

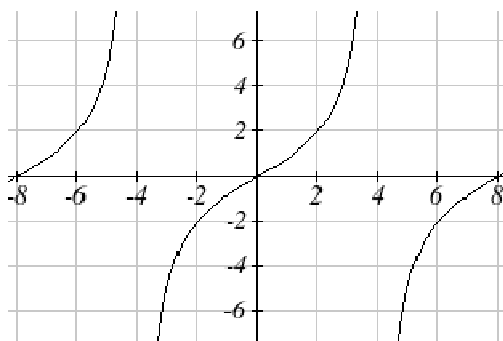
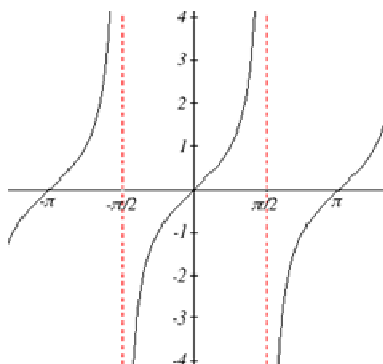
Features of the Graph of Tangent

The graph of the tangent function $m(\theta) = \tan(\theta)$

The **period** of the tangent function is π

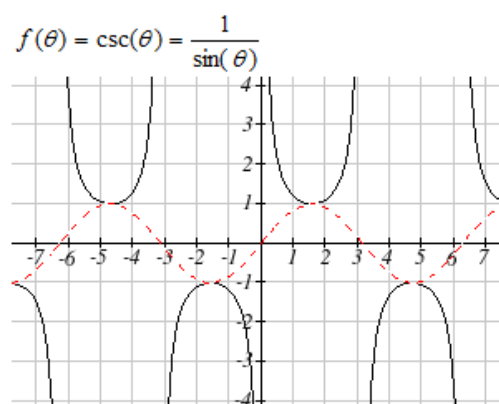
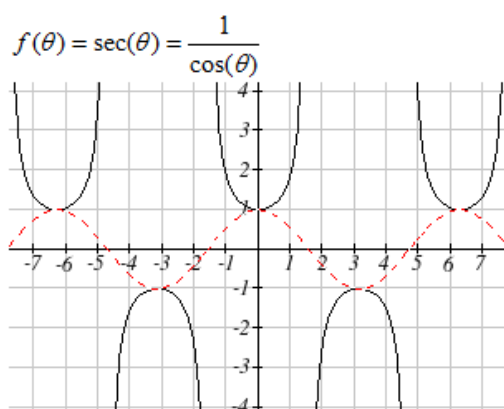
The **domain** of the tangent function is $\theta \neq \frac{\pi}{2} + k\pi$, where k is an integer

The **range** of the tangent function is all real numbers, $(-\infty, \infty)$



Try it Now

1. Sketch a graph of $f(\theta) = 3 \tan\left(\frac{\pi}{6}\theta\right)$.



Features of the Graph of Secant and Cosecant

The secant and cosecant graphs have period 2π like the sine and cosine functions.

Secant has domain $\theta \neq \frac{\pi}{2} + k\pi$, where k is an integer

Cosecant has domain $\theta \neq k\pi$, where k is an integer

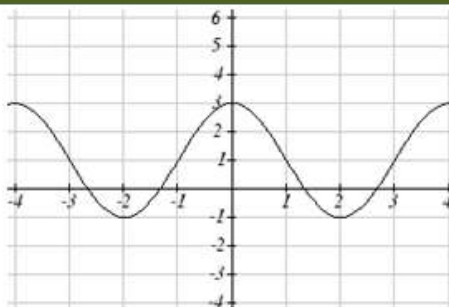
Both secant and cosecant have range of $(-\infty, -1] \cup [1, \infty)$

Example 2

Sketch a graph of $f(\theta) = 2 \csc\left(\frac{\pi}{2}\theta\right) + 1$. What is the domain and range of this function?

Try it Now

2. Given the graph of $f(\theta) = 2 \cos\left(\frac{\pi}{2}\theta\right) + 1$ shown, sketch the graph of $g(\theta) = 2 \sec\left(\frac{\pi}{2}\theta\right) + 1$ on the same axes.



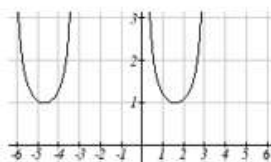
Match each trigonometric function with one of the graphs.

1. $f(x) = \tan(x)$

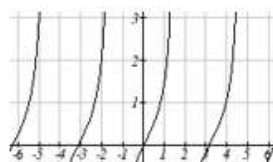
2. $f(x) = \sec(x)$

3. $f(x) = \csc(x)$

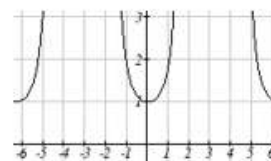
4. $f(x) = \cot(x)$



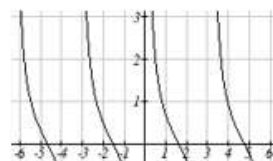
I



II



III



IV