

**Section 4.6 Graphs of Other Trigonometric Functions**

**Objective:** In this lesson you learned how to sketch the graphs of other trigonometric functions.

Course Number

Instructor

Date

**Important Vocabulary**

Define each term or concept.

**Damping factor****I. Graph of the Tangent Function** (Pages 334–335)

Because the tangent function is odd, the graph of  $y = \tan x$  is symmetric with respect to the \_\_\_\_\_. The period of the tangent function is \_\_\_\_\_. On the interval  $[0, \mathbf{p}]$ , the tangent function is undefined, and thus has a vertical asymptote, at  $x =$  \_\_\_\_\_. The domain of the tangent function is \_\_\_\_\_, and the range of the tangent function is \_\_\_\_\_.

Describe how to sketch the graph of a function of the form  $y = a \tan(bx - c)$ .

***What you should learn***

How to sketch the graphs of tangent functions

**II. Graph of the Cotangent Function** (Page 336)

The graph of  $y = \cot x$  is symmetric with respect to the \_\_\_\_\_. The period of the cotangent function is \_\_\_\_\_. On the interval  $(0, \mathbf{p}]$ , the cotangent function is undefined, and thus has a vertical asymptote, at  $x =$  \_\_\_\_\_.

***What you should learn***

How to sketch the graphs of cotangent functions

The domain of the cotangent function is \_\_\_\_\_,  
and the range of the cotangent function is \_\_\_\_\_.

### III. Graphs of the Reciprocal Functions (Pages 337–338)

At a given value of  $x$ , the  $y$ -coordinate of  $\csc x$  is the reciprocal of the  $y$ -coordinate of \_\_\_\_\_.

The graph of  $y = \csc x$  is symmetric with respect to the \_\_\_\_\_.  
The period of the cosecant function is \_\_\_\_\_.  
On the interval  $(0, \boldsymbol{p}]$ , the cosecant function is undefined, and thus has a vertical asymptote, at  $x =$  \_\_\_\_\_.

The domain of the cosecant function is \_\_\_\_\_,  
and the range of the cosecant function is \_\_\_\_\_.

At a given value of  $x$ , the  $y$ -coordinate of  $\sec x$  is the reciprocal of the  $y$ -coordinate of \_\_\_\_\_.

The graph of  $y = \sec x$  is symmetric with respect to the \_\_\_\_\_.  
The period of the secant function is \_\_\_\_\_.

On the interval  $[0, \boldsymbol{p}]$ , the secant function is undefined, and thus has a vertical asymptote, at  $x =$  \_\_\_\_\_.  
The domain of the secant function is \_\_\_\_\_, and  
the range of the secant function is \_\_\_\_\_.

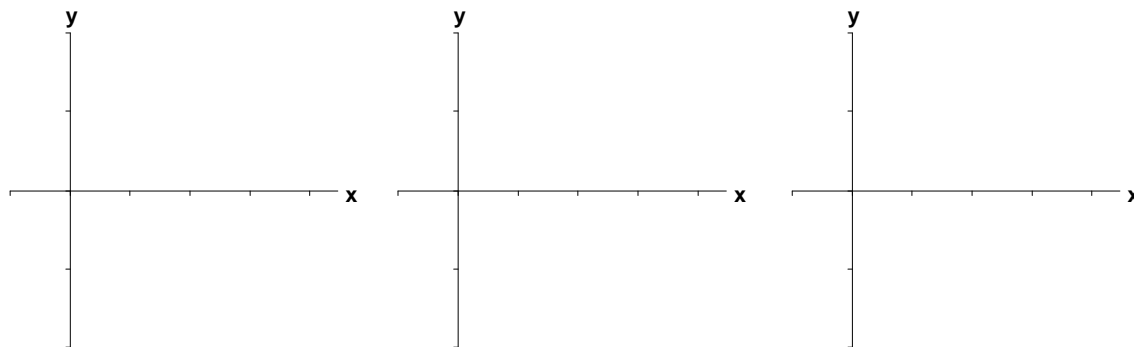
To sketch the graph of a secant or cosecant function, . . .

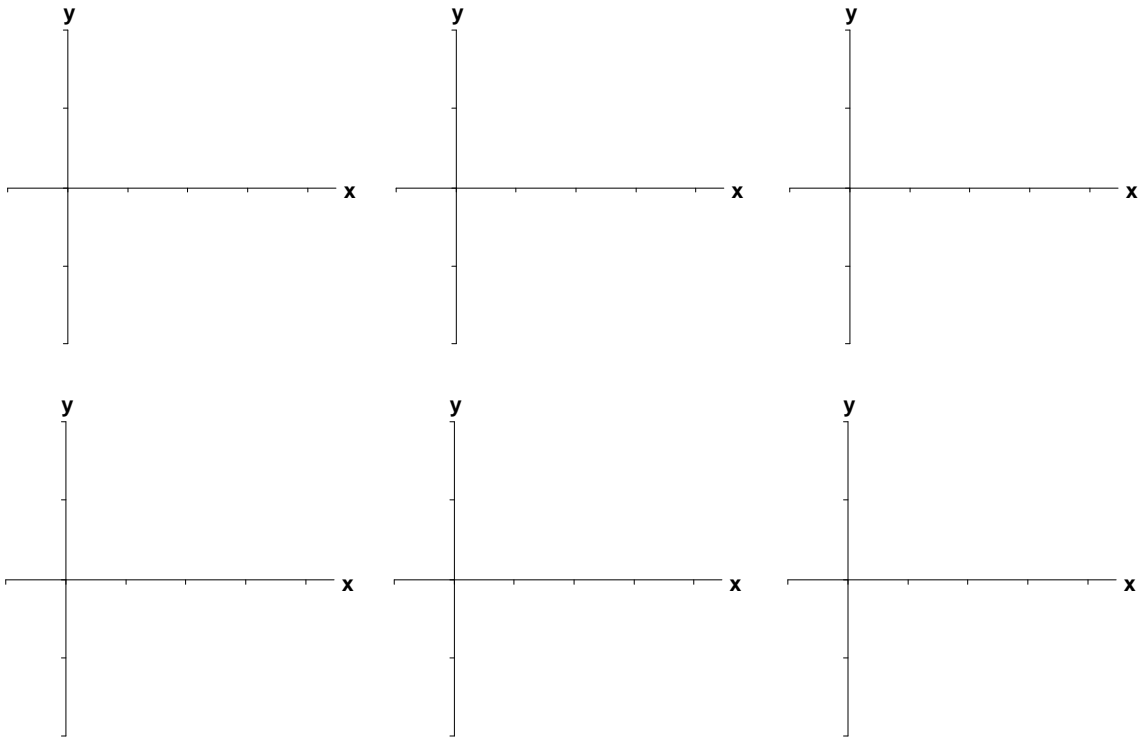
***What you should learn***  
How to sketch the graphs of secant and cosecant functions

**IV. Damped Trigonometric Graphs** (Pages 339–340)

Explain how to sketch the graph of the damped trigonometric function  $y = f(x)\cos x$ , where  $f(x)$  is the damping factor.

***What you should learn***  
How to sketch the graphs of damped trigonometric functions

**Additional notes**

**Additional notes****Homework Assignment**

Page(s)

Exercises