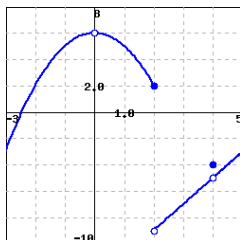


1. (2 pts) Use the figure below, which gives a graph of the function $f(x)$, to give values for the indicated limits.



(If any of the limits does not exist, enter the word **none** in the answer blank for that limit.)

(a) $\lim_{x \rightarrow -2} f(x) =$ _____

(b) $\lim_{x \rightarrow 0} f(x) =$ _____

(c) $\lim_{x \rightarrow 2} f(x) =$ _____

(d) $\lim_{x \rightarrow 4} f(x) =$ _____

Answer(s) submitted:

•
•
•
•

(incorrect)

2. (2 pts) For the function

$$f(x) = \begin{cases} x^2 - 3, & 0 \leq x < 4 \\ 4, & x = 4 \\ 4x - 3, & 4 < x \end{cases}$$

use algebra to find each of the following limits:

$\lim_{x \rightarrow 4^+} f(x) =$ _____

$\lim_{x \rightarrow 4^-} f(x) =$ _____

$\lim_{x \rightarrow 4} f(x) =$ _____

(For each, enter **dne** if the limit does not exist.)

Sketch a graph of $f(x)$ to confirm your answers.

Answer(s) submitted:

•
•
•

(incorrect)

3. (1 pt) Consider the function graphed below.



At what x -values does the function appear to not be continuous? $x =$ _____

At what x -values does the function appear to not be differentiable? $x =$ _____

(Enter **none** if there are no x -values that apply; enter x -values as a comma-separated list, e.g., **1,3,5**.)

Answer(s) submitted:

•
•

(incorrect)

4. (1 pt) Use continuity to evaluate

$$\lim_{x \rightarrow \pi} \sin(-8x + \sin 5x)$$

Enter **I** for ∞ , **-I** for $-\infty$, and **DNE** if the limit does not exist.

Limit = _____

Answer(s) submitted:

•

(incorrect)

5. (1 pt) Use continuity to evaluate

$$\lim_{x \rightarrow 1} e^{x^5 - x^1}$$

Enter **I** for ∞ , **-I** for $-\infty$, and **DNE** if the limit does not exist.

Limit = _____

Answer(s) submitted:

•

(incorrect)

6. (1 pt) Find k so that the following function is continuous on any interval:

$$f(x) = kx \quad \text{if } 0 \leq x < 4, \quad \text{and} \quad f(x) = 4x^2 \quad \text{if } 4 \leq x.$$

$k =$ _____

Answer(s) submitted:

•

(incorrect)

7. (1 pt) If possible, choose k so that the following function is continuous on any interval:

$$f(x) = \begin{cases} \frac{8x^3 - 16x^2}{x-2} & x \neq 2 \\ k & x = 2. \end{cases}$$

$k =$ _____

(If no k will make the function continuous, enter **none**)

Answer(s) submitted:

•

(incorrect)

8. (1 pt) For what value of c is the function defined below continuous on $(-\infty, \infty)$?

$$f(x) = \begin{cases} cx + 2, & x < 2, \\ cx^2 - 2, & x \geq 2. \end{cases}$$

$c =$ _____

Answer(s) submitted:

•

(incorrect)

9. (1 pt) Evaluate the limit

$$\lim_{u \rightarrow 3} \sqrt{u^2 + 3u + 6}$$

Enter **I** for ∞ , **-I** for $-\infty$, and **DNE** if the limit does not exist.

Limit = _____

Answer(s) submitted:

•

(incorrect)

10. (1 pt) Evaluate the limit

$$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x^2 - 4}$$

Enter **I** for ∞ , **-I** for $-\infty$, and **DNE** if the limit does not exist.

Limit = _____

Answer(s) submitted:

•

(incorrect)

11. (2 pts) Find (in terms of the constant a)

$$\lim_{h \rightarrow 0} \frac{\frac{4}{a+h} - \frac{4}{a}}{h}.$$

Limit = _____

Answer(s) submitted:

•

(incorrect)

12. (1 pt) Evaluate the limit

$$\lim_{x \rightarrow 2} \frac{|x-2|}{x-2}$$

Enter **I** for ∞ , **-I** for $-\infty$, and **DNE** if the limit does not exist.

Limit = _____

Answer(s) submitted:

•

(incorrect)

13. (2 pts) Let f be defined by

$$f(x) = \begin{cases} 3x^3 - 2m, & x \leq -1 \\ 6x^2 + 5m, & x > -1 \end{cases}$$

(a) Find (in terms of m) $\lim_{x \rightarrow -1^+} f(x)$

Limit = _____

(b) Find (in terms of m) $\lim_{x \rightarrow -1^-} f(x)$

Limit = _____

(c) Find all values of m such that

$$\lim_{x \rightarrow -1^-} f(x) = \lim_{x \rightarrow -1^+} f(x)$$

(Note: if there are more than one such value, list them separated by commas)

Values of $m =$ _____

Answer(s) submitted:

•

•

•

(incorrect)