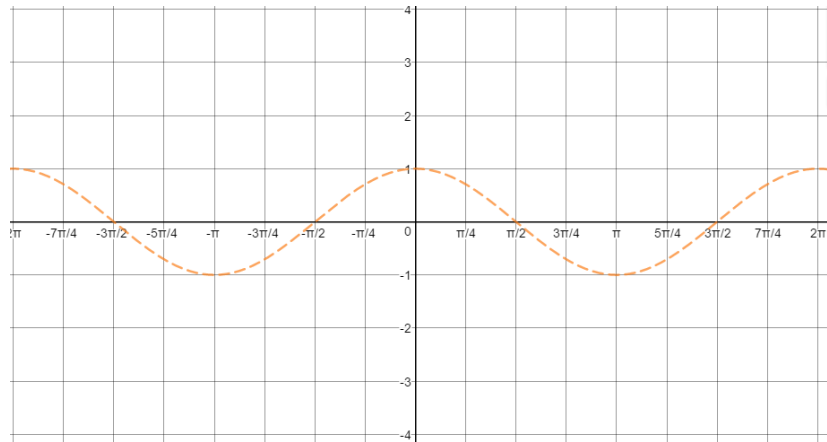


### 4.5 Graphs of Tangent, Cotangent, Secant, Cosecant

Target 5E: Rigid and non-rigid transformations of sinusoids

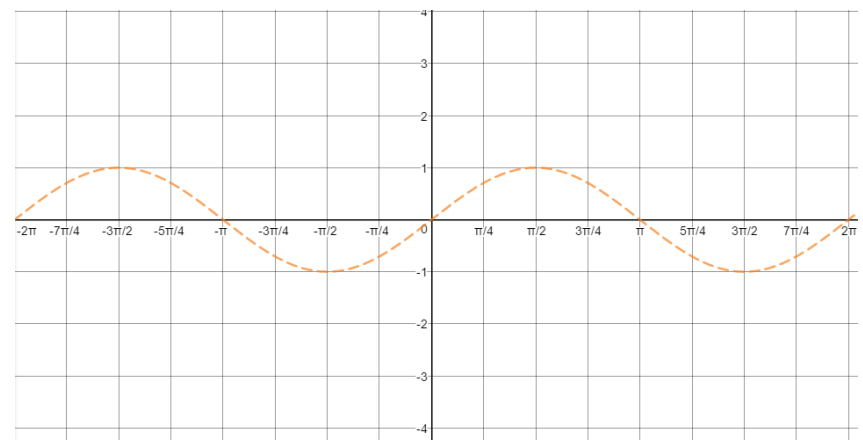
$y = \sec x$



Period: \_\_\_\_\_

Asymptotes: \_\_\_\_\_

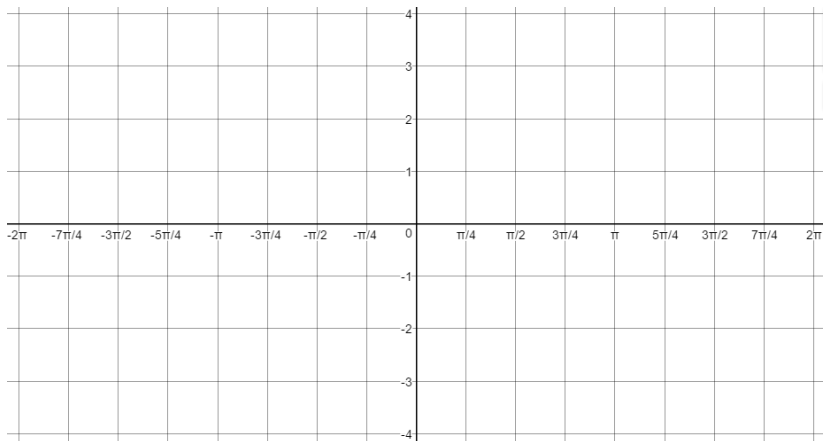
$y = \csc x$



Period: \_\_\_\_\_

Asymptotes: \_\_\_\_\_

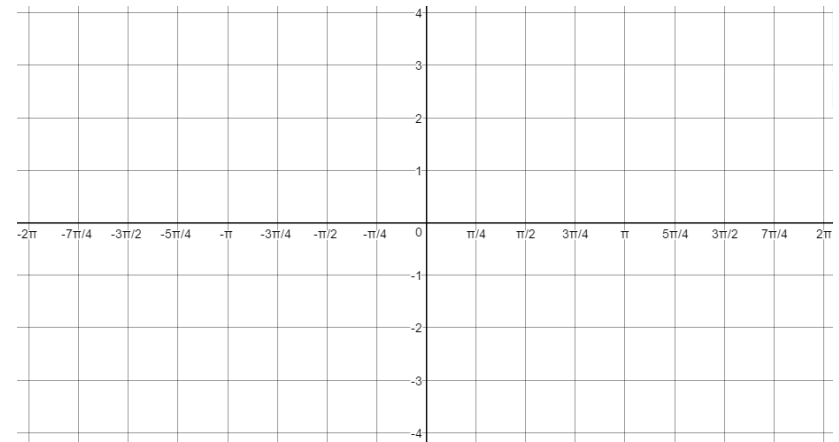
$y = \tan x$



Period: \_\_\_\_\_

Asymptotes: \_\_\_\_\_

$y = \cot x$

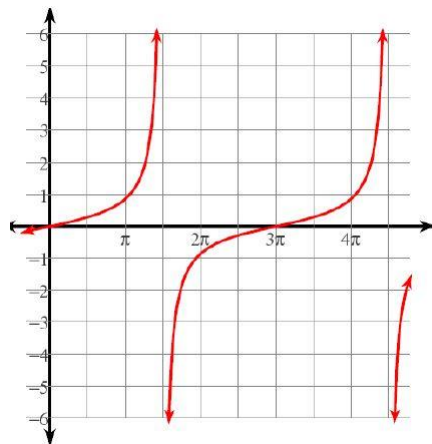


Period: \_\_\_\_\_

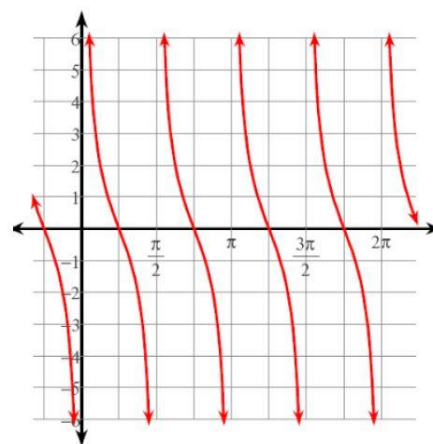
Asymptotes: \_\_\_\_\_

Write an equation for each graph and identify the vertical asymptotes.

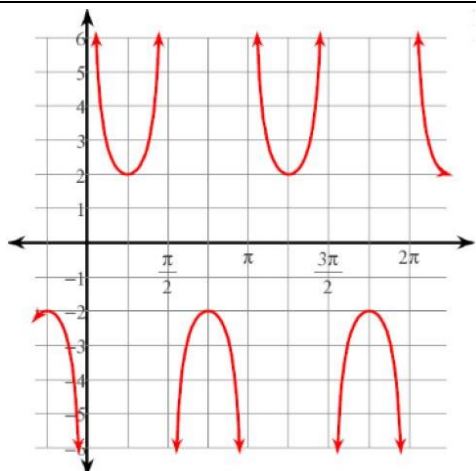
1. Tangent



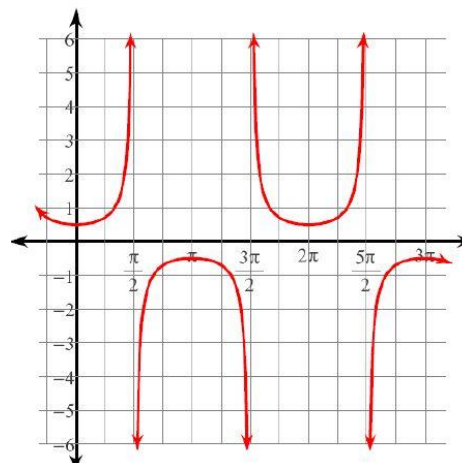
2. Cotangent



3. Secant



4. Cosecant



Describe the transformation for the given function.

5.  $y = \tan(5x) + 2$

6.  $y = \cot\left(\frac{x}{3} - \pi\right)$

7.  $y = -2 \sec(3x)$

8.  $y = \csc\left(2x + \frac{\pi}{2}\right)$

**More Practice**

**Graphs of Secant, Cosecant, Tangent, and Cotangent**

<http://www.regentsprep.org/regents/math/algtrig/att7/othergraphs.htm>

<http://www.intmath.com/trigonometric-graphs/4-graphs-tangent-cotangent-secant-cosecant.php>

<http://www.purplemath.com/modules/triggrph3.htm>

[https://www.youtube.com/watch?v=2m\\_qvTv1RgU](https://www.youtube.com/watch?v=2m_qvTv1RgU)

[https://www.youtube.com/watch?v=srWI\\_jFm91w](https://www.youtube.com/watch?v=srWI_jFm91w)

[https://www.youtube.com/watch?v=4Fnu3\\_mXaik](https://www.youtube.com/watch?v=4Fnu3_mXaik)

**Homework Assignment**

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