

Limits Practice ... Set 1

Released Multiple Choice Questions - Limits

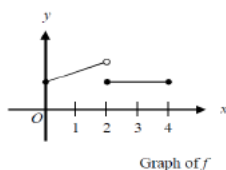
1. $\lim_{x \rightarrow \infty} \frac{(2x-1)(3-x)}{(x-1)(x+3)}$ is

- a. -3 b. -2 c. 2 d. 3 e. DNE

2. $\lim_{x \rightarrow 0} \frac{5x^4+8x^2}{3x^4-16x^2}$ is

- a. $-\frac{1}{2}$ b. 0 c. $\frac{5}{3}$ d. $\frac{7}{6}$ e. None of These

3. The figure below shows the graph of a function f with domain $0 \leq x \leq 4$. Which of the following statements are true?



- I. $\lim_{x \rightarrow 2} f(x)$ exists. II. $\lim_{x \rightarrow 2^+} f(x)$ exists. III. $\lim_{x \rightarrow 2} f(x)$ exists.
- a. I only b. II only c. I and II only d. I and III only e. I, II, and III

4. For $x \geq 0$, the horizontal line $y = 2$ is an asymptote for the graph of the function f . Which of the following statements must be true?

- a. $f(0) = 2$ b. $f(x) \neq 2$ for all $x \geq 0$ c. $f(2)$ is undefined d. $\lim_{x \rightarrow 2} f(x) = \infty$ e. $\lim_{x \rightarrow \infty} f(x) = 2$

5. $\lim_{x \rightarrow \infty} \frac{x^2-2x^2+3x-4}{4x^2-3x^2+2x-1} =$

- a. 4 b. 1 c. $\frac{1}{4}$ d. 0 e. -1

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6. If $f(x) = \begin{cases} \ln x & \text{for } 0 < x \leq 2 \\ x^2 \ln 2 & \text{for } 2 < x \leq 4 \end{cases}$, then $\lim_{x \rightarrow 2} f(x)$ is

- a. $\ln 2$ b. $\ln 8$ c. $\ln 16$ d. 4 e. DNE

7. The function f is continuous on the closed interval $[0,2]$ and has values that are given in the table. The equation $f(x) = \frac{1}{2}$ must have a least two solutions in the interval $[0,2]$ if $k =$

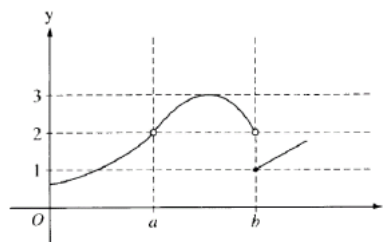
x	0	1	2
$f(x)$	1	k	2

- a. 0 b. $\frac{1}{2}$ c. 1 d. 2 e. 3

8. If $a \neq 0$, then $\lim_{x \rightarrow a} \frac{x^2 - a^2}{x^4 - a^4}$ is

- a. $\frac{1}{a^2}$ b. $\frac{1}{2a^2}$ c. $\frac{1}{6a^2}$ d. 0 e. DNE

9. The graph of the function f is shown in the figure to the right. Which of the following statements about f is true?



- a. $\lim_{x \rightarrow a} f(x) = \lim_{x \rightarrow b} f(x)$ b. $\lim_{x \rightarrow a} f(x) = 2$
 c. $\lim_{x \rightarrow b} f(x) = 2$ d. $\lim_{x \rightarrow b} f(x) = 1$
 e. $\lim_{x \rightarrow a} f(x)$ DNE

10. $\lim_{n \rightarrow \infty} \frac{3n^2 - 5n}{n^2 - 2n^2 + 1}$ is

- a. -5 b. -2 c. 1 d. 3 e. DNE

11. If the function f is continuous for all real numbers and if $f(x) = \frac{x^2 - 4}{x + 2}$ when $x \neq -2$, then $f(-2) =$

- a. -4 b. -2 c. -1 d. 0 e. 2

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12. $\lim_{n \rightarrow \infty} \frac{4n^2}{n^2 + 10,000n}$ is

- a. 0 b. $\frac{1}{2500}$ c. 1 d. 4 e. DNE

13. If $\lim_{x \rightarrow a} f(x) = L$, where L is a real number which of the following must be true?

- a. $f'(a)$ exists b. $f(x)$ is continuous at $x = a$
c. $f(x)$ is defined at $x = a$ d. $f(a) = L$
e. None of these

14. If $\begin{cases} f(x) = \frac{\sqrt{2x+5} - \sqrt{x+7}}{x-2}, \text{ for } x \neq 2, \\ f(2) = k \end{cases}$ and if f is continuous at $x = 2$, then $k =$

- a. 0 b. $\frac{1}{6}$ c. $\frac{1}{3}$ d. 1 e. $\frac{7}{5}$