
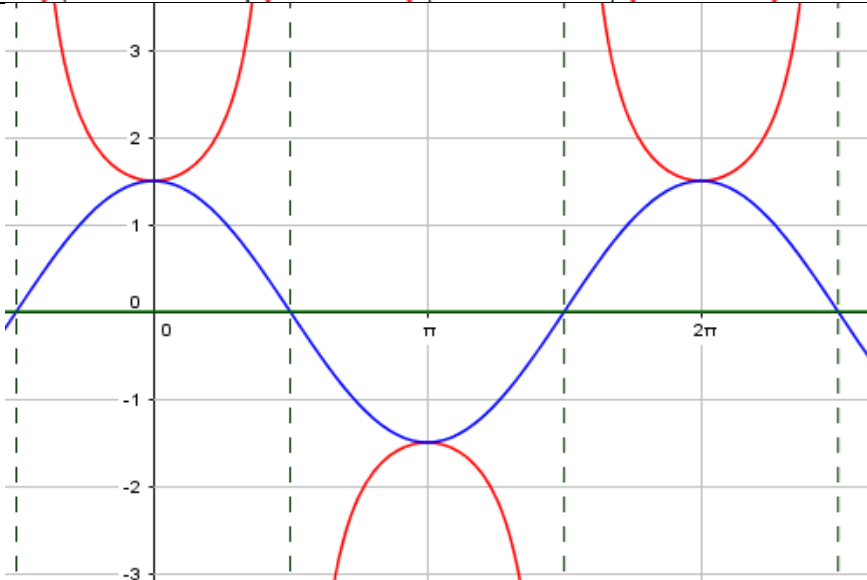
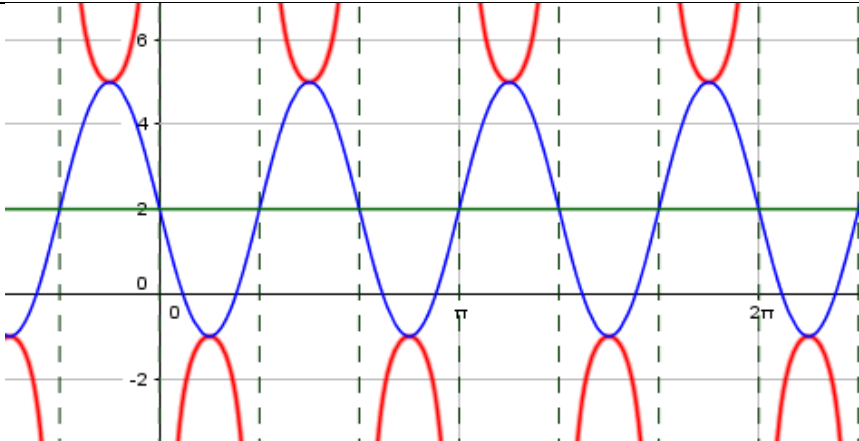
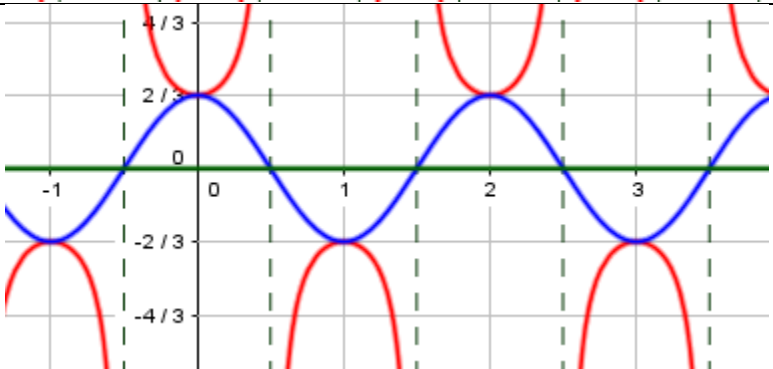
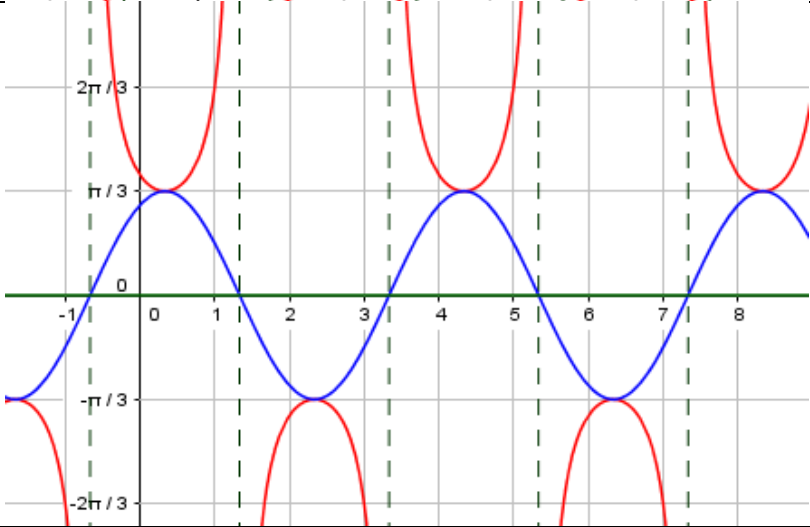
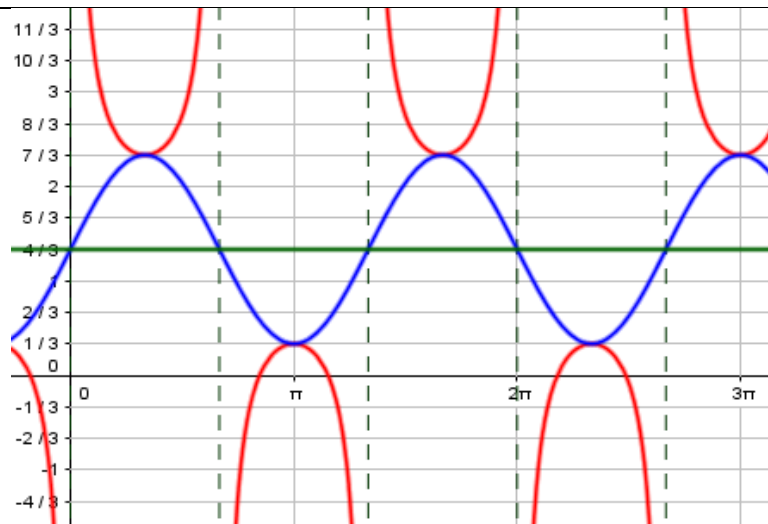


Graph the following $\csc(x)$ functions. Identify the periods of the functions, the range, the vertical asymptotes.

$f(x) = \csc\left(\frac{3}{2}x - 3\pi\right) - 2$		<p>period : $\frac{4\pi}{3}$ range: $(-\infty, -3] \cup [-1, \infty)$ V.A.s : $x = \frac{2\pi k}{3}$</p>
$f(x) = -\frac{3}{2}\csc\left(x - \frac{\pi}{2}\right)$		<p>period : 2π range: $(-\infty, -\frac{3}{2}] \cup [\frac{3}{2}, \infty)$ V.A.s : $x = \frac{\pi}{2} + \pi k$</p>

$f(x) = 3\csc(3x + \pi) + 2$		<p>period : $\frac{2\pi}{3}$</p> <p>range : $(-\infty, -1] \cup [5, \infty)$</p> <p>V.A.s : $x = \frac{\pi k}{3}$</p>
$f(x) = -\frac{2}{3}\csc\left(\pi x - \frac{\pi}{2}\right)$		<p>period : 2</p> <p>range : $(-\infty, -\frac{2}{3}] \cup [\frac{2}{3}, \infty)$</p> <p>V.A.s : $x = \frac{1}{2} + k$</p>
$f(x) = \frac{\pi}{3}\csc\left(\frac{\pi}{2}x + \frac{\pi}{3}\right)$		<p>period : 4</p> <p>range : $(-\infty, -\frac{\pi}{3}] \cup [\frac{\pi}{3}, \infty)$</p> <p>V.A.s : $x = -\frac{2}{3} + 2k$</p>

$$f(x) = -\csc\left(\frac{3}{2}x - \pi\right) + \frac{4}{3}$$

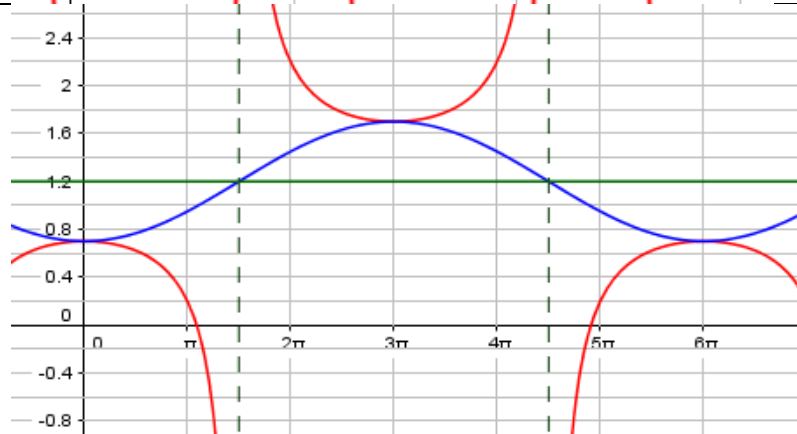


period : $\frac{4\pi}{3}$

range: $(-\infty, \frac{1}{3}] \cup [\frac{7}{3}, \infty)$

V.A.s : $x = \frac{2\pi}{3}k$

$$f(x) = -\frac{1}{2}\csc\left(\frac{x}{3} + \frac{\pi}{2}\right) + \frac{6}{5}$$

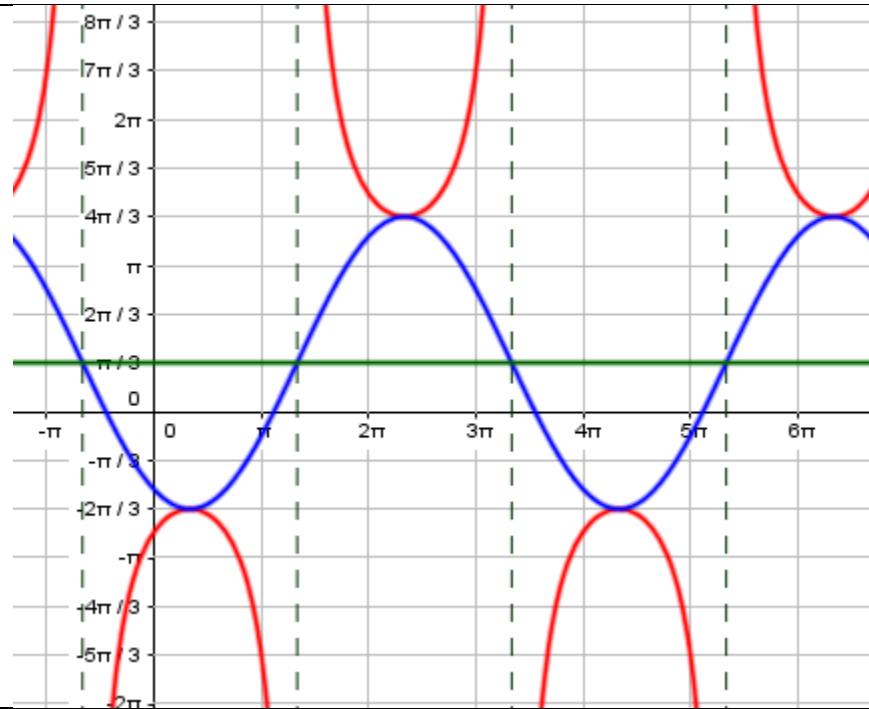


period : 6π

range: $(-\infty, \frac{7}{10}] \cup [\frac{17}{10}, \infty)$

V.A.s : $x = -\frac{3\pi}{2} + 3\pi k$

$$f(x) = -\pi \csc\left(\frac{x}{2} + \frac{\pi}{3}\right) + \frac{\pi}{3}$$



period : 4π

range: $(-\infty, -\frac{2\pi}{3}] \cup [\frac{4\pi}{3}, \infty)$

V.A.s : $x = -\frac{2\pi}{3} + 2\pi k$