AP Calculus AB
Practice AP Questions

You may not use a calculator for questions 1-8.

1. The $\lim\limits_{x \to 2} \dfrac{x^2 - 4}{x^2 + 4}$ is

A) 1   B) 0   C) -.5   D) -1   E) ∞

2. The $\lim\limits_{x \to \infty} \dfrac{4 - x^2}{x^2 - 1}$ is

A) 1   B) 0   C) -4   D) -1   E) ∞

3. The $\lim\limits_{x \to 0} \dfrac{x}{x}$ is

A) 1   B) 0   C) ∞ D) -1   E) nonexistent

4. The $\lim\limits_{x \to \infty} \dfrac{4 - x^2}{4x^2 - x - 2}$ is

A) -2   B) -.25   C) 1   D) 2   E) nonexistent

5. The $\lim\limits_{x \to \infty} \dfrac{5x^3 + 27}{20x^2 + 10x + 9}$ is

A) ∞ B) .25   C) 3   D) 0   E) 1

6. The $\lim\limits_{x \to \infty} \dfrac{2^{-x}}{2^x}$ is

A) - 1   B) 1   C) 0   D) ∞ E) none of these

7. If [x] is the greatest integer not greater than x, then $\lim\limits_{x \to 2} [x]$ is

A) 0   B) 1   C) 2   D) 3   E) none of these

8. The $\lim\limits_{x \to 0} \sin\left(\dfrac{1}{x}\right)$ is

A) ∞ B) 1   C) nonexistent   D) -1   E) none of these

You may use your calculator for questions 9 through 12.

9. The $\lim\limits_{x \to 0} \dfrac{\tan x}{x}$ is

A) 0   B) 1   C) ∞ D) π E) nonexistent

10. Let $f(x) = \begin{cases} x^2 - 1 & \text{if } x \neq 1 \\ 4 & \text{if x = 1} \end{cases}$ Which of he following statements are true?

I. $\lim\limits_{x \to 1} f(x)$ exists   II. $f(1)$ exists   III. F is continuous at x = 1

A) I. only   B) II. only   C) I. And II. only   D) none of them   E) all of them

11.

Suppose $\begin{cases} f(x) = \dfrac{3x(x-1)}{x^2 - 3x + 2} & \text{for } x \neq 1,2 \\ f(1) = -3 \\ f(2) = 4 \end{cases}$

Then, $f(x)$ is continuous

A) except at x = 1   B) except at x = 2   C) except at x = 1 or x = 2   D) except at x = 0, 1, or 2

E) at each real number

12. Suppose $\lim\limits_{x \to 0} \dfrac{g(x) - g(0)}{x} = 1$. It follows necessarily that

A) g is not defined at x = 0

B) g is not continuous at x = 0

C) The limit of $g(x)$ as x approaches 0 equals 1

D) $g'(0) = 1$

E) $g'(1) = 0$