Sections 6.4 Part B
Graphs of Other Trigonometric Functions

Let $f(x) = tan\, x$

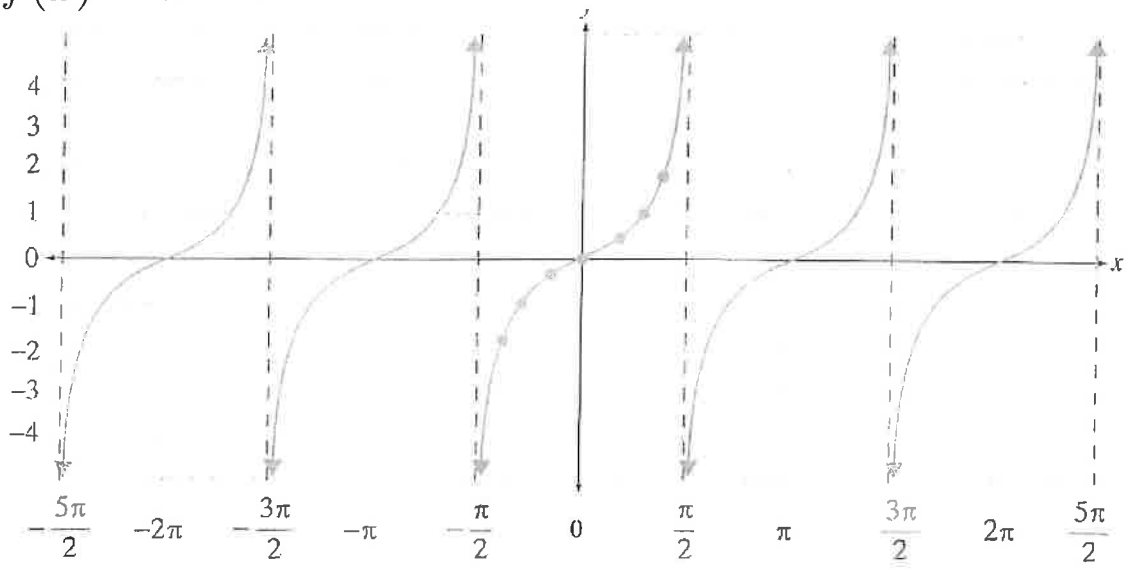
x	$-\frac{\pi}{2}$	$-\frac{\pi}{3}$	$-\frac{\pi}{4}$	$-\frac{\pi}{6}$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	
$tan\, x$	Und	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	Und	

x	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	
$tan\, x$	Und	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	Und	

Reminder, $tan\, x = \frac{sin\, x}{cos\, x}$ therefore the $tan\, x$ does not exist for odd multiples of $\frac{\pi}{2}$ and the graph of $f(x) = tanx$ will have a vertical asymptote at $x = (2k+1)\frac{\pi}{2}$.

Use the Axis Below to Graph the Tangent Function:

$f(x) = tan\, x$



Properties of the Tangent Function:

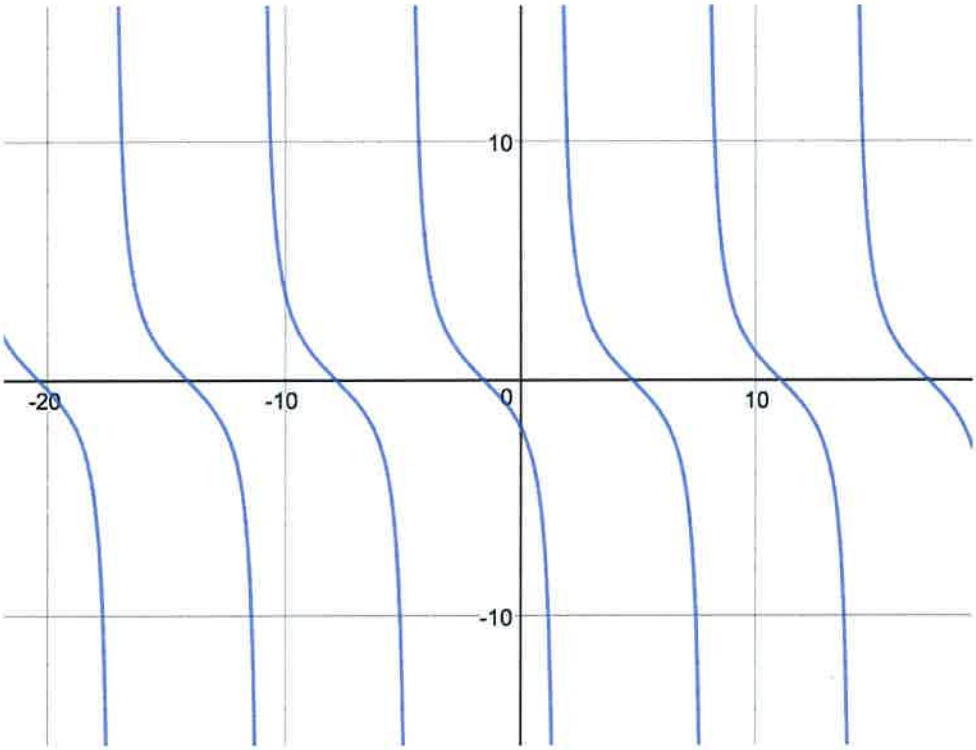
-Domain : $x =$ All real numbers that are not odd multiples of $\frac{\pi}{2}$.

-Range : $-\infty \leq tan\, x \leq \infty$

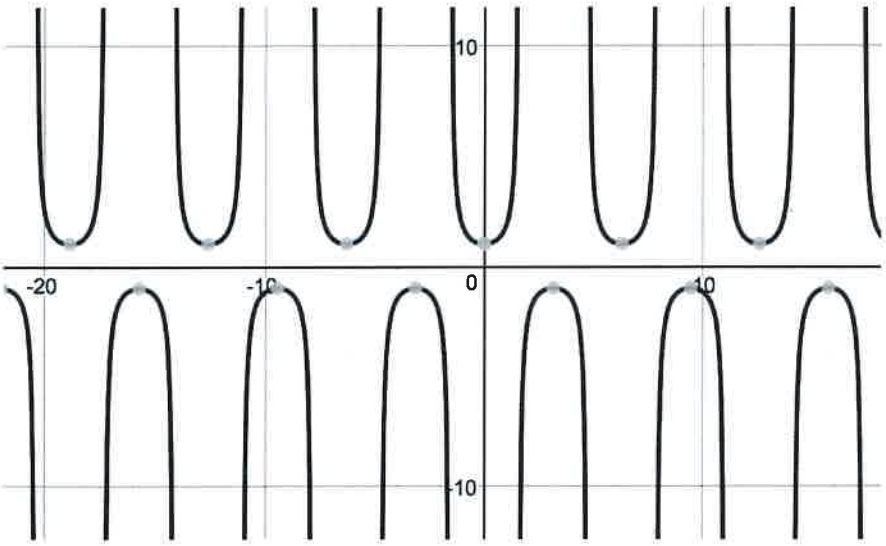
-$tan\, x$ is an odd function (symmetric about the origin)

-$tan\, x$ is a periodic function with a period of π

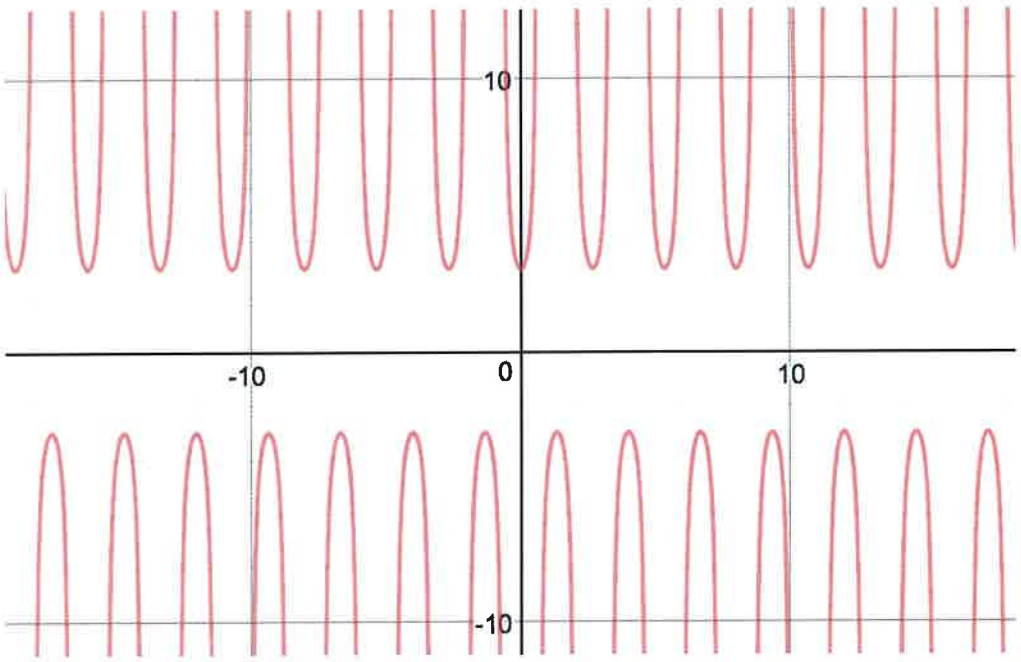
Example 1: $f(x) = -2\tan\left(\frac{x}{2} + \frac{\pi}{4}\right)$



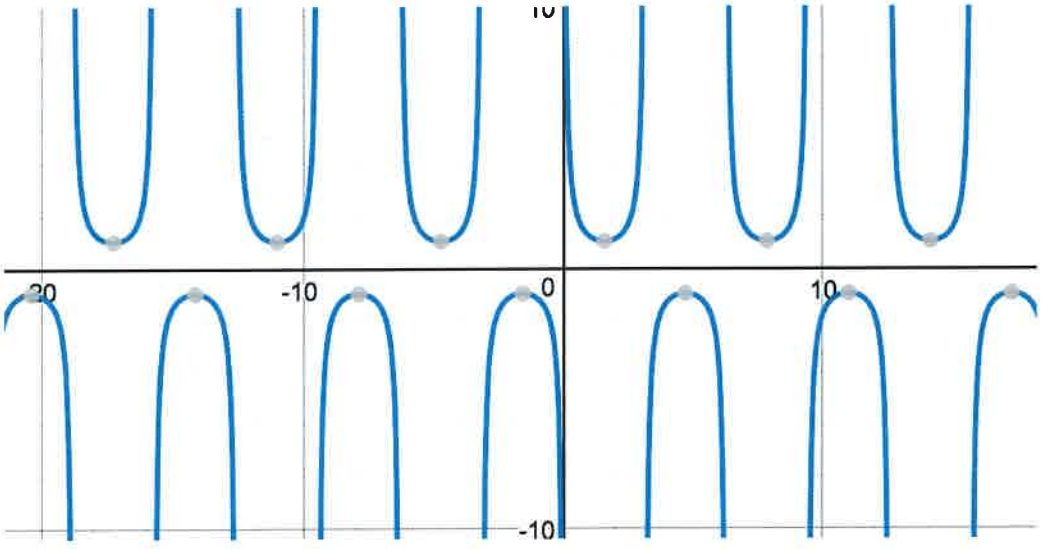
Example 2: $g(x) = \sec x$



Example 3: $h(x) = 3sec\left(\frac{3\pi}{4}x\right)$



Example 4: $g(x) = \csc x$



Example 5: $f(x) = -\frac{1}{2}csc\left(\pi - \frac{\pi}{2}x\right)$