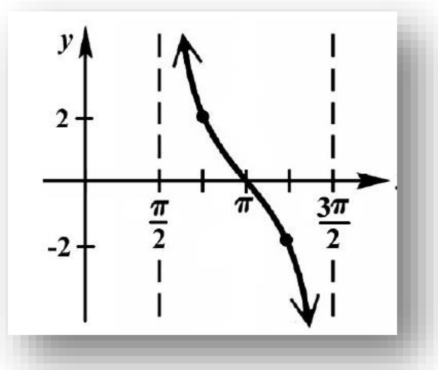
6.4: (More Trigonometric Graphs)

The number of all vertical asymptotes of the function $y = 2\tan\left(3\pi x + \frac{\pi}{4}\right), 0 \le x \le \frac{5}{12}$, is A) 2 B) 5 C) 4 D) 1 E) 3	Trigonometric Graphs ($\tan\theta$).
The graph in the adjacent figure represents part of the graph of A) $y = -2\tan(x - 3\pi/2)$ B) $y = 2\cot(x - \pi)$ C) $y = -2\tan(x - \pi/2)$ D) $y = 2\cot x$ E) $y = -2\tan x$ 	Trigonometric Graphs ($\tan\theta$).
The graph of the function $y = 2\tan\left(2x - \frac{\pi}{2}\right), 0 < x < \pi$, is below the x-axis on A) $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right)$ B) $\left(\frac{\pi}{4}, \frac{\pi}{2}\right) \cup \left(\frac{3\pi}{4}, \pi\right)$ C) $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$ D) $\left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ E) $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{3\pi}{4}, \pi\right)$	Trigonometric Graphs ($\tan\theta$).

The graph of the function $f(x) = -\tan\left(\frac{\pi}{4}x - \frac{\pi}{2}\right)$, $0 < x < 8$, is completely above the x-axis on (a) $(0,2) \cup (4,6)$ (b) $(1,3) \cup (5,7)$ (c) $(0,3)$ (d) $(0,4)$ (e) $(2,4) \cup (6,8)$	Trigonometric Graphs ($\tan\theta$).
The number of the x-intercepts of the function $f(x) = -3\tan\left(2x - \frac{\pi}{4}\right)$ over the interval $[-\pi, 2\pi]$ is: A) 6 B) 5 C) 4 D) 3 E) 2	Trigonometric Graphs ($\tan\theta$).
If the graph of the function $f(x) = a\tan(bx + c)$ has a period of $\frac{1}{4}$, a horizontal shift of $\frac{1}{2}$ to the right, and $f\left(\frac{7}{12}\right) = -\sqrt{3}$, then $\pi a + b =$ A) 3π B) 5π C) -2π D) 7π E) 2π	Trigonometric Graphs ($\tan\theta$).

If 2π is the period of the function $f(x) = a\tan(bx)$ and $f\left(\frac{\pi}{3}\right) = -\sqrt{3}$, then $a + b =$ A) $-\frac{5}{2}$ B) $\frac{5}{2}$ C) $-\frac{3}{2}$ D) $\frac{3}{2}$ E) $-\frac{7}{2}$	Trigonometric Graphs ($\tan\theta$).
If $f(x) = a\tan(bx), b > 0$, is a tangent function with period 3 and $f(1) = 2\sqrt{3}$, then $f\left(\frac{3}{4}\right) =$ A) 2 B) $\sqrt{3}$ C) 1 D) $\frac{2\sqrt{3}}{3}$ E) $\frac{\sqrt{3}}{3}$	Trigonometric Graphs ($\tan\theta$).
The number of the x-intercepts of the graph of $f(x) = 2\tan\left(3x - \frac{\pi}{4}\right)$, where $-\frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$, is A) 4 B) 3 C) 1 D) 5 E) 2	Trigonometric Graphs ($\tan\theta$).

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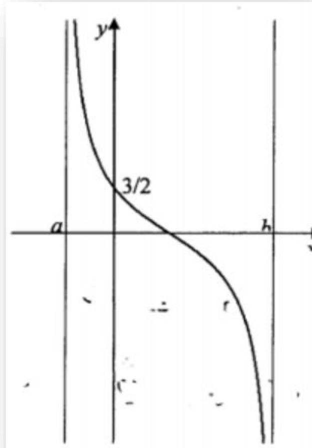
If $x = a$ and $x = b$ are two consecutive asymptotes of the graph of $y = \frac{3}{2}\cot(3x + \pi/4)$, then $a + b =$



A) $\frac{\pi}{4}$
B) $\frac{\pi}{3}$
C) $\frac{\pi}{2}$
D) $-\frac{\pi}{12}$
E) $\frac{\pi}{6}$

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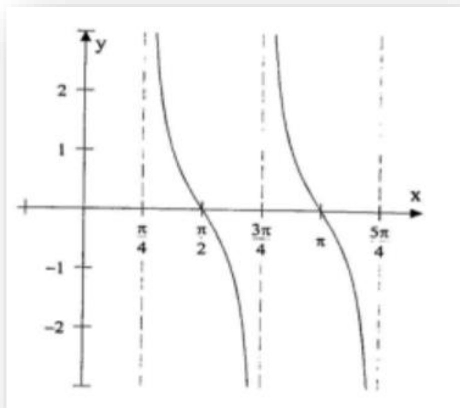
The equation of the adjacent graph is



A) $y = \cot\left(2x - \frac{3\pi}{2}\right)$
B) $y = \tan\left(2x + \frac{3\pi}{2}\right)$
C) $y = \tan\left(2x + \frac{\pi}{2}\right)$
D) $y = \cot\left(x - \frac{\pi}{4}\right)$
E) $y = \cot\left(2x + \frac{\pi}{4}\right)$

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The number of vertical asymptotes of the graph of the function $y = 2\cot\left(\pi x - \frac{\pi}{3}\right), -1 \le x \le 1$, is equal to

A) 5
B) 3
C) 4
D) 1
E) 2

</td><td>Trigonometric Graphs ($\cot\theta$).</td></tr>
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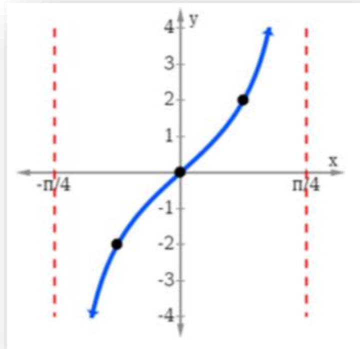
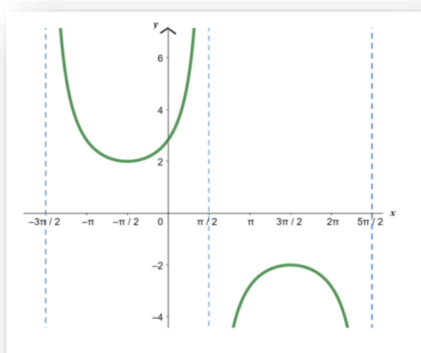
The adjacent figure represents part of the graph of  A) $y = -2\cot\left(2x + \frac{\pi}{2}\right)$ B) $y = -2\cot\left(x + \frac{\pi}{4}\right)$ C) $y = 2\tan\left(2x + \frac{\pi}{2}\right)$ D) $y = -2\tan(2x)$ E) $y = 2\tan\left(x + \frac{\pi}{4}\right)$	Trigonometric Graphs ($\cot\theta$).
The number of x-intercepts of the graph of the function $y = -3\cot\left(2x + \frac{\pi}{2}\right)$ over the interval $[-\pi, \pi]$, is equal to A) 3 B) 2 C) 4 D) 5 E) 1	Trigonometric Graphs ($\cot\theta$).
If $y = 2\cot 2x$, then the number of vertical asymptotes over the interval $\left(-\frac{\pi}{4}, \frac{3\pi}{4}\right)$ is equal to (a) 2 (b) 1 (c) 3 (d) 4 (e) 0	Trigonometric Graphs ($\cot\theta$).

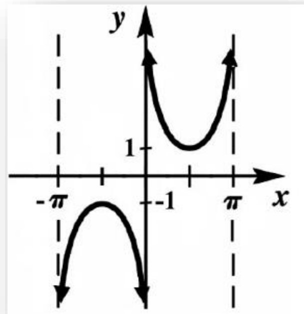
For $-\frac{7\pi}{2} < x < 0$, the number of vertical asymptotes of the graph of $y = \csc\left(\frac{1}{2}x - \frac{\pi}{4}\right)$ is: A) 1 B) 4 C) 2 D) 3 E) 6	Trigonometric Graphs ($\csc\theta$).
Which one of the following statements is FALSE about the graph of $y = \frac{3}{2}\csc\left(x - \frac{\pi}{2}\right)$ in the interval $[-\pi, 2\pi]$? A) the graph has four vertical asymptotes B) the graph has a period of 2π C) the graph has no x-intercept D) the graph has one y-intercept E) the range of the graph is $(-\infty, -3/2] \cup [3/2, \infty)$	Trigonometric Graphs ($\csc\theta$).
The equation of the graph below is A) $y = 2\sec\left(2x - \frac{\pi}{4}\right)$ B) $y = -2\csc\left(2x - \frac{\pi}{4}\right)$ C) $y = 2\csc\left(\frac{1}{2}x - \frac{\pi}{4}\right)$ D) $y = -2\sec\left(\frac{1}{2}x - \frac{\pi}{4}\right)$ E) $y = -2\csc\left(\frac{1}{2}x - \frac{\pi}{4}\right)$ 	Trigonometric Graphs ($\csc\theta$).

The graph of $y = -\csc(2x + \pi) + 2$, where $-\frac{3\pi}{4} \le x \le \frac{3\pi}{4}$, has A) three x - intercepts. B) four vertical asymptotes. C) one y - intercept. D) two vertical asymptotes. E) four x - intercepts.	Trigonometric Graphs ($\csc\theta$).
The range of the graph of the function $f(x) = 1 - 2\csc x$ is (a) $(-\infty, -1] \cup [3, \infty)$ (b) $(-\infty, -2] \cup [2, \infty)$ (c) $(-\infty, -3] \cup [2, \infty)$ (d) $[1, \infty)$ (e) $[-1,3]$	Trigonometric Graphs ($\csc\theta$).
The sum of all the vertical asymptotes of the graph of $y = -\csc\left(\frac{x}{3} - \frac{\pi}{6}\right)$ in the interval $[-4\pi, 2\pi]$, is A) -2π B) 4π C) 2π D) $-\pi$ E) π	Trigonometric Graphs ($\csc\theta$).

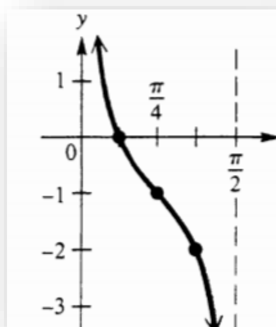
The graph of the function $f(x) = \csc\left(\frac{\pi x}{2}\right), -2 < x < 2$, intersects the line $y = -2$ at A) 2 points B) 5 points C) 1 point D) 4 points E) 3 points	Trigonometric Graphs ($\csc\theta$).
For $0 < x < \frac{5\pi}{4}$, the line $y = -3$ intersects the graph of $y = \tan(2x - \pi)$ at: A) 2 points. B) 4 points. C) 5 points. D) one point. E) 3 points.	Trigonometric Graphs ($\tan\theta$).
Which one of the following statements is TRUE? A) The domain of $y = \sec(4x + \pi)$ is $x \neq \frac{n\pi}{4} - \frac{\pi}{8}$, where n is an integer. B) $\sec x = -\sec(-x)$ C) The graph of $y = \sec x$ intersects x-axis at $x = n\pi$ where n is an integer. D) $\sec 30^\circ = \frac{\sqrt{3}}{3}$ E) $\sec^2 x = 1 - \tan^2 x$	Trigonometric Graphs ($\sec\theta$).

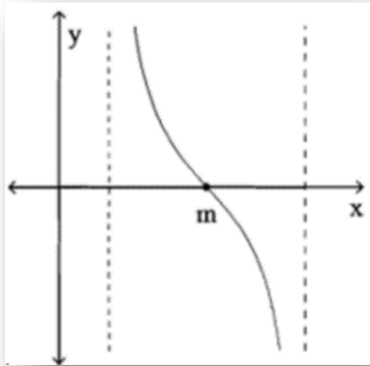
The graph of the function $f(x) = -2\sec\left(\pi x + \frac{\pi}{3}\right), -\frac{1}{3} < x < \frac{5}{3}$, is completely above the x-axis on the interval A) $\left(\frac{1}{6}, \frac{7}{6}\right)$ B) $\left(-\frac{1}{3}, \frac{1}{6}\right)$ C) $\left(\frac{7}{6}, \frac{5}{3}\right)$ D) $\left(0, \frac{1}{6}\right)$ E) $\left(-\frac{1}{3}, \frac{1}{6}\right) \cup \left(\frac{7}{6}, \frac{5}{3}\right)$	Trigonometric Graphs ($\sec\theta$).
If (a, b) is the minimum point on the graph of $f(x) = -2\sec\left(\frac{1}{2}\pi x + \pi\right), 3 < x < 5$, then $a + b =$ A) 6 B) 2 C) -2 D) π E) 0	Trigonometric Graphs ($\sec\theta$).
If the range of the function $f(x) = -3\sec(2x + 1) + 2$ is $(-\infty, m] \cup [n, \infty)$, then $m + n =$ A) 4 B) 6 C) -4 D) 0 E) 3	Trigonometric Graphs ($\sec\theta$).

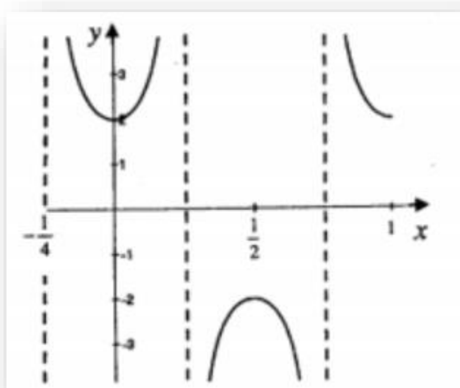
The graph of the function $f(x) = -\sec(\pi x), -\frac{1}{2} < x < 1$ is increasing on the interval A) $\left(0, \frac{1}{2}\right)$ B) $\left(-\frac{1}{2}, 0\right)$ C) $\left(-\frac{1}{2}, \frac{1}{2}\right)$ D) $(0,1)$ E) $\left(\frac{1}{2}, 1\right)$	Trigonometric Graphs ($\sec\theta$).
On the interval $[-\pi/4, 5\pi/4]$, if the the graph of $y = 2 + 3\sec(2x - \pi)$ has four vertical asymptotes at $x = a_1, a_2, a_3$ and a_4, then $a_1 + a_2 + a_3 + a_4 =$ A) 2π B) 3π C) $5\pi/2$ D) $5\pi/4$ E) $9\pi/4$	Trigonometric Graphs ($\sec\theta$).
The range of the graph of $y = 2 - 2\sec(x + \pi)$ is A) $(-\infty, 0] \cup [4, \infty)$ B) $(-\infty, -2] \cup [2, \infty)$ C) $(-\infty, 1] \cup [2, \infty)$ D) $[-2,2]$ E) $[0,4]$	Trigonometric Graphs ($\sec\theta$).

The given graph in the adjacent figure represents part of the graph of the function  A) $y = \sec(x + \pi)$ B) $y = \csc(x + \pi/2)$ C) $y = \csc(x - \pi/2)$ D) $y = \sec(x - \pi)$ E) $y = \sec(x - \pi/2)$	Trigonometric Graphs ($\sec\theta$).
The graph of the function $f(x) = -\sec\left(\frac{\pi}{2}x\right)$, over the interval [0,4], intersects the line $y = 1$ at A) 1 point B) 2 points C) 5 points D) 3 points E) 4 points	Trigonometric Graphs ($\sec\theta$).
If P is the period of the graph of $f(x) = 5\sec 2\left(x - \frac{\pi}{4}\right)$ and A is the amplitude of $y = -\pi \sin\left(\frac{x}{3}\right)$, then A + P = A) 2π B) 0 C) 4π D) π E) 3π	Trigonometric Graphs ($\sec\theta$).

The number of vertical asymptotes of the graph of $y = \csc\left(\frac{1}{2}x - \frac{\pi}{4}\right)$ over the interval $\left(0, \frac{9\pi}{2}\right)$ is A) 2 B) 1 C) 3 D) 4 E) 5	Trigonometric Graphs ($\csc\theta$).
The number of vertical asymptotes of the graph of the function $f(x) = 2 + 3\csc(2x - \pi)$, on the interval $[-\pi, \pi]$ is equal to (a) 5 (b) 6 (c) 4 (d) 3 (e) 2	Trigonometric Graphs ($\csc\theta$).
The number of x-intercepts of the graph of $y = \frac{2}{3}\tan\left(\frac{3x}{4} - \pi\right)$ over the interval $\left(0, \frac{10\pi}{3}\right)$ is A) 2 B) 1 C) 3 D) 4 E) 5	Trigonometric Graphs ($\tan\theta$).

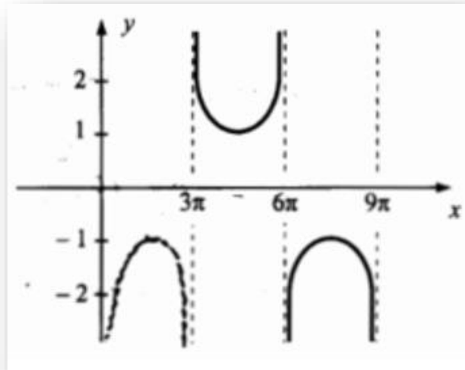
In which one of the following intervals is the graph of $y = \sec\left(2x + \frac{\pi}{3}\right)$ below the x-axis? A) $\left(\frac{\pi}{12}, \frac{7\pi}{12}\right)$ B) $\left(\frac{7\pi}{12}, \frac{13\pi}{12}\right)$ C) $\left(\frac{7\pi}{12}, \frac{5\pi}{6}\right)$ D) $\left(\frac{5\pi}{6}, \frac{13\pi}{12}\right)$ E) $\left(\frac{\pi}{3}, \frac{5\pi}{6}\right)$	Trigonometric Graphs ($\sec\theta$).
An equation for the given graph is  A) $y = -1 - \tan(2x - \pi/2)$ B) $y = -1 - \tan(x - \pi/4)$ C) $y = -1 + \cot(x/2)$ D) $y = 1 + \cot 2x$ E) $y = 1 - \cot(x - \pi/4)$	Trigonometric Graphs ($\cot\theta$).
The graph of $y = -\csc(2x + \pi) + 2$, where $-\frac{3\pi}{4} \le x \le \frac{3\pi}{4}$, has A) three x - intercepts. B) four vertical asymptotes. C) one y - intercept. D) two vertical asymptotes. E) four x - intercepts.	Trigonometric Graphs ($\cot\theta$).

$y = \cot\left(\frac{x}{2} - \frac{\pi}{4}\right)$, then $m =$  A) $\frac{3\pi}{2}$ B) $\frac{\pi}{2}$ C) $\frac{5\pi}{4}$ D) $\frac{3\pi}{4}$ E) $\frac{\pi}{4}$	Trigonometric Graphs ($\csc\theta$).
The graph of $y = \cot\left(3x + \frac{\pi}{4}\right)$ over the interval $\left(-\frac{\pi}{12}, \frac{7\pi}{12}\right)$ intersects the x-axis at: A) $\frac{\pi}{12}$ and $\frac{5\pi}{12}$ B) $-\frac{\pi}{8}$ and $\frac{\pi}{8}$ C) $-\frac{\pi}{8}$ and $\frac{5\pi}{12}$ D) $\frac{5\pi}{12}$ and $\frac{7\pi}{12}$ E) $\frac{\pi}{12}$ and $\frac{\pi}{8}$	Trigonometric Graphs ($\cot\theta$).
The number of vertical asymptotes of $y = \frac{3}{2}\csc\left(x - \frac{\pi}{2}\right)$ over the interval $\left(-\frac{3\pi}{2}, \frac{5\pi}{2}\right)$ is: A) 3 B) 2 C) 4 D) 1 E) 5	Trigonometric Graphs ($\csc\theta$).

The number of the x - intercepts of the function $f(x) = -3\tan\left(2x - \frac{\pi}{4}\right)$ over the interval $[-\pi, 2\pi]$ is: A) 6 B) 5 C) 4 D) 3 E) 2	Trigonometric Graphs ($\tan\theta$).
For $0 < x < \frac{2}{3}$, the graph of the function $y = 2\csc 3\pi x$ is decreasing on A) $\left(0, \frac{1}{6}\right) \cup \left(\frac{1}{2}, \frac{2}{3}\right)$ B) $\left(\frac{1}{6}, \frac{1}{3}\right) \cup \left(\frac{1}{3}, \frac{1}{2}\right)$ c) $\left(0, \frac{1}{3}\right)$ D) $\left(\frac{1}{3}, \frac{2}{3}\right)$ E) $\left(\frac{1}{6}, \frac{1}{3}\right) \cup \left(\frac{1}{2}, \frac{2}{3}\right)$	Trigonometric Graphs ($\sec\theta$).
The figure below, represents part of the graph of A) $y = 2\sec(2\pi x)$ B) $y = 2\csc(2\pi x)$ C) $y = 2\sec\left(\frac{\pi}{2}x\right)$ D) $y = -2\sec(2\pi x)$ E) $y = -2\csc\left(\frac{\pi}{2}x\right)$ 	Trigonometric Graphs ($\csc\theta$).

The equation of a tangent function with period 2π and phase shift $\frac{\pi}{2}$ is A) $y = \tan\left(\frac{x-\pi}{4}\right)$ B) $y = \tan\left(\frac{2t-\pi}{2}\right)$ C) $y = \tan\left(\frac{x-2\pi}{2}\right)$ D) $y = \tan\left(\frac{2x-\pi}{4}\right)$ E) $y = \tan\left(\frac{x-2\pi}{4}\right)$	Trigonometric Graphs ($\tan\theta$).
Over the interval $\left[-\frac{3\pi}{2}, 3\pi\right]$, the graph of $y = \tan\frac{2x}{3}$ has A) four vertical asymptotes B) three vertical asymptotes C) five x-intercepts D) five vertical asymptotes E) no y-intercept	Trigonometric Graphs ($\tan\theta$).
The graph of $y = -2\csc\frac{\pi x}{2}, -4 < x < 0$, is increasing on A) $(-4,-3) \cup (-1,0)$ B) $(-2,0)$ C) $(-3,-1)$ D) $(-3,-2)$ E) $(-4,-2)$	Trigonometric Graphs ($\csc\theta$).

Let $f(x) = 1 + \csc\left(2x + \frac{\pi}{6}\right)$. Then which one of the following statements is TRUE? A) the graph of f has infinitely many x-intercepts B) the range of f is $(-\infty, -1] \cup [1, \infty)$ C) the period of f is 2π D) the phase shift is $-\frac{\pi}{6}$ E) the graph of f has no y-intercept	Trigonometric Graphs ($\csc\theta$).
If $f(x) = -a\tan bx, a > 0, b > 0$, is a function of period 3, then $f\left(\frac{3}{4}\right)$ is A) equal to $-\frac{a}{b}$ B) undefined C) equal to $\frac{a}{b}$ D) equal to $-a$ E) equal to b	Trigonometric Graphs ($\tan\theta$).
The number of vertical asymptotes of $y = 3 + 2\cot\frac{\pi x}{3}$ over the interval $[-4,4]$ is A) 6 B) 3 C) 2 D) 1 E) 4	Trigonometric Graphs ($\cot\theta$).

The adjacent graph represents part of the graph of A) $y = \sec 9x$ B) $y = -\sec\frac{x}{3}$ C) $y = -\csc\frac{x}{3}$ D) $y = -\csc\frac{x}{9}$ E) $y = 2\csc\frac{x}{3}$ 	Trigonometric Graphs ($\csc\theta$).
The graph of the function $y = \left\|3\sec\frac{2x}{3}\right\|$ over the interval $\left[0, \frac{3\pi}{2}\right]$ intersects the line $y = 4$ at A) 1 point B) 2 points C) 3 points D) 4 points E) no point	Trigonometric Graphs ($\sec\theta$).
The period P and the phase shift S of the function $f(x) = -2\sec\left(\frac{\pi}{3} - \frac{x}{4}\right) + 5$ are (a) $P = 2\pi, S = \frac{2\pi}{3}$ (b) $P = 8\pi,\ S = \frac{4\pi}{3}$ (c) $P = 4\pi, S = \frac{\pi}{3}$ (d) $P = 8\pi, S = -\frac{4\pi}{3}$ (e) $P = -8\pi, S = \frac{4\pi}{3}$	Trigonometric Graphs ($\sec\theta$).

If $y = 2\cot 2x$, then the number of vertical asymptotes over the interval $\left(-\frac{\pi}{4}, \frac{3\pi}{4}\right)$ is equal to (a) 2 (b) 1 (c) 3 (d) 4 (e) 0	Trigonometric Graphs ($\cot\theta$).
The number of the vertical asymptotes of the graph of $y = -3\cot\left(\frac{2x}{3}\right)$ on the interval $\left[-\frac{3\pi}{4}, \frac{15\pi}{4}\right]$ is (a) 3 (b) 2 (c) 4 (d) 5 (e) 6	Trigonometric Graphs ($\cot\theta$).
Which statement about the graph of the function $f(x) = -3\sec\frac{\pi}{4}x$ over the interval $\left[\frac{5}{2}, 5\right]$ is true? A) There is a minimum but no maximum for the function. B) The maximum value of the function is $f\left(\frac{5}{2}\right)$ C) The maximum value of the function is f (5) D) The graph has neither a minimum not a maximum for the function. E) The maximum value of the function is $f(4)$	Trigonometric Graphs ($\sec\theta$).

The number of vertical asymptotes of $f(x) = 2\cot\frac{3x}{2}$ in the interval $\left(-\frac{\pi}{6}, 3\pi\right)$ is A) 5 B) 9 C) 3 D) 2 E) 4	Trigonometric Graphs ($\cot\theta$).