

Functions & Graphs Test 2A



Name: _____

7 8 9 10 11 12



Navigator



Assessment



Student

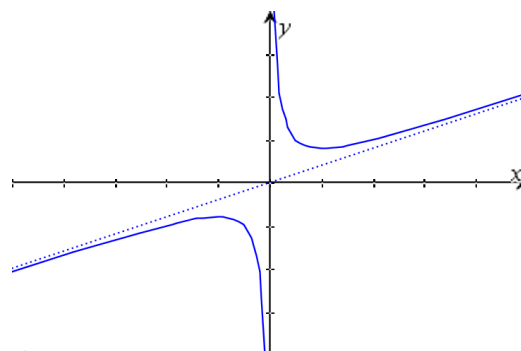


25 min

Question: 1

A possible equation for the graph of the curve shown is:

- a) $y = \frac{ax^2 + b}{x}$, $a > 0$ and $b > 0$
- b) $y = \frac{ax^2 + b}{x}$, $a < 0$ and $b < 0$
- c) $y = \frac{ax^2 + b}{x}$, $a < 0$ and $b > 0$
- d) $y = \frac{ax^3 + b}{x^2}$, $a > 0$ and $b > 0$
- e) $y = \frac{ax^3 + b}{x^2}$, $a < 0$ and $b < 0$



Question: 2

Which one of the following functions does **not** have range: $[-\pi, \pi]$

- a) $y = \left| x - \frac{\pi}{2} \right| - \left| x + \frac{\pi}{2} \right|$
- b) $y = 2 \sin^{-1}(x)$
- c) $y = 2 \sin^{-1}(x - 2)$
- d) $y = \tan^{-1}(x)$
- e) $y = 2 \cos^{-1}(x) - \pi$

Question: 3

$y = f(x)$ has a local maximum at $(2, -4)$, the function $y = \frac{1}{f(x)}$ will have:

- a) a local maximum at $(2, 4)$
- b) a local maximum at $\left(2, -\frac{1}{4}\right)$
- c) a local minimum at $(2, 4)$
- d) a local minimum at $\left(2, -\frac{1}{4}\right)$
- e) a local minimum at $\left(\frac{1}{2}, -\frac{1}{4}\right)$

Question: 4

The graph $y = \operatorname{cosec}(2x)$ has asymptotes:

- a) $x = n\pi$
- b) $x = 2n\pi$
- c) $x = \frac{2(n-1)\pi}{4}$
- d) $x = \frac{n\pi}{4}$
- e) $x = \frac{n\pi}{2}$

Question: 5

The graph of $y = \frac{1}{2a^2 + ax - x^2}$ where a is a non-zero real constant, has asymptotes at:

- a) $x = 2a$ only
- b) $x = -a$ only
- c) $x = a$ and $x = -2a$ only
- d) $x = -a$ and $x = 2a$ only
- e) $x = -a$, $x = 2a$ and $y = 0$.

Question: 6

The graph of $y = 2 \tan^{-1}\left(\frac{x}{2}\right)$ has asymptotes at

- a) $x = \pm 2$
- b) $y = \pm 2$
- c) $x = \pm \frac{\pi}{2}$
- d) $y = \pm \frac{\pi}{2}$
- e) $y = \pm \pi$

Question: 7

Given $f(x) = (x-a)^2(x+a)^2$, $g(x) = \frac{1}{f(x)}$ and $a > 1$ which statement is **not** true:

- a) $f'(0) = 0$
- b) $f'(a) = 0$
- c) $g'(0) = 0$
- d) $g'(a) = 0$
- e) $0 < g(0) < 1$

Question: 8

If $f(x) = \frac{ax^2 + bx + c}{x+5}$ has an asymptote $y = 2x - 4$ then

- a) $a = 2$
 $b = 5$
- b) $a = 2$
 $b = -5$
- c) $a = 2$
 $b = 6$
- d) $a = -2$
 $b = 4$
- e) $a = 2$
 $b = -4$

Question: 9

If $f(x) = \frac{1}{x^2 + bx + c}$ has two asymptotes of the form $x = m$ and $x = n$ then it follows:

- a) $b > 2\sqrt{c}$ or
 $b < -2\sqrt{c}$
- b) $b > c$
- c) $b < c$
- d) $b < -2c$
- e) $b > 2c$

Question: 10

Given $a \neq b \neq c \neq d \neq 0$, a possible equation for the graph shown is:

- a) $y = \frac{(x+a)(x-b)}{(x+c)(x-d)}$
- b) $y = \frac{(x-a)(x-b)}{(x-c)(x-d)}$
- c) $y = \frac{(x+a)^2(x+b)}{(x-c)(x-d)}$
- d) $y = -x^3 + \frac{1}{(x-c)(x-d)} + 1$
- e) $y = \frac{a(x+b)}{(x+c)(x-d)}$

