

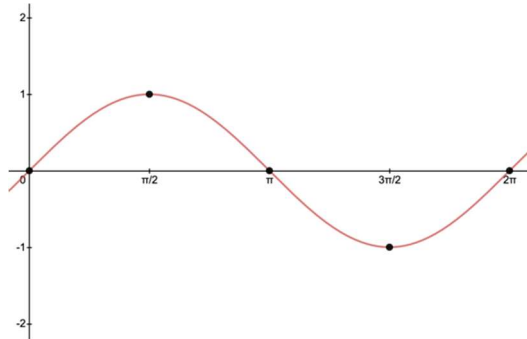
# Flip the Curve!

Name: \_\_\_\_\_



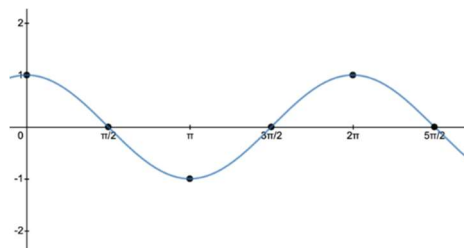
We've been working with the graphs of sine and cosine. What happens when we plot the reciprocal of each value? Let's find out!

1. Use the sine curve graphed below to fill in the table for  $y = \csc \theta$ .



$\theta$	$\csc \theta$	$\theta$	$\csc \theta$
0		$\frac{7\pi}{6}$	
$\frac{\pi}{6}$		$\frac{3\pi}{2}$	
$\frac{\pi}{2}$		$\frac{11\pi}{6}$	
$\frac{5\pi}{6}$		$2\pi$	
$\pi$			

2. For what values of  $\theta$  will the graph of  $\csc \theta$  have vertical asymptotes? Are you able to list them all? Why or why not?
3. At what values of  $\theta$  is  $\csc \theta = \sin \theta$ ? Why does this happen?
4. Sketch the cosecant curve on the same axis as the sine curve. Be sure to include any relevant asymptotes.
5. What is the range of  $y = \csc \theta$ ?
6. Suppose we graphed  $y = \sec \theta$ . Name three vertical asymptotes between 0 and  $3\pi$ .
7. Use the cosine graph below to sketch the secant curve.



8. What is the period of  $y = \csc \theta$  and  $y = \sec \theta$ ?

## Lesson 4.6 Day 1—Graphing Secant and Cosecant

Important Ideas:

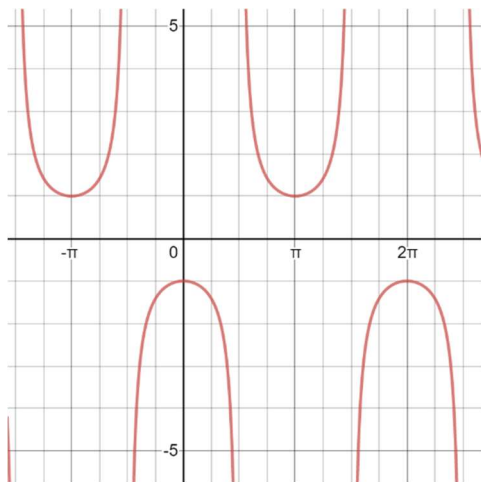
### Check Your Understanding

1. Graph  $y = \sec 3x$

2. Write an equation for a cosecant curve with asymptotes at  $x = \frac{\pi}{4}$ ,  $x = \frac{\pi}{2}$ , and  $x = \frac{3\pi}{4}$ .

3. Write an equation for each of the graphs below.

a.



b.

