Let's Go Off on a Tangent
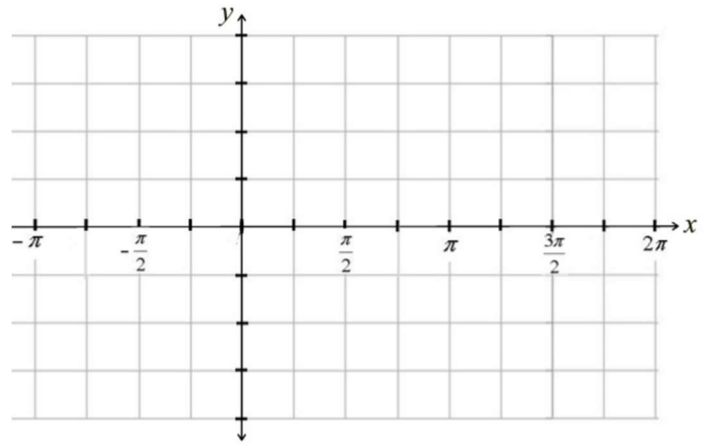
Name:_____

At this point, we've graphed sine, cosine, secant, and cosecant. Let's find out what happens when we plot the functions of $y = \tan\theta$ and $y = \cot\theta$.

1. Fill in the table for $y = \tan\theta$. Then use the table to sketch the graph on the coordinate plane.

θ	$\tan\theta$	θ	$\tan\theta$
$-\dfrac{\pi}{2}$		$\dfrac{3\pi}{4}$	
$-\dfrac{\pi}{4}$		π	
0		$\dfrac{5\pi}{4}$	
$\dfrac{\pi}{4}$		$\dfrac{3\pi}{2}$	
$\dfrac{\pi}{2}$		2π	

2. What is the period of $y = \tan\theta$? How do you know?

3. What is the domain of $y = \tan\theta$?

4. What is the range of $y = \tan\theta$?

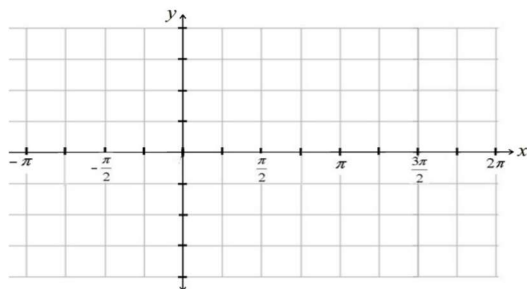5. Use what you know about cotangent to sketch the curve of $y = \cot\theta$.
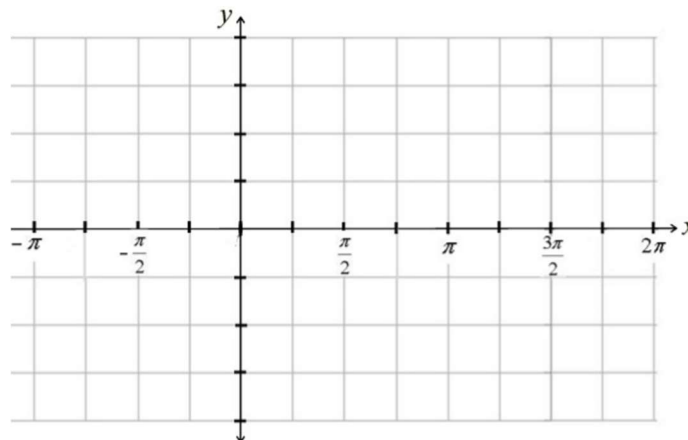
6. Write an equation for the vertical asymptotes.

7. Identify the period and range of $y = \cot\theta$. Explain why these make sense.

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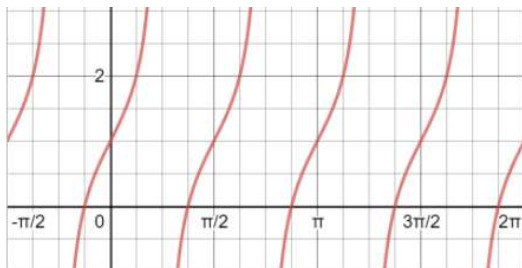# Lesson 4.6 Day 2—Graphing Tangent and Cotangent

Important Ideas:

Check Your Understanding

1. Graph $y = \tan 3x$.

2. Write an equation for the tangent graph below.

3. Write the equation of a cotangent function with a period of 2π that is shifted down 3 units.

4. Which of the following is equivalent to $y = \cot x$?

   a. $y = -\tan x$
   b. $y = -\tan(x - \frac{\pi}{2})$
   c. $y = \tan(x - \frac{\pi}{2})$
   d. $y = \tan(-x)$

5. Where on the interval $[0, 2\pi]$ do $y = \tan x$ and $y = \cot x$ intersect?