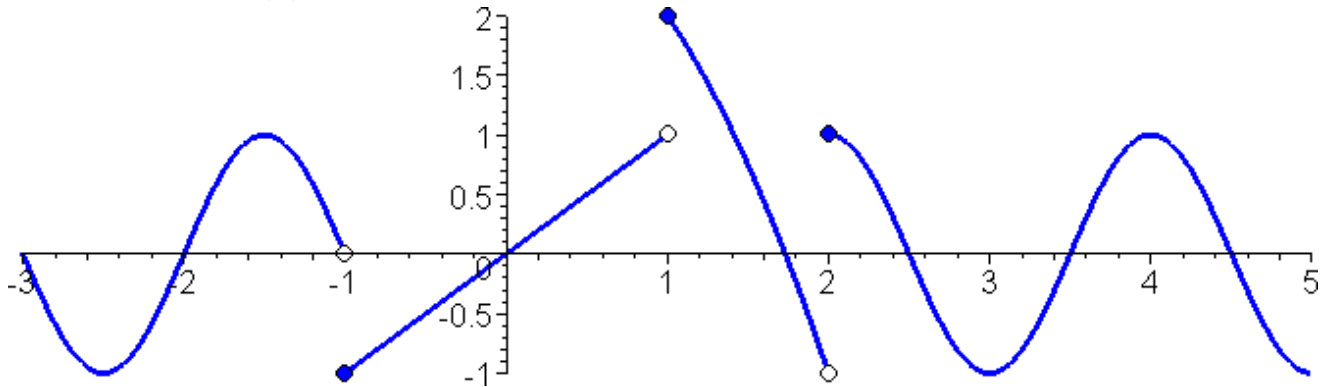


PreAP Precalculus

TEST Chapter 2.1-2.3, Form A. No Calculator

Part I: Multiple Choice, Put your **CAPITAL LETTER** answer choice in the blank to the left of the number.

Use the graph of $f(x)$ below for $-4 \leq x \leq 4$ to answer questions 1- 5.



_____ 1. $\lim_{x \rightarrow 2^-} f(x) =$

- (A) -1 (B) 0 (C) 1 (D) 2 (E) DNE

_____ 2. $f(x)$ is monotonic/strictly decreasing on which of the following given intervals?

- (A) $(-3, -2)$ (B) $(-1, 1)$ (C) $(3, 5)$ (D) $(1, 2)$ (E) $(2, 4)$

_____ 3. $\lim_{x \rightarrow 3} f(x) =$

- (A) -1 (B) 0 (C) 2 (D) DNE (E) $-\infty$

_____ 4. Which of the following is true about the graph of $f(x)$?

- (A) $f(x)$ has a local min at $x = 2$ (B) $f(x)$ has a local max of 4 (C) $f(x)$ has a local max at $x = 1$
 (D) $f(x)$ has a global/absolute max of 1 (E) $f(x)$ has no relative/local minimum

_____ 5. Which of the following is **NOT** true about the graph of $f(x)$?

- (A) $f(x)$ is continuous at $x = 0$ (B) $\lim_{x \rightarrow 2^-} f(x) = f(-1)$ (C) $\lim_{x \rightarrow 3} f(x) = -1$
 (D) $\lim_{x \rightarrow -1^-} f(x) = \lim_{x \rightarrow 2^-} f(x)$ (E) $f(x)$ has an absolute max at 1.

_____ 6. If $h(x) = x^2 - 2x - 15$, find the average rate of change of $h(x)$ on the interval $x \in [-2, 4]$.

- (A) $-\frac{7}{2}$ (B) $-\frac{14}{6}$ (C) 0 (D) $-\frac{1}{2}$ (E) DNE

_____ 7. Which of the following **is true** about $f(x) = \frac{2x^2 - 5x - 3}{x^2 + x - 12}$

- (A) $f(x)$ has a vertical asymptote at $x = 3$ (B) $f(x)$ has a vertical asymptote at $x = -\frac{1}{2}$
(C) $\lim_{x \rightarrow -\infty} f(x) = \infty$ (D) $f(x)$ has a hole at $(3, 1)$ (E) $f(x)$ has horizontal asymptote at $y = 0$

_____ 8. $\lim_{x \rightarrow \infty} \frac{22x^2 + 55x}{x^\pi} =$

- (A) 22 (B) π (C) 0 (D) $-\infty$ (E) ∞

_____ 9. The function $f(x) = \begin{cases} 3x - 2, & x < 1 \\ 2x^2 - 8, & x > 1 \end{cases}$

- (A) has a jump at $x = 1$ (B) has a hole at $x = 1$ (C) has a VA at $x = 1$
(D) is continuous at $x = 1$ (E) is an even function

Part II: Free Response

Show all work in the space provided. As always, use proper notation, and show the work that leads to your answer. Remember that on this section, your PROCESS is as important as your PRODUCT. Given

$$f(x) = 3x^2 + 6x - 45 \quad g(x) = x^2 + 3x - 10 \quad k(x) = 5x^{10} - 8x^8 - 2x^4 - 2 \quad p(x) = 9x^8 - 3x^4 + 6$$

10. Let $h(x) = \frac{g(x)}{f(x)}$

(a) Find the domain of $h(x)$.

(b) Find the **equation** of any vertical asymptote of $h(x)$.

(c) Find the **coordinate**, (x, y) , of any removable point discontinuity of $h(x)$.

(d) Find the **equation** of any horizontal asymptote of $h(x)$.

(e) Find the **coordinate**, (x, y) , of any x -intercepts of $h(x)$.

11. Let $m(x) = \frac{k(x)}{p(x)}$

(a) Is $m(x)$ is even, odd, or neither. Justify.

(b) Find $\lim_{x \rightarrow -\infty} m(x)$

(c) Find the y -intercept of $m(x)$. List it as an ordered pair.