

AP Calculus AB Prerequisite Quiz Version 1

Part A: NO CALCULATOR



- 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 $y = f(x + 2)$?
A. x -int: 1 B. y -int: 2 C. x -int: 5 D. y -int: 6
- What is the **domain** of $\frac{1}{2 - \sqrt{x+1}}$?
A. $(-1, 3) \cup (3, \infty)$ B. $[-1, 3) \cup (3, \infty)$ C. $(-1, 3)$ D. $[-1, 3)$
- 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. $\frac{x^3 + 4}{x + 2}$
- 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 $f(x) - g(x)$
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. $\frac{2x^2 + 6x + 3}{x - 3}$
- 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. $\frac{x^2 + 4x + 4}{x - 2}$

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

A. 6

B. 2

C. -2

D. -6

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

A. ± 2

B. ± 1

C. $\pm \sqrt{2}$

D. ± 4

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

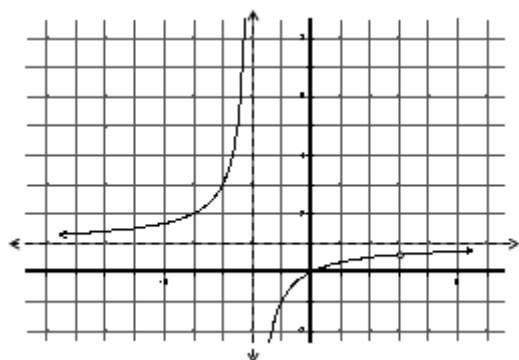
A. Yes because $f(-4) \neq 0$

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

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

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

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

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)

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

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

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Part B: CALCULATOR REQUIRED

Note that several questions have answer choices that are very close to each other. If you round correctly (and not until the very end), your answer should appear as an answer choice. If it doesn't, choose the answer choice that is closest to yours.

YOU MAY BEGIN WHEN READY.

- 17.** Find the x -intercept of $f(x) = 3x^5 + x^4 + 6x^3 - 15x + 10$
A. -1.4316 **B.** -1.4318 **C.** -1.4320 **D.** -1.4322
- 18.** Find the relative minimum value of $f(x)$ as defined above.
A. 2.2881 **B.** 2.2883 **C.** 2.2885 **D.** 2.2887
- 19.** Find the value of x for which $f(x) = -4$ for f as defined above.
A. -1.4829 **B.** -1.4830 **C.** -1.4831 **D.** -1.4832
- 20.** Solve $3x^3 + 5x - 3 = x + 6$ for x .
A. 1.1391 **B.** 1.1393 **C.** 1.1395 **D.** 1.1397

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 |