

AP Calculus AB Prerequisite Quiz Results

#	Correct Answer	If you missed it, then you need to study...
1	A	transformations
2	B	domain and range
3	A	characteristics of rational functions
4	B	characteristics of rational functions
5	D	even, odd, neither
6	A	rational expressions arithmetic
7	B	rational expressions arithmetic
8	D	rational equations
9	C	finding roots by factoring
10	B	relationship between factors and roots
11	D	characteristics of rational functions
12	B	characteristics of rational functions
13	D	characteristics of rational functions
14	C	unit circle
15	C	function composition
16	B	function composition
17	C	graphing calc: zero
18	C	graphing calc: extrema
19	A	graphing calc: solving equations
20	D	graphing calc: solving equations

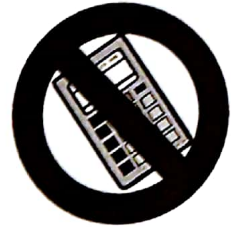
AP Calculus AB Prerequisite Quiz Version 1

Key

Part A: NO CALCULATOR



Do NOT write on this sheet!



- If a parent graph $y = f(x)$ has an x -intercept of 3 and a y -intercept of 4, which of the following MUST be true of $y = f(x+2)$? *left 2*

A. x -int: 1
 B. y -int: 2
 C. x -int: 5
 D. y -int: 6
- What is the domain of $\frac{1}{2-\sqrt{x+1}}$? *$\sqrt{x+1} \geq 0 \Rightarrow x \geq -1$
 $x+1 \geq 0$*

A. $(-1,3) \cup (3,\infty)$
 B. $[-1,3) \cup (3,\infty)$
 C. $(-1,3)$
 D. $[-1,3)$ *$2-\sqrt{x+1} \neq 0$
 $-\sqrt{x+1} \neq -2$
 $\sqrt{x+1} \neq 2$
 $x+1 \neq 4$
 $x \neq 3$*
- Does $y = \frac{6x^3 + 3x}{2x^4 + 4}$ have a horizontal asymptote? If so, what is it?

A. Yes, $y = 0$
 B. Yes, $y = 2$
 C. Yes, $y = 6$
 D. No
- Which of the following has a slant asymptote?

A. $\frac{x^2 + 4}{x^2 + 2}$
 B. $\frac{x^2 + 4}{x + 2}$
 C. $\frac{x + 4}{x^2 + 2}$
 D. $\frac{x^3 + 4}{x + 2}$ *quadratic*
- The graph of $y = 3x^3 - 2x + 7$ is symmetric with respect to which of the following?

A. the x -axis
 B. the y -axis
 C. the origin
 D. none of these
- If $f(x) = \frac{x}{x-3}$ and $g(x) = 2x-1$, find $f(x) - g(x)$ *$\frac{x}{x-3} - (2x-1)$*

A. $\frac{-2x^2 + 8x - 3}{x-3}$
 B. $\frac{-2x^2 + 6x + 1}{x-3}$
 C. $\frac{-2x^2 + 5x - 3}{x-3}$
 D. $\frac{2x^2 + 6x + 3}{x-3}$ *$\frac{x}{x-3} + \frac{(-2x+1)(x-3)}{(x-3)}$*
- Which of the following is equivalent to $\frac{x^3 - 8}{x^2 - 4x + 4}$ for x where both functions exist?

A. $x^2 + 2x + 4$
 B. $\frac{x^2 + 2x + 4}{x-2}$
 C. $x^2 + 4x + 4$
 D. $\frac{x^2 + 4x + 4}{x-2}$ *$\frac{(x-2)(x^2 + 2x + 4)}{(x-2)(x-2)}$
 $\frac{-2x^2 + 8x - 3}{x-3}$
 $\frac{x + (-2x^2 + 7x - 3)}{x-3}$*

$$(x+4)(x-1)$$

8. Solve for x : $\frac{1}{x+4} = \frac{1}{x^2+3x-4} + \frac{4}{x-1}$.

A. 6

B. 2

$$(x+4)(x-1)$$

9. Find the real zeros of $f(x) = 2x^4 - 3x^2 - 2$

A. ± 2

B. ± 1

$$x-1 = 1 + 4(x+4)$$

$$x-1 = 1 + 4x + 16$$

C. -2

D. -6

$$x-1 = 4x+17$$

$$-18 = 3x$$

$$x = -6$$

$$(2x^2+1)(x^2-2)$$

$$x^2 - 2 = 0$$

$$x^2 = 2$$

10. Determine if $(x+4)$ is a factor of $f(x) = x^3 + 3x^2 - 24$. Explain.

A. Yes because $f(-4) \neq 0$

B. No because $f(-4) \neq 0$

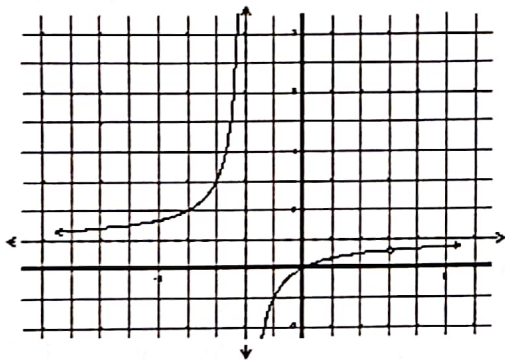
C. Yes because $f(4) \neq 0$

D. No because $f(4) \neq 0$

$$x = \pm\sqrt{2}$$

$$\begin{array}{r|rrrr} -4 & 1 & 3 & 0 & -24 \\ & & -4 & 4 & -16 \\ \hline & 1 & -1 & 4 & -40 \end{array}$$

11.



Which of the following could be the function represented by the graph?

A. $f(x) = \frac{x}{x-2}$

B. $f(x) = \frac{x(x+3)}{(x+3)(x-2)}$

C. $f(x) = \frac{x}{x+2}$

D. $f(x) = \frac{x(x-3)}{(x-3)(x+2)}$

VA at $x = -2$
hole at $(3, 3/5)$

12. Where does the function $f(x) = \frac{2x^2 - x - 3}{x^2 + 3x + 2}$ have a hole?

A. $(-1, -7)$

B. $(-1, -5)$

C. $(-2, -7)$

D. $(-2, -5)$

$$\frac{(2x-3)(x+1)}{(x+2)(x+1)}$$

$$\frac{-5}{1} \quad (-1, -5)$$

13. What is the vertical asymptote of $f(x) = \frac{2x^2 - x - 3}{x^2 + 3x + 2}$?

A. $x = 1$

B. $x = 2$

C. $x = -1$

D. $x = -2$

14. Solve for x : $\cos x + 1 = 0$. (In the answers below, n represents an arbitrary integer.)

A. $2\pi n$

B. $\frac{\pi}{2} + 2\pi n$

C. $\pi + 2\pi n$

D. $\frac{3\pi}{2} + 2\pi n$

$$\cos x = -1$$

$$x = \pi + 2\pi n$$

15. For which two functions below does $f(g(x)) = 1 + \sqrt{x^3 - 4}$?

A. $f(x) = 1 + \sqrt{x^3}$
 $g(x) = x - 4$

B. $f(x) = x - 4$
 $g(x) = 1 + \sqrt{x^3}$

C. $f(x) = 1 + \sqrt{x}$
 $g(x) = x^3 - 4$

D. $f(x) = x^3 - 4$
 $g(x) = 1 + \sqrt{x}$

16. If $f(x) = x^2 + 1$ and $g(x) = \frac{1}{x}$, find $(f \circ g)(x)$.

A. $\frac{x^2 + 1}{x}$

B. $\frac{x^2 + 1}{x^2}$

C. $\frac{1}{x^2 + 1}$

D. $\frac{x}{x^2 + 1}$

$$\left(\frac{1}{x}\right)^2 + 1$$

$$\frac{1}{x^2} + 1$$

$$\frac{1+x^2}{x^2}$$