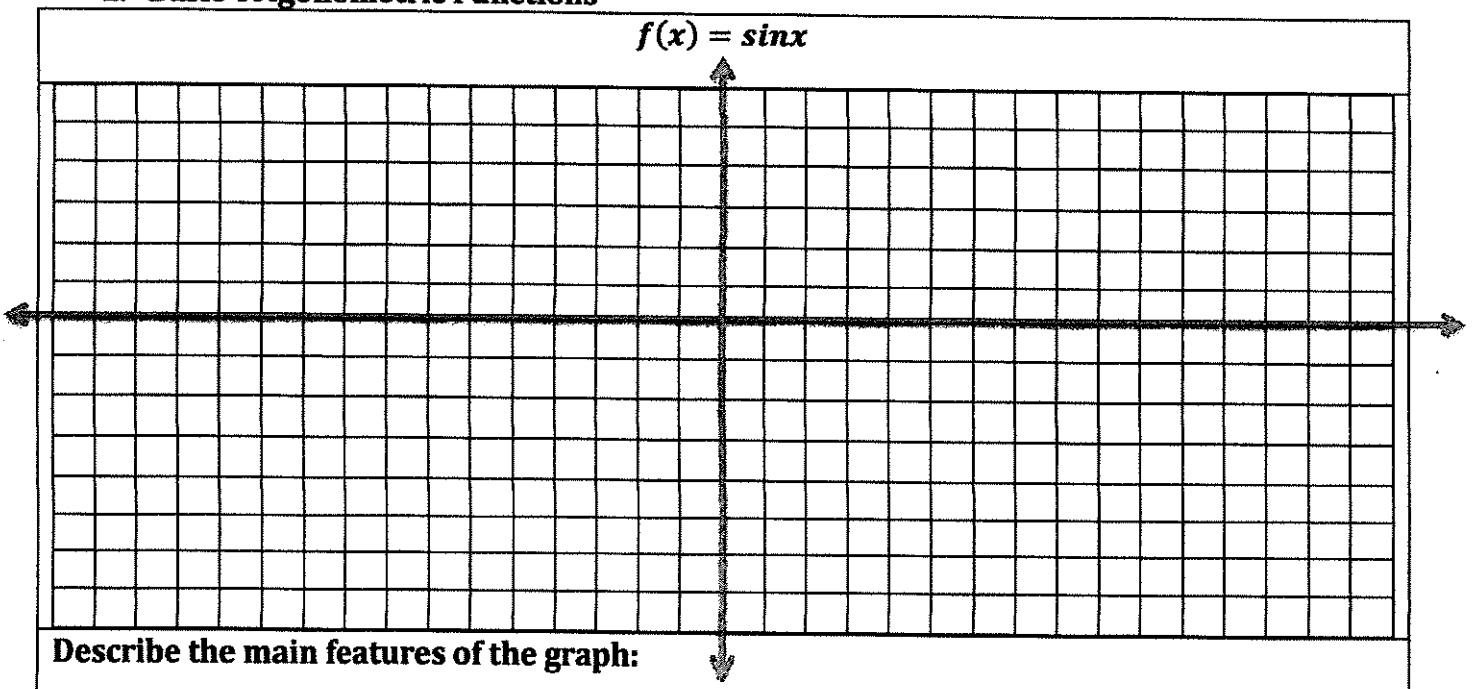
CALCULUS 12

TRIGONOMETRIC FUNCTIONS

1. Basic Trigonometric Functions



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

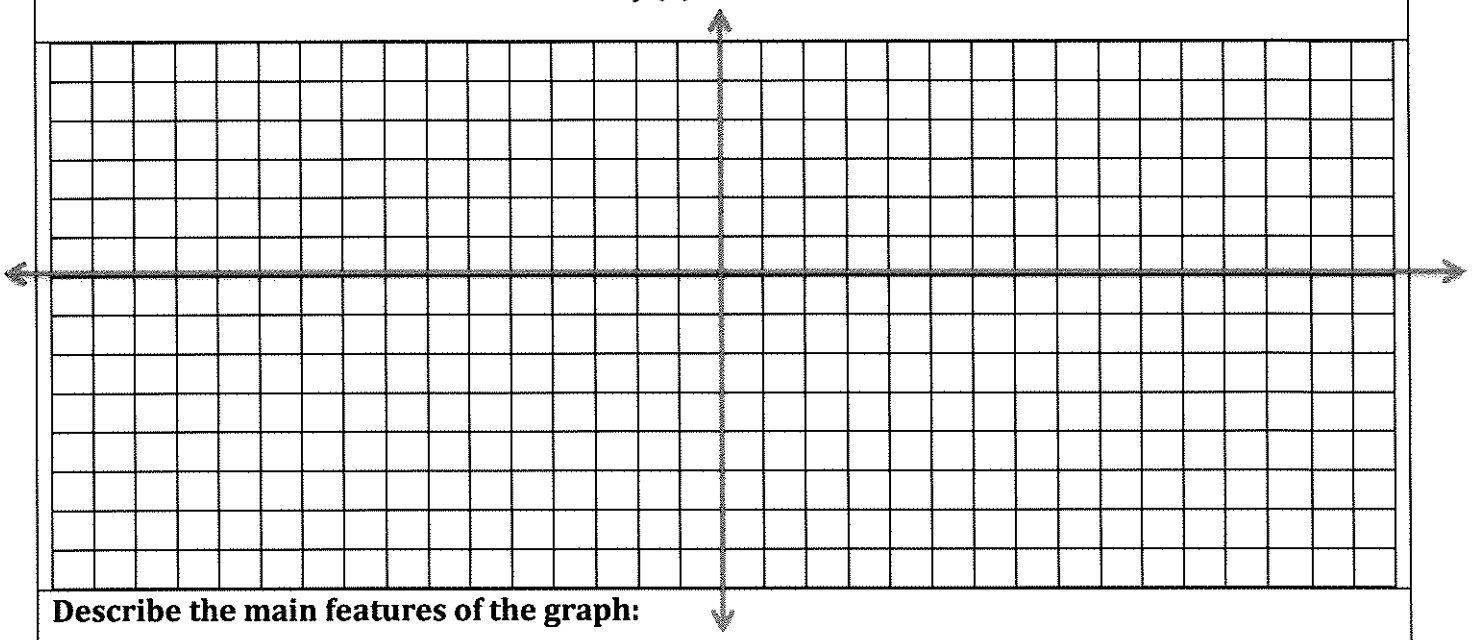
Amplitude:

Period:

Domain:

Range:

$f(x) = cosx$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

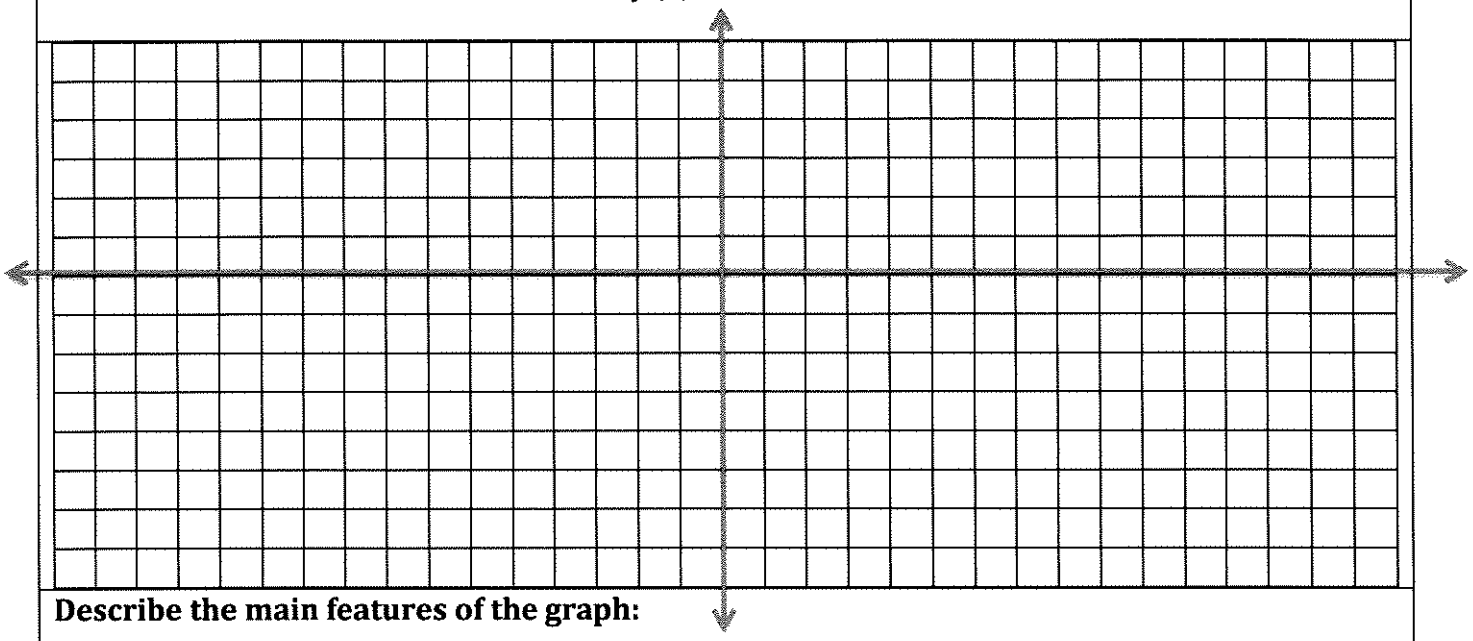
Amplitude:

Period:

Domain:

Range:

$f(x) = tanx$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

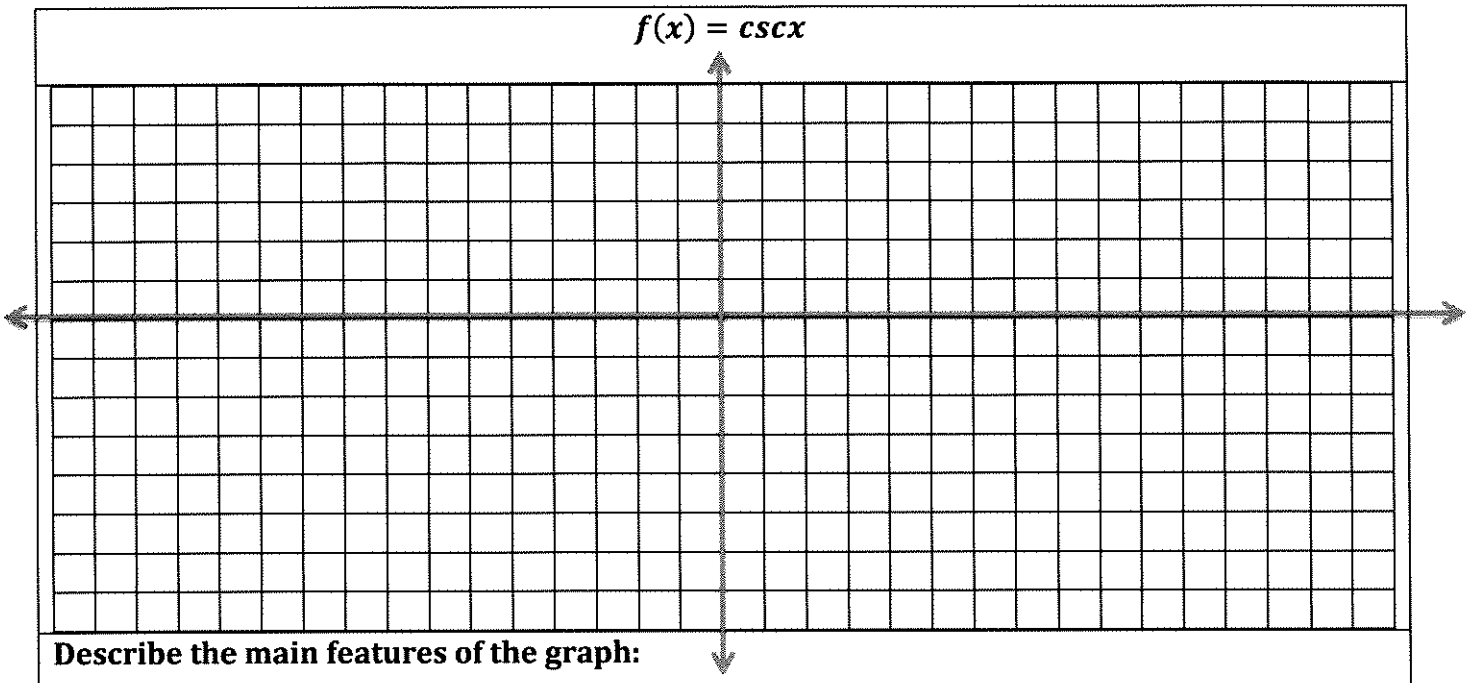
General equation of vertical asymptotes:

Period:

Domain:

Range:

2. Reciprocal Trigonometric Functions



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

General equation of vertical asymptotes:

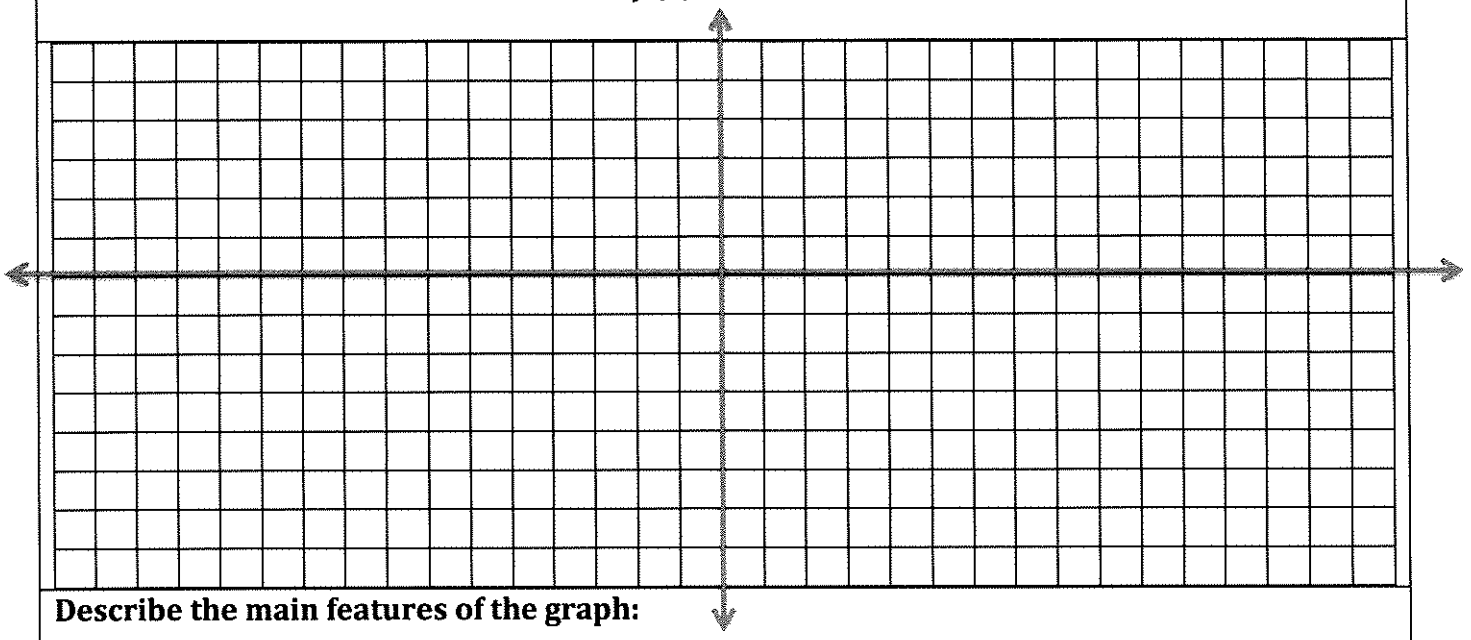
Period:

Domain:

Range:

$$\csc x = \frac{1}{sinx}$$

$f(x) = secx$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

General equation of vertical asymptotes:

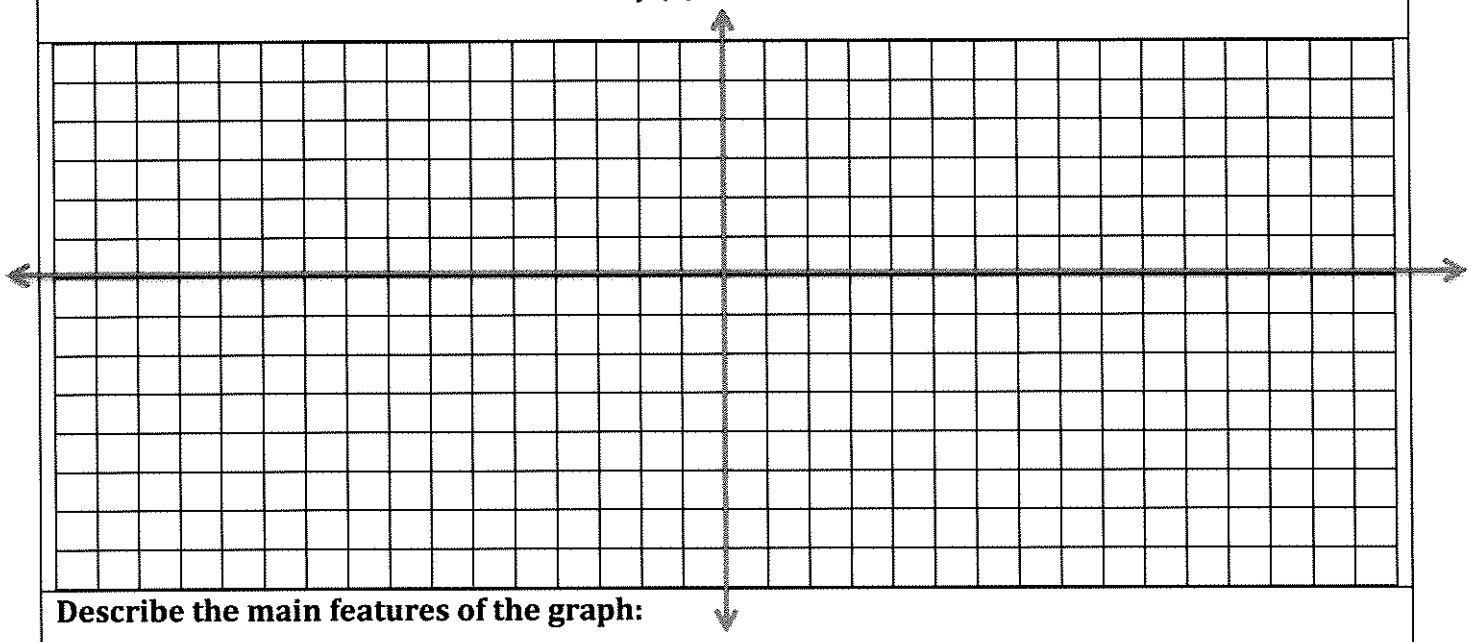
Period:

Domain:

Range:

$$\sec x = \frac{1}{cosx}$$

$f(x) = cotx$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

General equation of vertical asymptotes:

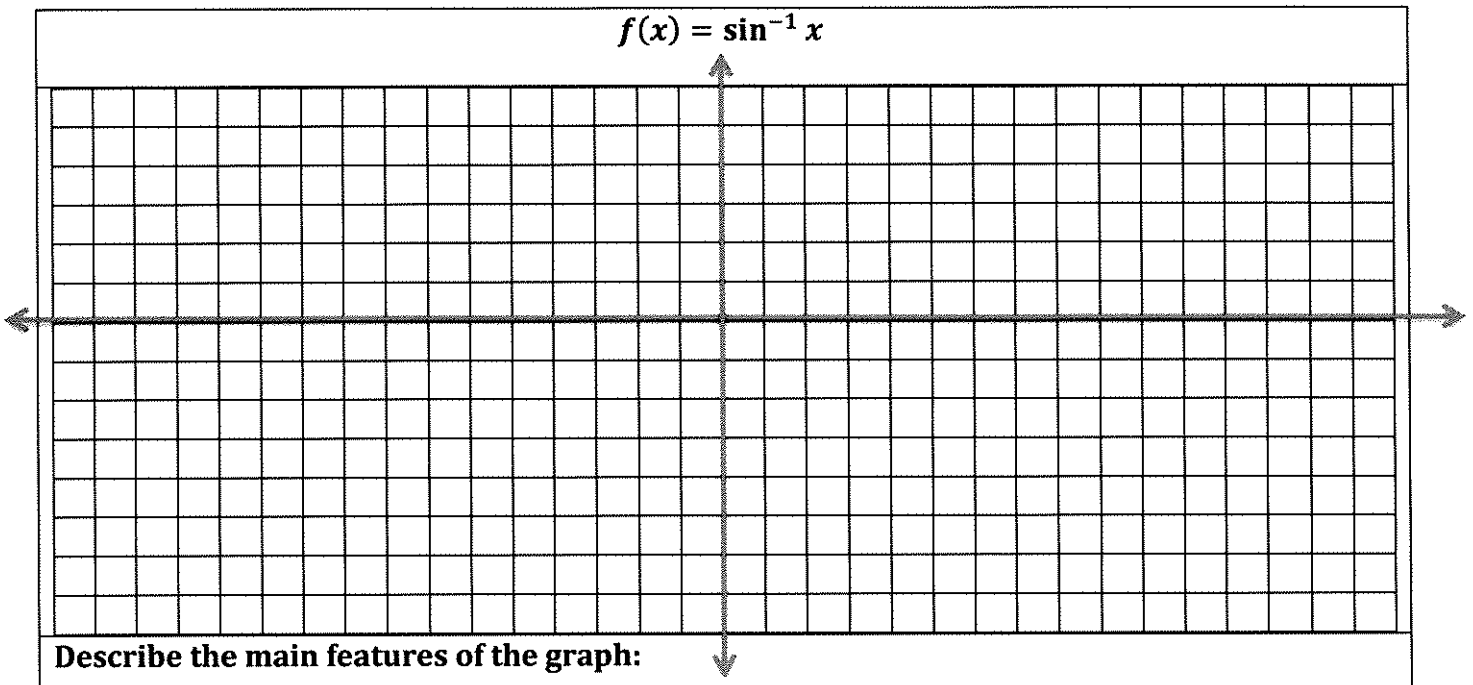
Period:

Domain:

Range:

$$\cot x = \frac{1}{tanx}$$

3. Inverse Trigonometric Functions



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equation of horizontal asymptotes:

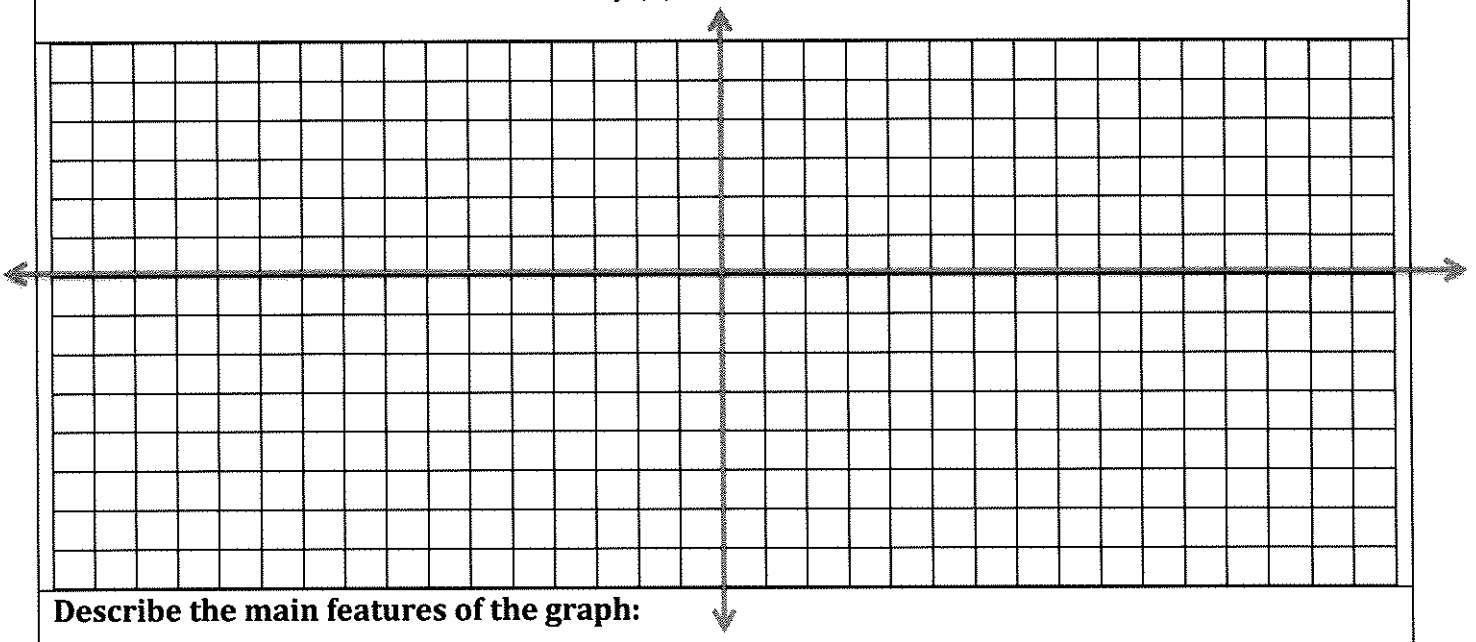
Period:

Domain:

Range:

$$\sin^{-1} x = arcsinx$$

$f(x) = \cos^{-1} x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equation of horizontal asymptotes:

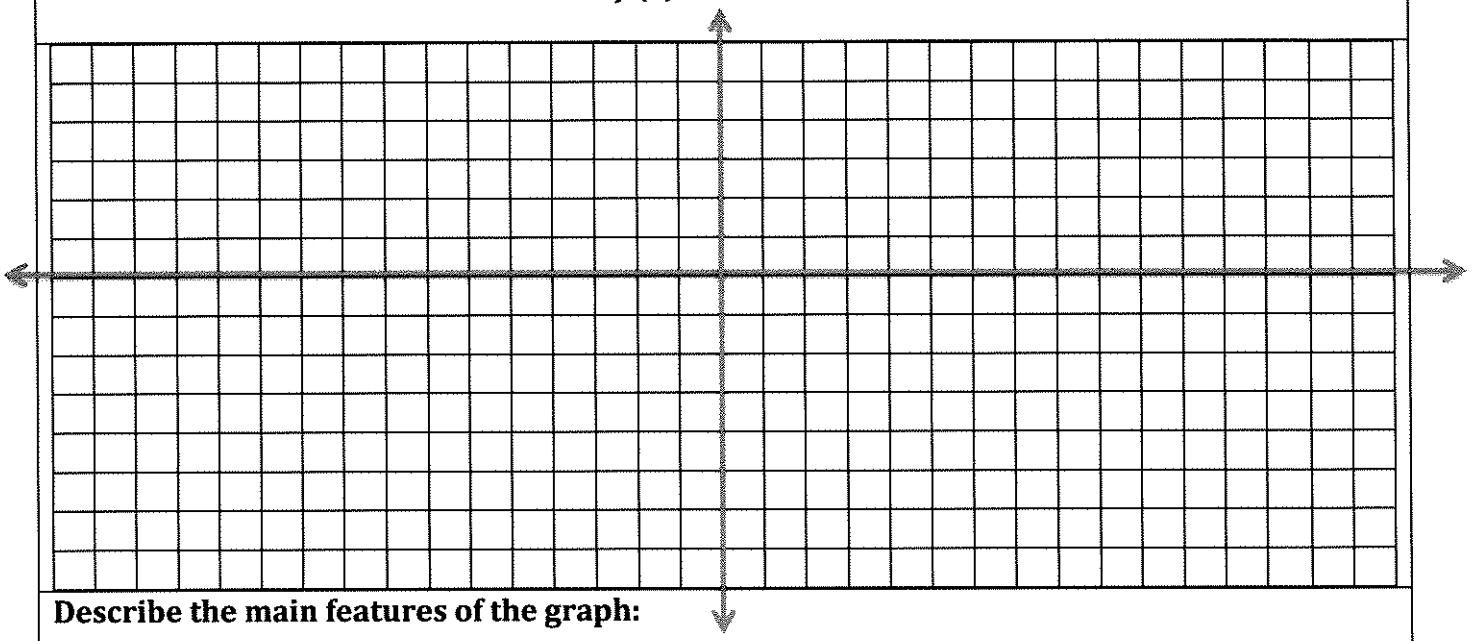
Period:

Domain:

Range:

$$\cos^{-1} x = arccosx$$

$f(x) = \tan^{-1} x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equations of horizontal asymptotes:

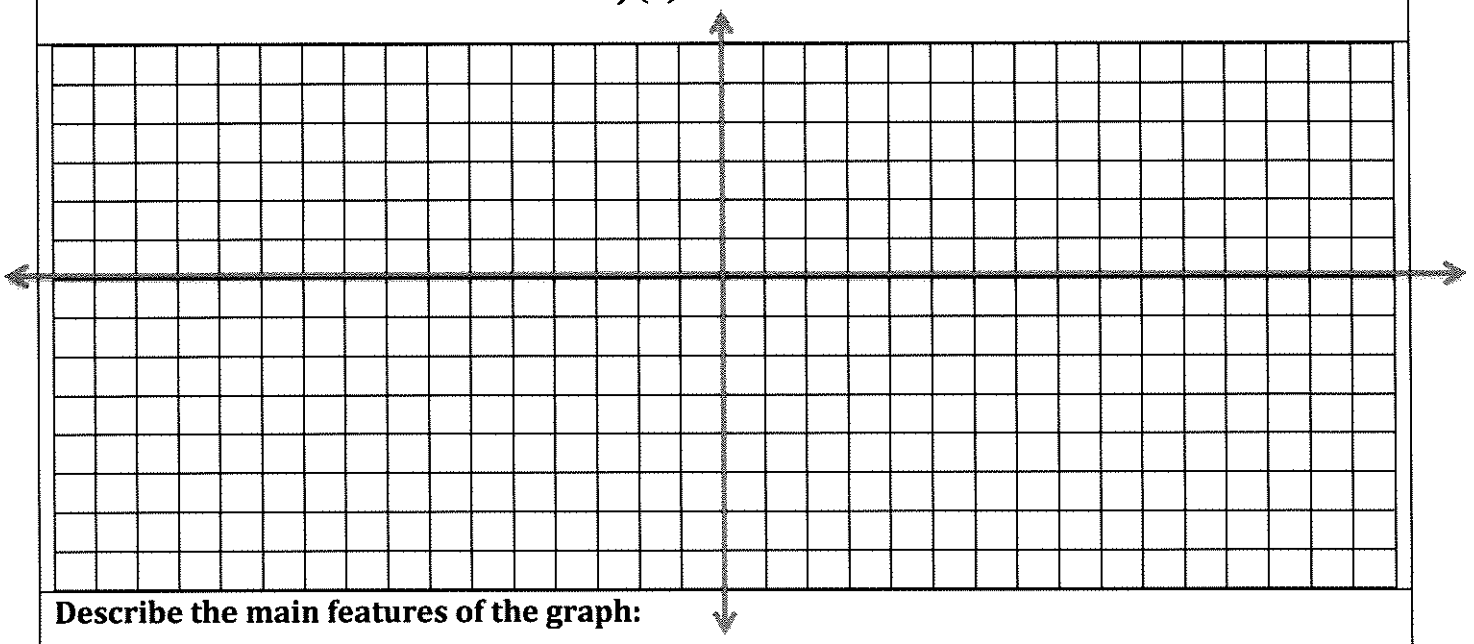
Period:

Domain:

Range:

$$\tan^{-1} x = arctanx$$

$f(x) = \csc^{-1} x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equations of horizontal asymptotes:

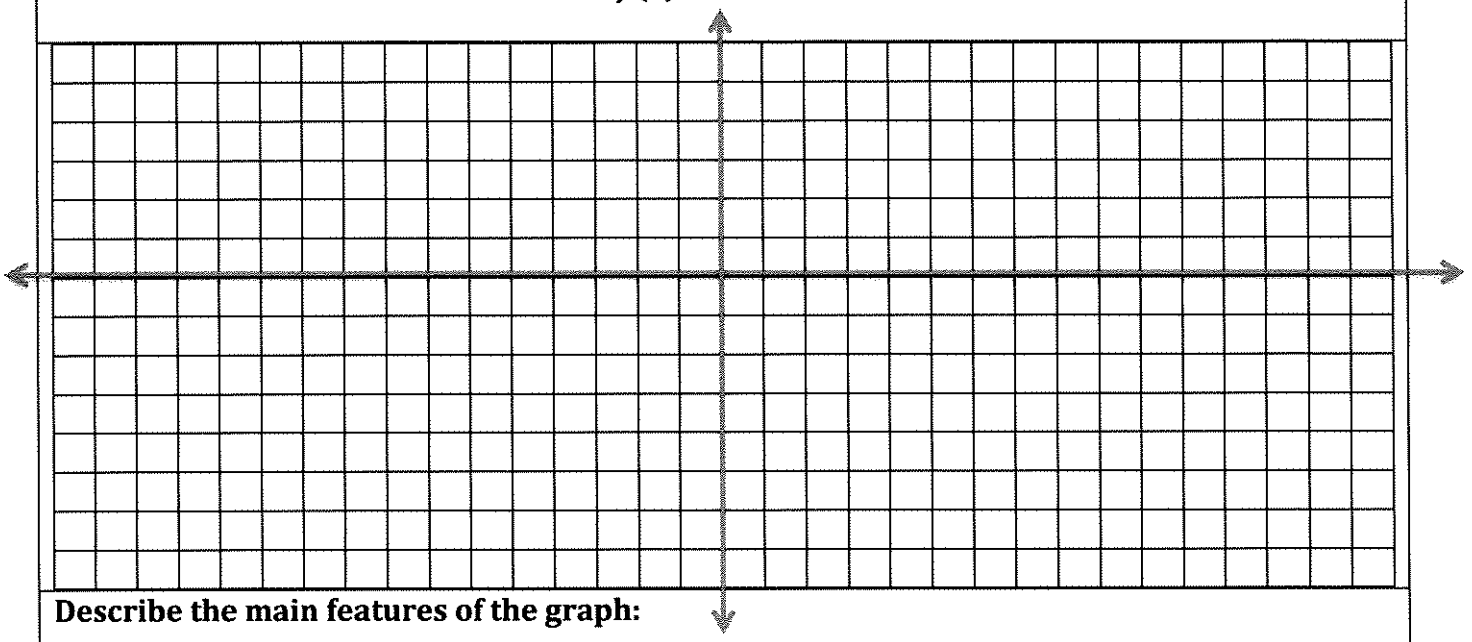
Period:

Domain:

Range:

$$\csc^{-1} x = arccscx$$

$f(x) = \sec^{-1} x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equations of horizontal asymptotes:

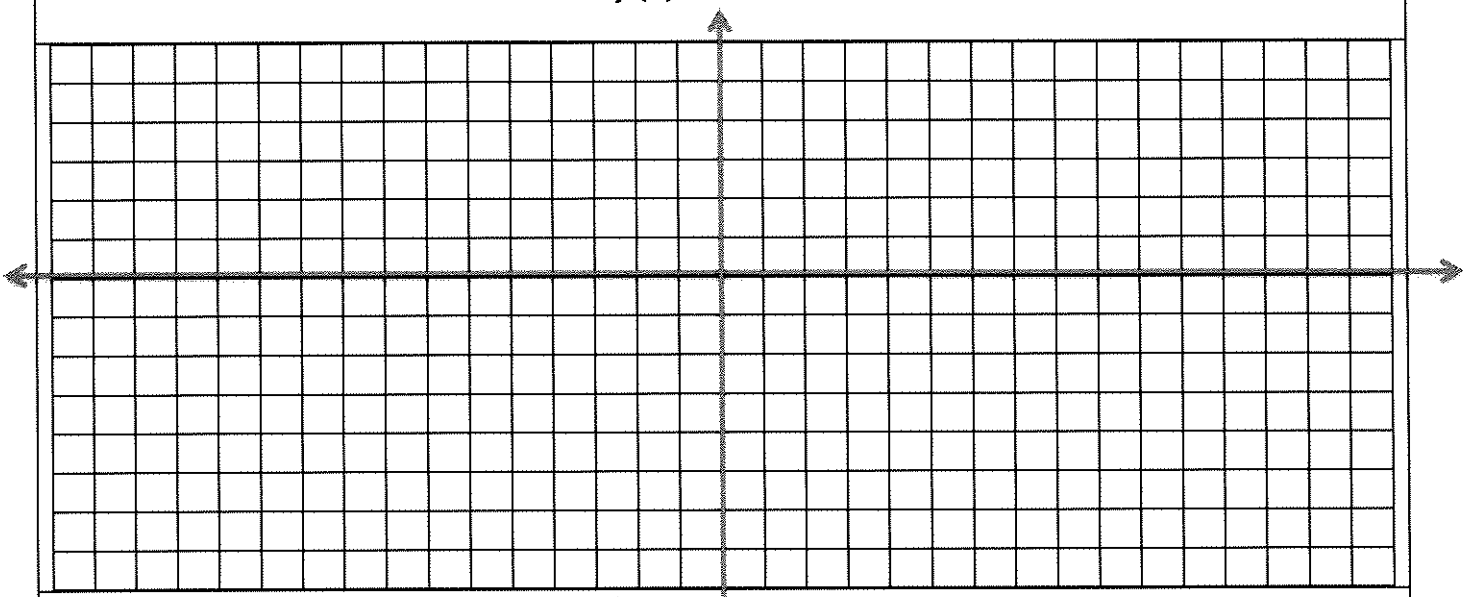
Period:

Domain:

Range:

$$\sec^{-1} x = arcsecx$$

$f(x) = \cot^{-1} x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equations of horizontal asymptotes:

Period:

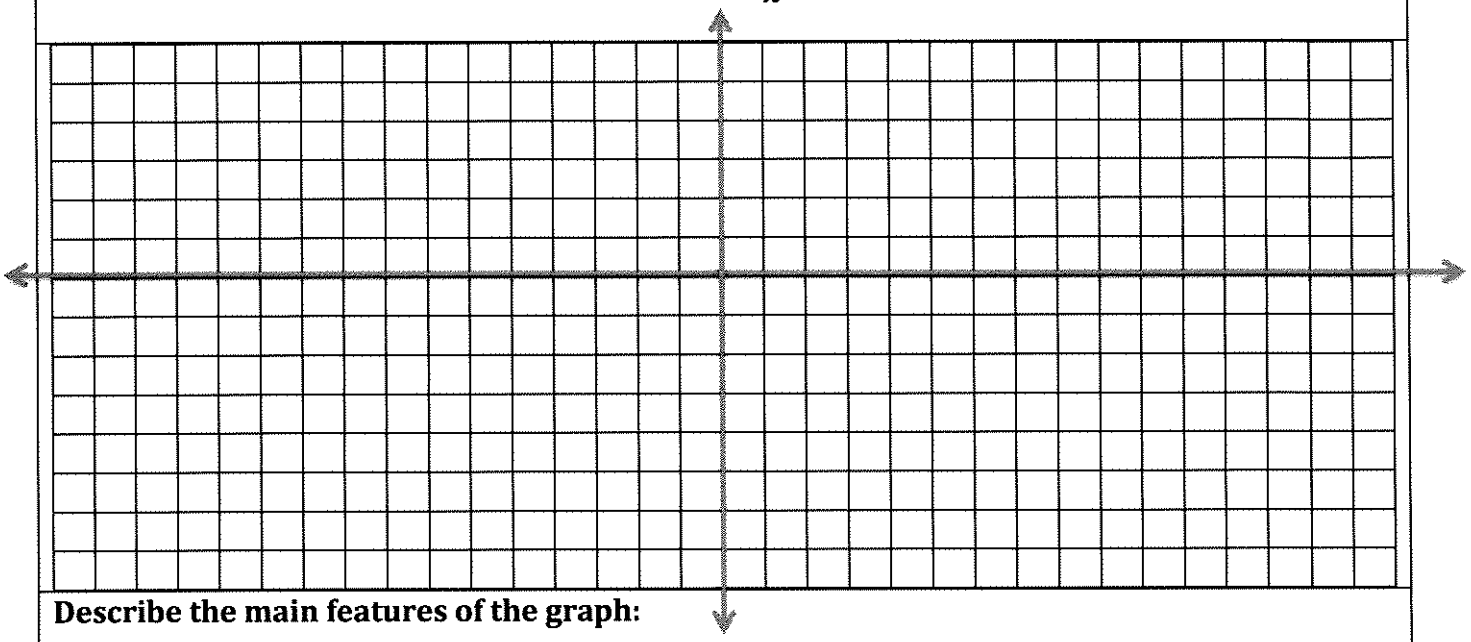
Domain:

Range:

$$\cot^{-1} x = arccotx$$

4. Other Trigonometric functions:

$$f(x) = \frac{sinx}{x}$$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

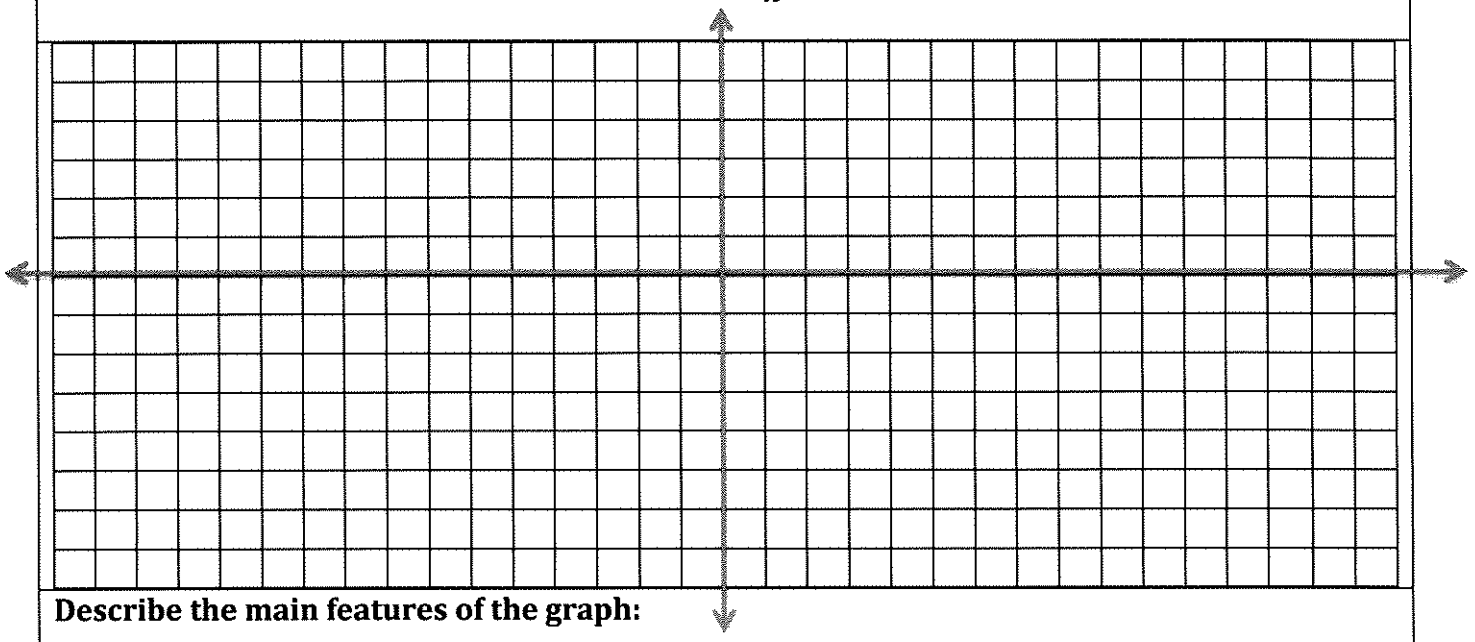
Equations of horizontal asymptotes:

Period:

Domain:

Range:

$$f(x) = \frac{cosx}{x}$$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

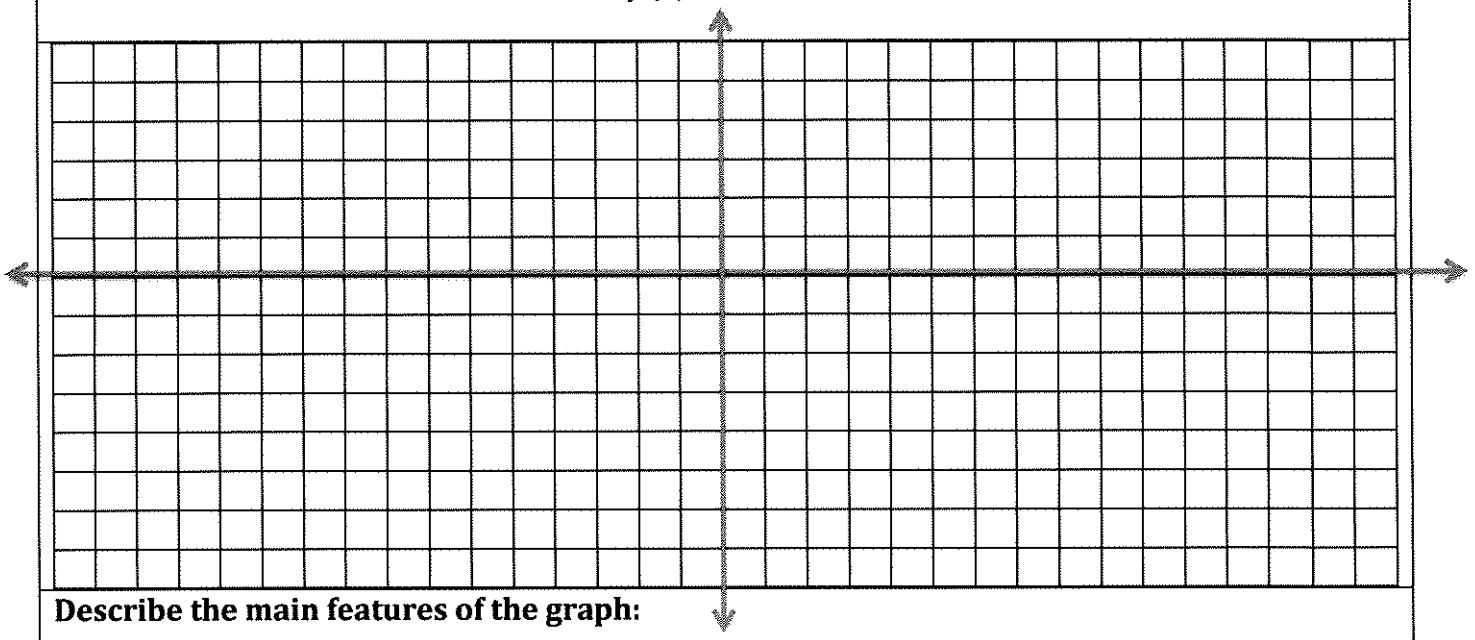
Equations of horizontal/vertical asymptotes:

Period:

Domain:

Range:

$f(x) = sin^2 x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

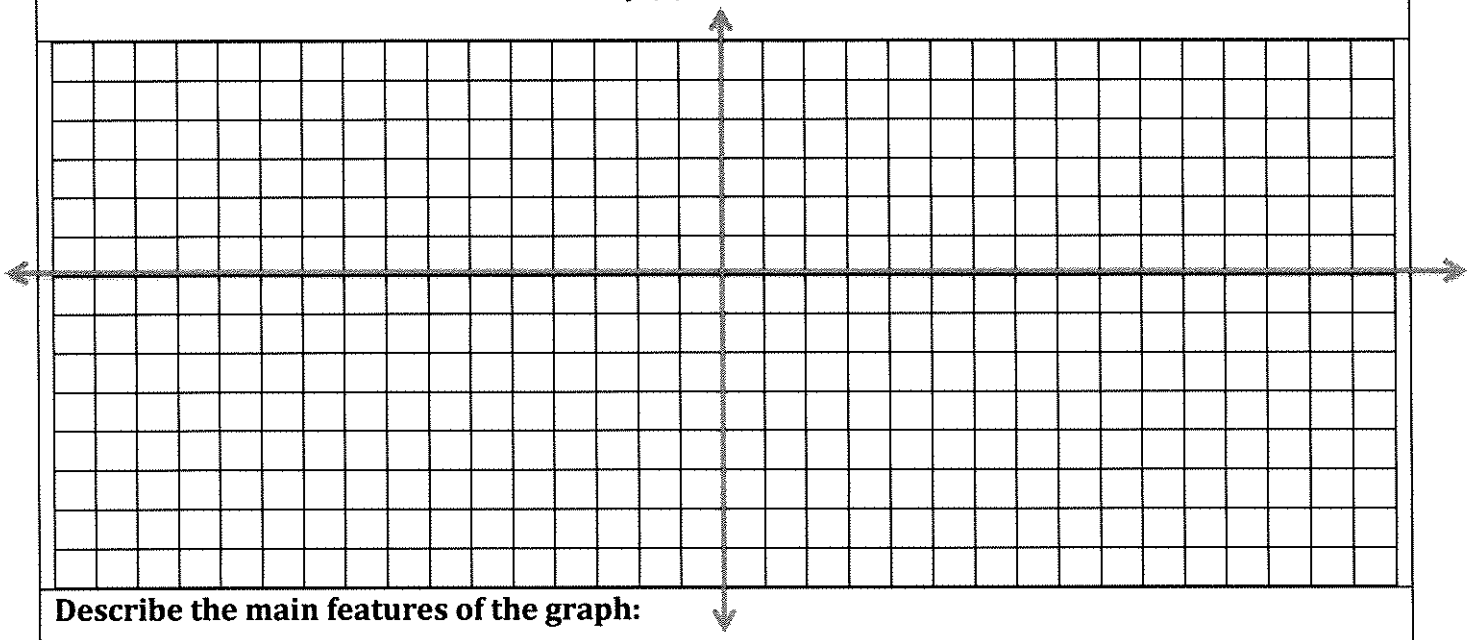
Equations of horizontal asymptotes:

Period:

Domain:

Range:

$f(x) = cos^2 x$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

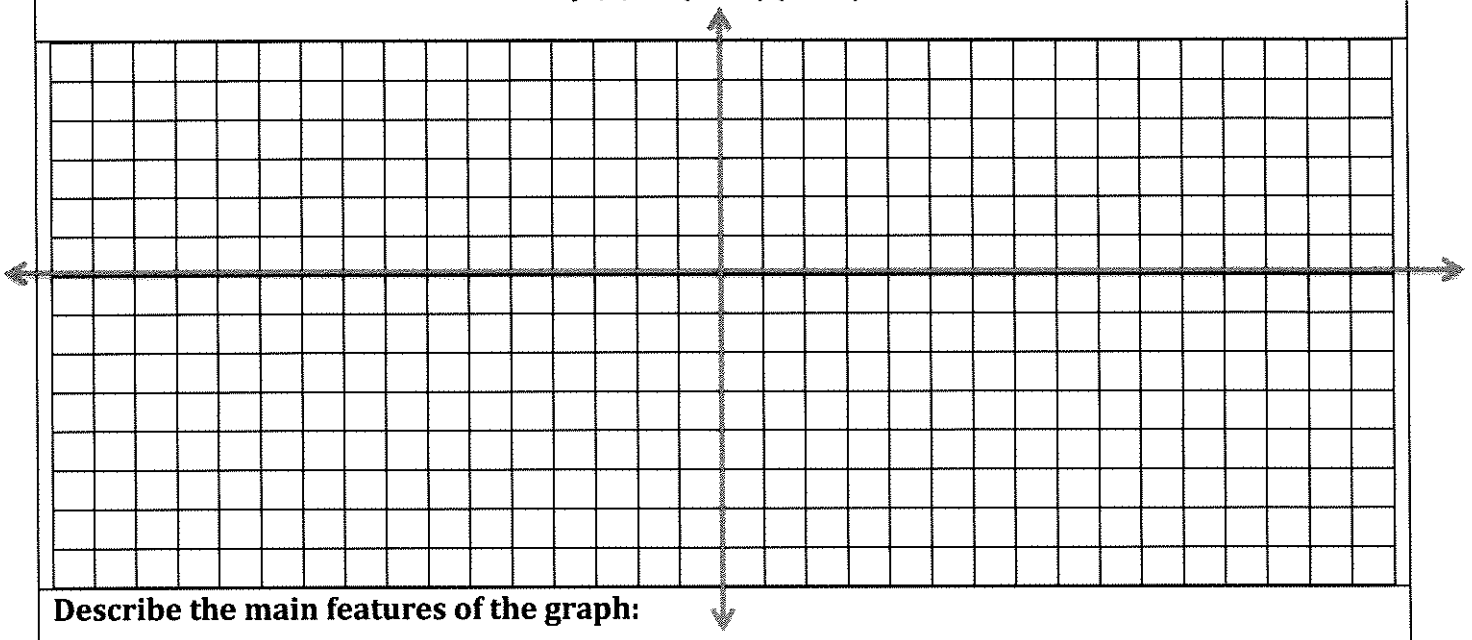
Equations of horizontal asymptotes:

Period:

Domain:

Range:

$f(x) = (sinx)(cosx)$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

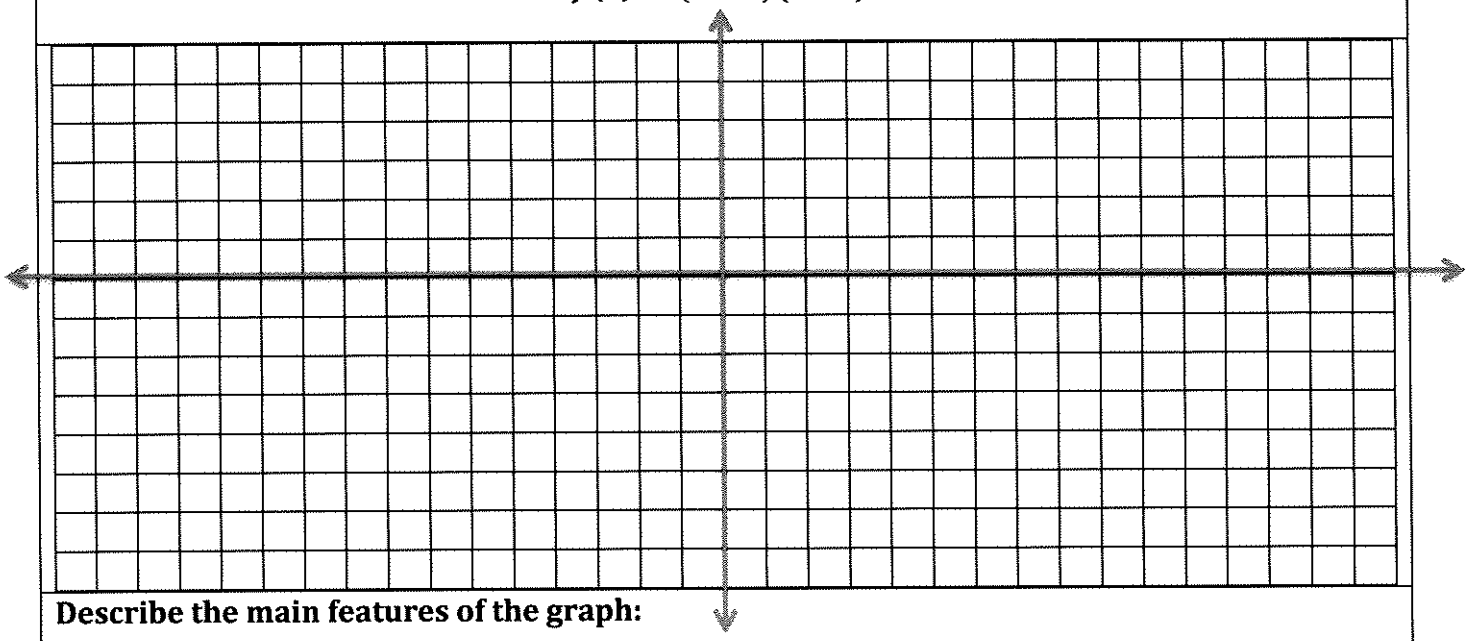
Equations of horizontal asymptotes:

Period:

Domain:

Range:

$f(x) = (tanx)(cotx)$



Describe the main features of the graph:

General coordinates of x-intercepts:

y-intercept:

Maximum value:

Minimum value:

Equations of horizontal asymptotes:

Period:

Domain:

Range:

Arc Length:

$$S=r\theta$$

Where the angle measure is in radians.

Recall: π ***radians*** $= 180°$

Periodic Function:

A function *f(x)* is **periodic** if there is a positive number p such that *f(x+p)=f(x)* for every value of *x*.

The smallest such value of *p* is the **period** of *f*.

Even Trig Functions		**Odd Trig Functions**	

Transformations of Trigonometric Graphs:

$$f(x) = \pm af\left(\pm b(x + c)\right) + d$$