

King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math 002 - Term 142
Recitation (6.5-6.6)

Question 1: Consider the function $f(x) = -2 \tan\left(2x - \frac{\pi}{4}\right)$, find the equation of all vertical asymptotes over the interval $[-\pi, \pi]$

Answer:

$$\boxed{x = -\frac{\pi}{8}}, \quad \boxed{x = \frac{3\pi}{8}}, \quad \boxed{x = -\frac{5\pi}{8}}, \quad \boxed{x = \frac{7\pi}{8}}, \quad \boxed{x = -\frac{9\pi}{8}}, \quad \boxed{x = \frac{11\pi}{8}}, \quad \boxed{x = -\frac{13\pi}{8}}, \quad \boxed{x = \frac{15\pi}{8}}$$

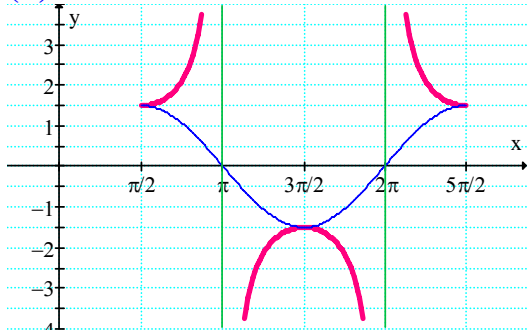
Question 2: Consider the function $y = \frac{3}{2} \sec\left(x - \frac{\pi}{2}\right)$:

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): $p = 2\pi$ Phase shift: $x = \frac{\pi}{2}$ units to the right. $Range = \left(-\infty, -\frac{3}{2}\right] \cup \left[\frac{3}{2}, \infty\right)$

(ii):



Question 3: 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

Question 4: 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) $f(x) = 2 \cot(x + 1)$

