

3.11 Secant, Cosecant, Cotangent Functions

AP Precalculus

Name: _____

Evaluate the following expressions. Use exact values.

1. $\sec\left(\frac{5\pi}{6}\right)$

2. $\csc(\pi)$

3. $\cot\left(\frac{11\pi}{6}\right)$

Evaluate the following expressions. Use approximate values from calculator.

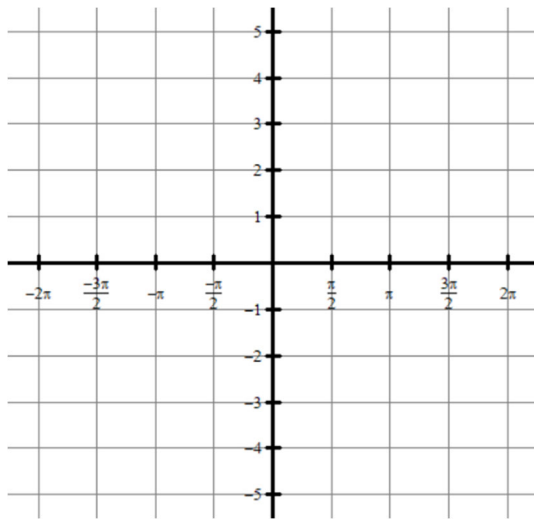
4. $\csc(2.79)$

5. $\sec\left(\frac{2\pi}{7}\right)$

6. $\cot\left(\frac{4\pi}{9}\right)$

Graph the following. State the range and all vertical asymptotes.

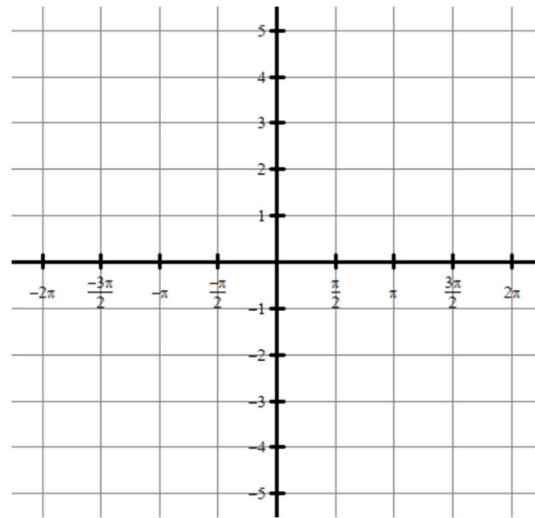
7. $f(x) = 2\csc(x - \pi) - 1$



Range:

Vertical Asymptotes:

8. $f(x) = 3\sec\left(\frac{1}{2}x\right) + 1$



Range:

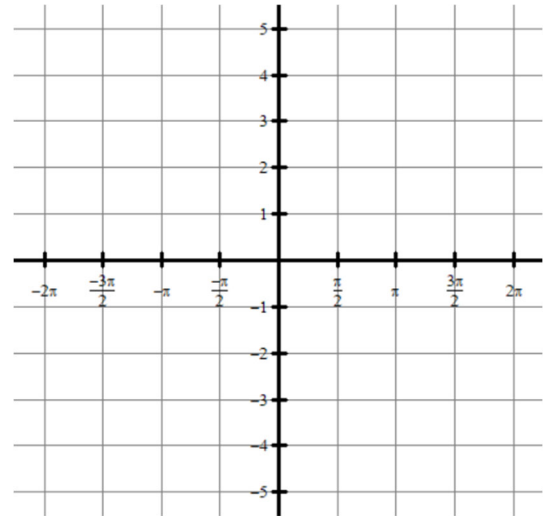
Vertical Asymptotes:

Graph the following. State the range and all vertical asymptotes.

9. $f(x) = \cot(2x)$

Range:

Vertical Asymptotes:



Answers to 3.11 CA #2

1. $-\frac{2\sqrt{3}}{3}$	2. undefined	3. $-\sqrt{3}$	
4. 2.903	5. 1.603	6. 0.176	
<p>7.</p> <p>Range: $(-\infty, -3] \cup [1, \infty)$</p> <p>Vertical: $x = \pi n$ where n is an integer</p>		<p>8.</p> <p>Range: $(-\infty, -2] \cup [4, \infty)$</p> <p>Vertical: $x = \pi + 2\pi n$ where n is an integer</p>	
<p>9.</p> <p>Range: $(-\infty, \infty)$</p> <p>Vertical: $x = \frac{\pi}{2} n$ where n is an integer</p>			