Score: 1 of 1 pt

2.1.1

Find the average rate of change of the function over the given intervals.

$f(x) = 8x^3 + 8$; **a)** $[6,8]$, **b)** $[-4,4]$

a) The average rate of change of the function $f(x) = 8x^3 + 8$ over the interval $[6,8]$ is 1184.
(Simplify your answer.)

b) The average rate of change of the function $f(x) = 8x^3 + 8$ over the interval $[-4,4]$ is 128.
(Simplify your answer.)

Score: 1 of 1 pt

2.1.4

Find the average rate of change of the function over the given interval.

$f(t) = 4 + \cos t$

a. $\left[-\pi, -\frac{\pi}{2}\right]$

b. $[0, 2\pi]$

a. The average rate of change over $\left[-\pi, -\frac{\pi}{2}\right]$ is $\frac{2}{\pi}$.

(Type an exact answer, using π as needed.)

b. The average rate of change over $[0,2\pi]$ is 0.
(Type an exact answer, using π as needed.)

Score: 1 of 1 pt

2.1.5

Find the average rate of change of the function over the given interval.

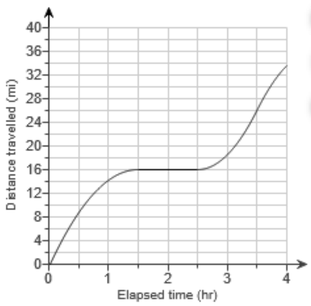
$R(\theta) = \sqrt{5\theta + 1}$; $[0,3]$

$\frac{\Delta R}{\Delta \theta} = 1$ (Simplify your answer.)

2.1.21

Question Help

The accompanying graph shows the total distance s traveled by a bicyclist after t hours.



Using the graph, answer parts **(a)** through **(c)**.

(a) Which of the following is the bicyclist's average speed, in mph, over the time interval [0, 1]?

- A. −64 mph
- B. −14 mph
- C. 64 mph
- D. 14 mph

Which of the following is the bicyclist's average speed, in mph, over the time interval [1, 2.5]?

- A. −26 mph
- B. 1.3 mph
- C. −1.3 mph
- D. 26 mph

Which of the following is the bicyclist's average speed, in mph, over the time interval [2.5, 3.5]?

- A. 10 mph
- B. 60 mph
- C. −10 mph
- D. −60 mph

(b) Which of the following is the bicyclist's instantaneous speed, in mph, at $t=\frac{1}{2}$ hr?

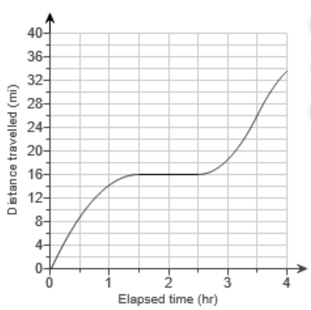
- A. 14.7 mph
- B. 65 mph
- C. −14.7 mph
- D. −65 mph

Score: 1 of 1 pt 4 of 50 **Test Score:** 95.07%, 47.53 of 50

2.1.21

Question Help

The accompanying graph shows the total distance s traveled by a bicyclist after t hours.



Using the graph, answer parts **(a)** through **(c)**.

- C. −14.7 mph
- D. −65 mph

Which of the following is the bicyclist's instantaneous speed, in mph, at $t=2$ hrs?

- A. −1 mph
- B. 0 mph
- C. 1 mph
- D. 2 mph

Which of the following is the bicyclist's instantaneous speed, in mph, at $t=3$ hrs?

- A. 5 mph
- B. 30 mph
- C. −30 mph
- D. −20 mph

(c) Which of the following choices gives the maximum speed, in mph, and the time at which it occurs?

- A. The maximum speed of the bicyclist is 20 mph and it occurs when $t=3.5$ hrs.
- B. The maximum speed of the bicyclist is 45 mph and it occurs when $t=3.5$ hrs.
- C. The maximum speed of the bicyclist is 45 mph and it occurs when $t=1$ hr.
- D. The maximum speed of the bicyclist is 20 mph and it occurs when $t=1$ hr.

Question is complete.

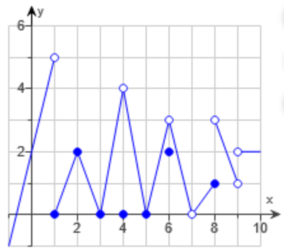
Score: 1 of 1 pt | 5 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.2.1

Question Help

For the graph g(x) graphed below, find the following limits, if they exist.

a) $\lim_{x \to 3} g(x)$ b) $\lim_{x \to 9} g(x)$ c) $\lim_{x \to 4} g(x)$



a) Find $\lim_{x \to 3} g(x)$. Select the correct choice below and fill in any answer boxes in your choice.

- A. $\lim_{x \to 3} g(x) = 0$
- B. The limit does not exist.

b) Find $\lim_{x \to 9} g(x)$. Select the correct choice below and fill in any answer boxes in your choice.

- A. $\lim_{x \to 9} g(x) =$ ☐
- B. The limit does not exist.

c) Find $\lim_{x \to 4} g(x)$. Select the correct choice below and fill in any answer boxes in your choice.

- A. $\lim_{x \to 4} g(x) = 4$
- B. The limit does not exist.

Score: 1 of 1 pt | 6 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.2.9

Question Help

If $\lim_{x \to 1} f(x) = 5$, must f be defined at x = 1? If it is, must f(1) = 5? Can anything be concluded about the values of f at x = 1? Explain.

Must f be defined at x = 1?

- No
- Yes

If f is defined at x = 1, must f(1) = 5?

- A. No, because it might be a piecewise function where the limit approaching 1 from the left and the limit approaching 1 from the right are the same, but f(1) might be defined as a different value.
- B. No, because even if a function is defined at a particular point, it may not exist at that point.
- C. Yes, because if it is defined at x = 1, the f(1) must equal $\lim_{x \to 1} f(x)$.

Can anything be concluded about the values of f at x = 1?

- A. No, nothing can be concluded without knowing more about the definition of f.
- B. Yes, f(1) must equal 5.

Score: 1 of 1 pt

7 of 50

2.2.11

Find the limit as x approaches -8 for the function $f(x) = 12x + 11$.

$\lim\limits_{x \to -8} (12x + 11) = -85$

(Simplify your answer.)

Score: 1 of 1 pt

8 of 50

2.2.14

Evaluate the following limit.

$$\lim_{x \to 2} \left(2x^3 - 3x^2 + 5x + 6\right)$$

$\lim\limits_{x \to 2} \left(2x^3 - 3x^2 + 5x + 6\right) = 20$ (Simplify your answer.)

Score: 1 of 1 pt

9 of 50

2.2.23

Find $\lim\limits_{x \to 6} \dfrac{x - 6}{x^2 - 36}$.

$\lim\limits_{x \to 6} \dfrac{x - 6}{x^2 - 36} = \dfrac{1}{12}$

(Type an integer or a simplified fraction.)

Score: 1 of 1 pt

2.2.26

Find the limit.

$$\lim_{x\to 9} \frac{x^2 - 3x - 54}{x - 9}$$

$\lim_{x\to 9} \frac{x^2 - 3x - 54}{x - 9} =$ 15 (Type an integer or a simplified fraction.)

Score: 1 of 1 pt

2.2.27

Find $\lim_{t\to 5} \frac{t^2 + 3t - 40}{t^2 - 25}$.

$\lim_{t\to 5} \frac{t^2 + 3t - 40}{t^2 - 25} = \frac{13}{10}$

(Type an integer or a simplified fraction.)

Score: 1 of 1 pt

2.2.43

Find the limit.

$$\lim_{x\to 0} (6 \sin x - 5)$$

$\lim_{x\to 0} (6 \sin x - 5) = -5$ (Type an integer or a simplified fraction.)

Score: 1 of 1 pt — 13 of 50

2.2.45

Find the limit.

$$\lim_{x\to 0} \sec x$$

$\lim_{x\to 0} \sec x =$ 1 (Type an integer or a simplified fraction.)

Score: 1 of 1 pt — 14 of 50 — Test Score: 95.

2.2.51

Suppose $\lim_{x\to 0} f(x) = 3$ and $\lim_{x\to 0} g(x) = -5$. Name the rule or limit law that is used to accomplish each step of the following calculation.

$$\lim_{x\to 0} \frac{4f(x) - g(x)}{(f(x)+5)^{4/3}} = \frac{\lim_{x\to 0}(4f(x) - g(x))}{\lim_{x\to 0}(f(x)+5)^{4/3}}$$

Quotient rule

$$= \frac{\lim_{x\to 0} 4f(x) - \lim_{x\to 0} g(x)}{\left(\lim_{x\to 0}(f(x)+5)\right)^{4/3}}$$

Difference rule and power rule

$$= \frac{4\lim_{x\to 0} f(x) - \lim_{x\to 0} g(x)}{\left(\lim_{x\to 0} f(x) + \lim_{x\to 0} 5\right)^{4/3}}$$

Constant multiple rule and sum rule

$$= \frac{4(3) - (-5)}{(3+5)^{4/3}}$$

$$= \frac{17}{16}$$

Score: 1 of 1 pt — 15 of 50

2.2.57

Limits of the form $\lim_{h\to 0} \frac{f(x+h) - f(x)}{h}$ occur frequently in calculus. Evaluate this limit for the given value of x and function f

$f(x) = x^2, \quad x = 2$

The value of the limit is 4 . (Simplify your answer.)

2.2.59

Find $\lim\limits_{h \to 0} \dfrac{f(x+h) - f(x)}{h}$ for the given function and value of x.

$f(x) = 4x - 1,\ x = 3$

The $\lim\limits_{h \to 0} \dfrac{f(x+h) - f(x)}{h}$ for $f(x) = 4x - 1,\ x = 3$ is 4.

(Type an integer or a simplified fraction.)

2.3.1

Question Help

Suppose that the interval (a,b) is on the x-axis with the point c inside the interval. For the given values of a, b, and c, find the value of $\delta > 0$ such that for all x, $0 < |x - c| < \delta \rightarrow a < x < b$.

$a = 9, \quad b = 21, \quad c = 18$

The value of δ is 3.

(Simplify your answer.)

2.3.5

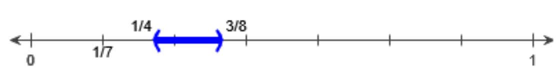
Question Help

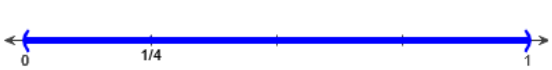
Sketch the interval (a,b) on the x-axis with the point c inside. Then find the largest value of $\delta > 0$ such that for all x, $0 < |x - c| < \delta$ implies $a < x < b$.

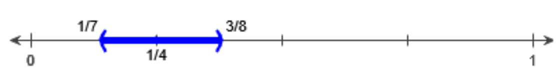
$a = \frac{1}{7},\ b = \frac{3}{8},\ c = \frac{1}{4}$

Choose the correct sketch below.

A.


B.


C.


D.


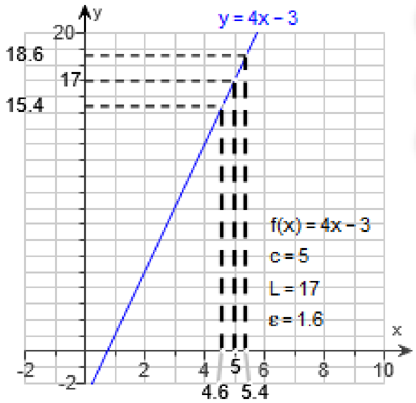
The largest possible value for δ is $\frac{3}{28}$.

(Type a simplified fraction.)

Score: 1 of 1 pt | 19 of 50 | Test S

2.3.7

Use the graph below to find $\delta > 0$ such that for all x, $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$.

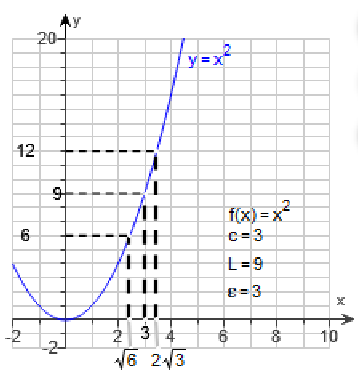


The value of δ is .4.
(Simplify your answer.)

Score: 1 of 1 pt | 20 of 50 | Test Score: 95.07

2.3.11

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



The value of δ is $2\sqrt{3} - 3$.
(Type an exact answer, using radicals as needed.)

Score: 0.5 of 1 pt | 21 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.3.17

Question Help

For the given function f(x) and values of L, c, and $\varepsilon > 0$ find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then determine the largest value for $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$.

$f(x) = \sqrt{17x + 36}$, $L = 11$, $c = 5$, $\varepsilon = 0.05$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (4.9355,5.0648).
(Use interval notation. Round to four decimal places as needed.)

You answered: [4.9354,5.0649]
Get answer feedback

The largest value of $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$ is .0646.
(Round to four decimal places as needed.)

Score: 0.5 of 1 pt | 22 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.3.23

Question Help

For the given function f(x) and values of L, c, and $\varepsilon > 0$ find the largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds. Then determine the largest value for $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$.

$f(x) = x^2$, $L = 49$, $c = -7$, $\varepsilon = 0.4$

The largest open interval about c on which the inequality $|f(x) - L| < \varepsilon$ holds is (−7.0285, −6.9714).
(Use interval notation. Round to four decimal places.)

You answered: [−7.0285, −6.9714]
Get answer feedback

The largest value of $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$ is .0285.
(Round to four decimal places.)

Score: 1 of 1 pt | 23 of 50

2.3.33

For the given function f(x) and the given values of c and $\varepsilon > 0$, find $L = \lim_{x \to c} f(x)$.

Then determine the largest value for $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$.

$f(x) = \dfrac{x^2 - 196}{x - 14}$, $c = 14$, $\varepsilon = 0.02$

The value of L is 28.
(Simplify your answer.)

The largest value of $\delta > 0$ such that $0 < |x - c| < \delta \rightarrow |f(x) - L| < \varepsilon$ is .02.
(Round to the nearest hundredth as needed.)

2.3.37

Give an ε-δ proof of the limit fact.

$$\lim_{x \to 0} (2x - 9) = -9$$

Let $\varepsilon > 0$ be given.

- A. Choose $\delta = 2\varepsilon$. Then $0 < |x - 0| < \delta \Rightarrow |(2x - 9) - (-9)| = |2x| = 2|x| < \frac{\delta}{2} = \varepsilon$.
- B. Choose $\delta = \frac{\varepsilon}{9}$. Then $0 < |x - 0| < \delta \Rightarrow |(2x - 9) - 2x| = |-9x| = 9|x| < 9\delta = \varepsilon$.
- C. Choose $\delta = \frac{\varepsilon}{2}$. Then $0 < |x - 0| < \delta \Rightarrow |(2x - 9) - (-9)| = |2x| = 2|x| < 2\delta = \varepsilon$.
- D. Choose $\delta = \varepsilon$. Then $0 < |x - 0| < \delta \Rightarrow |(2x - 9) - (-9)| = |2x| < \delta = \varepsilon$.
- E. None of the above proofs is correct.

2.3.45

Give an ε-δ proof of $\lim_{x \to 5} \left(\frac{x^2 - 25}{x - 5}\right) = 10$.

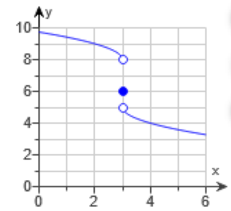
Let $\varepsilon > 0$ be given.

- A. Let $\delta = \varepsilon$. Then $0 < |x - 5| < \delta \Rightarrow$
  $$\left|\left(\frac{x^2 - 25}{x - 5}\right) - 10\right| = |(x + 5) - 10| = |x - 5| < \delta = \varepsilon.$$
- B. Let $\delta = 5\varepsilon$. Then $0 < |x - 5| < \delta \Rightarrow$
  $$\left|\left(\frac{x^2 - 25}{x - 5}\right) - 10\right| = \left|\frac{1}{5}(x + 5 - 10)\right| = \frac{1}{5}|x - 5| < \frac{1}{5}\delta = \varepsilon.$$
- C. Let $\delta = 2\varepsilon$. Then $0 < |x - 5| < \delta \Rightarrow$
  $$\left|\left(\frac{x^2 - 25}{x - 5}\right) - 10\right| = \left|\frac{1}{2}(x + 5 - 10)\right| = \frac{1}{2}|x - 5| < \frac{1}{2}\delta = \varepsilon.$$
- D. None of the above proofs is correct.

2.3.59

Question Help

For the function graphed to the right, explain why $\lim_{x\to 3} f(x) \neq 6$.



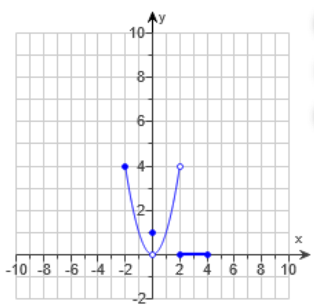
Choose the correct reason below.

- A. The limit of f(x) as x approaches 3 does not exist.
- B. The limit of f(x) as x approaches 3 is 5.
- C. The limit of f(x) as x approaches 3 is $\frac{13}{2}$.
- D. The limit of f(x) as x approaches 3 is 8.

2.4.1

Question Help

Use the graph below to determine whether the statements about the function y = f(x) are true or false.



True or false: $\lim_{x\to -2^+} f(x) = 4$.

- True
- False

True or false: $\lim_{x\to 0^-} f(x) = 1$.

- False
- True

True or false: $\lim_{x\to 0^-} f(x) = \lim_{x\to 0^+} f(x)$.

- False
- True

True or false: $\lim_{x\to 0} f(x)$ exists.

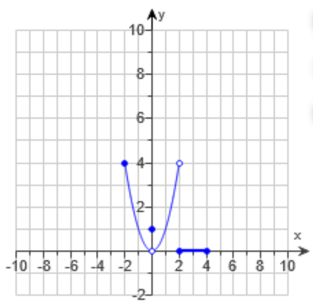
- True
- False

True or false: $\lim_{x\to 0} f(x) = 0$.

Score: 1 of 1 pt | 27 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.4.1 Question Help

Use the graph below to determine whether the statements about the function $y = f(x)$ are true or false.



False

True

True or false: $\lim_{x \to 0} f(x)$ exists.

True

False

True or false: $\lim_{x \to 0} f(x) = 0$.

False

True

True or false: $\lim_{x \to 2} f(x) = 4$.

False

True

True or false: $\lim_{x \to 4^-} f(x) = 4$.

False

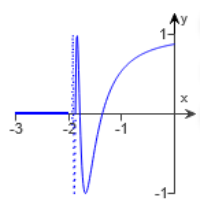
True

Score: 1 of 1 pt | 28 of 50 | **Test Score:** 95.07%, 47.53 of 50 pts

2.4.5 Question Help

Consider the function given below.

$$f(x) = \begin{cases} 0, & x \le -2 \\ \cos \dfrac{1}{x+2}, & x > -2 \end{cases}$$



Complete parts **(a)** through **(c)**.

(a) Does $\lim_{x \to -2^+} f(x)$ exist? If so, what is it? If not, why not?

A. Yes, $\lim_{x \to -2^+} f(x) =$ ☐. (Simplify your answer.)

B. No, because there is no real number to which the function's values stay increasingly close as x approaches -2 from the right side.

(b) Does $\lim_{x \to -2^-} f(x)$ exist? If so, what is it? If not, why not?

A. Yes, $\lim_{x \to -2^-} f(x) = 0$. (Simplify your answer.)

B. No, because there is no real number to which the function's values stay increasingly close as x approaches -2 from the left side.

(c) Does $\lim_{x \to -2} f(x)$ exist? If so, what is it? If not, why not?

A. Yes, $\lim_{x \to -2} f(x) =$ ☐. (Simplify your answer.)

B. No, because the left-hand and right-hand limits are not equal.

Score: 1 of 1 pt

2.4.11

Find the following limit.

$$\lim_{x \to -0.5^+} \sqrt{\frac{x+3}{x+1}}$$

$$\lim_{x \to -0.5^+} \sqrt{\frac{x+3}{x+1}} = \sqrt{5}$$

Score: 1 of 1 pt

2.4.15

Find the limit.

$$\lim_{h \to 0^+} \frac{\sqrt{h^2 + 10h + 19} - \sqrt{19}}{h}$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{h \to 0^+} \frac{\sqrt{h^2 + 10h + 19} - \sqrt{19}}{h} = \frac{5}{\sqrt{19}}$

B. The limit does not exist.

Score: 1 of 1 pt

2.4.21

Use the relation $\lim_{\theta \to 0} \frac{\sin \theta}{\theta} = 1$ to determine the limit of the given function.

$$f(\theta) = \frac{6 \sin \sqrt{10\theta}}{\sqrt{10\theta}}$$

$$\lim_{\theta \to 0} \frac{6 \sin \sqrt{10\theta}}{\sqrt{10\theta}} = 6$$

(Type an integer or a simplified fraction.)

Score: 1 of 1 pt | 32 of 50

2.4.27

Find the limit.

$$\lim_{x\to 0} \frac{x \csc 8x}{\cos 11x}$$

Select the correct choice below and fill in any answer boxes in your choice.

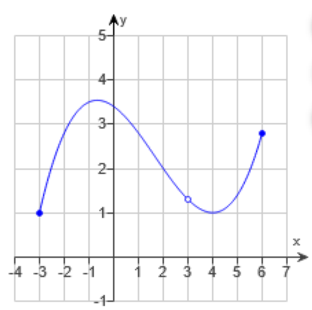
A. $\lim_{x\to 0} \frac{x \csc 8x}{\cos 11x} = \frac{1}{8}$ (Simplify your answer.)

B. The limit does not exist.

Score: 1 of 1 pt | 33 of 50 | Test Score: 95.07%, 47.53 of 50 pts

2.5.1 | Question Help

Say whether the function graph below is continuous on $[-3,6]$. If not, where does it fail to be continuous?



Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

A. The graph is not continuous at $x = 3$.
(Use a comma to separate answers as needed.)

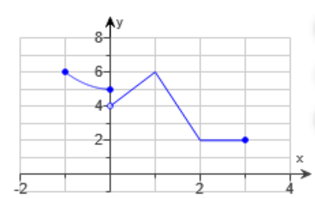
B. The graph is not continuous on the interval ___.
(Type your answer in interval notation.)

C. The graph is continuous on $[-3,6]$.

Score: 1 of 1 pt | 34 of 50 | Test Score: 95.07%, 47.53 of 50 pts

2.5.3 | Question Help

State whether the function graphed is continuous on $[-1,3]$. If not, where does it fail to be continuous and why?



Is the function continuous on the interval $[-1,3]$? If not, why?

A. The function is not continuous at $x = 0$ because of an oscillating discontinuity.

B. The function is not continuous at $x = 0$ because of a removable discontinuity.

C. The function is not continuous at $x = 0$ because of a jump discontinuity.

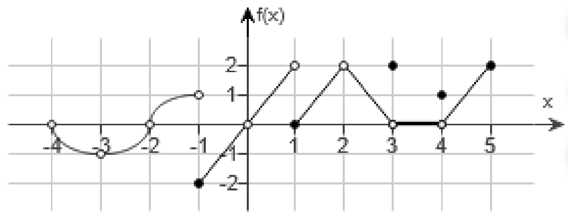
D. The function is continuous on the interval $[-1,3]$.

Score: 1 of 1 pt

35 of 50

2.5.11

Use the graph to answer the question about discontinuity.



Select the correct description of the continuity of f(x) at $x = 2$.

A. There is a discontinuity that can be removed by defining $f(2) = -2$.

B. There is a non-removable discontinuity.

C. There is a discontinuity that can be removed by defining $f(2) = 2$.

Score: 1 of 1 pt

36 of 50

2.5.15

At what points is the function $y = \dfrac{x+4}{x^2 - 10x + 24}$ continuous?

Describe the set of x-values where the function is continuous, using interval notation.

$(-\infty,4)\cup(4,6)\cup(6,\infty)$

(Simplify your answer. Type your answer in interval notation.)

Score: 1 of 1 pt

37 of 50

2.5.25

Determine the point(s) at which the given function f(x) is continuous.

$f(x) = \sqrt{7x+21}$

Describe the set of x-values where the function is continuous, using interval notation.

$[-3,\infty)$

(Use interval notation.)

Score: 1 of 1 pt | 38 of 50 | Test Sc

2.5.31

Determine the limit as x approaches the given x-coordinate and the continuity of the function at that x-coordinate.

$$\lim_{x \to 7\pi/12} \cos(6x - \cos(6x))$$

$$\lim_{x \to 7\pi/12} \cos(6x - \cos(6x)) = 0$$

(Simplify your answer.)

Is $\cos(6x - \cos(6x))$ continuous at $x = \frac{7\pi}{12}$?

- [x] Yes
- [ ] No

Score: 1 of 1 pt | 39 of 50 | T

2.5.35

Find the following limit. Is the function continuous at the point being approached?

$$\lim_{t \to 0} \cos\left(\frac{\pi}{\sqrt{19 - 3\sec t}}\right)$$

$$\lim_{t \to 0} \cos\left(\frac{\pi}{\sqrt{19 - 3\sec t}}\right) = \frac{\sqrt{2}}{2}$$

(Type an exact answer, using radicals as needed.)

Is the given function continuous at $t = 0$?

- [ ] A. No
- [x] B. Yes

Score: 1 of 1 pt | 40 of 50

2.5.43

For what value of a is the following function continuous at every x?

$$f(x) = \begin{cases} x^2 - 63, & x < 9 \\ 2ax, & x \geq 9 \end{cases}$$

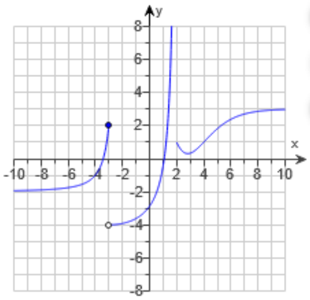
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- [x] A. $a = 1$
- [ ] B. There is no solution.

Score: 1 of 1 pt   41 of 50   **Test Score:** 95.07%, 47.53 of 50 pts

2.6.1   Question Help

Using the following graph of the function f, evaluate the limits **(a)** through **(i)**.



(a) Select the correct choice below and fill in the answer box within the choice.

A. $\lim_{x \to 4} f(x) = 1$

B. $\lim_{x \to 4} f(x)$ does not exist.

(b) $\lim_{x \to -3^+} f(x) = -4$

(c) $\lim_{x \to -3^-} f(x) = 2$

(d) Select the correct choice below and fill in the answer box within the choice.

A. $\lim_{x \to -3} f(x) =$

B. $\lim_{x \to -3} f(x)$ does not exist.

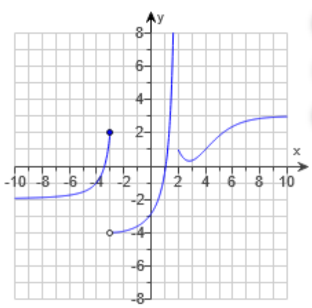
(e) $\lim_{x \to 2^+} f(x) = 1$

(f) $\lim_{x \to 2^-} f(x) = \infty$

Score: 1 of 1 pt   41 of 50   **Test Score:** 95.07%, 47.53 of 50 pts

2.6.1   Question Help

Using the following graph of the function f, evaluate the limits **(a)** through **(i)**.



(d) Select the correct choice below and fill in the answer box within the choice.

A. $\lim_{x \to -3} f(x) =$

B. $\lim_{x \to -3} f(x)$ does not exist.

(e) $\lim_{x \to 2^+} f(x) = 1$

(f) $\lim_{x \to 2^-} f(x) = \infty$

(g) Select the correct choice below and fill in the answer box within the choice.

A. $\lim_{x \to 2} f(x) =$

B. $\lim_{x \to 2} f(x)$ does not exist.

(h) $\lim_{x \to \infty} f(x) = 3$

(i) $\lim_{x \to -\infty} f(x) = -2$

Question is complete.

Score: 1 of 1 pt

42 of 50

2.6.3

Find the limit of $f(x) = \frac{2}{x} - 5$ as x approaches ∞ and as x approaches $-\infty$.

$\lim_{x\to\infty} f(x) = -5$

(Type a simplified fraction.)

$\lim_{x\to -\infty} f(x) = -5$

(Type a simplified fraction.)

Score: 1 of 1 pt

43 of 50

2.6.13

Find the limit of $f(x) = \frac{5x+7}{8x+5}$ as x approaches ∞ and as x approaches $-\infty$.

$\lim_{x\to\infty} f(x) = \frac{5}{8}$

(Type a simplified fraction.)

$\lim_{x\to -\infty} f(x) = \frac{5}{8}$

(Type a simplified fraction.)

Score: 1 of 1 pt

44 of 50

2.6.19

Find the limit of $f(x) = \frac{8x^9 + 2x^8 + 3}{8x^{10}}$ as x approaches ∞ and as x approaches $-\infty$.

$\lim_{x\to\infty} f(x) = 0$

(Type a simplified fraction.)

$\lim_{x\to -\infty} f(x) = 0$

(Type a simplified fraction.)

Score: 1 of 1 pt

45 of 50

2.6.27

Find the limit of $f(x) = \dfrac{8\sqrt{x} + x^{-4}}{4x - 4}$ as x approaches ∞.

$\lim\limits_{x \to \infty} f(x) = 0$

(Type an integer or a simplified fraction.)

Score: 1 of 1 pt

46 of 50

2.6.37

Find the limit.

$$\lim_{x \to 0^+} \frac{1}{6x}$$

$\lim\limits_{x \to 0^+} \dfrac{1}{6x} = \infty$

(Simplify your answer.)

Score: 1 of 1 pt

47 of 50

2.6.49

Find the limit.

$$\lim_{x \to (13\pi/2)^-} 7 \tan x$$

$\lim\limits_{x \to (13\pi/2)^-} 7 \tan x = \infty$

(Simplify your answer.)

2.6.57

Find $\lim \frac{x^2 - 7x + 12}{x^3 - 4x^2}$ as

a. $x \to 0^+$ **b.** $x \to 4^+$ **c.** $x \to 4^-$ **d.** $x \to 4$

e. Determine what, if anything, can be said about the limit as $x \to 0$.

---

a. $\lim\limits_{x \to 0^+} \frac{x^2 - 7x + 12}{x^3 - 4x^2} = -\infty$ (Simplify your answer.)

b. $\lim\limits_{x \to 4^+} \frac{x^2 - 7x + 12}{x^3 - 4x^2} = \frac{1}{16}$ (Simplify your answer.)

c. $\lim\limits_{x \to 4^-} \frac{x^2 - 7x + 12}{x^3 - 4x^2} = \frac{1}{16}$ (Simplify your answer.)

d. $\lim\limits_{x \to 4} \frac{x^2 - 7x + 12}{x^3 - 4x^2} = \frac{1}{16}$ (Simplify your answer.)

e. What, if anything, can be said about the limit as $x \to 0$?

- A. The limit is 0.
- B. The limit is $-\infty$.

e. What, if anything, can be said about the limit as $x \to 0$?

- A. The limit is 0.
- B. The limit is $-\infty$.
- C. The limit is ∞.
- D. The limit does not exist.
- E. Nothing can be said about the limit.

2.6.67

Question Help

Find the horizontal and vertical asymptotes of f(x). Then graph f(x).

$$f(x) = \frac{x+4}{x+2}$$

If there is a horizontal asymptote, what is it? Select the correct choice below and fill in any answer boxes within your choice.

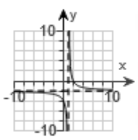
- A. The horizontal asymptote is $y = 1$. (Type an equation.)
- B. There is no horizontal asymptote.

If there is a vertical asymptote, what is it? Select the correct choice below and fill in any answer boxes within your choice.

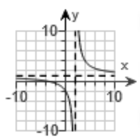
- A. The vertical asymptote is $x = -2$. (Type an equation.)
- B. There is no vertical asymptote.

Choose the correct graph of f(x).

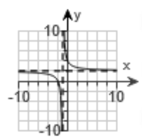
A.



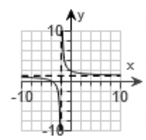
B.



C.



D.



2.6.73

Question Help

Find a function that satisfies the given conditions and sketch its graph.

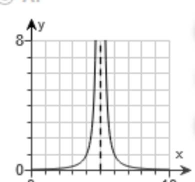
$$\lim_{x \to \pm\infty} f(x) = 0, \quad \lim_{x \to 5^-} f(x) = \infty, \text{ and } \lim_{x \to 5^+} f(x) = \infty$$

Which of the following functions satisfies the given conditions?

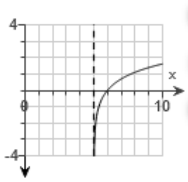
- A. $-\frac{1}{(x-5)^2}$
- B. $\frac{1}{x-5}$
- C. $\frac{1}{(x-5)^2}$
- D. **ln** $(x-6)$

Graph this function. Choose the correct graph below.

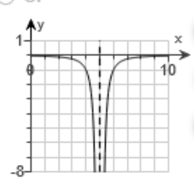
A.



B.



C.



D.