

2.2 AP Style Questions

1. The values of $f(x)$ of a function f can be made arbitrarily large by taking x sufficiently close to 2 but not equal to 2. Which of the following statements must be true?

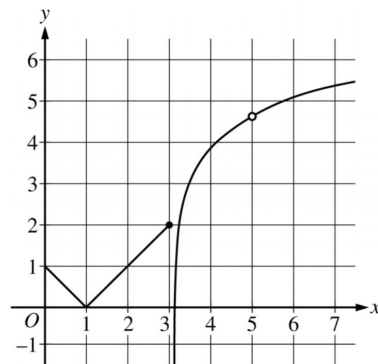
- a. $f(2)$ does not exist
- b. f is continuous at $x = 2$
- c. $\lim_{x \rightarrow 2} f(x) = \infty$
- d. $\lim_{x \rightarrow \infty} f(x) = 2$

2. The function g is continuous at all x except $x = 2$. If $\lim_{x \rightarrow 2} g(x) = \infty$, which of the following statements about g must be true?

- a. $g(2) = \infty$
- b. The line $x = 2$ is a horizontal asymptote to the graph of g .
- c. The line $x = 2$ is a vertical asymptote to the graph of g .
- d. The line $y = 2$ is a vertical asymptote to the graph of g .

3. The graph of the function f is shown below. Which of the following limits does not exist?

- a. $\lim_{x \rightarrow 1^-} f(x)$
- b. $\lim_{x \rightarrow 1} f(x)$
- c. $\lim_{x \rightarrow 3^-} f(x)$
- d. $\lim_{x \rightarrow 3} f(x)$
- e. $\lim_{x \rightarrow 5} f(x)$



Graph of f

4. $\lim_{n \rightarrow \infty} \frac{3n^3 - 5n}{n^3 - 2n^2 + 1}$ is
- a. -5
 - b. -2
 - c. 1
 - d. 3
 - e. Nonexistent

5. Which of the following limits are equal to -1 ?

I. $\lim_{x \rightarrow 0^-} \frac{|x|}{x}$

II. $\lim_{x \rightarrow 3} \frac{x^2 - 7x + 12}{3 - x}$

III. $\lim_{x \rightarrow \infty} \frac{1 - x}{1 + x}$

- a. I only
- b. I and III only
- c. II and III only
- d. I, II, and III only