

14.2

## Cosecant and Secant graphs

Warm-up

Graph

1)  $\cos\theta$

2)  $\sin\theta$

$$\sec\theta = \frac{1}{\cos\theta}$$

$$\csc\theta = \frac{1}{\sin\theta}$$

Discuss with your partners about where  $\sec\theta$  and  $\csc\theta$  are undefined. How do we know?

<http://www.sophia.org/tutorials/finding-secant-and-cosecant-asymptotes--7>

$$y = A\sec(Bx + C) + D$$

$$y = A\csc(Bx + C) + D$$

I Try:  
Graph  $\csc\theta$   
Identify the period and asymptotes.

<p>Graph the reciprocal function.</p> $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$	<p>Graph <math>\sin\theta</math>.</p>
<p>Identify the periods</p>	
<p>Identify the asymptotes asymptotes. Asymptotes are where the x- intercepts are.</p>	
<p>Start the graphs at the maximum or minimum of the reciprocal function.</p>	

We Try:  
Graph  $\sec\theta$

Graph the reciprocal function. $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$	
Identify the period	
Identify the asymptotes asymptotes. Asymptotes are where the x- intercepts are.	
Start the graphs at the maximum or minimum of the reciprocal function.	

I Try:  
Graph  
 $g(x) = \sec 2\theta$

Graph the reciprocal function. $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$	Graph $\cos 2\theta$ .
Identify the asymptotes asymptotes. Asymptotes are where the x- intercepts are.	
Start the graphs at the maximum or minimum of the reciprocal function.	

We Try:  
Graph  $g(x) = -5\csc 2\theta$

Graph the reciprocal function. $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$	
Identify the period	
Identify the asymptotes asymptotes. Asymptotes are where the x- intercepts are.	
Start the graphs at the maximum or minimum of the reciprocal function.	

You Try in your notebooks:

Even, Write, Odd Talk

Graph  $g(x) = -2\sec 2\theta$

Graph the reciprocal function. $\sec\theta = \frac{1}{\cos\theta}$ $\csc = \frac{1}{\sin\theta}$	
Identify the period	
Identify the asymptotes asymptotes. Asymptotes are where the x- intercepts are.	
Start the graphs at the maximum or minimum of the reciprocal function.	

Closure:

1) Explain how do you find the asymptotes for  
 $y = \csc\theta$

2) Explain why vertical stretches or vertical translations do not affect the asymptotes for cosecant or secant graphs.