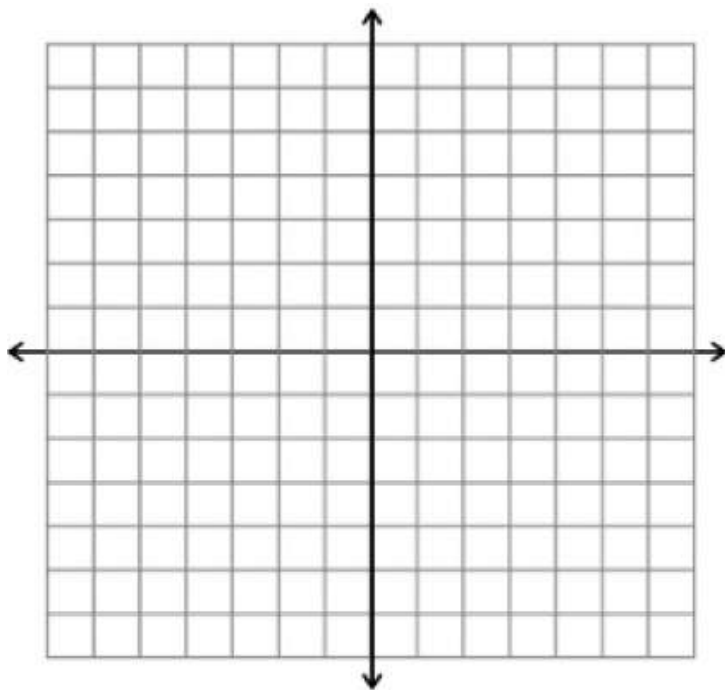


Trigonometry Lesson 5: Graphs of Cosecant, Secant, and Cotangent
textbook section 7.5

1. Use the given table to graph the function $y = \csc x$ on the coordinate plane. Use increments of .4 on the y -axis and $\frac{\pi}{6}$ on the x -axis. (use decimal approximations as needed.) How can you make use of the fact that cosecant is an odd function?

x	$y = \csc x$
$-\pi$	
$-5\pi/6$	
$-2\pi/3$	
$-\pi/2$	
$-\pi/3$	
$-\pi/6$	
0	
$\pi/6$	
$\pi/3$	
$\pi/2$	
$2\pi/3$	
$5\pi/6$	
π	

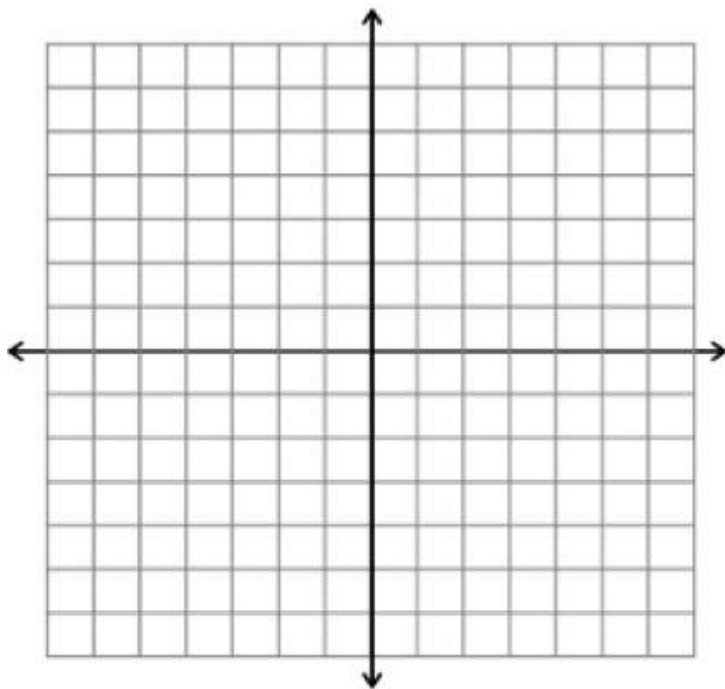


Why is it sufficient to graph only from $-\pi$ to π ? In other words, how do we know that this gives us all the information that we need? Answer these questions and use your responses to graph cosecant on a much larger interval. Use the same scale as above and make the center of the rectangle the origin.

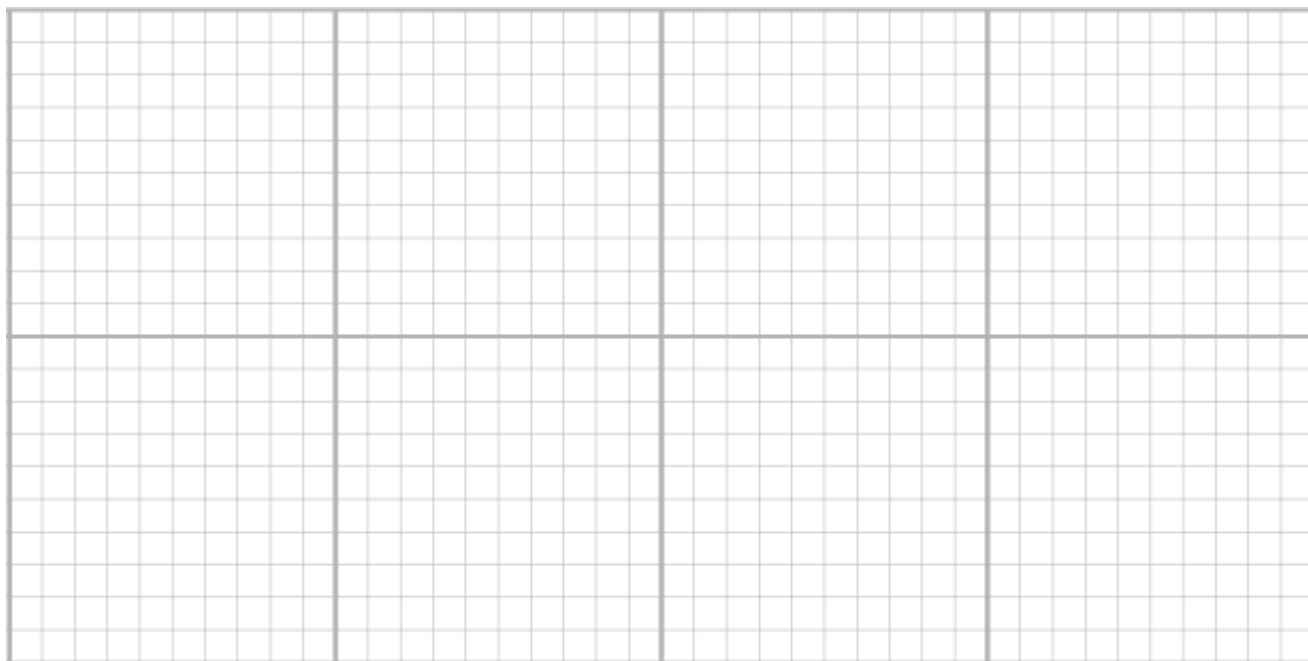


2. Use the given table to graph the function $y = \sec x$ on the coordinate plane. Use increments of .4 on the y-axis and $\frac{\pi}{6}$ on the x-axis. (use decimal approximations as needed.) How can you make use of the fact that secant is an even function?

x	$y = \sec x$
$-\pi$	
$-\frac{5\pi}{6}$	
$-\frac{2\pi}{3}$	
$-\frac{\pi}{2}$	
$-\frac{\pi}{3}$	
$-\frac{\pi}{6}$	
0	
$\frac{\pi}{6}$	
$\frac{\pi}{3}$	
$\frac{\pi}{2}$	
$\frac{2\pi}{3}$	
$\frac{5\pi}{6}$	
π	

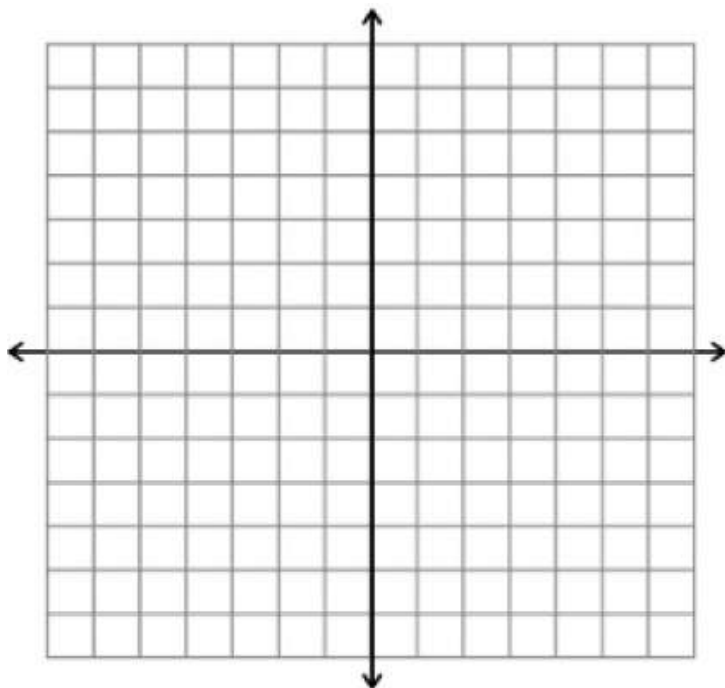


Why is it sufficient to graph only from $-\pi$ to π ? In other words, how do we know that this gives us all the information that we need? Answer these questions and use your responses to graph secant on a much larger interval. Use the same scale as above and make the center of the rectangle the origin. You do not have to label each x value, but provide enough labels so that the scales on the axes are obvious.

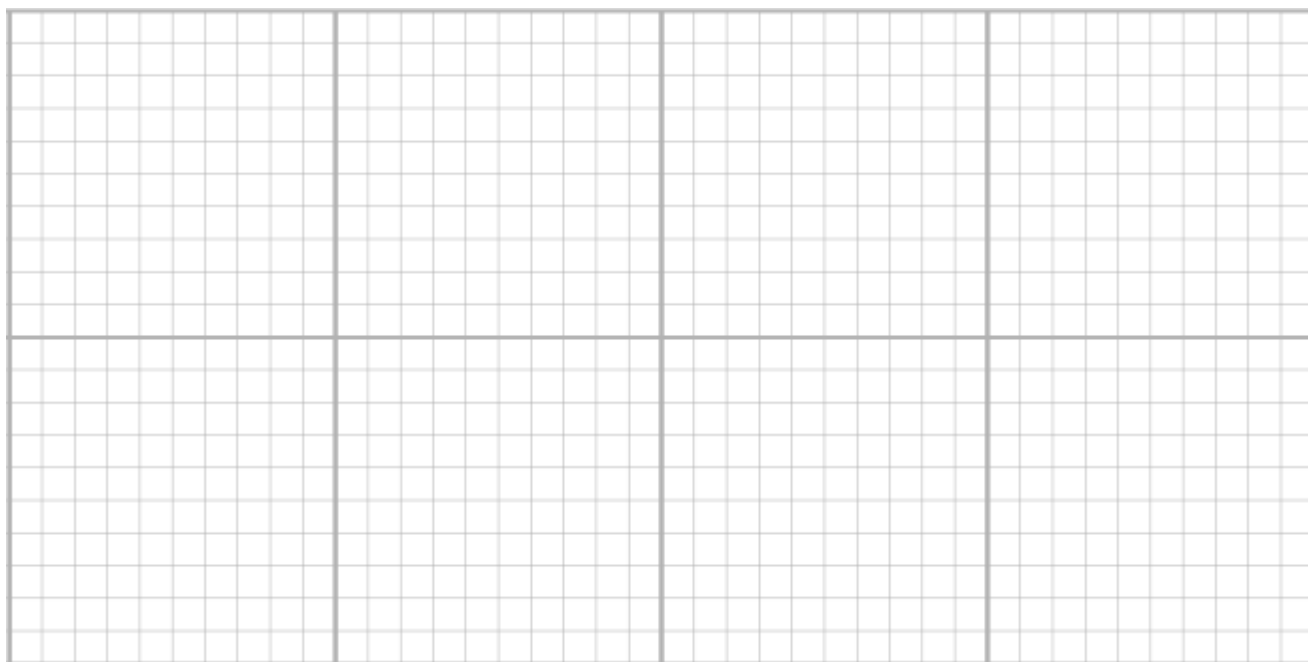


3. Use the given table to graph the function $y = \cot x$ on the coordinate plane. Use increments of .4 on the y-axis and $\frac{\pi}{6}$ on the x-axis. (Use the decimal approximations as needed.) Remember to use the fact that cotangent is odd.

x	$y = \cot x$
$-\pi/2$	
$-\pi/3$	
$-\pi/6$	
0	
$\pi/6$	
$\pi/3$	
$\pi/2$	



Why is it sufficient to graph only from $-\frac{\pi}{2}$ to $\frac{\pi}{2}$? In other words, how do we know that this gives us all the information that we need? Answer these questions and use your responses to graph cotangent on a much larger interval. Use the same scale as above and make the center of the rectangle the origin. You do not have to label each x value, but provide enough labels so that the scales on the axes are obvious.



4. Use the graphs of the cosecant, secant, and cotangent functions to find the domain and range for each:

	Domain	Range
$\csc x$		
$\sec x$		
$\cot x$		

5. Why are the domains of cosecant and cotangent the same? Secant and tangent? *Hint:* write each in terms of sine and cosine, and examine the denominators.

Homework: Complete this worksheet and be prepared for a quiz over all concepts covered.