

AP Practice – Limits

Multiple Choice Questions

NC '08
#1

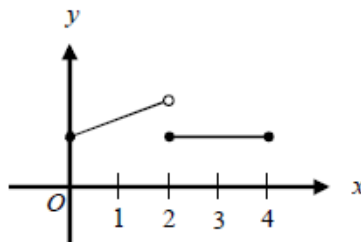
$$\lim_{x \rightarrow \infty} \frac{(2x-1)(3-x)}{(x-1)(x+3)} \text{ is}$$

- (A) -3 (B) -2 (C) 2 (D) 3 (E) nonexistent

NC '08
#5

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

- (A)
- $-\frac{1}{2}$
- (B) 0 (C) 1 (D)
- $\frac{5}{3} + 1$
- (E) nonexistent

C '08
MC
#77Graph of f

The figure above 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

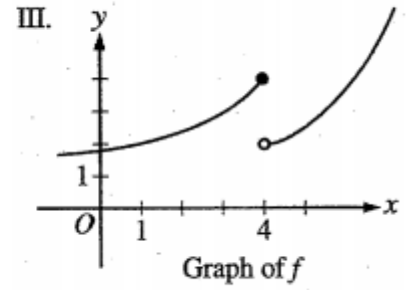
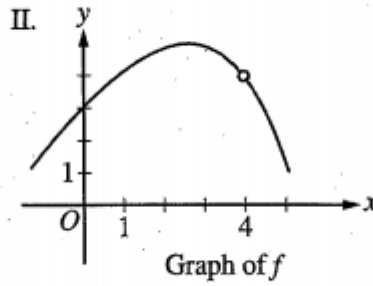
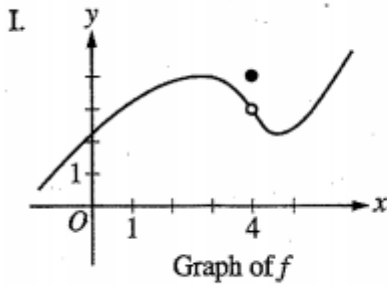
NC '03
#6

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

- (A) 4 (B) 1 (C)
- $\frac{1}{4}$
- (D) 0 (E) -1

C '03
#79

For which of the following does $\lim_{x \rightarrow 4} f(x)$ exist?



- (A) I only
(B) II only
(C) III only
(D) I and II only
(E) I and III only

NC '98
#12

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) nonexistent

C '98
#83

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

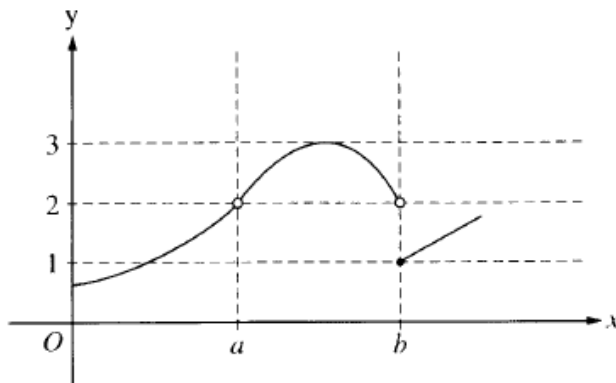
- (A) $\frac{1}{a^2}$ (B) $\frac{1}{2a^2}$ (C) $\frac{1}{6a^2}$ (D) 0 (E) nonexistent

NC '97
#21

$\lim_{x \rightarrow 1} \frac{x}{\ln x}$ is

- (A) 0 (B) $\frac{1}{e}$ (C) 1 (D) e (E) nonexistent

NC '97
#15



The graph of the function f is shown in the figure above. 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) $\lim_{x \rightarrow a} f(x)$ does not exist.

SC '93
#3

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

- (A) -5 (B) -2 (C) 1 (D) 3 (E) nonexistent

SC '93
#29

$$\lim_{\theta \rightarrow 0} \frac{1 - \cos \theta}{2 \sin^2 \theta} \text{ is}$$

- (A) 0 (B) $\frac{1}{8}$ (C) $\frac{1}{4}$ (D) 1 (E) nonexistent