King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 151

Recitation (6.5 – 6.6)

Question1:

Consider the function $f(x) = -2\tan(2x - \frac{\pi}{4})$, find the equation of all vertical asymptotes over the interval $[-\pi, \pi]$

Answer: $\boxed{x = -\frac{5\pi}{8}}$, $\boxed{x = -\frac{\pi}{8}}$, $\boxed{x = \frac{3\pi}{8}}$, $\boxed{x = \frac{7\pi}{8}}$

Question2:

Consider the function $y = \frac{3}{2}\sec\left(x - \frac{\pi}{2}\right)$:

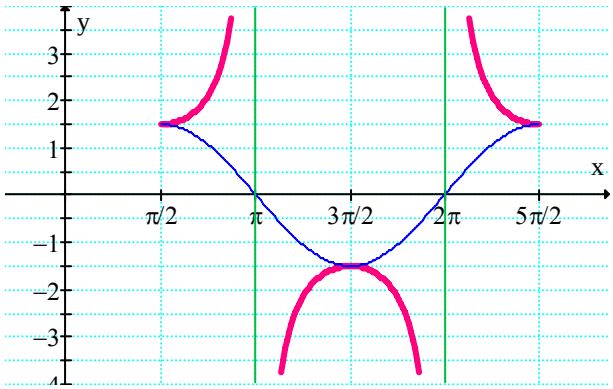
i) Find the period, the phase shift and the range.

ii) Graph the function over the interval $\left(\frac{\pi}{2}, \frac{5\pi}{2}\right)$.

Answer: (i): $p = \frac{2\pi}{1} = 2\pi$ Phase shift: $x = \frac{\pi}{2}$ units to the right.

$Range = \left(-\infty, -\frac{3}{2}\right] \cup \left[\frac{3}{2}, \infty\right)$

Answer: (ii):



Question3:

If the graph of the function $y = \frac{3}{2}\tan(ax + b)$, where $a > 0$, has a period of $\frac{\pi}{2}$ and phase shift $-\frac{\pi}{8}$, then $4b - a\pi =$

A) $-\pi$ B) -3π C) π D) 3π E) 0

Answer: $4b - a\pi = 4\left(\frac{\pi}{4}\right) - 2\pi = \pi - 2\pi = -\pi$

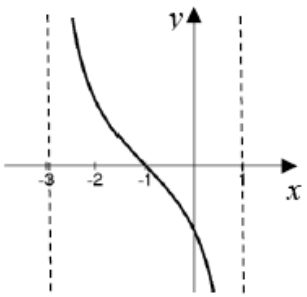
Question4:

The graph below can be represented by the trigonometric function

A) $f(x) = -2\tan\left(\frac{\pi}{4}x + \frac{\pi}{4}\right)$ B) $f(x) = 2\tan\left(\frac{\pi}{4}x + \frac{\pi}{4}\right)$

C) $f(x) = 2\cot\left(\frac{\pi}{4}x + 1\right)$ D) $f(x) = -2\tan(x+1)$

E) $f(x) = 2\cot(x+1)$



Answer: $f(x) = a\tan(bx + c) = -2\tan\left(\frac{\pi}{4}x + \frac{\pi}{4}\right)$

Question 5: The number of vertical asymptotes of the Graph of the function $y = \frac{1}{2}\cot(2x - 3\pi)$ in the Interval $\left[\frac{\pi}{4}, \frac{7\pi}{2}\right]$

Answer: The number of vertical asymptotes is 3