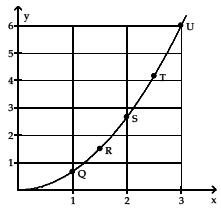
Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

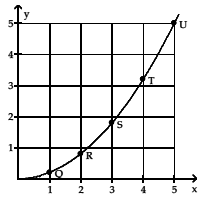
Use the slopes of UQ, UR, US, and UT to estimate the rate of change of y at the specified value of x.

1) x = 3 1)



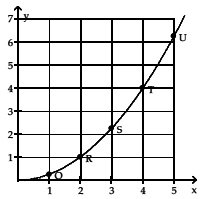
A) 0 B) 2 C) 6 D) 4

2) x = 5 2)



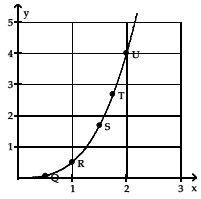
A) 1 B) 0 C) 2 D) 5

3) x = 5 3)



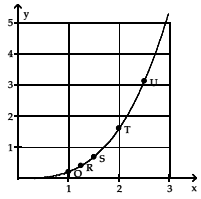
A) $\frac{25}{4}$ B) $\frac{5}{4}$ C) 0 D) $\frac{5}{2}$

4) x = 2 4)



A) 6 B) 0 C) 3 D) 4

5) x = 2.5 5)



A) 7.5 B) 1.25 C) 3.75 D) 0

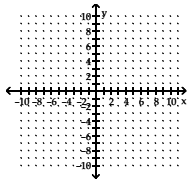
SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

6) If $f(x) = 2x^3 - 5x + 5$, show that there is at least one value of c for which f(x) equals π. 6) _____

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

7) $\lim_{x\to\pm\infty} f(x) = 0$, $\lim_{x\to 3^-} f(x) = \infty$, $\lim_{x\to 3^+} f(x) = \infty$. 7)



Provide an appropriate response.

8) If functions $f(x)$ and $g(x)$ are continuous for $0 \le x \le 6$, could $\frac{f(x)}{g(x)}$ possibly be discontinuous at a point of [0,6]? Provide an example. 8) _____

Solve the problem.

9) Does the graph of $f(x) = \begin{cases} 0, & x > 0 \\ 5, & x \le 0 \end{cases}$ have a vertical tangent at the point (0,5)? Give reasons for your answer. 9) _____

Provide an appropriate response.

10) Explain why the following five statements ask for the same information. 10) _____

(a) Find the roots of $f(x) = 4x^3 - 4x - 2$.

(b) Find the x-coordinate of the points where the curve $y = 4x^3$ crosses the line $y = 4x + 2$.

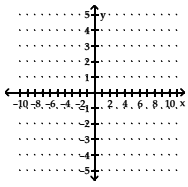
(c) Find all the values of x for which $4x^3 - 4x = 2$.

(d) Find the x-coordinates of the points where the cubic curve $y = 4x^3 - 4x$ crosses the line $y = 2$.

(e) Solve the equation $4x^3 - 4x - 2 = 0$.

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

11) $\lim_{x\to-\infty} f(x) = 1$, $\lim_{x\to 0^+} f(x) = -1$, $\lim_{x\to\infty} f(x) = -1$, $\lim_{x\to 0^-} f(x) = 1$ 11)



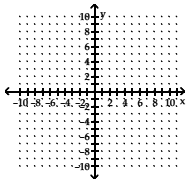
Solve the problem.

12) Does the graph of $f(x) = \begin{cases} 1, & x<0 \\ 0, & x=0 \\ -1, & x>0 \end{cases}$ have a vertical tangent at the origin? Give reasons for your answer. 12) _____

13) Does the graph of $f(x) = \begin{cases} x\cos\frac{1}{x}, & x \ne 0 \\ 0, & x = 0 \end{cases}$ have a tangent at the origin? Give reasons for your answer. 13) _____

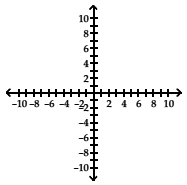
Find a function that satisfies the given conditions and sketch its graph.

14) $\lim_{x\to-\infty} g(x) = -4$, $\lim_{x\to\infty} g(x) = 4$, $\lim_{x\to 0^+} g(x) = 4$, $\lim_{x\to 0^-} g(x) = -4$. 14)



Provide an appropriate response.

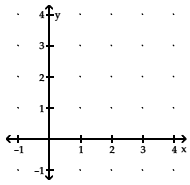
15) A function y = f(x) is continuous on [−2, 3]. It is known to be positive at x = −2 and negative at x = 3. What, if anything, does this indicate about the equation f(x) = 0? Illustrate with a sketch. 15)



16) Give an example of a function f(x) that is continuous at all values of x except at x = 10, where it has a removable discontinuity. Explain how you know that *f* is discontinuous at x = 10 and how you know the discontinuity is removable. 16) _____

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

17) $\lim_{x\to\infty} f(x) = 0$, $\lim_{x\to 0^+} f(x) = \infty$. 17)

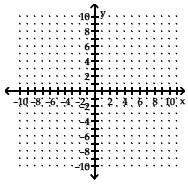


Solve the problem.

18) Does the graph of $f(x) = \begin{cases} x^2 \cos\frac{1}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$ have a tangent at the origin? Give reasons for your answer. 18) _____

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

19) $\lim_{x\to\pm\infty} f(x) = 0$, $\lim_{x\to -5^-} f(x) = \infty$, $\lim_{x\to -5^+} f(x) = \infty$. 19)



Provide an appropriate response.

20) Give an example of a function f(x) that is continuous for all values of x except x = 6, where it has a nonremovable discontinuity. Explain how you know that *f* is discontinuous at x = 6 and why the discontinuity is nonremovable. 20) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the equation for the tangent to the curve at the given point.

21) $f(x) = 3x^2 + 5x - 7$; (−2, −5) 21) _____

A) $y = \frac{1}{2}x - \frac{1}{2}$ B) $y = \frac{1}{4}x + 1$ C) $y = -7x + 28$ D) $y = -7x - 19$

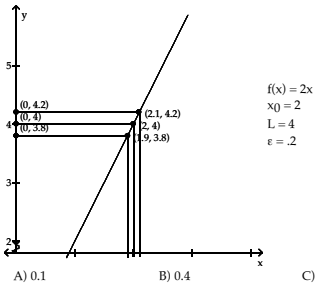
Find the limit, if it exists.

22) $\lim_{x\to 2} (x^3 + 5x^2 - 7x + 1)$ 22) _____

A) 29 B) 0 C) Does not exist D) 15

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

23) 23)



f(x) = 2x
$x_0 = 2$
L = 4
ε = .2

A) 0.1 B) 0.4 C) 0.5 D) 2

Given the interval (a, b) on the x-axis with the point x_0 inside, find the greatest value for $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow a < x < b$.

24) a = 9, b = 19, $x_0 = 12$ 24) _____

A) 3 B) 7 C) 1 D) 4

Provide an appropriate response.

25) Which of the following statements defines $\lim_{x\to(x_0)^+} f(x) = -\infty$? 25) _____

I. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0 + \delta$.
II. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 < x < x_0 + \delta$.
III. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0$.

A) I B) III C) II D) None

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

26) $\lim_{x\to 0} \frac{\sin x \cos 4x}{x + x\cos 5x}$ 26) _____

A) 0 B) 4/5 C) 1/2 D) Does not exist

Find the limit and determine if the function is continuous at the point being approached.

27) $\lim_{x\to 8} \sin(x \sin^2(x) + x\cos^2(x) + 2)$ 27) _____

A) sin −6; yes B) Does not exist; no
C) sin 10; yes D) sin 10; no

Provide an appropriate response.

28) Find $\lim_{x\to 0} \frac{\frac{1}{x+3} - \frac{1}{3}}{x}$. 28) _____

A) 0 B) $-\frac{1}{9}$ C) $\frac{1}{9}$ D) Does not exist

Use the table to estimate the rate of change of y at the specified value of x.

29) x = 1. 29) _____

x	y
0	0
0.2	0.12
0.4	0.48
0.6	1.08
0.8	1.92
1.0	3
1.2	4.32
1.4	5.88

A) 2 B) 4 C) 6 D) 8

Find the limit.

30) $\lim_{x\to 0} (1 - \cot x)$ 30) _____

A) Does not exist B) $-\infty$ C) ∞ D) 0

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

31) $\lim_{x\to 0} \frac{\sin 3x \cot 4x}{\cot 5x}$ 31) _____

A) 15/4 B) Does not exist C) 0 D) 12/5

Find the limit, if it exists.

32) $\lim_{x\to -\infty} \frac{-6 + (5/x)}{6 - (1/x^2)}$ 32) _____

A) 1 B) ∞ C) −1 D) $-\infty$

Find the limit.

33) $\lim_{x\to 5^+} \sqrt{\frac{7x^2}{6 + x}}$ 33) _____

A) $\sqrt{\frac{35}{11}}$ B) $\frac{175}{11}$ C) Does not exist D) $\sqrt{\frac{175}{11}}$

Determine if the given function can be extended to a continuous function at x = 0. If so, approximate the extended function's value at x = 0 (rounded to four decimal places if necessary). If not, determine whether the function can be continuously extended from the left or from the right and provide the values of the extended functions at x = 0. Otherwise write "no continuous extension."

34) $f(x) = \frac{\tan x}{x}$ 34) _____

A) f(0) = 1 only from the left B) No continuous extension
C) f(0) = 1 D) f(0) = 1 only from the right

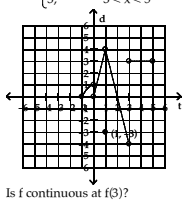
Find the limit, if it exists.

35) $\lim_{x\to\infty} x^2 e^{-x}$ 35) _____

A) e B) 0 C) 1 D) ∞

Answer the question.

36) $f(x) = \begin{cases} -x^2 + 1, & -1 \le x < 0 \\ 4x, & 0 < x < 1 \\ -3, & x = 1 \\ -4x + 8 & 1 < x < 3 \\ 3, & 3 < x < 5 \end{cases}$ 36)



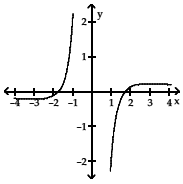
Is f continuous at f(3)?

A) No B) Yes

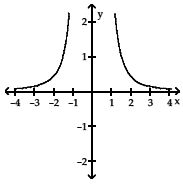
Sketch the graph of the given function f(x) near the vertical asymptote x = c.

37) $f(x) = \dfrac{x^2 + 3}{x^3}$ 37)

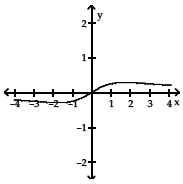
A) Asymptotes: x = 0, y = 0



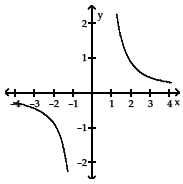
B) Asymptote: x = 0, y = 0



C) Asymptote: y = 0

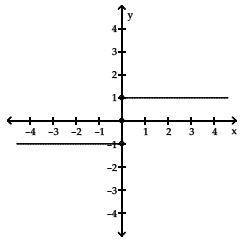


D) Asymptotes: x = 0, y = 0



Use the graph to evaluate the limit.

38) $\lim\limits_{x \to 0} f(x)$ 38)



A) 1 B) Does not exist C) –1 D) ∞

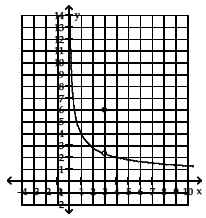
Find the limit, if it exists.

39) $\lim\limits_{x \to -2} (3x^5 - 2x^4 - 4x^3 + x^2 + 5)$ 39) _____

A) –23 B) –87 C) 57 D) –151

Use the graph to estimate the specified limit.

40) $\lim\limits_{x \to 3^-} f(x)$ 40)



A) –3 B) $\frac{4}{3}$ C) $\frac{4\sqrt{3}}{3}$ D) $-\frac{4\sqrt{3}}{3}$

Complete the table and use the result to find the indicated limit.

41) If $f(x) = \dfrac{\sqrt{x+1}}{x+1}$, find $\lim\limits_{x \to 1} f(x)$. 41) _____

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)						

A)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	0.21764	0.21266	0.21219	0.21208	0.21160	0.20702

; limit = 0.21213

B)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	0.21764	0.21266	0.21219	0.21208	0.21160	0.20702

; limit = ∞

C)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	0.72548	0.70888	0.70728	0.70693	0.70535	0.69007

; limit = 0.7071

D)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	2.15293	2.13799	2.13656	2.13624	2.13481	2.12106

; limit = 2.13640

Give an appropriate answer.

42) Let $\lim\limits_{x \to 2} f(x) = 3$ and $\lim\limits_{x \to 2} g(x) = -5$. Find $\lim\limits_{x \to 2} [f(x) \cdot g(x)]$. 42) _____

A) –15 B) 2 C) –2 D) –5

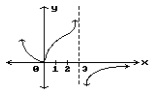
Solve the problem.

43) Given $f(x) = 8x + 4$, $L = 28$, $x_0 = 3$, and $\varepsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 43) _____

A) 0.0062 B) 0.0025 C) 0.0012 D) 0.0033

Find all points where the function is discontinuous.

44) 44) _____



A) x = 0, x = 3 B) None C) x = 0 D) x = 3

Find the limit, if it exists.

45) 45) _____

$$\lim_{x \to \infty} \left(\frac{1}{x}\right)^{1/x}$$

A) 1 B) Does not exist C) ∞ D) 0

Provide an appropriate response.

46) Which of the following expressions is a left-hand limit. 46) _____

I. $\lim\limits_{x \to 0} f(x)$

II. $\lim\limits_{x \to 0^-} f(x)$

III. $\lim\limits_{x \to 0^+} f(x)$

A) II and III only B) II only C) I only D) III only

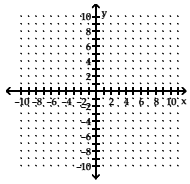
47) If $\lim\limits_{x \to 1} \dfrac{f(x) - 3}{x - 4} = 3$, find $\lim\limits_{x \to 1} f(x)$. 47) _____

A) 1 B) 2 C) –6 D) Does not exist

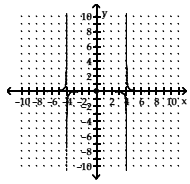
Sketch the graph of a function y = f(x) that satisfies the given conditions.

48) $f(0) = 0$, $\lim_{x \to \pm\infty} f(x) = 0$, $\lim_{x \to 4^-} f(x) = -\infty$, $\lim_{x \to -4^+} f(x) = -\infty$, $\lim_{x \to 4^+} f(x) = \infty$, $\lim_{x \to -4^-} f(x) = \infty$. 48)

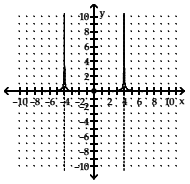
A)



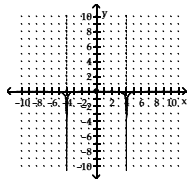
B)

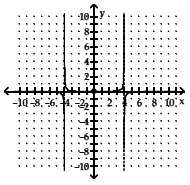


C)



D)





Find the limit if it exists.

49) $\lim_{x \to -3} 4x(x + 10)(x - 7)$ 49) _____

A) 840 B) −1560 C) −336 D) −840

Find the limit and determine if the function is continuous at the point being approached.

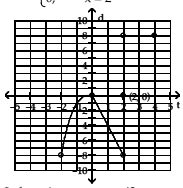
50) $\lim_{x \to 5\pi} \sin(5x - \sin 5x)$ 50) _____

A) 0; no B) Does not exist; yes

C) Does not exist; no D) 0; yes

Answer the question.

51) $f(x) = \begin{cases} x^3, & -2 < x \le 0 \\ -4x, & 0 \le x < 2 \\ 8, & 2 < x \le 4 \\ 0, & x = 2 \end{cases}$ 51)



Is f continuous at x = 4?

A) No B) Yes

Find the limit, if it exists.

52) $\lim_{x \to 1} \frac{2x - 7}{4x + 5}$ 52) _____

A) $-\frac{1}{2}$ B) $-\frac{5}{9}$ C) Does not exist D) $-\frac{7}{5}$

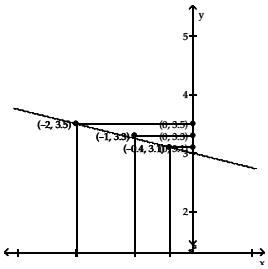
Find the equation for the tangent to the curve at the given point.

53) $f(x) = 5x^2 + x$; (−4, 76) 53) _____

A) $y = 13x - 16$ B) $y = -39x - 80$ C) $y = -\frac{4}{25}x + \frac{8}{5}$ D) $y = \frac{x}{20} + \frac{1}{5}$

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

54) 54)



$f(x) = -\frac{1}{4}x + 3$

$x_0 = -1$

$L = 0.6$

$\varepsilon = .2$

A) 0.04 B) 0.6 C) 0.2 D) 4.3

Use the table to estimate the rate of change of y at the specified value of x.

55) x = 1. 55) _____

x	y
0.900	−0.05263
0.990	−0.00503
0.999	−0.0005
1.000	0.0000
1.001	0.0005
1.010	0.00498
1.100	0.04762

A) −0.5 B) 1 C) 0 D) 0.5

Provide an appropriate response.

56) Which of the following statements defines $\lim_{x \to x_0} f(x) = -\infty$? 56) _____

I. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0 + \delta$.

II. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 < x < x_0 + \delta$.

III. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0$.

A) III B) II C) I D) None

Find the limit, if it exists.

57) $\lim_{x \to -\infty} \frac{\cos 5x}{x}$ 57) _____

A) $-\infty$ B) 5 C) 0 D) 1

Complete the table and use the result to find the indicated limit.

58) If $f(x) = \sqrt{x} - 2$, find $\lim_{x \to 4} f(x)$. 58) _____

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)						

A)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	3.9000	2.9000	1.9000	2.0000	3.0000	4.0000

; limit = ∞

B)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	1.47736	1.49775	1.49977	1.50022	1.50225	1.52236

; limit = 1.50

C)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	−0.02516	−0.00250	−0.00025	0.00025	0.00250	0.02485

; limit = 0.0

D)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	3.9000	2.9000	1.9000	2.0000	3.0000	4.0000

; limit = 1.95

Find the limit, if it exists.

59) $\lim_{x \to \infty} \frac{-2x^{-1} + -4x^{-3}}{3x^{-2} + x^{-5}}$ 59) _____

A) ∞ B) 0 C) $-\infty$ D) $-\frac{2}{3}$

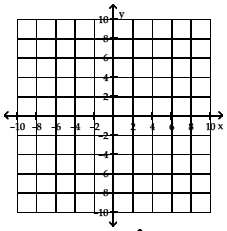
Find the equation for the tangent to the curve at the given point.

60) $f(x) = x^2 + 11x - 15$; (1, −3) 60) _____

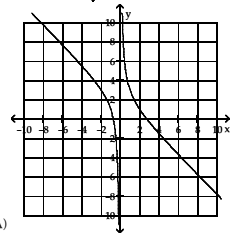
A) $y = \frac{1}{20}x + \frac{1}{5}$ B) $y = 13x - 16$ C) $y = -\frac{4}{25}x + \frac{8}{5}$ D) $y = -39x - 80$

Sketch the graph of the given function f(x) near the vertical asymptote x = c.

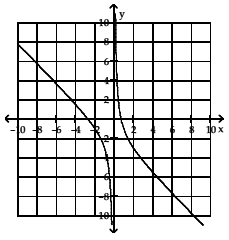
61) $f(x) = \frac{2 - 2x - x^2}{x}$ 61)



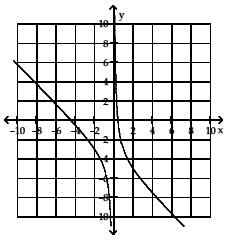
A)



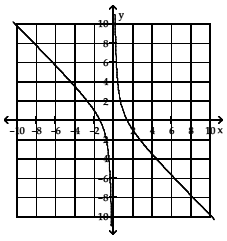
B)



C)



D)



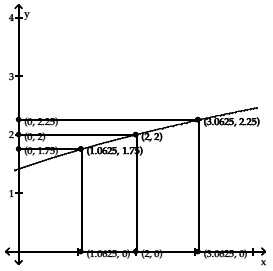
Solve the problem.

62) The equation for free fall at the surface of Planet X is $s = 10.17t^2$ m with t in seconds. Assume a rock is dropped from the top of a 600m cliff. Find the speed of the rock at t = 4 sec. 62) _____

A) 40.68 m/sec B) 39.68 m/sec C) 82.36 m/sec D) 81.36 m/sec

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

63) 63)

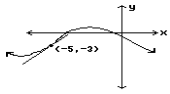


$f(x) = \sqrt{x + 2}$
$x_0 = 2$
$L = 2$
$\varepsilon = \frac{1}{4}$

A) 0.94 B) 0 C) $\frac{1}{2}$ D) $\frac{1}{4}$

Estimate the slope of the curve at the indicated point.

64) 64) _____



A) $-\frac{1}{20}$ B) −2 C) 2 D) $\frac{1}{20}$

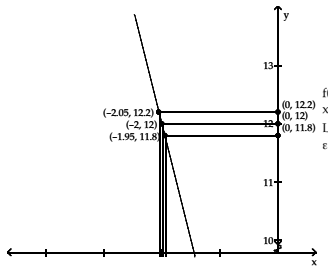
Find the limit if it exists.

65) $\lim_{x \to -5} (7x - 2)$ 65) _____

A) −37 B) 37 C) 33 D) −33

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

66) 66)

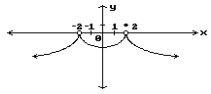


$f(x) = -4x + 4$
$x_0 = -2$
$L = 12$
$\varepsilon = .2$

A) 0.05 B) 0.4 C) 0.5 D) 14

Find all points where the function is discontinuous.

67) 67) _____



A) x = 2 B) x = −2, x = 2 C) x = −2 D) None

Find the intervals on which the function is continuous.

68) $y = \sqrt[4]{6x - 8}$ 68) _____

A) $\left[-\frac{4}{3}, \infty\right)$ B) $\left[\frac{4}{3}, \infty\right)$ C) $\left(\frac{4}{3}, \infty\right)$ D) $\left(-\infty, \frac{4}{3}\right]$

Provide an appropriate response.

69) Which of the following expressions is a right−hand limit. 69) _____

I. $\lim_{x \to 0} f(x)$

II. $\lim_{x \to 0^-} f(x)$

III. $\lim_{x \to 0^+} f(x)$

A) II only B) I only C) II and III only D) III only

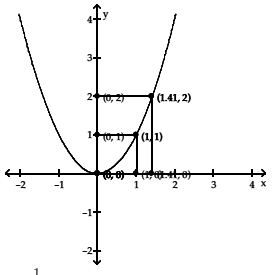
Find the limit, if it exists.

70) $\lim_{x \to 19} \frac{1}{x - 19}$ 70) _____

A) 19 B) 38 C) Does not exist D) 0

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

71) 71)



$f(x) = x^2$
$x_0 = 1$
$L = 1$
$\varepsilon = 1$

A) $\frac{1}{6}$ B) 0 C) $\frac{1}{2}$ D) 0.41

Give an appropriate answer.

72) Let $\lim_{x \to 4} f(x) = -10$ and $\lim_{x \to 4} g(x) = -9$. Find $\lim_{x \to 4} [f(x) - g(x)]$. 72) _____

A) 4 B) −1 C) −19 D) −10

Evaluate $\lim_{h \to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

73) $f(x) = -5x + 6$ for $x_0 = 8$ 73) _____

A) −34 B) Does not exist C) −40 D) −5

Find the limit.

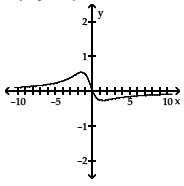
74) $\lim_{x \to (\pi/2)^+} \tan x$ 74) _____

A) $-\infty$ B) 1 C) ∞ D) 0

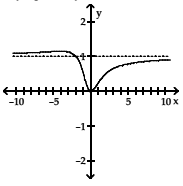
Sketch the graph of the given function f(x) near the vertical asymptote x = c.

75) $f(x) = \frac{x}{x^2 + x + 2}$ 75)

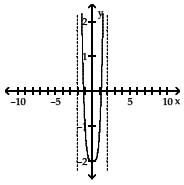
A) Asymptote: y = 0



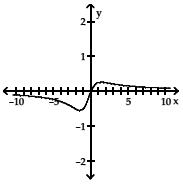
B) Asymptotes: y = 1



C) Asymptotes: x = 2, x = −2



D) Asymptote: y = 0



Find the limit, if it exists.

76) $\lim_{x \to -\infty} \frac{-8x^2 + 7x + 9}{-6x^2 + 9x + 16}$ 76) _____

A) 1 B) $\frac{4}{3}$ C) ∞ D) $\frac{9}{16}$

Provide an appropriate response.

77) Which of the following statements defines $\lim_{x \to (x_0)^-} f(x) = -\infty$? 77) _____

I. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0 + \delta$.

II. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 < x < x_0 + \delta$.

III. For every negative real number B there exists a corresponding $\delta > 0$ such that $f(x) < B$ whenever $x_0 - \delta < x < x_0$.

A) II B) III C) I D) None

Give an appropriate answer.

78) Let $\lim_{x \to 8} f(x) = 243$. Find $\lim_{x \to 8} \sqrt[5]{f(x)}$. 78) _____

A) 8 B) 5 C) 3 D) 243

Provide an appropriate response.

79) If $\lim_{x\to 1^-} f(x) = 1$, $\lim_{x\to 1^+} f(x) = -1$, and f(x) is an even function, which of the following statements are true? 79) _____

I. $\lim_{x\to -1^-} f(x) = -1$

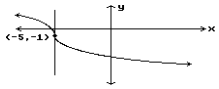
II. $\lim_{x\to -1^+} f(x) = -1$

III. $\lim_{x\to -1} f(x)$ does not exist.

A) I and III only B) II and III only C) I and II only D) I, II, and III

Estimate the slope of the curve at the indicated point.

80) 80) _____



A) 0 B) 1 C) –1 D) Undefined

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

81) $h(t) = \sin(5t), \left[0, \frac{\pi}{10}\right]$ 81) _____

A) $\frac{\pi}{10}$ B) $-\frac{10}{\pi}$ C) $\frac{10}{\pi}$ D) $\frac{5}{\pi}$

Find the equation for the tangent to the curve at the given point.

82) $f(x) = x - \sqrt{x}$; (1, 0) 82) _____

A) $y = -7x + 28$ B) $y = \frac{1}{4}x + 1$ C) $y = -7x - 9$ D) $y = \frac{1}{2}x - \frac{1}{2}$

Find the limit.

83) $\lim_{x\to(-2)^+} \frac{1}{x+2}$ 83) _____

A) $-\infty$ B) ∞ C) $-1/2$ D) $1/2$

84) $\lim_{x\to(-\pi/2)^-} \sec x$ 84) _____

A) ∞ B) 1 C) $-\infty$ D) 0

Find the limit and determine if the function is continuous at the point being approached.

85) $\lim_{x\to 9} \sec\left(x\sec^2(x) - x\tan^2(x) - 1\right)$ 85) _____

A) Does not exist; no B) sec 8; no

C) csc 8; yes D) sec 8; yes

Find the intervals on which the function is continuous.

86) $y = \frac{2}{(x+3)^2 + 6}$ 86) _____

A) $(-\infty, -24), (-24, \infty)$ B) $(-\infty, -3), (-3, \infty)$

C) $(-\infty, \infty)$ D) $(-\infty, 15), (15, \infty)$

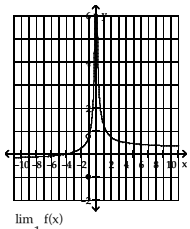
Solve the problem.

87) Find an equation of the tangent to the curve $f(x) = \sqrt{x+5}$ that has slope $\frac{1}{4}$. 87) _____

A) $y = \frac{1}{4}x - \frac{9}{4}$ B) $y = \frac{1}{4}x$ C) $y = \frac{1}{4}x + \frac{9}{4}$ D) $y = -\frac{1}{4}x + \frac{9}{4}$

Use the graph to evaluate the limit.

88) 88)



$\lim_{x\to -1} f(x)$

A) $\frac{3}{4}$ B) $-\frac{3}{4}$ C) –1 D) ∞

Give an appropriate answer.

89) Let $\lim_{x\to 10} f(x) = 2$. Find $\lim_{x\to 10} (-5)^{f(x)}$. 89) _____

A) –5 B) 9,765,625 C) 25 D) 2

Find the limit, if it exists.

90) $\lim_{x\to 0} (\sqrt{x} - 2)$ 90) _____

A) Does not exist B) 2 C) –2 D) 0

Solve the problem.

91) Find equations of all tangents to the curve $f(x) = \frac{1}{x+25}$ that have slope –1. 91) _____

A) $y = -x - 23$ B) $y = -x + 27$

C) $y = -x + 27$, $y = -x - 23$ D) $y = -x - 23$, $y = -x - 27$

Find the intervals on which the function is continuous.

92) $y = \sqrt{x^2 - 10}$ 92) _____

A) $(-\infty, -\sqrt{10}], [\sqrt{10}, \infty)$ B) $[\sqrt{10}, \infty)$

C) $(-\infty, \infty)$ D) $[-\sqrt{10}, \sqrt{10}]$

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

93) $\lim_{x\to 0} \frac{\sin 5x}{x}$ 93) _____

A) 1 B) 5 C) 1/5 D) Does not exist

Find the equation for the tangent to the curve at the given point.

94) $f(x) = \sqrt{x+6}$, (19, 5) 94) _____

A) $y = \frac{1}{5}x + \frac{6}{5}$ B) $y = \frac{1}{5}x - \frac{6}{5}$ C) $y = \frac{1}{10}x - \frac{31}{10}$ D) $y = \frac{1}{10}x + \frac{19}{10}$

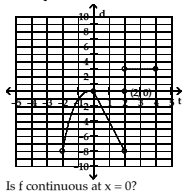
Find the limit.

95) $\lim_{x\to 1^+} \left(\frac{x}{x+5}\right)\left(\frac{-1x+3}{x^2+5x}\right)$ 95) _____

A) $\frac{1}{13}$ B) $\frac{1}{18}$ C) Does not exist D) $\frac{1}{2}$

Answer the question.

96) $f(x) = \begin{cases} x^3, & -2 < x \le 0 \\ -4x, & 0 \le x < 2 \\ 3, & 2 < x \le 4 \\ 0, & x = 2 \end{cases}$ 96)



Is f continuous at x = 0?

A) No B) Yes

Evaluate $\lim_{h\to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

97) $f(x) = \frac{4}{x}$ for $x_0 = 2$ 97) _____

A) –8 B) Does not exist C) 2 D) – 1

98) $f(x) = \sqrt{x}$ for $x_0 = 13$ 98) _____

A) $\frac{\sqrt{13}}{26}$ B) $\frac{13}{2}$ C) $\frac{\sqrt{13}}{13}$ D) Does not exist

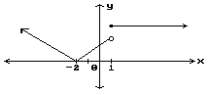
Solve the problem.

99) Ohm's Law for electrical circuits is stated V = RI, where V is a constant voltage, R is the resistance in ohms and I is the current in amperes. Your firm has been asked to supply the resistors for a circuit in which V will be 9 volts and I is to be 5 ± 0.1 amperes. In what interval does R have to lie for I to be within 0.1 amps of the target value $I_0 = 5$? 99) _____

A) $\left(\frac{30}{17}, \frac{90}{49}\right)$ B) $\left(\frac{90}{49}, \frac{30}{17}\right)$ C) $\left(\frac{10}{49}, \frac{10}{51}\right)$ D) $\left(\frac{17}{30}, \frac{49}{90}\right)$

Find all points where the function is discontinuous.

100) 100) _____



A) None B) x = 1 C) x = –2 D) x = –2, x = 1

Complete the table and use the result to find the indicated limit.

101) If $f(x) = \frac{x^3 - 6x + 8}{x - 2}$, find $\lim_{x\to 0} f(x)$. 101) _____

x	–0.1	–0.01	–0.001	0.001	0.01	0.1
f(x)						

A)

x	–0.1	–0.01	–0.001	0.001	0.01	0.1
f(x)	–4.09476	–4.00995	–4.00100	–3.99900	–3.98995	–3.89526

; limit = –4.0

B)

x	–0.1	–0.01	–0.001	0.001	0.01	0.1
f(x)	–1.22843	–1.20298	–1.20030	–1.19970	–1.19699	–1.16858

; limit = –1.20

C)

x	–0.1	–0.01	–0.001	0.001	0.01	0.1
f(x)	–1.22843	–1.20298	–1.20030	–1.19970	–1.19699	–1.16858

; limit = ∞

D)

x	–0.1	–0.01	–0.001	0.001	0.01	0.1
f(x)	–2.18529	–2.10895	–2.10090	–2.99910	–2.09096	–2.00574

; limit = –2.10

Solve the problem.

102) The power P (in W) generated by a particular windmill is given by $P = 0.015V^3$ where V is the velocity of the wind (in mph). Find the instantaneous rate of change of power with respect to velocity when the velocity is 14.4 mph. 102) _____

A) 20.7 W/mph B) 9.3 W/mph C) 0.6 W/mph D) 89.6 W/mph

Find the limit.

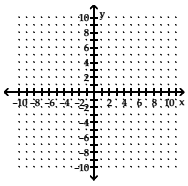
103) $\lim_{x \to -2^+} (x+1)\left(\frac{|x+2|}{x+2}\right)$ 103) _____

A) –1 B) 3 C) Does not exist D) 1

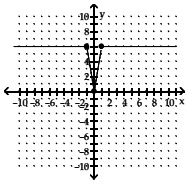
Sketch the graph of a function y = f(x) that satisfies the given conditions.

104) f(0) = 0, f(1) = 6, f(–1) = 6, $\lim_{x \to \pm\infty} f(x) = -6$. 104)

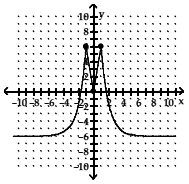
A)



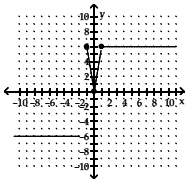
B)

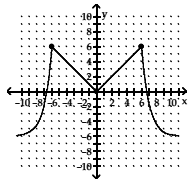


C)



D)





Find the limit, if it exists.

105) $\lim_{x \to 3} \frac{x^2 + 2x - 15}{x^2 - 9}$ 105) _____

A) 0 B) $-\frac{1}{3}$ C) $\frac{4}{3}$ D) Does not exist

106) $\lim_{x \to -\infty} \frac{6x^3 + 2x^2}{x - 6x^2}$ 106) _____

A) $-\infty$ B) 6 C) $-\frac{1}{3}$ D) ∞

Provide an appropriate response.

107) If $x^3 \le f(x) \le x$ for x in [–1,1], find $\lim_{x \to 0} f(x)$ if it exists. 107) _____

A) 1 B) Does not exist C) –1 D) 0

Find the intervals on which the function is continuous.

108) $y = \sqrt{8x + 4}$ 108) _____

A) $\left[\frac{1}{2}, \infty\right)$ B) $\left[-\frac{1}{2}, \infty\right)$ C) $\left(-\infty, -\frac{1}{2}\right]$ D) $\left(-\frac{1}{2}, \infty\right)$

Use the table to estimate the rate of change of y at the specified value of x.

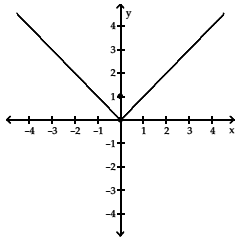
109) x = 2. 109) _____

x	y
0	10
0.5	38
1.0	58
1.5	70
2.0	74
2.5	70
3.0	58
3.5	38
4.0	10

A) 0 B) 8 C) –8 D) 4

Use the graph to evaluate the limit.

110) $\lim_{x \to 0} f(x)$ 110)



A) 0 B) Does not exist C) 1 D) –1

Solve the problem.

111) The velocity of water ft/s at the point of discharge is given by $v = 14.34\sqrt{P}$, where P is the pressure lb/in^2 of the water at the point of discharge. Find the rate of change of the velocity with respect to pressure if the pressure is 50.00 lb/in^2. 111) _____

A) 2.03 ft/s per lb/in^2 B) 0.1434 ft/s per lb/in^2
C) 50.70 ft/s per lb/in^2 D) 1.0140 ft/s per lb/in^2

112) Find equations of all tangents to the curve $f(x) = \frac{1}{x}$ that have slope –1. 112) _____

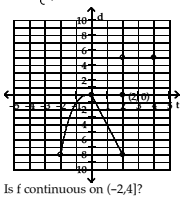
A) y = –x + 2 B) y = x – 2
C) y = –x + 2, y = –x – 2 D) y = x + 2, y = x – 2

113) Given $f(x) = \sqrt{6 - x}$, L = $\sqrt{4}$, $x_0 = 2$, and ε = 1, find the greatest value for δ > 0 such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 113) _____

A) 5 B) 4 C) –5 D) 3

Answer the question.

114) $f(x) = \begin{cases} x^3, & -2 < x \le 0 \\ -4x, & 0 \le x < 2 \\ 5, & 2 < x \le 4 \\ 0, & x = 2 \end{cases}$ 114)



Is f continuous on (–2,4]?

A) Yes B) No

Find the limit and determine if the function is continuous at the point being approached.

115) $\lim_{\theta \to 0} \tan\left(\frac{3\pi}{4} \cos(\sin\theta)\right)$ 115) _____

A) –1; yes B) Does not exist; no
C) –1; no D) 0; yes

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

116) $y = \frac{x^2}{3} + e^x$ 116) _____

A) $y = e^{-x}$; $y = x^2$ B) $y = e^x$; $y = e^{-x}$ C) $y = e^x$; $y = \frac{x^2}{3}$ D) $y = e^x$; $y = e^x$

Find the limit, if it exists.

117) $\lim_{h \to 0} \frac{(1+h)^{1/3} - 1}{h}$ 117) _____

A) 0 B) 1/3 C) Does not exist D) 3

118) $\lim_{x \to -\infty} x^2 e^x$ 118) _____

A) ∞ B) 0 C) 2 D) 1

Provide an appropriate response.

119) If $\lim_{x \to 2} \frac{f(x)}{x} = 3$, find $\lim_{x \to 2} f(x)$. 119) _____

A) 6 B) 2 C) 3 D) Does not exist

Determine if the given function can be extended to a continuous function at x = 0. If so, approximate the extended function's value at x = 0 (rounded to four decimal places if necessary). If not, determine whether the function can be continuously extended from the left or from the right and provide the values of the extended functions at x = 0. Otherwise write "no continuous extension."

120) $f(x) = \frac{\cos 2x}{|2x|}$ 120) _____

A) f(0) = 2 B) f(0) = 2 only from the right
C) f(0) = 2 only from the left D) No continuous extension

Find the limit if it exists.

121) $\lim_{x \to \frac{1}{2}} 6x\left(x - \frac{3}{4}\right)$ 121) _____

A) $-\frac{1}{8}$ B) $-\frac{3}{4}$ C) $\frac{15}{4}$ D) $-\frac{3}{2}$

Give an appropriate answer.

122) Let $\lim_{x \to 8} f(x) = 25$. Find $\lim_{x \to 8} \sqrt{f(x)}$. 122) _____

A) 5 B) 8 C) 25 D) 2.2361

Provide an appropriate response.

123) Which of the following statements describes a way to verify that L is the left–hand limit of a function f(x) at $x = x_0$? 123) _____

I. Given ε > 0, find an interval $I = (x_0 - \delta, x_0 + \delta)$, δ > 0, such that if x lies in I, then $|f(x) - L| < \varepsilon$.

II. Given ε > 0, find an interval $I = (x_0, x_0 + \delta)$, δ > 0, such that if x lies in I, then $|f(x) - L| < \varepsilon$.

III. Given ε > 0, find an interval $I = (x_0 - \delta, x_0)$, δ > 0, such that if x lies in I, then $|f(x) - L| < \varepsilon$.

A) I only B) II only C) III only D) None

124) Which of the following statements defines $\lim_{x \to -\infty} f(x) = \infty$? 124) _____

I. For every positive real number B there exists a corresponding positive real number N such that f(x) > B whenever x > N.
II. For every positive real number B there exists a corresponding negative real number N such that f(x) > B whenever x < N.
III. For every negative real number B there exists a corresponding negative real number N such that f(x) < B whenever x < N.
IV. For every negative real number B there exists a corresponding positive real number N such that f(x) < B whenever x > N

A) I B) IV C) II D) III

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

125) $y = -3x^2 - x$, [5, 6] 125) _____

A) $-\frac{1}{6}$ B) −34 C) $\frac{1}{2}$ D) −2

Find the limit, if it exists.

126) $\lim_{x \to \pi/2} \frac{\sin x}{x}$ 126) _____

A) $\pi/2$ B) Does not exist C) 1 D) $2/\pi$

127) $\lim_{x \to \pm\infty} x \sin \frac{1}{x}$ 127) _____

A) ∞ B) 1 C) 0 D) $-\infty$

Find the intervals on which the function is continuous.

128) $y = \frac{3 \cos(\theta)}{\theta + 2}$ 128) _____

A) $(-\infty, \infty)$ B) $\left(-\infty, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \infty\right)$ C) $(-\infty, -2), (-2, \infty)$ D) $(-\infty, 2), (2, \infty)$

129) $y = \frac{4}{|x| + 5} - \frac{x^2}{7}$ 129) _____

A) $(-\infty, -7), (-7, -5), (-5, \infty)$ B) $(-\infty, -12), (-12, \infty)$
C) $(-\infty, \infty)$ D) $(-\infty, -5), (-5, \infty)$

Complete the table and use the result to find the indicated limit.

130) If $f(x) = \frac{x - 4}{\sqrt{x} - 2}$, find $\lim_{x \to 4} f(x)$. 130) _____

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)						

A)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	3.97484	3.99750	3.99975	4.00025	4.00250	4.02485

; limit = 4.0

B)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	5.07736	5.09775	5.09978	5.10022	5.10225	5.12236

; limit = 5.10

C)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	1.19245	1.19925	1.19993	1.20007	1.20075	1.20745

; limit = 1.20

D)

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)	1.19245	1.19925	1.19993	1.20007	1.20075	1.20745

; limit = ∞

Provide an appropriate response.

131) The inequality 131) _____

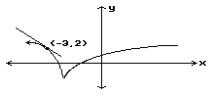
$$1 - \frac{x^2}{2} < \frac{\sin x}{x} < 1$$

holds when x is measured in radians and $|x| < 1$. Find $\lim_{x \to 0} \frac{\sin x}{x}$ if it exists

A) 1 B) 0.0007 C) Does not exist D) 0

Estimate the slope of the curve at the indicated point.

132) 132) _____



A) −1 B) 0 C) Undefined D) 1

Provide an appropriate response.

133) If $\lim_{x \to 0} f(x) = L$, which of the following expressions are true? 133) _____

I. $\lim_{x \to 0^-} f(x)$ does not exist.
II. $\lim_{x \to 0^+} f(x)$ does not exist.
III. $\lim_{x \to 0^-} f(x) = L$
IV. $\lim_{x \to 0^+} f(x) = L$

A) II and III only B) I and IV only C) III and IV only D) I and II only

134) Given $\lim_{x \to 0^-} f(x) = L_1$, $\lim_{x \to 0^+} f(x) = L_r$, and $L_1 \neq L_r$, which of the following statements is true? 134) _____

I. $\lim_{x \to 0} f(x) = L_1$
II. $\lim_{x \to 0} f(x) = L_r$
III. $\lim_{x \to 0} f(x)$ does not exist.

A) I B) III C) II D) None

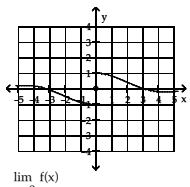
Find the limit and determine if the function is continuous at the point being approached.

135) $\lim_{x \to 3\pi} \sin\left(\frac{9\pi}{2} \cos(\tan x)\right)$ 135) _____

A) Does not exist; no B) 1; yes
C) Does not exist; yes D) 1; no

Use the graph to evaluate the limit.

136) 136)



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

A) Does not exist B) 0 C) −1 D) 1

Solve the problem.

137) Assume that a watermelon dropped from a tall building falls $y = 16t^2$ ft in t sec. Find the watermelon's average speed during the first 3 sec of fall and the speed at the instant t = 3 sec. 137) _____

A) 48 ft/sec; 96 ft/sec B) 96 ft/sec; 49 ft/sec
C) 24 ft/sec; 48 ft/sec D) 49 ft/sec; 98 ft/sec

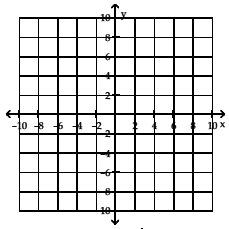
Find the limit, if it exists.

138) $\lim_{x \to 2} (x^2 + 8x - 2)$ 138) _____

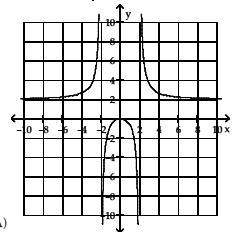
A) Does not exist B) 0 C) 18 D) −18

Sketch the graph of the given function f(x) near the vertical asymptote x = c.

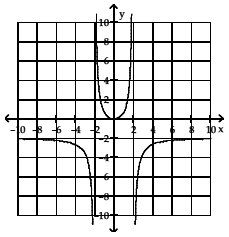
139) $f(x) = \frac{2x^2}{4 - x^2}$ 139)

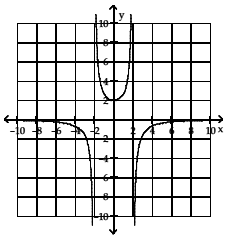


A)

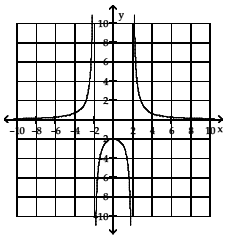


B)





C)



D)

Use the table to estimate the rate of change of y at the specified value of x.

140) x = 1. 140) _____

x	y
0	0
0.2	0.02
0.4	0.08
0.6	0.18
0.8	0.32
1.0	0.5
1.2	0.72
1.4	0.98

A) 1.5 B) 1 C) 0.5 D) 2

Find the limit.

141) $\lim_{x \to 5^+} \frac{\sqrt{3x}(x-5)}{|x-5|}$ 141) _____

A) $\sqrt{15}$ B) 0 C) Does not exist D) $-\sqrt{15}$

142) $\lim_{x \to 0^+} (1 + \csc x)$ 142) _____

A) 0 B) ∞ C) $-\infty$ D) 1

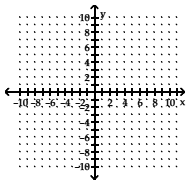
Find the limit if it exists.

143) $\lim_{x \to 5} \sqrt{4x+2}$ 143) _____

A) −22 B) $-\sqrt{22}$ C) 22 D) $\sqrt{22}$

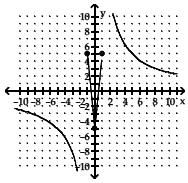
Sketch the graph of a function y = f(x) that satisfies the given conditions.

144) f(0) = 5, f(1) = −5, f(−1) = −5, $\lim_{x \to \pm\infty} f(x) = 0$. 144)

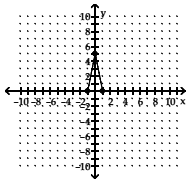


A)

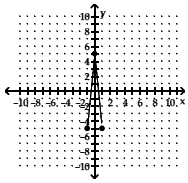
B)

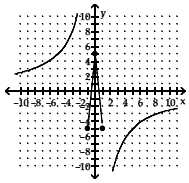


C)



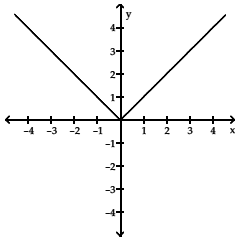
D)





Use the graph to evaluate the limit.

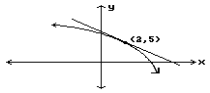
145) $\lim_{x \to 0} f(x)$ 145)



A) 0 B) Does not exist C) −1 D) 1

Estimate the slope of the curve at the indicated point.

146) 146) _____



A) 0 B) −1 C) 1 D) Undefined

Find the limit and determine if the function is continuous at the point being approached.

147) $\lim_{x \to \frac{-\pi}{2}} \cos(4x - \cos 4x)$ 147) _____

A) 0; yes B) Does not exist; yes
C) 0; no D) Does not exist; no

Solve the problem.

148) Given f(x) = −3x + 6, L = −3, $x_0 = 3$, and ε = .01, find the greatest value for δ > 0 such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 148) _____

A) 0.0034 B) −0.0033 C) 0.0134 D) 0.0067

Find the limit and determine if the function is continuous at the point being approached.

149) $\lim_{x \to \frac{-\pi}{2}} \cos\left(\frac{7\pi}{2}\cos(\tan x)\right)$ 149) _____

A) Does not exist; yes B) Does not exist; no
C) 1; yes D) 1; no

Find the limit, if it exists.

150) $\lim_{x \to 0} \frac{\sqrt{1+x} - 1}{x}$ 150) _____

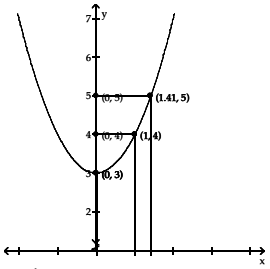
A) 1/2 B) Does not exist C) 1/4 D) 0

151) $\lim_{h \to 0} \frac{(x+h)^3 - x^3}{h}$ 151) _____

A) Does not exist B) 0 C) $3x^2 + 3xh + h^2$ D) $3x^2$

Use the graph to find a δ > 0 such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

152) 152)

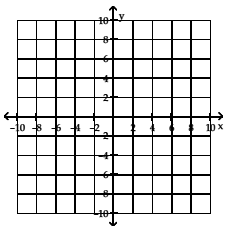


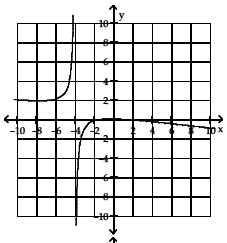
$f(x) = x^2 + 3$
$x_0 = 1$
L = 4
ε = 1

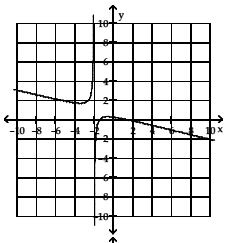
A) $\frac{1}{2}$ B) 0.41 C) $\frac{1}{6}$ D) 3

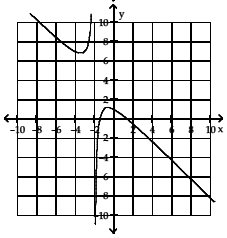
Sketch the graph of the given function f(x) near the vertical asymptote x = c.

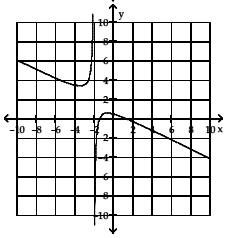
153) $f(x) = \frac{2-x^2}{2x+4}$ 153)



A) 

B) 

C) 

D) 

Find the limit, if it exists.

154) $\lim_{x \to 0} \frac{x^3 - 6x + 8}{x - 2}$ 154) _____

A) 4 B) Does not exist C) −4 D) 0

Complete the table and use the result to find the indicated limit.

155) If $f(x) = \frac{x^2 - 5x + 4}{x^2 - 2x - 8}$, find $\lim_{x \to 2} f(x)$. 155) _____

x	3.9	3.99	3.999	4.001	4.01	4.1
f(x)						

A) 0.3915; 0.3992; 0.3999; 0.4001; 0.4008; 0.4082
limit = 0.4

B) 0.5915; 0.5992; 0.5999; 0.6001; 0.6008; 0.6082
limit = 0.6

C) 0.4915; 0.4992; 0.4999; 0.5001; 0.5008; 0.5082
limit = 0.5

D) 2.4286; 2.4925; 2.4993; 2.5008; 2.5075; 2.5789
limit = 2.5

156) If $f(x) = x^2 - 5$, find $\lim_{x \to 0} f(x)$. 156) _____

x	−0.1	−0.01	−0.001	0.001	0.01	0.1
f(x)						

A)

x	−0.1	−0.01	−0.001	0.001	0.01	0.1
f(x)	−1.4970	−1.4999	−1.5000	−1.5000	−1.4999	−1.4970

; limit = −15.0

B)

x	−0.1	−0.01	−0.001	0.001	0.01	0.1
f(x)	−2.9910	−2.9999	−3.0000	−3.0000	−2.9999	−2.9910

; limit = −3.0

C)

x	−0.1	−0.01	−0.001	0.001	0.01	0.1
f(x)	−4.9900	−4.9999	−5.0000	−5.0000	−4.9999	−4.9900

; limit = −5.0

D)

x	−0.1	−0.01	−0.001	0.001	0.01	0.1
f(x)	−1.4970	−1.4999	−1.5000	−1.5000	−1.4999	−1.4970

; limit = ∞

Provide an appropriate response.

157) Which of the following statements defines $\lim_{x \to (x_0)^+} f(x) = \infty$? 157) _____

I. For every positive real number B there exists a corresponding $\delta > 0$ such that $f(x) > B$ whenever $x_0 - \delta < x < x_0 + \delta$.

II. For every positive real number B there exists a corresponding $\delta > 0$ such that $f(x) > B$ whenever $x_0 < x < x_0 + \delta$.

III. For every positive real number B there exists a corresponding $\delta > 0$ such that $f(x) > B$ whenever $x_0 - \delta < x < x_0$.

A) I B) II C) III D) None

Evaluate $\lim_{h \to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

158) $f(x) = 3x^2$ for $x_0 = -1$ 158) _____

A) Does not exist B) −3 C) −6 D) 3

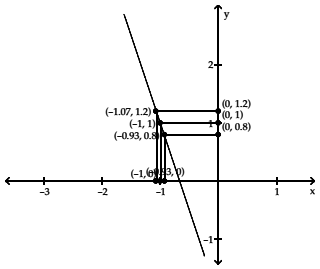
Solve the problem.

159) Given $f(x) = \sqrt{x + 3}$, $L = \sqrt{9}$, $x_0 = 6$, and $\varepsilon = 1$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 159) _____

A) 16 B) 4 C) 5 D) 7

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

160) 160)

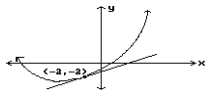


$f(x) = -x$
$x_0 = -1$
$L = 1$
$\varepsilon = .2$

A) 0.07 B) 0.4 C) 0.5 D) 6

Estimate the slope of the curve at the indicated point.

161) 161) _____



A) −2 B) 2 C) $\frac{1}{2}$ D) $-\frac{1}{2}$

Complete the table and use the result to find the indicated limit.

162) If $f(x) = \frac{x^4 - 1}{x - 1}$, find $\lim_{x \to 1} f(x)$. 162) _____

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)						

A)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	4.595	5.046	5.095	5.105	5.154	5.677

; limit = 5.10

B)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	1.032	1.182	1.198	1.201	1.218	1.392

; limit = 1.210

C)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	1.032	1.182	1.198	1.201	1.218	1.392

; limit = ∞

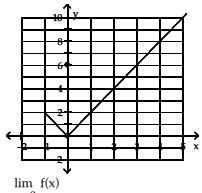
D)

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)	3.439	3.940	3.994	4.006	4.060	4.641

; limit = 4.0

Use the graph to evaluate the limit.

163) 163)



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

A) 6 B) 0 C) Does not exist D) −1

Give an appropriate answer.

164) Let $\lim_{x \to 10} f(x) = 32$. Find $\lim_{x \to 10} \log_2 f(x)$. 164) _____

A) $\frac{5}{2}$ B) 5 C) 25 D) 10

Solve the problem.

165) A cubic salt crystal expands by accumulation on all sides. As it expands outward find the rate of change of its volume with respect to the length of an edge when the edge is 0.13 mm. 165) _____

A) 0.51 mm^3/mm B) 0.01 mm^3/mm
C) 5.07 mm^3/mm D) 0.0507 mm^3/mm

Find the limit.

166) $\lim_{x \to -2} \frac{1}{x + 2}$ 166) _____

A) Does not exist B) $-\infty$ C) 1/2 D) ∞

Solve the problem.

167) Identify the incorrect statements about limits. 167) _____

I. The number L is the limit of f(x) as x approaches x_0 if f(x) gets closer to L as x approaches x_0.

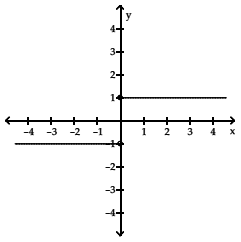
II. The number L is the limit of f(x) as x approaches x_0 if, for any $\varepsilon > 0$, there corresponds a $\delta > 0$ such that $|f(x) - L| < \varepsilon$ whenever $0 < |x - x_0| < \delta$.

III. The number L is the limit of f(x) as x approaches x_0 if, given any $\varepsilon > 0$, there exists a value of x for which $|f(x) - L| < \varepsilon$.

A) II and III B) I and II C) I and III D) I, II, and III

Use the graph to evaluate the limit.

168) $\lim_{x \to 0} f(x)$ 168)



A) Does not exist B) –1 C) ∞ D) 1

Find the limit, if it exists.

169) $\lim_{x \to \infty} \frac{x^2 - 4x + 11}{x^3 - 8x^2 + 19}$ 169) _____

A) 1 B) $\frac{11}{19}$ C) 0 D) ∞

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

170) $\lim_{x \to 0} \frac{\sin 5x}{\sin 4x}$ 170) _____

A) 0 B) Does not exist C) 5/4 D) 4/5

Find the limit, if it exists.

171) $\lim_{x \to -\infty} \frac{\sqrt[3]{x} + 3x + -3}{-4x + x^{2/3} + 4}$ 171) _____

A) 0 B) $-\frac{3}{4}$ C) $-\frac{4}{3}$ D) $-\infty$

Provide an appropriate response.

172) If $\lim_{x \to 0} \frac{f(x)}{x^2} = 1$, find $\lim_{x \to 0} \frac{f(x)}{x}$. 172) _____

A) 1 B) 2 C) 0 D) Does not exist

Find the limit, if it exists.

173) $\lim_{x \to -6} \frac{x^2 + 4x - 12}{x^2 + 3x - 18}$ 173) _____

A) $-\frac{8}{9}$ B) Does not exist C) $\frac{8}{9}$ D) $\frac{4}{9}$

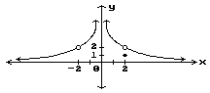
Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

174) $\lim_{x \to 0} \frac{x^2 - 2x + \sin x}{x}$ 174) _____

A) Does not exist B) 0 C) 1 D) –1

Find all points where the function is discontinuous.

175) 175) _____

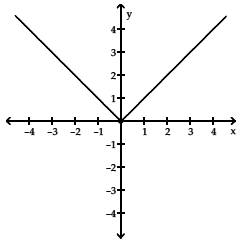


A) x = –2, x = 0, x = 2 B) x = 2

C) x = –2, x = 0 D) x = 0, x = 2

Use the graph to evaluate the limit.

176) $\lim_{x \to 0} f(x)$ 176)



A) –1 B) Does not exist C) 1 D) 0

Provide an appropriate response.

177) If $\lim_{x \to 0^-} f(x) = 1$ and f(x) is an odd function, which of the following statements are true? 177) _____

I. $\lim_{x \to 0} f(x) = 1$

II. $\lim_{x \to 0^+} f(x) = -1$

III. $\lim_{x \to 0} f(x)$ does not exist.

A) I and III only B) II and III only C) I and II only D) I, II, and III

Find the limit, if it exists.

178) $\lim_{x \to \pi/2} \frac{\cos x}{1 - \pi}$ 178) _____

A) 0 B) $2/\pi$ C) Does not exist D) $\frac{1}{1-\pi}$

Find the limit and determine if the function is continuous at the point being approached.

179) $\lim_{\theta \to 3\pi} \tan(\sin(3\pi \cos(\sin\theta)))$ 179) _____

A) 1; yes B) 0; yes

C) Does not exist; no D) 0; no

Determine if the given function can be extended to a continuous function at x = 0. If so, approximate the extended function's value at x = 0 (rounded to four decimal places if necessary). If not, determine whether the function can be continuously extended from the left or from the right and provide the values of the extended functions at x = 0. Otherwise write "no continuous extension."

180) $f(x) = (1 + 2x)^{\frac{1}{x}}$ 180) _____

A) f(0) = 2.718282 B) No continuous extension

C) f(0) = 7.389056 D) f(0) = 5.436564

Find the limit, if it exists.

181) $\lim_{x \to 3} (3x + 4)$ 181) _____

A) 13 B) –5 C) 4 D) 7

Solve the problem.

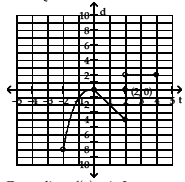
182) A rectangular steel plate expands as it is heated. Find the rate of change of area with respect to temperature T when the width is 1.7 cm and the length is 2.7 cm if $dl/dt = 1.7 \times 10^{-5}$ cm/°C and $dw/dt = 8.7 \times 10^{-6}$ cm/°C. 182) _____

A) 4.6×10^{-5} cm^2/°C B) 2.9×10^{-5} cm^2/°C

C) 5.2×10^{-5} cm^2/°C D) 1.5×10^{-5} cm^2/°C

Answer the question.

183) $f(x) = \begin{cases} x^3, & -2 < x \le 0 \\ -2x, & 0 \le x < 2 \\ 2, & 2 < x \le 4 \\ 0, & x = 2 \end{cases}$ 183)



Does $\lim_{x \to 0} f(x)$ exist?

A) Yes B) No

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

184) $y = e^{-x} + 2x$ 184) _____

A) $y = e^x$; $y = x$ B) $y = -e^x$; $y = 2x$ C) $y = e^{-x}$; $y = 2x$ D) $y = e^{-x}$; $y = x$

Find the equation for the tangent to the curve at the given point.

185) $f(x) = x^3 - 9x$, (1, –8) 185) _____

A) $y = -6x - 2$ B) $y = 3x - 7$ C) $y = -6x$ D) $y = 3x - 11$

Provide an appropriate response.

186) If $\lim_{x \to 1} \frac{f(x) - 3}{x - 1} = 2$, find $\lim_{x \to 1} f(x)$. 186) _____

A) 3 B) 2 C) 1 D) Does not exist

Solve the problem.

187) For a motorcycle traveling at speed v (in mph) when the brakes are applied, the distance d (in feet) required to stop the motorcycle may be approximated by the formula $d = 0.05v^2 + v$. Find the instantaneous rate of change of distance with respect to velocity when the speed is 46 mph. 187) _____

A) 5.6 mph B) 47 mph C) 4.6 mph D) 11.2 mph

Find the intervals on which the function is continuous.

188) $y = \frac{1}{x + 6} - 1x$ 188) _____

A) $(-\infty, -6), (-6, \infty)$ B) $(-\infty, 6), (6, \infty)$ C) $(-\infty, \infty)$ D) $(-\infty, -7), (-7, \infty)$

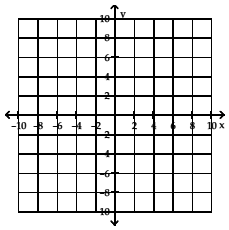
Find the limit.

189) $\lim_{x \to 4^-} \frac{\sqrt{5x}(x - 4)}{|x - 4|}$ 189) _____

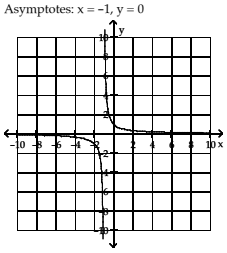
A) 0 B) $\sqrt{20}$ C) Does not exist D) $-\sqrt{20}$

Sketch the graph of the given function f(x) near the vertical asymptote x = c.

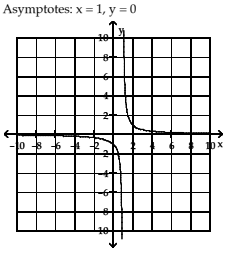
190) $f(x) = \frac{1}{x+1}$ 190)



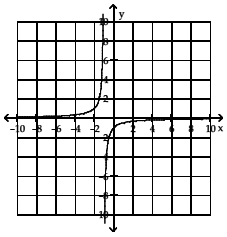
A) Asymptotes: x = –1, y = 0



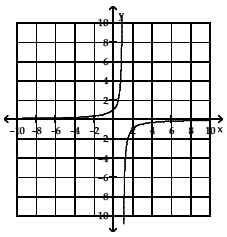
B) Asymptotes: x = 1, y = 0



C) Asymptotes: x = –1, y = 0



D) Asymptotes: x = 1, y = 0



Find the limit.

191) $\lim_{h \to 0^-} \frac{\sqrt{6} - \sqrt{1h^2 + 3h + 6}}{h}$ 191) _____

A) $\frac{-3}{2\sqrt{6}}$ B) $\frac{3}{2\sqrt{6}}$ C) $\frac{-3}{\sqrt{12}}$ D) Does not exist

Solve the problem.

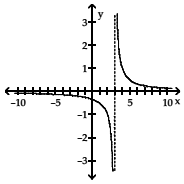
192) Given f(x) = 1/x, L = 1/2, $x_0 = 2$, and ε = 0.1, find the greatest value for δ > 0 such that $0 < |x - x_0| < \delta \Rightarrow$ the inequality $|f(x_0 - L| < \varepsilon$ holds. 192) _____

A) 5 B) 0.3333 C) 0.5 D) 0.1666

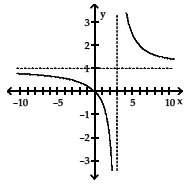
Sketch the graph of the given function f(x) near the vertical asymptote x = c.

193) $f(x) = \frac{x}{x+3}$ 193)

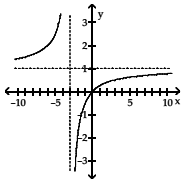
A) Asymptotes: x = 3, y = 0



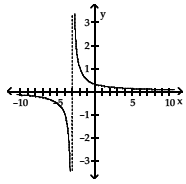
B) Asymptotes: x = 3, y = 1



C) Asymptotes: x = –3, y = 1



D) Asymptotes: x = –3, y = 0



Find the limit, if it exists.

194) $\lim_{x \to 1} \frac{3x^2 + 7x - 2}{3x^2 - 4x - 2}$ 194) _____

A) 0 B) $-\frac{7}{4}$ C) Does not exist D) $-\frac{8}{3}$

195) $\lim_{x \to 8} \frac{x^2 - 64}{x - 8}$ 195) _____

A) 8 B) 1 C) Does not exist D) 16

Provide an appropriate response.

196) Which of the following expressions is a one–sided limit? 196) _____

I. $\lim_{x \to 0} f(x)$

II. $\lim_{x \to 0^-} f(x)$

III. $\lim_{x \to 0^+} f(x)$

A) II and III only B) I, II, and III C) I and III only D) I and II only

Give an appropriate answer.

197) Let $\lim_{x \to -10} f(x) = 2$ and $\lim_{x \to -10} g(x) = 4$. Find $\lim_{x \to -10} [f(x) + g(x)]^2$. 197) _____

A) 6 B) 36 C) 20 D) –2

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

198) $g(t) = 4 + \tan t, \left[-\frac{\pi}{4}, \frac{\pi}{4}\right]$ 198) _____

A) $-\frac{3}{2}$ B) $-\frac{4}{\pi}$ C) $\frac{4}{\pi}$ D) 0

Provide an appropriate response.

199) If $\lim_{x \to 0} \frac{f(x)}{x} = 1$, find $\lim_{x \to 0} f(x)$. 199) _____

A) 0 B) 2 C) 1 D) Does not exist

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

200) $y = 7x + \ln|x|$ 200) _____

A) y = x; y = –ln|x| B) y = 7x; y = –7x C) y = 7x; y = 7x D) y = 7x; y = ln|x|

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

201) $\lim_{x \to 0} \frac{\sin 4x}{\sin 5x}$ 201) _____

A) 4/5 B) Does not exist C) 0 D) 5/4

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

202) $y = x^2 + 4x$, [2, 4] 202) _____

A) 8 B) 16 C) 5 D) 10

Evaluate $\lim_{h \to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

203) $f(x) = 2\sqrt{x} + 6$ for $x_0 = 4$ 203) _____

A) Does not exist B) 4 C) 2 D) $\frac{1}{2}$

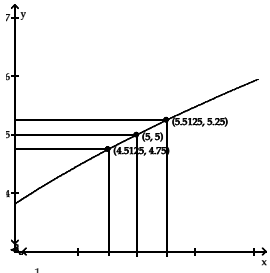
Find the limit if it exists.

204) $\lim_{x \to 64} x^{2/3}$ 204) _____

A) 16 B) $\frac{2}{3}$ C) $\frac{128}{3}$ D) 64

Use the graph to find a δ > 0 such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

205) 205)



$f(x) = \sqrt{5x}$
$x_0 = 5$
L = 5
$\varepsilon = \frac{1}{4}$

A) $\frac{1}{2}$ B) 0 C) $\frac{1}{4}$ D) 0.4875

Provide an appropriate response.

206) Which of the following statements defines $\lim_{x \to (x_0)^-} f(x) = \infty$? 206) _____

I. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 - \delta < x < x_0 + \delta$.

II. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 < x < x_0 + \delta$.

III. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 - \delta < x < x_0$.

A) I B) III C) II D) None

Evaluate $\lim_{h \to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

207) $f(x) = 4x^2 + 4$ for $x_0 = 4$ 207) _____

A) Does not exist B) 64 C) 32 D) 36

Find the limit, if it exists.

208) $\lim_{x \to 0} \frac{x^3 + 12x^2 - 5x}{5x}$ 208) _____

A) –1 B) 0 C) Does not exist D) 5

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

209) $\lim_{x \to 0} \frac{\tan 4x}{x}$ 209) _____

A) 4 B) 1 C) Does not exist D) 1/4

Evaluate $\lim_{h \to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

210) $f(x) = \frac{x}{4} + 8$ for $x_0 = 8$ 210) _____

A) $\frac{1}{4}$ B) 2 C) 10 D) Does not exist

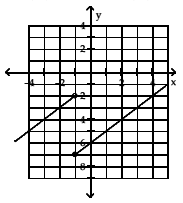
Find the average rate of change of the function over the given interval.

211) $y = 6x^3 + 8x^2 + 5, [-3, -1]$ 211) _____

A) – 92 B) 46 C) – 7 D) $\frac{7}{2}$

Use the graph to estimate the specified limit.

212) $\lim_{x \to (-1)^-} f(x)$ and $\lim_{x \to (-1)^+} f(x)$ 212)



A) –2; –7 B) –7; –5 C) –7; –2 D) –5; –2

Find the limit.

213) $\lim_{x \to 0} \frac{1}{x^{2/3}}$ 213) _____

A) ∞ B) $-\infty$ C) 2/3 D) 0

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

214) $\lim_{x \to 0} 6x^2(\cot 3x)(\csc 2x)$ 214) _____

A) Does not exist B) 1/2 C) 1 D) 1/3

Solve the problem.

215) Given $f(x) = 6x^2$, L =6, $x_0 = 1$, and $\varepsilon = 0.3$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta \Rightarrow$ the inequality $|f(x_0 - L| < \varepsilon$ holds. 215) _____

A) 0.9747 B) 0.0253 C) 0.0247 D) 1.0247

Find the limit, if it exists.

216) $\lim_{x \to -3} \frac{x^2 + 4x + 3}{x + 3}$ 216) _____

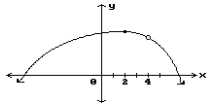
A) 4 B) –2 C) 24 D) Does not exist

217) $\lim_{x \to 0} (x^2 - 5)$ 217) _____

A) –5 B) 0 C) Does not exist D) 5

Find all points where the function is discontinuous.

218) 218) _____



A) x = 4 B) x = 4, x = 2 C) x = 2 D) None

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

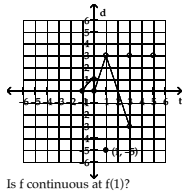
219) $y = -5x^2 - 5 \cos x$ 219) _____

A) $y = -5x^2$; $y = -5x^2$ B) $y = 5x^2$; $y = -5x^2$

C) $y = -5 \cos x$; $y = -5x^2$ D) $y = 5x^2$; $y = -5 \cos x$

Answer the question.

220) $f(x) = \begin{cases} -x^2 + 1, & -1 \le x < 0 \\ 3x, & 0 < x < 1 \\ -5, & x = 1 \\ -3x + 6 & 1 < x < 3 \\ 3, & 3 < x < 5 \end{cases}$ 220)



Is f continuous at f(1)?

A) Yes B) No

Find the limit, if it exists.

221) $\lim_{x \to \infty} \frac{3x + 1}{8x - 7}$ 221) _____

A) ∞ B) $\frac{3}{8}$ C) $-\frac{1}{7}$ D) 0

Find the intervals on which the function is continuous.

222) $y = \frac{\sin 4(\theta)}{5\theta}$ 222) _____

A) $(-\infty, 0), (0, \infty)$ B) $(-\infty, \infty)$ C) $\left(-\infty, \frac{\pi}{2}\right), \left(\frac{\pi}{2}, \infty\right)$ D) $(-\infty, \pi), (\pi, \infty)$

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

223) $y = \frac{3}{x - 2}, [4, 7]$ 223) _____

A) $\frac{1}{3}$ B) 7 C) $-\frac{3}{10}$ D) 2

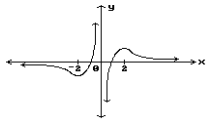
Find the limit, if it exists.

224) $\lim_{x \to 3} \frac{x^2 - 9}{x^2 - 8x + 15}$ 224) _____

A) – 3 B) $-\frac{3}{2}$ C) Does not exist D) 0

Find all points where the function is discontinuous.

225) 225) _____

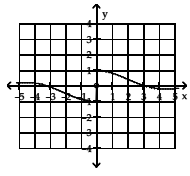


A) x = –2, x = 0, x = 2 B) x = –2, x = 2

C) None D) x = 0

Use the graph to estimate the specified limit.

226) $\lim_{x \to 0} f(x)$ 226)



A) Does not exist B) 0 C) 1 D) –1

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

227) $y = e^x - 2x$ 227) _____

A) $y = e^x$; $y = -2x$ B) $y = e^{-x}$; $y = 2x$ C) $y = -e^x$; $y = -2x$ D) $y = -e^{-x}$; $y = 2x$

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

228) $y = \sqrt{2x}, [2, 8]$ 228) _____

A) $\frac{1}{3}$ B) 7 C) $-\frac{3}{10}$ D) 2

Provide an appropriate response.

229) If $\lim_{x \to 2} \frac{f(x)}{x^2} = 4$, find $\lim_{x \to 2} \frac{f(x)}{x}$. 229) _____

A) 16 B) 4 C) 8 D) 2

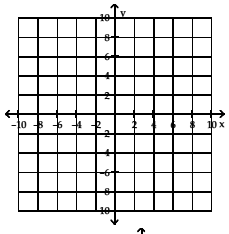
Find the limit if it exists.

230) $\lim_{x \to 20} (18 - 5x)$ 230) _____

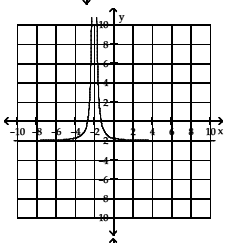
A) –118 B) 118 C) 82 D) –82

Sketch the graph of the given function f(x) near the vertical asymptote x = c.

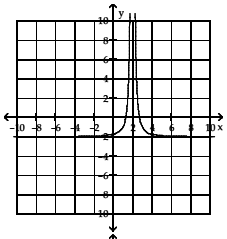
231) $f(x) = \dfrac{1}{(x+2)^2}$ 231)



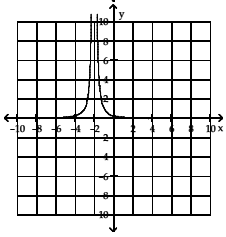
A)



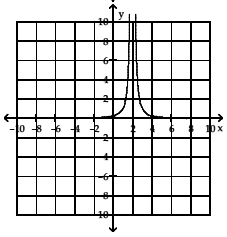
B)



C)

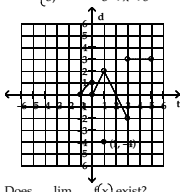


D)



Answer the question.

232) $f(x) = \begin{cases} -x^2 + 1, & -1 \le x < 0 \\ 2x, & 0 < x < 1 \\ -4, & x = 1 \\ -2x + 4 & 1 < x < 3 \\ 3, & 3 < x < 5 \end{cases}$ 232)



Does $\lim\limits_{x \to (-1)^+} f(x)$ exist?

A) Yes B) No

Find the limit, if it exists.

233) $\lim\limits_{x \to \infty} \left(1 + \dfrac{1}{x}\right)^x$ 233) _____

A) 1 B) 0 C) ∞ D) e

Find the equation for the tangent to the curve at the given point.

234) $f(x) = \dfrac{4}{x}; \left(5, \dfrac{4}{5}\right)$ 234) _____

A) y = 13x – 16 B) y = –39x – 80 C) $y = \dfrac{1}{20}x + \dfrac{1}{5}$ D) $y = -\dfrac{4}{25}x + \dfrac{8}{5}$

Find the limit, if it exists.

235) $\lim\limits_{h \to 0} \dfrac{18x + h}{x^3(x - h)}$ 235) _____

A) 18x B) $\dfrac{18}{x^3}$ C) $\dfrac{18}{x^4}$ D) Does not exist

236) $\lim\limits_{x \to 3} \dfrac{x^2 + 3x - 18}{x - 3}$ 236) _____

A) 9 B) 3 C) 0 D) Does not exist

Solve the problem.

237) A balloon used in surgical procedures is cylindrical in shape. As it expands outward, assume that the length remains a constant 90.0 mm. Find the rate of change of surface area with respect to radius when the radius is 0.040 mm. (Answer can be left in terms of π). 237) _____

A) $180.0\pi\ \text{mm}^2/\text{mm}$ B) $90.16\pi\ \text{mm}^2/\text{mm}$

C) $90.08\pi\ \text{mm}^2/\text{mm}$ D) $180.16\pi\ \text{mm}^2/\text{mm}$

Find the equation for the tangent to the curve at the given point.

238) $f(x) = x^2 + 5x$; (4, 36) 238) _____

A) $y = -\dfrac{4x}{25} + \dfrac{8}{5}$ B) y = –39x – 80 C) $y = \dfrac{x}{20} + \dfrac{1}{5}$ D) y = 13x – 16

Find the limit if it exists.

239) $\lim\limits_{x \to -8} (7x^2 - 2x - 2)$ 239) _____

A) 430 B) 466 C) 434 D) 462

Determine if the given function can be extended to a continuous function at x = 0. If so, approximate the extended function's value at x = 0 (rounded to four decimal places if necessary). If not, determine whether the function can be continuously extended from the left or from the right and provide the values of the extended functions at x = 0. Otherwise write "no continuous extension."

240) $f(x) = \dfrac{10^{2x} - 1}{x}$ 240) _____

A) No continuous extension B) f(0) = 0 only from the right

C) f(0) = 0 D) f(0) = 0 only from the left

Find the limit, if it exists.

241) $\lim\limits_{h \to 0} \dfrac{2}{\sqrt{3h+4} + 2}$ 241) _____

A) Does not exist B) 2 C) 1/2 D) 1

242) $\lim\limits_{x \to -1} \dfrac{x}{3x+2}$ 242) _____

A) 0 B) –1/5 C) Does not exist D) 1

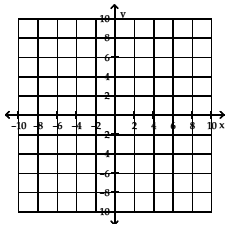
Solve the problem.

243) The current in a simple electrical circuit is given by I = V/R, where I is the current in amperes, V is the voltage in volts, and R is the resistance in ohms. When V = 12 volts, what is a 12Ω resistor's tolerance for the current to be within 1 ± 0.01 amp? 243) _____

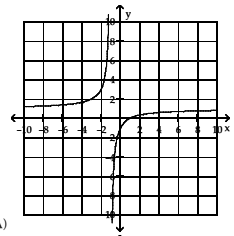
A) 10% B) 1% C) 0.01% D) 0.1%

Sketch the graph of the given function f(x) near the vertical asymptote x = c.

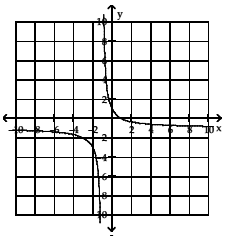
244) $f(x) = \dfrac{x - 1}{x + 1}$ 244)



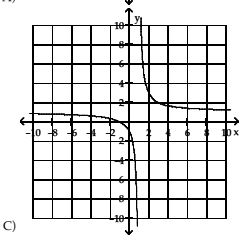
A)



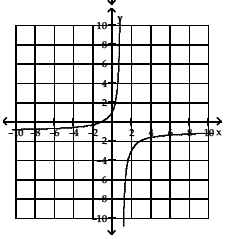
B)



C)



D)



Find the equation for the tangent to the curve at the given point.

245) $f(x) = \dfrac{7}{x} - 2; \left(3, \dfrac{1}{3}\right)$ 245) _____

A) $y = -\dfrac{7}{9}x + \dfrac{8}{3}$ B) y = –7x – 9 C) $y = \dfrac{1}{4}x + 1$ D) $y = \dfrac{1}{2}x + \dfrac{1}{2}$

Solve the problem.

246) The cross–sectional area of a cylinder is given by $A = \pi D^2/4$, where D is the cylinder diameter. Find the tolerance range of D such that $|A - 10| < 0.01$ as long as $D_{min} < D < D_{max}$. 246) _____

A) $D_{min} = 3.567$, $D_{max} = 3.578$ B) $D_{min} = 3.558$, $D_{max} = 3.578$

C) $D_{min} = 3.558$, $D_{max} = 3.570$ D) $D_{min} = 3.567$, $D_{max} = 3.570$

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

247) $y = \dfrac{x^2}{2} - e^x$ 247) _____

A) $y = -e^x$; $y = -e^{-x}$ B) $y = -e^x$; $y = -e^x$ C) $y = e^{-x}$; $y = x^2$ D) $y = -e^x$; $y = \dfrac{x^2}{2}$

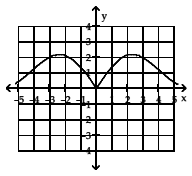
Give an appropriate answer.

248) Let $\lim_{x \to 9} f(x) = -1$ and $\lim_{x \to 9} g(x) = -6$. Find $\lim_{x \to 9} \frac{f(x)}{g(x)}$. 248) _____

A) 9 B) 5 C) $\frac{1}{6}$ D) 6

Use the graph to estimate the specified limit.

249) $\lim_{x \to 0} f(x)$ 249)



A) Does not exist B) –3 C) 0 D) 3

Solve the problem.

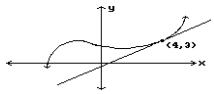
250) Find the points where the graph of the function have horizontal tangents. 250) _____

$f(x) = 3x^2 + 5x - 4$

A) (–11, 238) B) $\left(\frac{5}{6}, -\frac{173}{6}\right)$ C) $\left(-\frac{5}{6}, -\frac{73}{12}\right)$ D) (0, 4)

Estimate the slope of the curve at the indicated point.

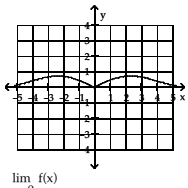
251) 251) _____



A) Undefined B) –1 C) 1 D) 0

Use the graph to evaluate the limit.

252) 252)



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

A) 1 B) 0 C) –1 D) Does not exist

Find the limit, if it exists.

253) $\lim_{x \to 5} \frac{x^2 - 2x - 15}{x + 3}$ 253) _____

A) –8 B) 5 C) 0 D) Does not exist

Use the table to estimate the rate of change of y at the specified value of x.

254) x = 1. 254) _____

x	y
0	0
0.2	0.01
0.4	0.04
0.6	0.09
0.8	0.16
1.0	0.25
1.2	0.36
1.4	0.49

A) 1.5 B) 1 C) 2 D) 0.5

Find the limit, if it exists.

255) $\lim_{x \to 4} \sqrt{x^2 + 2x + 1}$ 255) _____

A) 5 B) ±5 C) 25 D) Does not exist

Complete the table and use the result to find the indicated limit.

256) If $f(x) = x^2 + 8x - 2$, find $\lim_{x \to 2} f(x)$. 256) _____

x	1.9	1.99	1.999	2.001	2.01	2.1
f(x)						

A)

x	1.9	1.99	1.999	2.001	2.01	2.1
f(x)	5.043	5.364	5.396	5.404	5.436	5.763

; limit = ∞

B)

x	1.9	1.99	1.999	2.001	2.01	2.1
f(x)	5.043	5.364	5.396	5.404	5.436	5.763

; limit = 5.40

C)

x	1.9	1.99	1.999	2.001	2.01	2.1
f(x)	16.692	17.592	17.689	17.710	17.808	18.789

; limit = 17.70

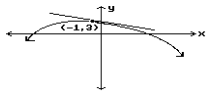
D)

x	1.9	1.99	1.999	2.001	2.01	2.1
f(x)	16.810	17.880	17.988	18.012	18.120	19.210

; limit = 18.0

Estimate the slope of the curve at the indicated point.

257) 257) _____



A) $-\frac{1}{2}$ B) –2 C) $\frac{1}{2}$ D) 2

Find the limit, if it exists.

258) $\lim_{x \to \infty} \left(\frac{2}{x^3} - \cos\frac{1}{x}\right)\left(6 + \cos\frac{1}{x}\right)$ 258) _____

A) 0 B) 3 C) –7 D) Does not exist

Solve the problem.

259) Select the correct statement for the definition of the limit: $\lim_{x \to x_0} f(x) = L$ 259) _____

means that _____

A) if given any number $\varepsilon > 0$, there exists a number $\delta > 0$, such that for all x, $0 < |x - x_0| < \varepsilon$ implies $|f(x) - L| < \delta$.

B) if given any number $\varepsilon > 0$, there exists a number $\delta > 0$, such that for all x, $0 < |x - x_0| < \delta$ implies $|f(x) - L| < \varepsilon$.

C) if given any number $\varepsilon > 0$, there exists a number $\delta > 0$, such that for all x, $0 < |x - x_0| < \delta$ implies $|f(x) - L| > \varepsilon$.

D) if given any number $\varepsilon > 0$, there exists a number $\delta > 0$, such that for all x, $0 < |x - x_0| < \varepsilon$ implies $|f(x) - L| > \delta$.

260) Find the points where the graph of the function have horizontal tangents. 260) _____

$f(x) = x^3 - 15x$

A) $(-\sqrt{5}, 30\sqrt{5})$, (0,0), $(\sqrt{5}, -30\sqrt{5})$ B) $(-\sqrt{5}, 10\sqrt{5})$, $(\sqrt{5}, -10\sqrt{5})$

C) (–5, 20), $(\sqrt{5}, 50)$ D) $(\sqrt{5}, -30\sqrt{5})$

Find the limit, if it exists.

261) $\lim_{x \to 6} \frac{x + 6}{(x - 6)^2}$ 261) _____

A) 0 B) –6 C) 6 D) Does not exist

Find the limit.

262) $\lim_{h \to 0^+} \frac{\sqrt{h^2 + 5h + 3} - \sqrt{3}}{h}$ 262) _____

A) Does not exist B) $\frac{5}{6}$ C) $\frac{5}{2\sqrt{3}}$ D) $\frac{5}{\sqrt{6}}$

Give an appropriate answer.

263) Suppose $\lim_{x \to 0} f(x) = 1$ and $\lim_{x \to 0} g(x) = -3$. Name the limit rules that are used to accomplish steps (a), (b), and (c) of the following calculation. 263) _____

$$\lim_{x \to 0} \frac{-2f(x) - 4g(x)}{(f(x) + 15)^{1/2}} \overset{(a)}{=} \frac{\lim_{x \to 0} (-2f(x) - 4g(x))}{\lim_{x \to 0} (f(x) + 15)^{1/2}}$$

$$\overset{(b)}{=} \frac{\lim_{x \to 0} -2f(x) - \lim_{x \to 0} 4g(x)}{(\lim_{x \to 0} (f(x) + 15))^{1/2}} \overset{(c)}{=} \frac{-2 \lim_{x \to 0} f(x) - 4 \lim_{x \to 0} g(x)}{(\lim_{x \to 0} f(x) + \lim_{x \to 0} 15)^{1/2}}$$

$$= \frac{-2 + 12}{(1 + 15)^{1/2}} = \frac{5}{2}$$

A) (a) Quotient Rule
(b) Difference Rule
(c) Constant Multiple Rule

B) (a) Difference Rule
(b) Power Rule
(c) Sum Rule

C) (a) Quotient Rule
(b) Difference Rule, Sum Rule
(c) Constant Multiple Rule and Power Rule

D) (a) Quotient Rule
(b) Difference Rule, Power Rule
(c) Constant Multiple Rule and Sum Rule

Solve the problem.

264) Find an equation of the tangent to the curve $f(x) = 2x^2 - 2x + 1$ that has slope 2. 264) _____

A) y = 2x + 2 B) y = 2x + 1 C) y = 2x D) y = 2x – 1

Provide an appropriate response.

265) Given $\lim_{x\to 0^-} f(x) = L_l$, $\lim_{x\to 0^+} f(x) = L_r$, and $L_l = L_r$, which of the following statements is false? 265) _____

I. $\lim_{x\to 0} f(x) = L_l$

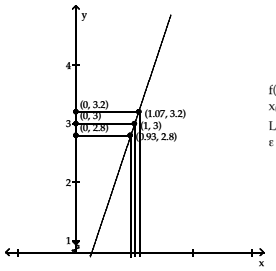
II. $\lim_{x\to 0} f(x) = L_r$

III. $\lim_{x\to 0} f(x)$ does not exist.

A) I B) III C) II D) None

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

266) 266)

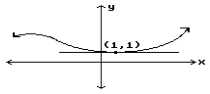


$f(x) = 3x$
$x_0 = 1$
$L = 3$
$\varepsilon = .2$

A) 0.5 B) 0.07 C) 2 D) 0.4

Estimate the slope of the curve at the indicated point.

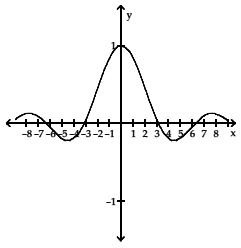
267) 267) _____



A) 0 B) –1 C) 1 D) Undefined

Use the graph to evaluate the limit.

268) $\lim_{x\to 0} f(x)$ 268)



A) Does not exist B) 0 C) 1 D) –1

Find the limit, if it exists.

269) $\lim_{x\to\infty} \frac{6x^3 - 4x^2 + 3x}{-x^3 - 2x + 5}$ 269) _____

A) 6 B) $\frac{3}{2}$ C) –6 D) ∞

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

270) $y = e^x + 3x$ 270) _____

A) $y = -e^{-x}$; $y = 3x$ B) $y = e^x$; $y = x$ C) $y = -e^{-x}$; $y = x$ D) $y = e^x$; $y = 3x$

Find the equation for the tangent to the curve at the given point.

271) $f(x) = \frac{\sqrt{x}}{5}; \left(4, \frac{2}{5}\right)$ 271) _____

A) $y = -39x - 80$ B) $y = \frac{1}{20}x + \frac{1}{5}$ C) $y = 13x - 16$ D) $y = -\frac{4}{25}x + \frac{8}{5}$

Find the limit, if it exists.

272) $\lim_{x\to\pm\infty} \left(4 + \frac{5}{x}\right)\left(\sin\frac{1}{x}\right)$ 272) _____

A) –4 B) Does not exist C) 0 D) 4

Solve the problem.

273) You are asked to make some circular cylinders, each with a cross–sectional area of 9 cm^2. To do this, you need to know how much deviation from the ideal cylinder diameter of $x_0 = 2.67$ cm you can allow and still have the area come within 0.1 cm^2 of the required 9 cm^2. To find out, let $A = \pi\left(\frac{x}{2}\right)^2$ and look for the interval in which you must hold x to make $|A - 9| < 0.1$. What interval do you find? 273) _____

A) $(3.3663, 3.4039)$ B) $(0.5642, 0.5642)$ C) $(5.9666, 6.0332)$ D) $(2.3803, 2.4069)$

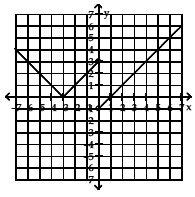
Find the limit if it exists.

274) $\lim_{x\to -1} (x + 2)^2(x - 2)^3$ 274) _____

A) –243 B) 9 C) 1 D) –27

Use the graph to estimate the specified limit.

275) $\lim_{x\to 0^-} f(x)$ and $\lim_{x\to 0^+} f(x)$ 275)



A) –3; –1 B) 3; 1 C) 3; –1 D) –1; 3

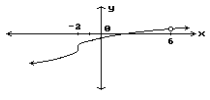
Evaluate $\lim_{h\to 0} \frac{f(x_0 + h) - f(x_0)}{h}$ for the given x_0 and function f.

276) $f(x) = 3\sqrt{x}$ for $x_0 = 25$ 276) _____

A) Does not exist B) $\frac{3}{10}$ C) $\frac{75}{2}$ D) $\frac{15}{2}$

Find all points where the function is discontinuous.

277) 277) _____



A) x = 6 B) None C) x = –2, x = 6 D) x = –2

Solve the problem.

278) Given $f(x) = 5x - 9$, $L = 1$, $x_0 = 2$, and $\varepsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 278) _____

A) 0.005 B) 0.001 C) 0.004 D) 0.002

279) Given $f(x) = -10x - 9$, $L = -49$, $x_0 = 4$, and $\varepsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \varepsilon$ holds. 279) _____

A) 0.002 B) –0.0025 C) 0.0005 D) 0.001

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

280) $\lim_{x\to 0} \frac{\sin(\sin x)}{\sin x}$ 280) _____

A) 0 B) Does not exist C) –1 D) 1

Find the intervals on which the function is continuous.

281) $y = \frac{x + 1}{x^2 - 15x + 56}$ 281) _____

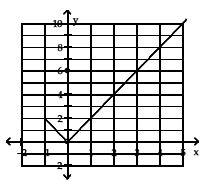
A) $(-\infty, -7), (-7, 8), (8, \infty)$ B) $(-\infty, -8), (-8, 7), (7, \infty)$
C) $(-\infty, 7), (7, 8), (8, \infty)$ D) $(-\infty, 7), (7, \infty)$

282) $y = \frac{3}{x^2 - 16}$ 282) _____

A) $(-\infty, 16), (16, \infty)$ B) $(-\infty, -4), (-4, \infty)$
C) $(-\infty, -4), (-4, 4), (4, \infty)$ D) $(-\infty, -16), (-16, 16), (16, \infty)$

Use the graph to estimate the specified limit.

283) $\lim_{x\to 0} f(x)$ 283)



A) Does not exist B) 0 C) –1 D) 6

Provide an appropriate response.

284) Which of the following statements is true about the greatest integer function f(x) = int x ? 284) _____

I. $\lim_{x\to 0^+}$ int x = 1

II. $\lim_{x\to 0^-}$ int x = −1

III. $\lim_{x\to 0}$ int x does not exist.

A) II and III only B) I and III only C) I and II only D) I, II, and III

Find the limit using $\lim_{x=0} \frac{\sin x}{x} = 1$.

285) $\lim_{x\to 0} \frac{x}{\sin 3x}$ 285) _____

A) 1/3 B) Does not exist C) 1 D) 3

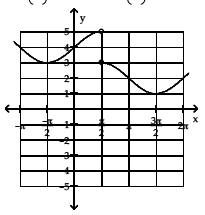
Find the limit.

286) $\lim_{x\to -5^-} \left(x + 2\right)\left(\frac{|x+5|}{x+5}\right)$ 286) _____

A) Does not exist B) 7 C) −3 D) 3

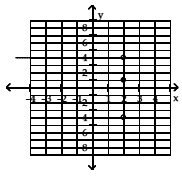
Use the graph to estimate the specified limit.

287) $\lim_{x\to \left(\frac{\pi}{2}\right)^-}$ f(x) and $\lim_{x\to \left(\frac{\pi}{2}\right)^+}$ f(x) 287)



A) $\frac{\pi}{2}; \frac{\pi}{2}$ B) 3; 5 C) π; π D) 5; 3

288) $\lim_{x\to 2^-}$ f(x) and $\lim_{x\to 2^+}$ f(x) 288)

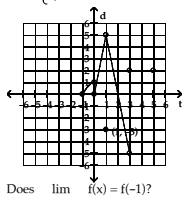


A) 1; 1 B) Does not exist; does not exist

C) −4; 4 D) 4; −4

Answer the question.

289) $f(x) = \begin{cases} -x^2 + 1, & -1 \le x < 0 \\ 5x, & 0 < x < 1 \\ -3, & x = 1 \\ -5x + 10 & 1 < x < 3 \\ 2, & 3 < x < 5 \end{cases}$ 289)



Does $\lim_{x\to -1^+}$ f(x) = f(−1)?

A) Yes B) No

Provide an appropriate response.

290) It can be shown that the inequalities 290) _____

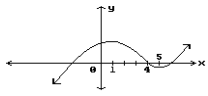
$-x \le x\cos(\frac{1}{x}) \le x$

hold for all values of x ≥ 0. Find $\lim_{x\to 0}$ x cos$(\frac{1}{x})$ if it exists

A) 1 B) 0 C) 0.0007 D) Does not exist

Find all points where the function is discontinuous.

291) 291) _____



A) x = 1, x = 5 B) None C) x = 1, x = 4, x = 5 D) x = 4

Find the limit, if it exists.

292) $\lim_{x\to 1} \frac{x^4 - 1}{x - 1}$ 292) _____

A) 4 B) 0 C) 2 D) Does not exist

Complete the table and use the result to find the indicated limit.

293) If $f(x) = \frac{x-1}{x^2 + 2x - 3}$, find $\lim_{x\to 1}$ lim f(x). 293) _____

x	0.9	0.99	0.999	1.001	1.01	1.1
f(x)						

A) 0.1564; 0.1506; 0.1501; 0.1499; 0.1494; 0.1439

limit = 0.15

B) 0.2564; 0.2506; 0.2501; 0.2499; 0.2494; 0.2439

limit = 0.25

C) 0.3564; 0.3506; 0.3501; 0.3499; 0.3494; 0.3439

limit = 0.35

D) −0.2564; −0.2506; −0.2501; −0.2499; −0.2494; −0.2439

limit = −0.25

Find the limit, if it exists.

294) $\lim_{x\to \infty} \frac{3\sqrt{x} + x^{-1}}{5x + 3}$ 294) _____

A) ∞ B) 0 C) $\frac{3}{5}$ D) $\frac{1}{5}$

295) $\lim_{x\to \infty} x\cos\frac{1}{x}$ 295) _____

A) 1 B) 0 C) −∞ D) ∞

296) $\lim_{x\to 11} \frac{|11 - x|}{11 - x}$ 296) _____

A) 0 B) Does not exist C) 1 D) −1

Give an appropriate answer.

297) Let $\lim_{x\to 3}$ f(x) = 10 and $\lim_{x\to 3}$ g(x) = 3. Find $\lim_{x\to 3}\left[\frac{-8f(x) - 8g(x)}{5 + g(x)}\right]$. 297) _____

A) − 24 B) − 7 C) − 13 D) 3

Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

298) $y = 4x^2 - 4\sin x$ 298) _____

A) $y = 4x^2$; $y = -4x^2$ B) $y = 4x^2$; $y = 4x^2$

C) $y = 4x^2$; $y = -4\sin x$ D) $y = -4\sin x$; $y = 4x^2$

Provide an appropriate response.

299) Which of the following statements defines $\lim_{x\to x_0}$ f(x) = ∞? 299) _____

I. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 - \delta < x < x_0 + \delta$.

II. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 < x < x_0 + \delta$.

III. For every positive real number B there exists a corresponding δ > 0 such that f(x) > B whenever $x_0 - \delta < x < x_0$.

A) III B) II C) I D) None

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

300) $y = 4x^2, \left[0, \frac{7}{4}\right]$ 300) _____

A) $-\frac{3}{10}$ B) 7 C) 2 D) $\frac{1}{3}$

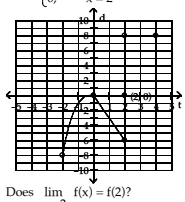
Find a simple basic function as a right–end behavior model and a simple basic function as a left–end behavior model.

301) $y = e^{-x} - 3x$ 301) _____

A) $y = e^x$; $y = -3x$ B) $y = e^{-x}$; $y = 3x$ C) $y = e^{-x}$; $y = -3x$ D) $y = -e^{-x}$; $y = -3x$

Answer the question.

302) $f(x) = \begin{cases} x^3, & -2 < x \le 0 \\ -3x, & 0 \le x < 2 \\ 8, & 2 < x \le 4 \\ 0, & x = 2 \end{cases}$ 302)



Does $\lim_{x \to 2} f(x) = f(2)$?

A) Yes B) No

Find the limit.

303) $\lim_{x \to (-2)^-} \frac{1}{x+2}$ 303) _____

A) ∞ B) 1/2 C) $-\infty$ D) –1/2

Find the limit if it exists.

304) $\lim_{x \to -3} (x+5)^{1/3}$ 304) _____

A) 4 B) 2 C) –2 D) 1

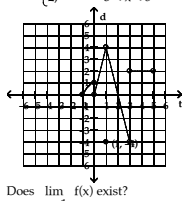
Find the limit, if it exists.

305) $\lim_{x \to -\infty} \frac{\cos\left(\frac{5}{x}\right)}{5 + \frac{5}{x}}$ 305) _____

A) $-\frac{1}{5}$ B) 0 C) Does not exist D) $\frac{1}{5}$

Answer the question.

306) $f(x) = \begin{cases} -x^2 + 1, & -1 \le x < 0 \\ 4x, & 0 < x < 1 \\ -4, & x = 1 \\ -4x + 8 & 1 < x < 3 \\ 2, & 3 < x < 5 \end{cases}$ 306)

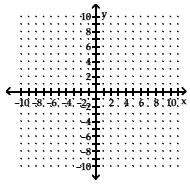


Does $\lim_{x \to 1} f(x)$ exist?

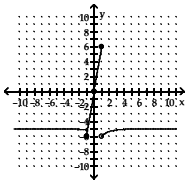
A) No B) Yes

Sketch the graph of a function y = f(x) that satisfies the given conditions.

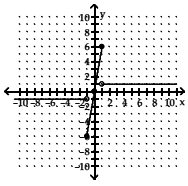
307) $f(0) = 0$, $f(1) = 6$, $f(-1) = -6$, $\lim_{x \to -\infty} f(x) = -5$, $\lim_{x \to \infty} f(x) = 5$. 307)



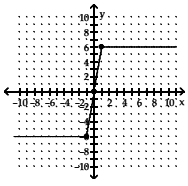
A)



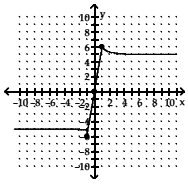
B)



C)

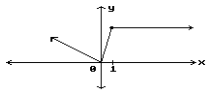


D)



Find all points where the function is discontinuous.

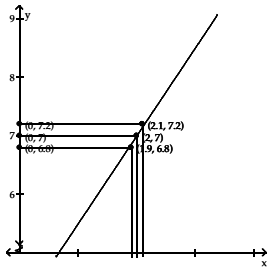
308) 308) _____



A) None B) x = 0 C) x = 0, x = 1 D) x = 1

Use the graph to find a $\delta > 0$ such that for all x, $0 < |x - x_0| < \delta \Rightarrow |f(x) - L| < \varepsilon$.

309) 309)



$f(x) = \frac{3}{2}x + 4$

$x_0 = 2$

$L = 0.1$

$\varepsilon = .2$

A) 0.02 B) 5 C) 0.1 D) 0.04

Find the limit, if it exists.

310) $\lim_{x \to -\infty} \frac{\ln |x|}{x^4}$ 310) _____

A) ∞ B) 0 C) $-\infty$ D) 1

Find the limit if it exists.

311) $\lim_{x \to 14} \sqrt{3}$ 311) _____

A) 14 B) $\sqrt{3}$ C) 3 D) $\sqrt{14}$

Find the limit.

312) $\lim_{x \to 0.5^-} \sqrt{\frac{x+1}{x+2}}$ 312) _____

A) $\sqrt{\frac{1}{3}}$ B) Does not exist C) $\sqrt{\frac{3}{5}}$ D) $\frac{3}{5}$

1) D
ID: TCALC11W 2.1.5–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Graphically

2) C
ID: TCALC11W 2.1.5–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Graphically

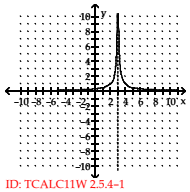
3) D
ID: TCALC11W 2.1.5–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Graphically

4) A
ID: TCALC11W 2.1.5–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Graphically

5) C
ID: TCALC11W 2.1.5–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Graphically

6) Notice that f(0) = 5 and f(1) = 2. As f is continuous on [0,1], the Intermediate Value Theorem implies that there is a number c such that f(c) = π.
ID: TCALC11W 2.6.6–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

7) (Answers may vary.) Possible answer: $f(x) = \frac{1}{|x-3|}$.



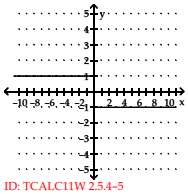
ID: TCALC11W 2.5.4–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function with Given Values and Limits

8) Yes, if f(x) = 1 and g(x) = x − 3, then $h(x) = \frac{1}{x-3}$ is discontinuous at x = 3.
ID: TCALC11W 2.6.6–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

9) The function is not differentiable at x = 0 because it is discontinuous at x = 0. The graph does not have a vertical tangent at (0, 5) since f remains bounded as x approaches zero from either side.
ID: TCALC11W 2.7.5–4
Diff: 0 Page Ref: 134–139
Objective: (2.7) ∗Know Concepts: Tangents

10) The roots of f(x) are the solutions to the equation f(x) = 0. Statement (b) is asking for the solution to the equatior $4x^3 = 4x + 2$. Statement (d) is asking for the solution to the equation $4x^3 - 4x = 2$. These three equations are equivalent to the equations in statements (c) and (e). As five equations are equivalent, their solutions are the same.
ID: TCALC11W 2.6.6–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

11) (Answers may vary.) Possible answer: $f(x) = \begin{cases} 1, & x < 0 \\ -1, & x > 0 \end{cases}$

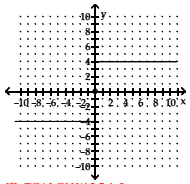


ID: TCALC11W 2.5.4–5
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function with Given Values and Limits

12) The function is not differentiable at the x = 0 and hence does not have a tangent at the origin.
ID: TCALC11W 2.7.5–3
Diff: 0 Page Ref: 134–139
Objective: (2.7) ∗Know Concepts: Tangents

13) The function f is not differentiable at x = 0 and hence does not have a tangent at the origin.
ID: TCALC11W 2.7.5–2
Diff: 0 Page Ref: 134–139
Objective: (2.7) ∗Know Concepts: Tangents

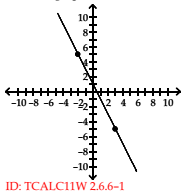
14) (Answers may vary.) Possible answer: $f(x) = \begin{cases} 4, & x > 0 \\ -4, & x < 0 \end{cases}$



ID: TCALC11W 2.5.4–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function with Given Values and Limits

15) The Intermediate Value Theorem implies that there is at least one solution to f(x) = 0 on the interval [−2, 3].

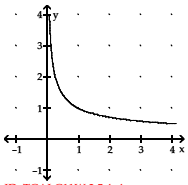
Possible graph:



ID: TCALC11W 2.6.6–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

16) Let $f(x) = \frac{\sin(x-10)}{(x-10)}$ be defined for all x ≠ 10. The function f is continuous for all x ≠ 10. The function is not defined at x = 10 because division by zero is undefined; hence f is not continuous at x = 10. This discontinuity is removable because $\lim_{x \to 10} \frac{\sin(x-10)}{x-10} = 1$. (We can extend the function to x = 10 by defining its value to be 1.)
ID: TCALC11W 2.6.6–5
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

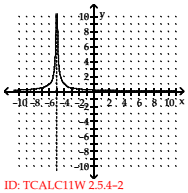
17) (Answers may vary.) Possible answer: $f(x) = \frac{1}{\sqrt{x}}$.



ID: TCALC11W 2.5.4–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function with Given Values and Limits

18) The function f is differentiable at x = o and hence has a tangent at the origin.
ID: TCALC11W 2.7.5–1
Diff: 0 Page Ref: 134–139
Objective: (2.7) ∗Know Concepts: Tangents

19) (Answers may vary.) Possible answer: $f(x) = \frac{1}{|x+5|}$.



ID: TCALC11W 2.5.4–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function with Given Values and Limits

20) Let $f(x) = \frac{1}{(x-6)^2}$, for all x ≠ 6. The function f is continuous for all x ≠ 6, and $\lim_{x \to 6} \frac{1}{(x-6)^2} = \infty$. As f is unbounded as x approaches 6, f is discontinuous at x = 6, and, moreover, this discontinuity is nonremovable.
ID: TCALC11W 2.6.6–6
Diff: 0 Page Ref: 124–132
Objective: (2.6) ∗Know Concepts: Continuity

21) D
ID: TCALC11W 2.7.2–8
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

22) D
ID: TCALC11W 2.1.3–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

23) A
ID: TCALC11W 2.3.2–2
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

24) A
ID: TCALC11W 2.3.1–1
Diff: 0 Page Ref: 91–98
Objective: (2.3) Center Interval About a Point

25) C
ID: TCALC11W 2.5.6–5
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

26) C
ID: TCALC11W 2.4.3–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

27) C
ID: TCALC11W 2.6.4–6
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

28) B
ID: TCALC11W 2.2.7–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

29) C
ID: TCALC11W 2.1.6–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Numerically

30) A
ID: TCALC11W 2.5.1–8
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

31) A
ID: TCALC11W 2.4.3–10
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

32) C
ID: TCALC11W 2.4.4–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

33) D
ID: TCALC11W 2.4.2–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

34) C
ID: TCALC11W 2.6.5–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) Evaluate Continuity of Function at x = 0

35) B
ID: TCALC11W 2.4.5–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

36) A
ID: TCALC11W 2.6.2–5
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

37) D
ID: TCALC11W 2.5.2–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

38) B
ID: TCALC11W 2.1.1–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

39) B
ID: TCALC11W 2.1.3–6
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

40) C
ID: TCALC11W 2.4.1–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Graphically

41) C
ID: TCALC11W 2.1.2–6
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

42) A
ID: TCALC11W 2.2.4–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

43) C
ID: TCALC11W 2.3.3–1
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

44) D
ID: TCALC11W 2.6.1–7
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

45) A
ID: TCALC11W 2.4.5–10
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

46) B
ID: TCALC11W 2.4.6–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

47) C
ID: TCALC11W 2.2.7–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

48) B
ID: TCALC11W 2.5.3–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Function with Given Values and Limits

49) A
ID: TCALC11W 2.2.1–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

50) D
ID: TCALC11W 2.6.4–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

51) B
ID: TCALC11W 2.6.2–9
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

52) B
ID: TCALC11W 2.2.2–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

53) B
ID: TCALC11W 2.7.2–2
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

54) B
ID: TCALC11W 2.3.2–6
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

55) D
ID: TCALC11W 2.1.6–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Numerically

56) C
ID: TCALC11W 2.5.6–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

57) C
ID: TCALC11W 2.4.4–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

58) C
ID: TCALC11W 2.1.2–7
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

59) A
ID: TCALC11W 2.4.4–9
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

60) B
ID: TCALC11W 2.7.2–5
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

61) B
ID: TCALC11W 2.5.2–9
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

62) D
ID: TCALC11W 2.7.4–7
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

63) A
ID: TCALC11W 2.3.2–8
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

64) C
ID: TCALC11W 2.7.1–8
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

65) A
ID: TCALC11W 2.2.1–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

66) A
ID: TCALC11W 2.3.2–4
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

67) B
ID: TCALC11W 2.6.1–8
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

68) B
ID: TCALC11W 2.6.3–9
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

69) D
ID: TCALC11W 2.4.6–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

70) C
ID: TCALC11W 2.2.2–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

71) D
ID: TCALC11W 2.3.2–9
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

72) B
ID: TCALC11W 2.2.4–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

73) D
ID: TCALC11W 2.2.5–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

74) A
ID: TCALC11W 2.5.1–5
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

75) D
ID: TCALC11W 2.5.2–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

76) B
ID: TCALC11W 2.4.4–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

77) B
ID: TCALC11W 2.5.6–6
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

78) C
ID: TCALC11W 2.2.4–9
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

79) A
ID: TCALC11W 2.4.6–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

80) D
ID: TCALC11W 2.7.1–5
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

81) C
ID: TCALC11W 2.1.4–7
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

82) D
ID: TCALC11W 2.7.2–7
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

83) B
ID: TCALC11W 2.5.1–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

84) A
ID: TCALC11W 2.5.1–6
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

85) D
ID: TCALC11W 2.6.4–5
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

86) C
ID: TCALC11W 2.6.3–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

87) C
ID: TCALC11W 2.7.3–5
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

88) A
ID: TCALC11W 2.1.1–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

89) C
ID: TCALC11W 2.2.4–8
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

90) C
ID: TCALC11W 2.1.3–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

91) D
ID: TCALC11W 2.7.3–4
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

92) A
ID: TCALC11W 2.6.3–10
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

93) B
ID: TCALC11W 2.4.3–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

94) D
ID: TCALC11W 2.7.2–10
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

95) B
ID: TCALC11W 2.4.2–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

96) B
ID: TCALC11W 2.6.2–8
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

97) D
ID: TCALC11W 2.2.5–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

98) A
ID: TCALC11W 2.2.5–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

99) A
ID: TCALC11W 2.3.4–2
Diff: 0 Page Ref: 91–98
Objective: (2.3) Solve Apps: Definition of a Limit

100) B
ID: TCALC11W 2.6.1–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

101) A
ID: TCALC11W 2.1.2–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

102) B
ID: TCALC11W 2.7.4–2
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

103) A
ID: TCALC11W 2.4.2–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

104) B
ID: TCALC11W 2.5.3–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Function with Given Values and Limits

105) C
ID: TCALC11W 2.2.3–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

106) D
ID: TCALC11W 2.4.4–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

107) D
ID: TCALC11W 2.2.6–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find limit Using the Sandwich Theorem

108) B
ID: TCALC11W 2.6.3–8
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

109) A
ID: TCALC11W 2.1.6–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Numerically

110) A
ID: TCALC11W 2.1.1–8
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

111) D
ID: TCALC11W 2.7.4–3
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

112) C
ID: TCALC11W 2.7.3–3
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

113) D
ID: TCALC11W 2.3.3–6
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

114) B
ID: TCALC11W 2.6.2–10
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

115) A
ID: TCALC11W 2.6.4–7
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

116) C
ID: TCALC11W 2.5.5–5
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

117) B
ID: TCALC11W 2.2.2–10
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

118) B
ID: TCALC11W 2.4.5–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

119) A
ID: TCALC11W 2.2.7–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

120) D
ID: TCALC11W 2.6.5–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) Evaluate Continuity of Function at x = 0

121) B
ID: TCALC11W 2.2.1–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

122) A
ID: TCALC11W 2.2.4–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

123) C
ID: TCALC11W 2.4.6–9
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

124) C
ID: TCALC11W 2.5.6–7
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

125) B
ID: TCALC11W 2.1.4–6
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

126) D
ID: TCALC11W 2.1.3–9
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

127) B
ID: TCALC11W 2.4.5–9
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

128) C
ID: TCALC11W 2.6.3–7
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

129) C
ID: TCALC11W 2.6.3–5
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

130) A
ID: TCALC11W 2.1.2–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

131) A
ID: TCALC11W 2.2.6–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find limit Using the Sandwich Theorem

132) A
ID: TCALC11W 2.7.1–4
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

133) C
ID: TCALC11W 2.4.6–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

134) B
ID: TCALC11W 2.4.6–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

135) B
ID: TCALC11W 2.6.4–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

136) A
ID: TCALC11W 2.1.1–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

137) A
ID: TCALC11W 2.7.4–8
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

138) C
ID: TCALC11W 2.1.3–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

139) B
ID: TCALC11W 2.5.2–7
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

140) B
ID: TCALC11W 2.1.6–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Numerically

141) A
ID: TCALC11W 2.4.2–9
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

142) B
ID: TCALC11W 2.5.1–7
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

143) D
ID: TCALC11W 2.2.1–9
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

144) D
ID: TCALC11W 2.5.3–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Function with Given Values and Limits

145) A
ID: TCALC11W 2.1.1–7
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

146) B
ID: TCALC11W 2.7.1–3
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

147) A
ID: TCALC11W 2.6.4–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

148) A
ID: TCALC11W 2.3.3–3
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

149) B
ID: TCALC11W 2.6.4–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

150) A
ID: TCALC11W 2.2.2–9
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

151) D
ID: TCALC11W 2.2.3–9
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

152) B
ID: TCALC11W 2.3.2–10
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

153) D
ID: TCALC11W 2.5.2–8
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

154) C
ID: TCALC11W 2.2.2–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

155) C
ID: TCALC11W 2.1.2–9
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

156) C
ID: TCALC11W 2.1.2–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

157) B
ID: TCALC11W 2.5.6–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

158) C
ID: TCALC11W 2.2.5–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

159) C
ID: TCALC11W 2.3.3–5
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

160) A
ID: TCALC11W 2.3.2–3
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

161) C
ID: TCALC11W 2.7.1–6
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

162) D
ID: TCALC11W 2.1.2–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

163) B
ID: TCALC11W 2.1.1–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

164) B
ID: TCALC11W 2.2.4–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

165) D
ID: TCALC11W 2.7.4–6
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

166) A
ID: TCALC11W 2.5.1–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

167) C
ID: TCALC11W 2.3.5–2
Diff: 0 Page Ref: 91–98
Objective: (2.3) Know Concepts: Definition of a Limit

168) A
ID: TCALC11W 2.1.1–6
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

169) C
ID: TCALC11W 2.4.4–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

170) C
ID: TCALC11W 2.4.3–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

171) B
ID: TCALC11W 2.4.4–10
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

172) C
ID: TCALC11W 2.2.7–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

173) C
ID: TCALC11W 2.2.3–8
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

174) D
ID: TCALC11W 2.4.3–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

175) A
ID: TCALC11W 2.6.1–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

176) D
ID: TCALC11W 2.1.1–9
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

177) B
ID: TCALC11W 2.4.6–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

178) A
ID: TCALC11W 2.1.3–10
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

179) B
ID: TCALC11W 2.6.4–8
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Limit and Determine Continuity of Composite Trig Function

180) C
ID: TCALC11W 2.6.5–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) Evaluate Continuity of Function at x = 0

181) A
ID: TCALC11W 2.1.3–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

182) C
ID: TCALC11W 2.7.4–5
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

183) A
ID: TCALC11W 2.6.2–6
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

184) C
ID: TCALC11W 2.5.5–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

185) A
ID: TCALC11W 2.7.2–9
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

186) A
ID: TCALC11W 2.2.7–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

187) A
ID: TCALC11W 2.7.4–1
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

188) A
ID: TCALC11W 2.6.3–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

189) D
ID: TCALC11W 2.4.2–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

190) A
ID: TCALC11W 2.5.2–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

191) A
ID: TCALC11W 2.4.2–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

192) B
ID: TCALC11W 2.3.3–8
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

193) C
ID: TCALC11W 2.5.2–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

194) D
ID: TCALC11W 2.2.2–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

195) D
ID: TCALC11W 2.2.3–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

196) A
ID: TCALC11W 2.4.6–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One–Sided Limits

197) B
ID: TCALC11W 2.2.4–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

198) C
ID: TCALC11W 2.1.4–8
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

199) A
ID: TCALC11W 2.2.7–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

200) C
ID: TCALC11W 2.5.5–7
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

201) A
ID: TCALC11W 2.4.3–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

202) D
ID: TCALC11W 2.1.4–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

203) D
ID: TCALC11W 2.2.5–8
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

204) A
ID: TCALC11W 2.2.1–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

205) D
ID: TCALC11W 2.3.2–7
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

206) B
ID: TCALC11W 2.5.6–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

207) C
ID: TCALC11W 2.2.5–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

208) A
ID: TCALC11W 2.2.3–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

209) A
ID: TCALC11W 2.4.3–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

210) A
ID: TCALC11W 2.2.5–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

211) B
ID: TCALC11W 2.1.4–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

212) A
ID: TCALC11W 2.4.1–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Graphically

213) A
ID: TCALC11W 2.5.1–4
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

214) C
ID: TCALC11W 2.4.3–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving $(\sin\theta)/\theta$

215) C
ID: TCALC11W 2.3.3–7
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

216) B
ID: TCALC11W 2.2.3–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

217) A
ID: TCALC11W 2.1.3–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

218) A
ID: TCALC11W 2.6.1–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

219) A
ID: TCALC11W 2.5.5–9
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

220) B
ID: TCALC11W 2.6.2–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

221) B
ID: TCALC11W 2.4.4–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

222) A
ID: TCALC11W 2.6.3–6
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

223) C
ID: TCALC11W 2.1.4–4
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

224) A
ID: TCALC11W 2.2.3–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

225) D
ID: TCALC11W 2.6.1–9
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

226) A
ID: TCALC11W 2.4.1–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Graphically

227) A
ID: TCALC11W 2.5.5–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

228) A
ID: TCALC11W 2.1.4–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

229) C
ID: TCALC11W 2.2.7–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Know Concepts: Limits

230) D
ID: TCALC11W 2.2.1–3
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

231) C
ID: TCALC11W 2.5.2–6
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

232) A
ID: TCALC11W 2.6.2–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

233) D
ID: TCALC11W 2.4.5–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

234) D
ID: TCALC11W 2.7.2–3
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

235) B
ID: TCALC11W 2.2.2–8
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

236) A
ID: TCALC11W 2.2.3–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

237) D
ID: TCALC11W 2.7.4–4
Diff: 0 Page Ref: 134–139
Objective: (2.7) Solve Apps: Rate of Change and Free Fall

238) D
ID: TCALC11W 2.7.2–1
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

239) D
ID: TCALC11W 2.2.1–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

240) C
ID: TCALC11W 2.6.5–1
Diff: 0 Page Ref: 124–132
Objective: (2.6) Evaluate Continuity of Function at x = 0

241) C
ID: TCALC11W 2.2.2–7
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

242) D
ID: TCALC11W 2.1.3–8
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

243) B
ID: TCALC11W 2.3.4–4
Diff: 0 Page Ref: 91–98
Objective: (2.3) Solve Apps: Definition of a Limit

244) A
ID: TCALC11W 2.5.2–5
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Rational Function

245) A
ID: TCALC11W 2.7.2–6
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

246) D
ID: TCALC11W 2.3.4–3
Diff: 0 Page Ref: 91–98
Objective: (2.3) Solve Apps: Definition of a Limit

247) D
ID: TCALC11W 2.5.5–6
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

248) C
ID: TCALC11W 2.2.4–4
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

249) C
ID: TCALC11W 2.4.1–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Graphically

250) C
ID: TCALC11W 2.7.3–1
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

251) C
ID: TCALC11W 2.7.1–2
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

252) B
ID: TCALC11W 2.1.1–3
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

253) C
ID: TCALC11W 2.2.2–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

254) D
ID: TCALC11W 2.1.6–2
Diff: 0 Page Ref: 73–81
Objective: (2.1) Estimate Rate of Change Numerically

255) A
ID: TCALC11W 2.1.3–7
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function by Substitution

256) D
ID: TCALC11W 2.1.2–1
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

257) A
ID: TCALC11W 2.7.1–7
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

258) C
ID: TCALC11W 2.4.5–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

259) B
ID: TCALC11W 2.3.5–1
Diff: 0 Page Ref: 91–98
Objective: (2.3) Know Concepts: Definition of a Limit

260) B
ID: TCALC11W 2.7.3–2
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

261) D
ID: TCALC11W 2.2.2–5
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Substitution

262) C
ID: TCALC11W 2.4.2–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Algebraically

263) D
ID: TCALC11W 2.2.4–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

264) D
ID: TCALC11W 2.7.3–6
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Tangent Lines with Given Slope

265) B
ID: TCALC11W 2.4.6–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One-Sided Limits

266) B
ID: TCALC11W 2.3.2–1
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

267) A
ID: TCALC11W 2.7.1–1
Diff: 0 Page Ref: 134–139
Objective: (2.7) Estimate Slope of Curve at Point Graphically

268) C
ID: TCALC11W 2.1.1–10
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Graph

269) C
ID: TCALC11W 2.4.4–4
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

270) D
ID: TCALC11W 2.5.5–3
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

271) B
ID: TCALC11W 2.7.2–4
Diff: 0 Page Ref: 134–139
Objective: (2.7) Find Equation of Tangent to Curve at Given Pt

272) C
ID: TCALC11W 2.4.5–3
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

273) A
ID: TCALC11W 2.3.4–1
Diff: 0 Page Ref: 91–98
Objective: (2.3) Solve Apps: Definition of a Limit

274) D
ID: TCALC11W 2.2.1–8
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

275) C
ID: TCALC11W 2.4.1–6
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Graphically

276) B
ID: TCALC11W 2.2.5–6
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Average Rates of Change

277) A
ID: TCALC11W 2.6.1–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

278) D
ID: TCALC11W 2.3.3–2
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

279) D
ID: TCALC11W 2.3.3–4
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Algebraically

280) D
ID: TCALC11W 2.4.3–9
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving (sinθ)/θ

281) C
ID: TCALC11W 2.6.3–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

282) C
ID: TCALC11W 2.6.3–4
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Over What Intervals Function is Continuous

283) B
ID: TCALC11W 2.4.1–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One-Sided Limit Graphically

284) A
ID: TCALC11W 2.4.6–10
Diff: 0 Page Ref: 102–111
Objective: (2.4) Know Concepts: One-Sided Limits

285) A
ID: TCALC11W 2.4.3–2
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit Involving (sinθ)/θ

286) D
ID: TCALC11W 2.4.2–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically

287) D
ID: TCALC11W 2.4.1–5
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Graphically

288) D
ID: TCALC11W 2.4.1–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Graphically

289) A
ID: TCALC11W 2.6.2–2
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

290) B
ID: TCALC11W 2.2.6–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find limit Using the Sandwich Theorem

291) B
ID: TCALC11W 2.6.1–5
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

292) A
ID: TCALC11W 2.2.3–2
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

293) B
ID: TCALC11W 2.1.2–8
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Limit of Function from Table

294) B
ID: TCALC11W 2.4.4–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit as x Approaches Infinity

295) D
ID: TCALC11W 2.4.5–8
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

296) B
ID: TCALC11W 2.2.3–10
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Rational Function by Factor Cancellation

297) C
ID: TCALC11W 2.2.4–10
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit Using Limit Rules

298) B
ID: TCALC11W 2.5.5–8
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

299) C
ID: TCALC11W 2.5.6–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Know Concepts: Infinite Limits

300) B
ID: TCALC11W 2.1.4–5
Diff: 0 Page Ref: 73–81
Objective: (2.1) Find Average Rate of Change on Interval

301) C
ID: TCALC11W 2.5.5–2
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Function Terms for Graphing

302) B
ID: TCALC11W 2.6.2–7
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

303) C
ID: TCALC11W 2.5.1–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Find Infinite Limit

304) C
ID: TCALC11W 2.2.1–10
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

305) D
ID: TCALC11W 2.4.5–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

306) B
ID: TCALC11W 2.6.2–3
Diff: 0 Page Ref: 124–132
Objective: (2.6) Determine Existence of Limit/Continuity of Function (Y/N)

307) D
ID: TCALC11W 2.5.3–1
Diff: 0 Page Ref: 115–121
Objective: (2.5) Graph Function with Given Values and Limits

308) A
ID: TCALC11W 2.6.1–6
Diff: 0 Page Ref: 124–132
Objective: (2.6) Find Points of Discontinuity from Graph

309) C
ID: TCALC11W 2.3.2–5
Diff: 0 Page Ref: 91–98
Objective: (2.3) Find Delta Graphically

310) B
ID: TCALC11W 2.4.5–7
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find Limit of Function y = f(1/x) at Infinity

311) B
ID: TCALC11W 2.2.1–1
Diff: 0 Page Ref: 84–89
Objective: (2.2) Find Limit of Polynomial or Power Function

312) C
ID: TCALC11W 2.4.2–1
Diff: 0 Page Ref: 102–111
Objective: (2.4) Find One–Sided Limit Algebraically