Calculus Web Assignments

Web Assignments are intended to be completed with a partner. Both partners should individually work each of the problems, followed by a collaborative discussion about the problem.
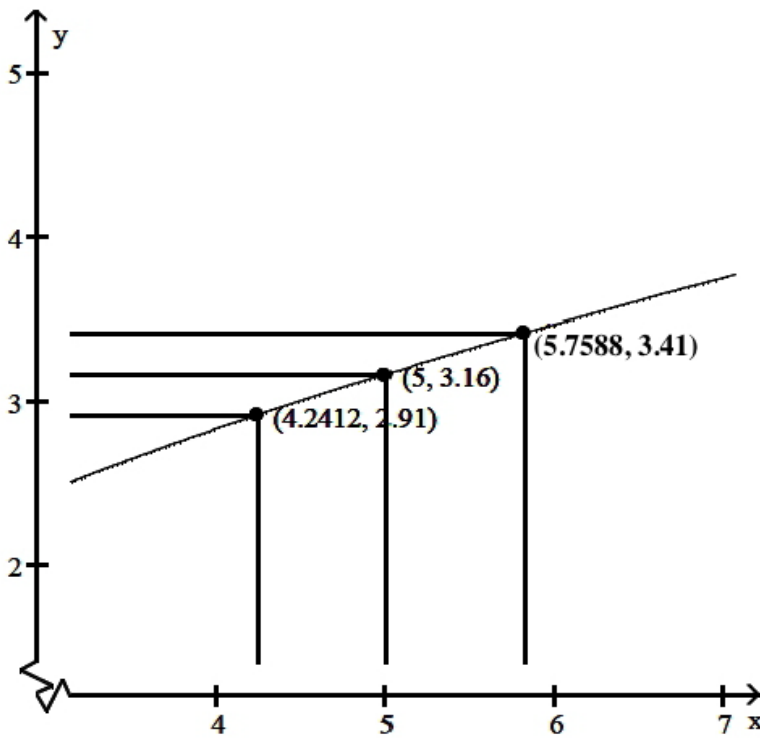
Both partners are required to participate in the "Honor-System" Grading of the Web Assignment.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - a| < \delta \Rightarrow |f(x) - L| < \varepsilon$

a. $\dfrac{1}{4}$

b. $\dfrac{1}{2}$

c. 0.7588

d. -1.84

___ 2. Given $\lim\limits_{x \to 4} -5x + 10$ and $\varepsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - a| < \delta$ the inequality $|f(x) - L| < \varepsilon$ holds.

   a.   0.008
   b.   0.004
   c.   -0.0025
   d.   0.002

___ 3. Evaluate the limit: $\quad \lim\limits_{x \to 9} \dfrac{3 - \sqrt{x}}{9 - x}$

   a. $\dfrac{1}{12}$

   b. $-\dfrac{1}{3}$
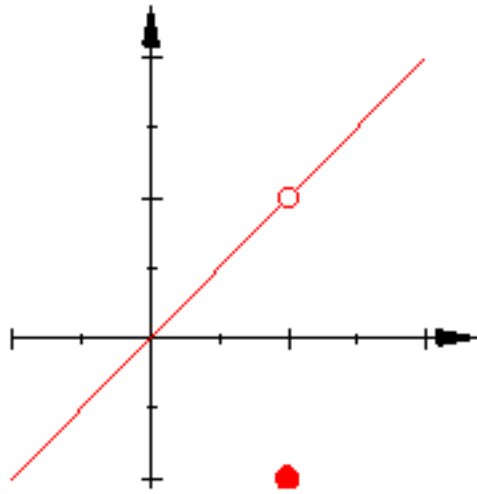
   c. -6

   d. $\dfrac{1}{6}$

___ 4. **TRUE or FALSE:**   If $f(x) = \dfrac{x^2 - 4}{x - 2}$ and $g(x) = x + 2$ then we can say the functions f and g are equal.

   a.   TRUE
   b.   FALSE

___ 5. Let f be the function given by $f(x) = \dfrac{x + 4}{(x - 1)(x + 8)}$. For which of the following values of x is f not continuous?

   a.   -4 and 8 only
   b.   -4, 1, and -8
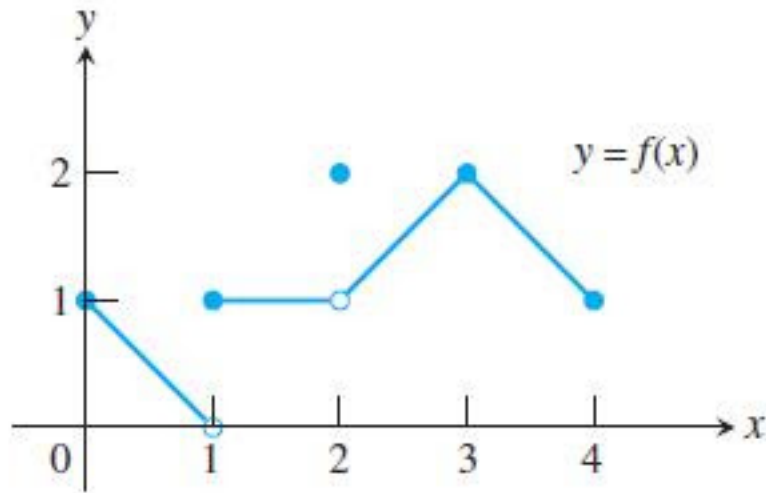   c.   1 and -8 only
   d.   -4 only

_____ 6.

The graph of a function f is shown in the figure above. Which of the following statements is true?

a. $f(2) = 2$
b. f is continuous at $x = 2$
c. $\lim\limits_{x \to 2} f(x) = -2$
d. $\lim\limits_{x \to 2} f(x) = 2$
e. $\lim\limits_{x \to 2} f(x)$ does not exist

The graph of the function f is shown above. Which of the following statements is false?

a. $\lim\limits_{x \to 2} f(x)$ exists

b. $\lim\limits_{x \to 3} f(x)$ exists

c. $\lim\limits_{x \to 1} f(x)$ exists

d. The function f is continuous at $x = 3$

$$f(x) = \begin{cases} k\sqrt{x+1} & 0 \le x \le 3 \\ 5-x & 3 < x \le 5 \end{cases}$$

The function f is defined above. For what value of k, if any, is f continuous at $x = 3$?

a. 1

b. 2

c. 3

d. No value of k will make f continuous at $x = 2$.

____ 9. Let f be defined as follows, where $a \neq 0$.

$$f(x) = \begin{cases} \dfrac{x^2 - a^2}{x - a} & \text{for } x \neq a \\ 0 & \text{for } x = a \end{cases}$$

Which of the following are true about f ?

    I. $\lim\limits_{x \to a} f(x)$ exists

    II. $f(a)$ exists

    III. $f(x)$ is continuous at $x = a$

a. None
b. I only
c. II only
d. I and II only
e. I, II, and III

____ 10. If $\begin{cases} f(x) = \dfrac{3x^2 + x}{2x} & \text{for } x \neq 0 \\ f(0) = k \end{cases}$ and if f is continuous at $x = 0$, then $k =$

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