



Assessment

Mathematics: Lesson 37



Question 1

Determine the limit by substitution. $\lim_{x \rightarrow 2} (x^3 + 5x^2 - 7x + 1)$

- A. 29
- B. 0
- C. Does not exist
- D. 15

Question 2

Determine the limit if it exists. $\lim_{x \rightarrow 6} \frac{x+6}{(x-6)^2}$

- A. -6
- B. 0
- C. 6
- D. Does not exist

Question 3

Find the limit, if it exists. $\lim_{x \rightarrow 0} \frac{x^3 + 12x^2 - 5x}{5x}$

- A. -1
- B. 5
- C. 0
- D. Does not exist

Question 4

Find the limit, if it exists. $\lim_{x \rightarrow 6^-} \frac{1}{(x-6)^2}$

A. ∞

B. $-\infty$

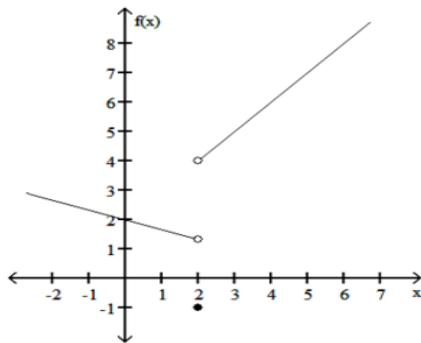
C. 0

D. -1

Question 5

Determine the limit graphically, if it exists $\lim_{x \rightarrow 2^+} f(x)$

- A. 4
- B. 2
- C. 1
- D. -1



Question 6

$$f(x) = \begin{cases} \frac{1}{x+1}, & \text{for } x > -1 \\ x^2 - 3x, & \text{for } x \leq -1 \end{cases} \quad \lim_{x \rightarrow -1^-} f(x)$$

- A. 4
- B. -4
- C. 0
- D. Does not exist

Question 7

$$f(x) = \begin{cases} \frac{1}{x+1}, & \text{for } x > -1 \\ x^2 - 3x, & \text{for } x \leq -1 \end{cases} \quad \lim_{x \rightarrow -1} f(x)$$

- A. 4
- B. -4
- C. 0
- D. Does not exist

Question 8

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

A. 1

B. $-\frac{1}{2}$

C. 0

D. -1

Question 9

What is the value of the limit $\lim_{x \rightarrow 0} \frac{x^2 - x - 2}{x^2 - 2x}$

- A. -2
- B. Does not exist
- C. 1
- D. $-\infty$

Question 10

Find the limit $\lim_{x \rightarrow -2} \frac{1}{x+2}$

- A. Does not exist
- B. $-\infty$
- C. $\frac{1}{2}$
- D. ∞



Assessment

Mathematics: Lesson 38



Question 1

Classify each statement as either true or false

a.) If $\lim_{x \rightarrow 2} f(x) = 9$ then $\lim_{x \rightarrow 2} \sqrt{f(x)} = 3$

- i. True
- ii. False

b.) If $\lim_{x \rightarrow 1} g(x) = 5$ then $\lim_{x \rightarrow 1} [g(x)]^2 = 10$

- i. True
- ii. False

c.) If $\lim_{x \rightarrow 4} f(x) = 7$ then $\lim_{x \rightarrow 4} [c \cdot f(x)] = 7c$

- i. True
- ii. False

Question 2

Suppose that $\lim_{x \rightarrow 4} f(x) = 5$ and $\lim_{x \rightarrow 4} g(x) = -2$. Find the $\lim_{x \rightarrow 4} (f(x) + 3g(x))$

A. 3

B. 7

C. $-\frac{6}{5}$

D. -1

Question 3

Suppose that $\lim_{x \rightarrow 4} f(x) = 5$ and $\lim_{x \rightarrow 4} g(x) = -2$. Find the $\lim_{x \rightarrow 4} xf(x)$

- A. 1
- B. 9
- C. 5
- D. 20

Question 4

Suppose that $\lim_{x \rightarrow 4} f(x) = 5$ and $\lim_{x \rightarrow 4} g(x) = -2$. Find the $\lim_{x \rightarrow 4} (g(x))^2$

- A. 25
- B. -47
- C. -8
- D. 4

Question 5

$$\lim_{x \rightarrow -2} \frac{2x^2 - 1}{x^2 + 1}$$

A. $\frac{7}{5}$

B. $-\frac{7}{5}$

C. 0

D. Does not exist

Question 6

What is the limit $\lim_{x \rightarrow -2} \frac{x^2 - x - 2}{x^2 - 2x}$

A. $\frac{1}{2}$

B. $-\frac{1}{2}$

C. 0

D. Does not exist

Question 7

$\lim_{x \rightarrow -3} (2x^2 + 4x + 1)$ Type equation here.

- A. 7
- B. -3
- C. 0
- D. 3

Question 8

Use the limit rules to find $\lim_{x \rightarrow 2} \frac{\sqrt{2+x} - x\sqrt{2}}{x}$

A. $2\sqrt{2}$

B. $-\frac{\sqrt{2}}{4}$

C. Does not exist

D. $1 - \sqrt{2}$

Question 9

Use the limit rules and evaluate the limit, if it exists, $\lim_{x \rightarrow 5} \frac{\sqrt{x-5}-2}{x-9}$

A. $-\frac{1}{2}$

B. 0

C. $\frac{1}{2}$

D. Does not exist

Question 10

Use the limit rules to find $\lim_{x \rightarrow 0} \frac{x^3 - 6x + 8}{x - 2}$

- A. 0
- B. 4
- C. -4
- D. Does not exist



Assessment

Mathematics: Lesson 39



Question 1

What is $\lim_{x \rightarrow \infty} \frac{1}{x+1}$?

A. $-\infty$

B. -1

C. ∞

D. 0

Question 2

What is $\lim_{x \rightarrow \infty} \frac{8}{5-2x^3}$?

A. $\sqrt[3]{2.5}$

B. $-\infty$

C. ∞

D. 0

Question 3

What is $\lim_{x \rightarrow \infty} (2x - 7x^3)$?

A. 0

B. ∞

C. $-\infty$

D. $\sqrt{\frac{2}{7}}$

Question 4

$$\lim_{x \rightarrow \infty} \left(\frac{3x - 7}{5x^4 - 8x + 12} \right) =$$

- A. $\frac{3}{5}$
- B. 3
- C. ∞
- D. 0

Question 5

$\lim_{x \rightarrow -\infty} \frac{5x^3 + 27}{20x^2 + 10x + 9}$ is:

A. $-\infty$

B. -1

C. 0

D. 3

Question 6

Evaluate the indicated limit $\lim_{x \rightarrow 5^-} \frac{1}{5-x}$

A. ∞

B. 0

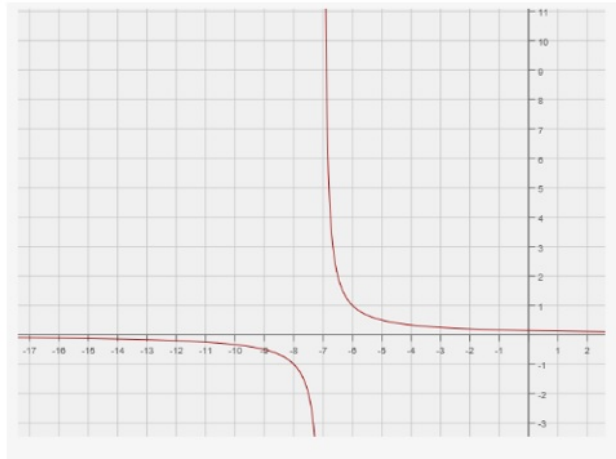
C. $-\infty$

D. $\frac{1}{5}$

Question 7

Find the horizontal asymptote of the function $\frac{1}{x+7}$ from this part of its graph

- A. -7
- B. 0
- C. -17
- D. Does not exist



Question 8

Evaluate the limit $\lim_{x \rightarrow -\infty} \frac{\sqrt{2x^2 + 3}}{2x + 3}$

A. $-\frac{\sqrt{2}}{2}$

B. 2

C. 0

D. ∞

Question 9

$$\lim_{x \rightarrow \infty} (\sqrt{2x^2 - 5} - \sqrt{x^2 - 10}) =$$

- A. 0
- B. $+\infty$
- C. $-\infty$
- D. None is correct

Question 10

$$\lim_{x \rightarrow -\infty} (4x^2 + 3x - 10)$$

A. ∞

B. $-\infty$

C. 0

D. -10



Assessment

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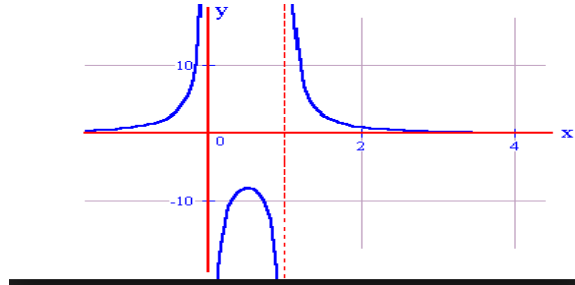


Question 1

Indicate whether the following function is continuous or discontinuous.

A. Continuous

B. Discontinuous



Question 2

In order for a function to be continuous at a point, which of the following conditions must be true?

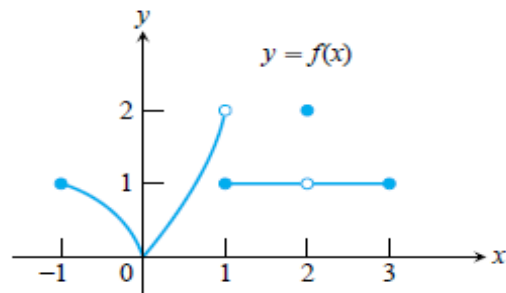
- A. The limits has to exist
- B. The limits has to be equal to the value of the function
- C. A & B
- D. None of the above.

Question 3

$\lim_{x \rightarrow 2} f(x)$ does not exist

A. True

B. False

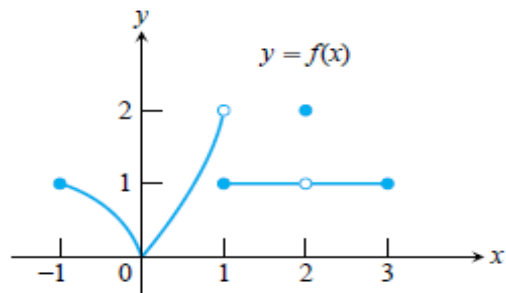


Question 4

$\lim_{x \rightarrow 1} f(x)$ does not exist

A. True

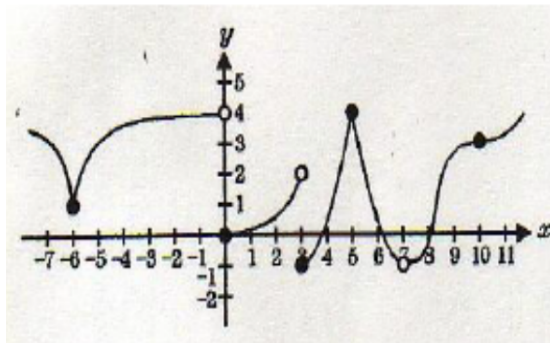
B. False



Question 5

$\lim_{x \rightarrow 6} f$ is

- A. -1
- B. 2
- C. 1
- D. 6



Question 6

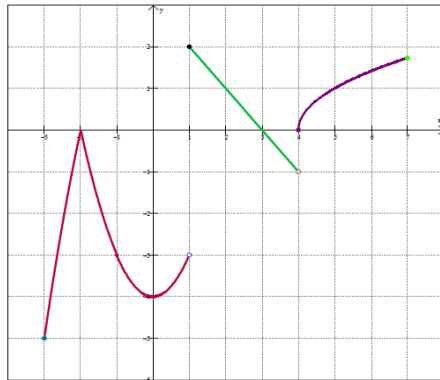
Where is $f(x)$ discontinuous?

A. $x = -2$

B. $x = 0$ and $x = 5$

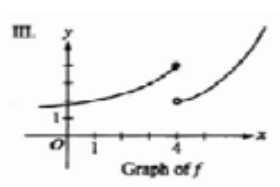
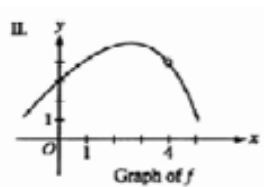
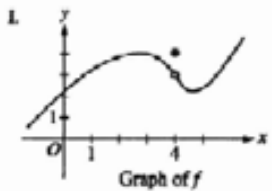
C. $x = 1$ and $x = 4$

D. $x = 7$



Question 7

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

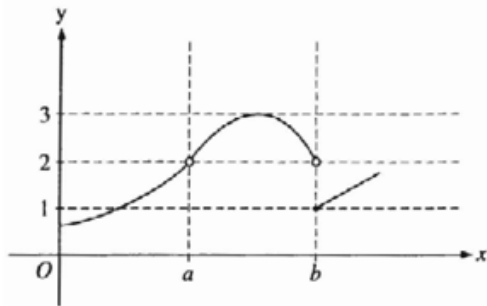


- A. I only
- B. II only
- C. I and II only
- D. I and III only

Question 8

The following statement $\lim_{x \rightarrow a} (fx) =$

- A. True
- B. False



Question 9

What is $\lim_{x \rightarrow 2} \frac{x^2 - x - 2}{x^2 - 2x}$?

A. 0

B. 1

C. ∞

D. $\frac{3}{2}$

Question 10

Is the function f continuous at $x = c$? If not why? $f(x) = \frac{1}{x+1}$ $c = 0$

- A. f is continuous at $x = 0$
- B. $f(0)$ is defined but $\lim_{x \rightarrow 0} f(x)$ does not exist
- C. $f(0)$ is defined but $\lim_{x \rightarrow 0} f(x)$ exists but these two numbers are not equal
- D. $f(0)$ is not defined



Assessment

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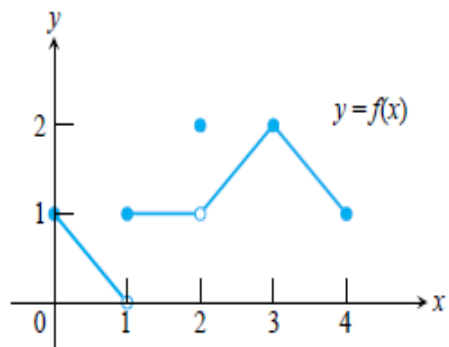


Question 1

At $x = 0$ $\lim_{x \rightarrow 0^+} f(x) = 1$

A. False

B. True



Question 2

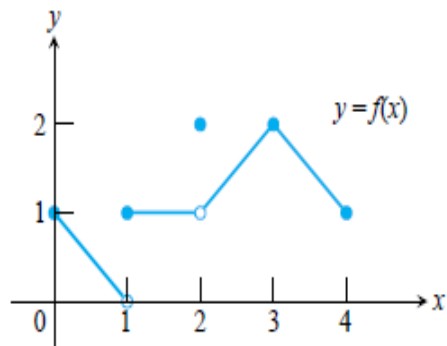
Find $\lim_{x \rightarrow 2^+} f(x)$

A. 0

B. 2

C. 1

D. Does not exist

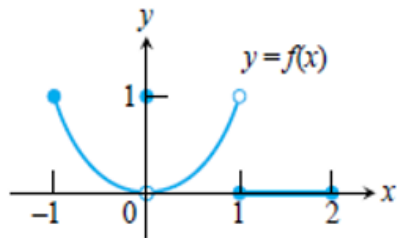


Question 3

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

A. True

B. False

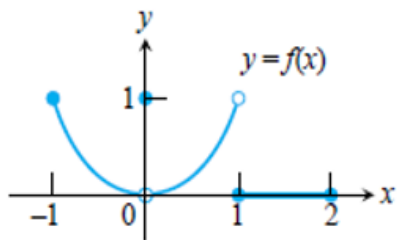


Question 4

$$\lim_{x \rightarrow 1} f(x) = 0$$

A. False

B. True



Question 5

$$f(x) = \begin{cases} 2 - x, & x \leq 1 \\ \frac{x}{2} + 1, & x > 1 \end{cases}$$

What is the value of $\lim_{x \rightarrow 1^+} f(x)$?

- A. $\frac{5}{2}$
- B. $\frac{3}{2}$
- C. 1
- D. 0

Question 6

$$f(x) = \begin{cases} 2 - x, & x \leq 1 \\ \frac{x}{2} + 1, & x > 1 \end{cases}$$

What is the value of $f(1)$?

A. $\frac{5}{2}$

B. $\frac{3}{2}$

C. 1

D. 0

Question 7

$$\lim_{x \rightarrow 4^+} f(x), \quad \text{where } f(x) = \begin{cases} x^2 + 4 & \text{for } x \neq 4 \\ 0 & \text{for } x = 4 \end{cases}$$

A. 20

B. 0

C. 16

D. 12

Question 8

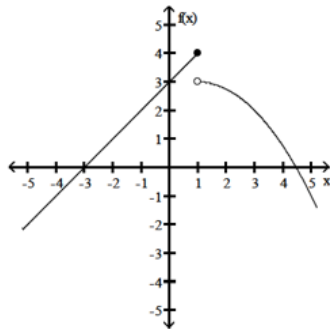
Find $\lim_{x \rightarrow -1^+} (f(x))$

A. $3\frac{1}{2}$

B. 3

C. Does not exist

D. 4

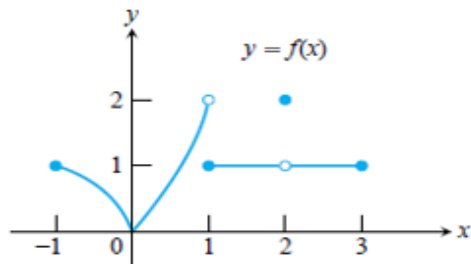


Question 9

$$\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^-} f(x)$$

A. False

B. True



Question 10

$$\lim_{x \rightarrow 6^+} f(x), \quad \text{where } f(x) = \begin{cases} -4x - 3 & \text{for } x < 6 \\ 5x - 2 & \text{for } x \geq 6 \end{cases}$$

- A. 28
- B. -27
- C. -2
- D. -1



Assessment

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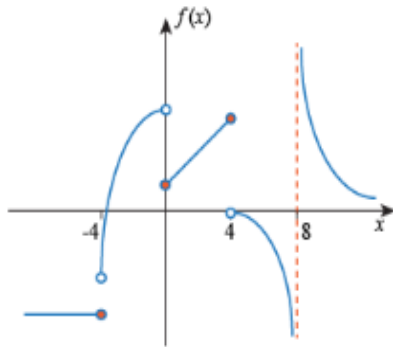


Question 1

The following function is continuous at $(0, 4)$

A. False

B. True



Question 2

Which of the following is not a property of continuous functions?

A. $\lim_{x \rightarrow a} f(x) = f(a)$

B. $\lim_{x \rightarrow a} f(a)$ is defined

C. $\lim_{x \rightarrow a} f(x)$ exists

D. All of the above three are properties of continuous functions

Question 3

The given function is continuous on the given interval

$$f(x) = \begin{cases} \frac{4}{x-2} & x < -1 \\ 3 & -1 \leq x \end{cases} \text{ on } (-3, -2)$$

- A. True
- B. False

Question 4

Which of the following points is not a point of discontinuity of $f(x) = \sqrt{x-1}$?

A. $x = -1$

B. $x = \frac{1}{2}$

C. $x = 1$

D. $x = 0$

Question 5

Which of the following statements about this function is not true

$$f(x) = \begin{cases} 2x & 0 < x < 1 \\ 1 & x = 1 \\ -x + 3 & 1 < x < 2 \end{cases}$$

A. $f(1)$ does not exist

B. $\lim_{x \rightarrow 0^+} f(x)$ exists

C. $\lim_{x \rightarrow 2^-} f(x)$ exists

D. $\lim_{x \rightarrow 1} f(x)$ exists

Question 6

Find the intervals on which the function is continuous $f(x) = \begin{cases} -\frac{x}{2} - \frac{7}{2} & , \quad x \leq 0 \\ -x^2 + 2x - 2 & , \quad x > 0 \end{cases}$

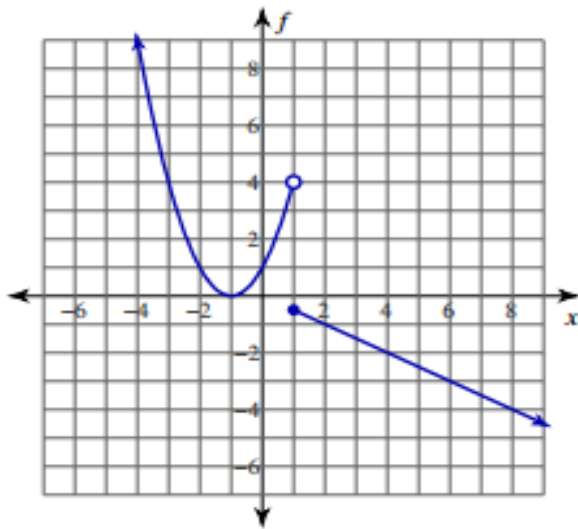
- A. $(-\infty, 0], (0, \infty)$
- B. $(-\infty, 0), [0, \infty)$
- C. All real numbers
- D. $f(x)$ is not continuous

Question 7

Find the intervals on which the function is continuous.

$$f(x) = \begin{cases} x^2 + 2x + 1 & x < 1 \\ -\frac{x}{2} & x \geq 1 \end{cases}$$

- A. $(-\infty, 1), [1, \infty)$
- B. $(-\infty, 1], (1, \infty)$
- C. All real numbers
- D. $f(x)$ is not continuous



Question 8

Find the intervals on which the function is continuous $f(x) = \frac{7x-1}{x^3-4x}$

A. $(-\infty, \frac{1}{7}), (\frac{1}{7}, \infty)$

B. $(-\infty, -2), (-2, 0), (0, 2), (2, \infty)$

C. $(-\infty, -2), (-2, 2), (2, \infty)$

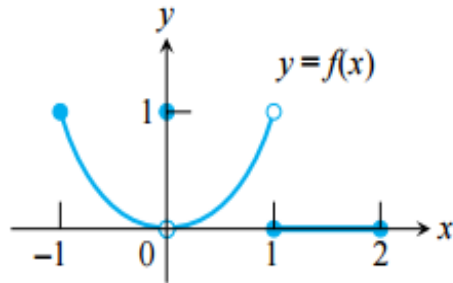
D. $(-\infty, 0), (0, \infty)$

Question 9

Which of the following statements is true about the given function?

A. False

B. True



Question 10

Find the domain of the given function. $f(x) = \frac{1}{\sqrt{x-3}}$

- A. The domain of f is all real numbers $- \{3\}$
- B. The domain is all real numbers
- C. The domain is all real numbers $- \{\frac{1}{3}\}$
- D. The domain is $(3, \infty)$