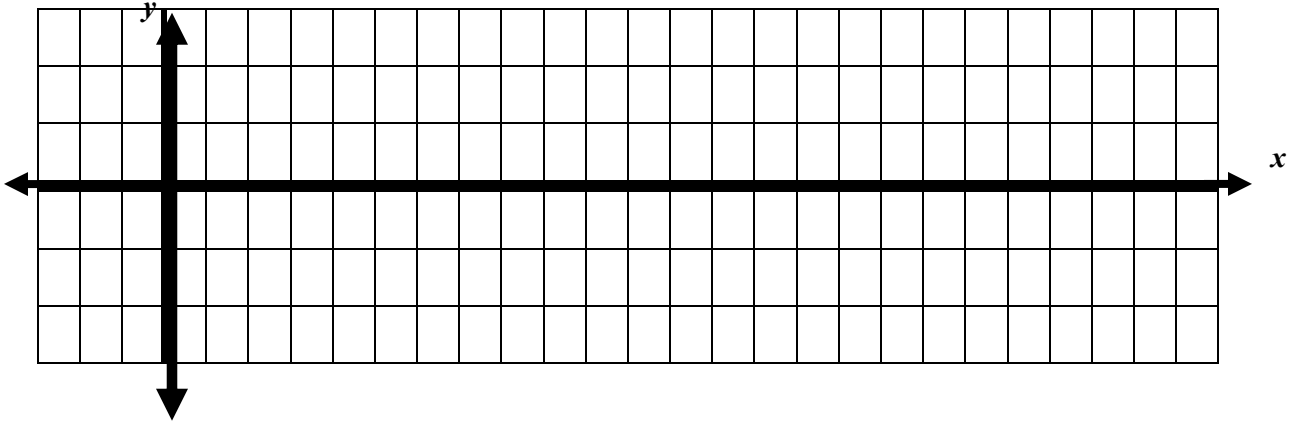
3.6.1 Graphs of Tangent and Cotangent in Radians

On the given set of axes, graph Tangent x and Cotangent x .

(x -axis is in increments of $\frac{\pi}{12}$)

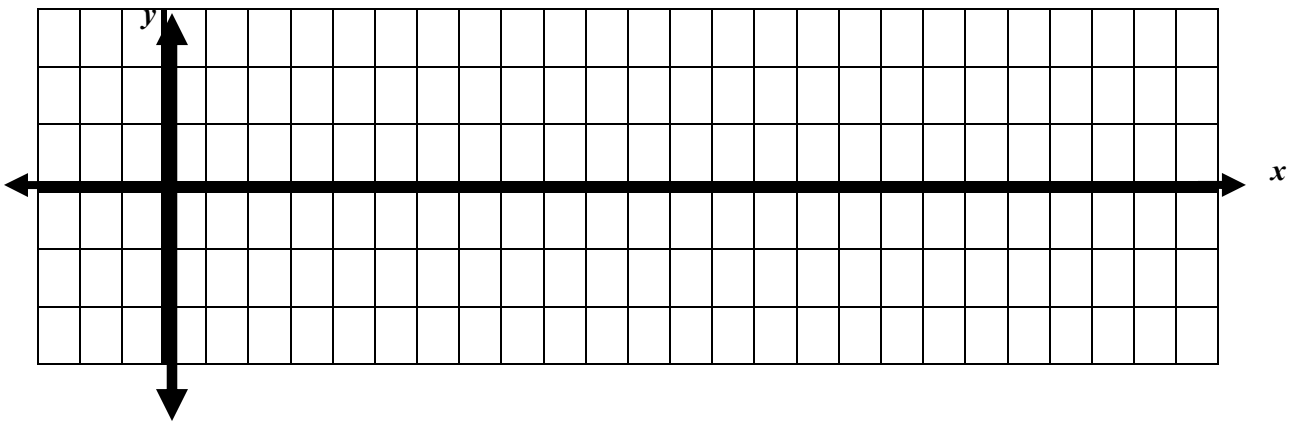
(y -axis is in increments of 0.5)

$y = \text{Tangent } (x)$



Characteristics:

$y = \text{Cotangent } (x)$



Characteristics:

Characteristics of Tangent and Cotangent

	$\tan x$	$\cot x$
Maximum Points		
Minimum Points		
Amplitude		
Period		
Zeros		
Y-Intercept		

3.5.3 Reciprocal Trigonometric Functions Practice

Knowledge

Find each function value:

- $\csc \theta$, if $\sin \theta = \frac{\sqrt{2}}{4}$
- $\cos \theta$, if $\sec \theta = -2.5$
- $\sin \theta$, if $\csc \theta = 3$
- $\sin \theta$, if $\csc \theta = \sqrt{15}$
- $\sec \theta$, if $\cos \theta = \frac{-1}{\sqrt{7}}$
- $\sec \theta$, if $\cos \theta = \frac{5}{\sqrt{26}}$
- $\csc \theta$, if $\sin \theta = \frac{\sqrt{11}}{6}$
- $\cos \theta$, if $\sec \theta = \frac{-\sqrt{14}}{3}$
- $\sin \theta$, if $\csc \theta = \frac{\sqrt{3}}{3}$
- $\sec \theta$, if $\cos \theta = \frac{\sqrt{6}}{12}$

Application

Find each function value (keep answers in radical form):

- $\csc \theta$, if $\tan \theta = \frac{\sqrt{6}}{12}$
- $\sec \theta$, if $\sin \theta = \frac{\sqrt{3}}{3}$
- $\cos \theta$, if $\cot \theta = \frac{-\sqrt{3}}{3}$
- $\sin \theta$, if $\cos \theta = \frac{\sqrt{3}}{2}$
- $\sec \theta$, if $\csc \theta = \sqrt{15}$
- $\cos \theta$, if $\csc \theta = \sqrt{15}$
- $\sec \theta$, if $\tan \theta = \sqrt{3}$
- $\csc \theta$, if $\sin \theta = \frac{-2}{\sqrt{12}}$
- $\cos \theta$, if $\sin \theta = \frac{5}{13}$
- $\sin \theta$, if $\tan \theta = \frac{-2}{\sqrt{5}}$