

Name _____

Determine if the function is even, odd, or neither.

1) $g(x) = \frac{9x}{x^2 + 6}$

1) _____

A) Even

B) Odd

C) Neither

Find the domain and range of the function.

2) $f(x) = -6 + \sqrt{x}$

2) _____

A) D: $[0, \infty)$, R: $(-\infty, \infty)$

B) D: $(-\infty, \infty)$, R: $[-6, \infty)$

C) D: $(-\infty, 0]$, R: $(-\infty, -6]$

D) D: $[0, \infty)$, R: $[-6, \infty)$

3) $g(z) = \sqrt{4 - z^2}$

3) _____

A) D: $(-2, 2)$, R: $(-2, 2)$

B) D: $(-\infty, \infty)$, R: $(0, 2)$

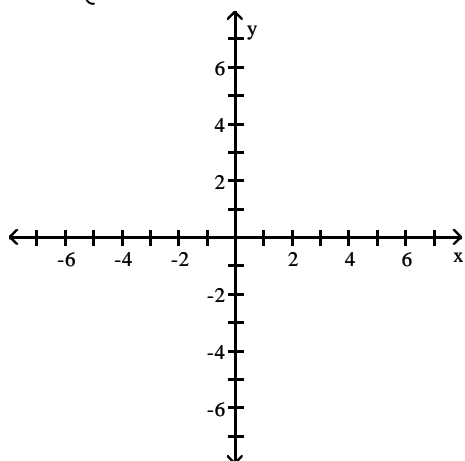
C) D: $[0, \infty)$, R: $(-\infty, \infty)$

D) D: $[-2, 2]$, R: $[0, 2]$

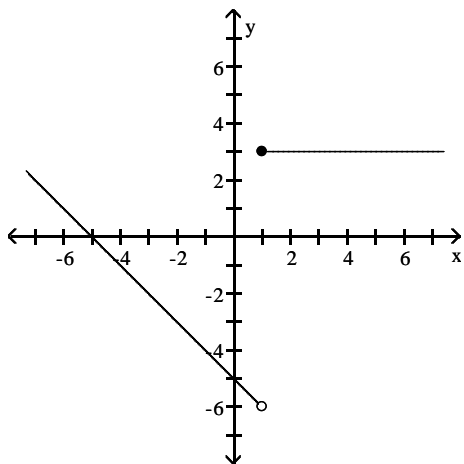
Graph the function.

4) $f(x) = \begin{cases} -5 - x, & x < 1 \\ 3, & x \geq 1 \end{cases}$

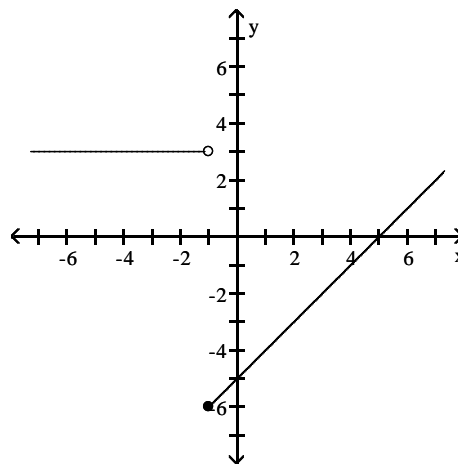
4) _____



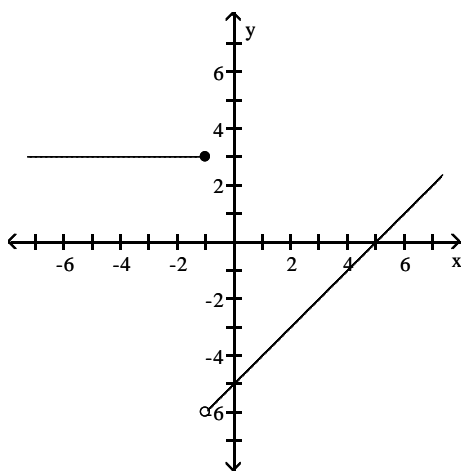
A)



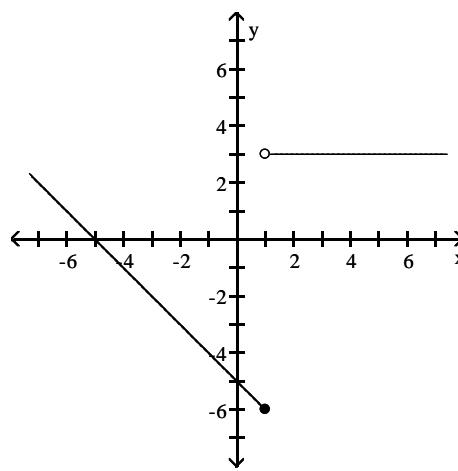
B)



C)



D)



Find the exact value of the trigonometric function. Do not use a calculator or tables.

5) $\tan\left(\frac{\pi}{3}\right)$

5) _____

A) $\sqrt{3}$

B) $\frac{\sqrt{3}}{3}$

C) 2

D) $\frac{\sqrt{3}}{2}$

6) $\sin\left(\frac{4\pi}{3}\right)$

6) _____

A) $\frac{\sqrt{2}}{2}$

B) $\frac{\sqrt{3}}{2}$

C) $-\frac{\sqrt{2}}{2}$

D) $-\frac{\sqrt{3}}{2}$

Use the properties of logarithms to simplify the expression.

7) $\ln(x^2 - 16) - \ln(x + 4)$

7) _____

A) $\ln(x^2 - 4)$

B) $\ln(x - 16)$

C) $\ln(x + 4)$

D) $\ln(x - 4)$

8) $\ln \cos \theta - \ln \left(\frac{\cos \theta}{8} \right)$

8) _____

A) $\ln \cos \theta$

B) $\ln \left(\frac{\cos^2 \theta}{8} \right)$

C) $\ln \left(\frac{1}{8} \right)$

D) $\ln 8$

Find the exact function value.

9) $\sin^{-1} \left(\frac{\sqrt{2}}{2} \right)$

9) _____

A) $\frac{\pi}{3}$

B) $\frac{3\pi}{4}$

C) $\frac{\pi}{4}$

D) $\frac{2\pi}{3}$

10) $\operatorname{arccsc}(-2)$

10) _____

A) $-\frac{\pi}{3}$

B) $-\frac{\pi}{6}$

C) $\frac{\pi}{3}$

D) $\frac{\pi}{6}$

11) $\tan^{-1}(-1)$

11) _____

A) $\frac{3\pi}{4}$

B) $-\frac{\pi}{4}$

C) 1

D) 0

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

12) $f(x) = x^2 + 1x, [2, 5]$

12) _____

A) $\frac{24}{5}$

B) 10

C) 8

D) 6

13) $h(t) = \sin(2t), \left[0, \frac{\pi}{4} \right]$

13) _____

A) $-\frac{4}{\pi}$

B) $\frac{4}{\pi}$

C) $\frac{2}{\pi}$

D) $\frac{\pi}{4}$

14) $g(x) = 3x^3 - 2x^2 + 8, [4, 6]$

14) _____

A) $\frac{292}{3}$

B) $\frac{208}{3}$

C) 208

D) 292

Find an equation of the tangent line at the given point P.

15) $y = 3x^2 + 5x - 7, P(-2, -5)$

15) _____

A) $y = -7x + 28$

B) $y = \frac{1}{4}x + 1$

C) $y = -7x - 19$

D) $y = \frac{1}{2}x - \frac{1}{2}$

Find the slope of the curve at the given point P.

16) $y = x^2 + 5x$, $P(4, 20)$

16) _____

A) 13

B) 21

C) 3

D) 9

17) $y = x^2 + 11x - 15$, $P(1, -3)$

17) _____

A) 13

B) 11

C) 26

D) -9

18) $y = 4x - 11$, $P(4, 5)$

18) _____

A) -11

B) 11

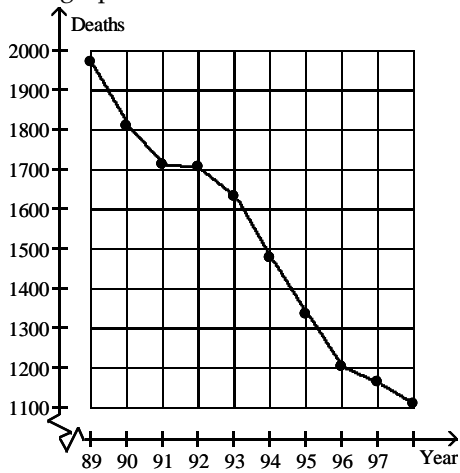
C) 4

D) $\frac{1}{4}$

Solve the problem.

19) The graph below shows the number of tuberculosis deaths in the United States from 1989 to 1998.

19) _____



Estimate the average rate of change in tuberculosis deaths from 1996 to 1998.

A) About -20 deaths per year

B) About -90 deaths per year

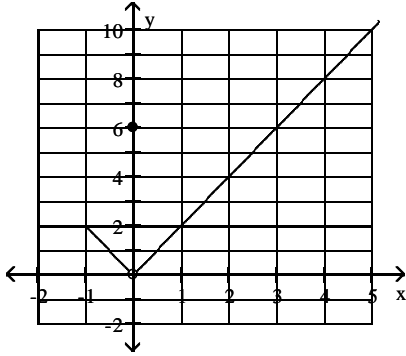
C) About -0.5 deaths per year

D) About -50 deaths per year

Use the graph to evaluate the limit.

20)

20) _____



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

A) -1

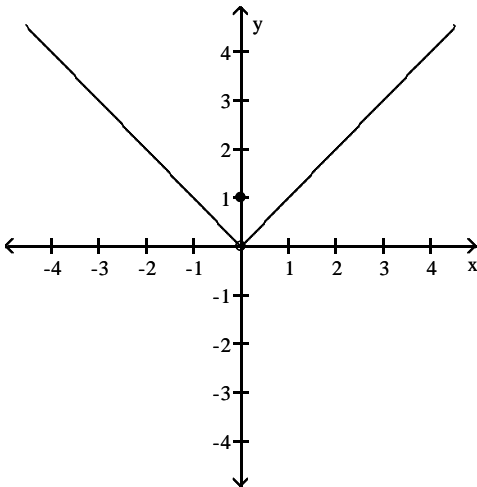
B) 6

C) 0

D) Does not exist

21) $\lim_{x \rightarrow 0} f(x)$

21) _____



A) 0

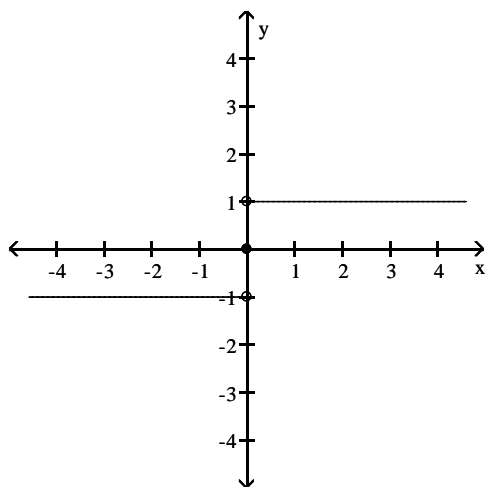
B) 1

C) Does not exist

D) -1

22) $\lim_{x \rightarrow 0} f(x)$

22) _____



- A) ∞ B) Does not exist C) -1 D) 1

Find the limit if it exists.

23) $\lim_{x \rightarrow \frac{1}{4}} 8x \left(x - \frac{3}{4} \right)$

23) _____

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

24) $\lim_{x \rightarrow -2} (5x - 3)$

24) _____

- A) 7 B) -7 C) 13 D) -13

Find the limit, if it exists.

25) $\lim_{x \rightarrow 0} \frac{x^3 + 12x^2 - 5x}{5x}$

25) _____

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

26) $\lim_{x \rightarrow 5} \frac{x^2 - 25}{x^2 - 7x + 10}$

26) _____

- A) 0 B) Does not exist C) $\frac{10}{3}$ D) $\frac{5}{3}$

27) $\lim_{x \rightarrow 10} \frac{|10 - x|}{10 - x}$ 27) _____

A) 0

B) Does not exist

C) 1

D) -1

28) $\lim_{x \rightarrow 1} \frac{3x^2 + 7x - 2}{3x^2 - 4x - 2}$ 28) _____

A) $-\frac{7}{4}$

B) $-\frac{8}{3}$

C) Does not exist

D) 0

29) $\lim_{x \rightarrow 0} \frac{x^3 - 6x + 8}{x - 2}$ 29) _____

A) Does not exist

B) 4

C) -4

D) 0

30) $\lim_{x \rightarrow 6} \frac{x + 6}{(x - 6)^2}$ 30) _____

A) 0

B) -6

C) Does not exist

D) 6

31) $\lim_{h \rightarrow 0} \frac{2}{\sqrt{3h+4} + 2}$ 31) _____

A) 1/2

B) Does not exist

C) 2

D) 1

32) $\lim_{x \rightarrow 20} \frac{1}{x - 20}$ 32) _____

A) 40

B) Does not exist

C) 0

D) 20

Find the limit.

33) $\lim_{x \rightarrow 0} \frac{2 \tan x}{10x}$ 33) _____

A) 0

B) 1

C) $\frac{1}{5}$

D) Does not exist

34) $\lim_{x \rightarrow 0} \frac{5x - 3 \sin x}{x}$ 34) _____

A) 2

B) 0

C) 8

D) Does not exist

35) $\lim_{x \rightarrow 0} \frac{\sin^2 x}{2x}$

35) _____

A) 1

B) $\frac{1}{2}$

C) 0

D) Does not exist

36) $\lim_{x \rightarrow 0} \frac{6x}{2 \sin x}$

36) _____

A) 1

B) 3

C) 0

D) Does not exist

Solve the problem.

37) Given $f(x) = 10x + 9$, $L = 39$, $x_0 = 3$, and $\epsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \epsilon$ holds.

37) _____

A) 0.001

B) 0.005

C) 0.002

D) 0.0033

38) Given $f(x) = 8x - 3$, $L = 13$, $x_0 = 2$, and $\epsilon = .01$, find the greatest value for $\delta > 0$ such that $0 < |x - x_0| < \delta$ the inequality $|f(x_0) - L| < \epsilon$ holds.

38) _____

A) 0.005

B) 0.0025

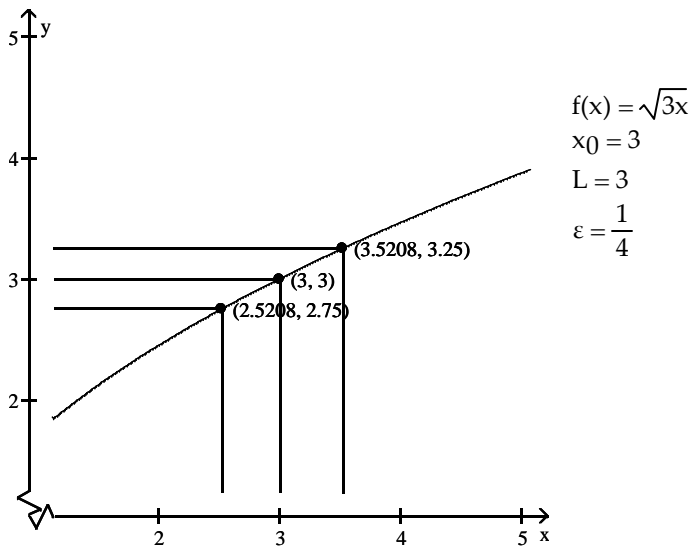
C) 0.0012

D) 0.0006

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

39)

39) _____



A) 0

B) $\frac{1}{4}$

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

D) 0.4792

The given function is not defined at a certain point. How should it be defined at that point to make it continuous at that point?

40) $f(x) = \frac{\sin x}{9x}$ 40) _____

- A) Define $f(0) = 0$ B) Define $f(0) = \frac{1}{9}$ C) Define $f(0) = 1$ D) Define $f(9) = 1$

41) $f(x) = \sin \frac{x^2 - 81}{x + 9}$ 41) _____

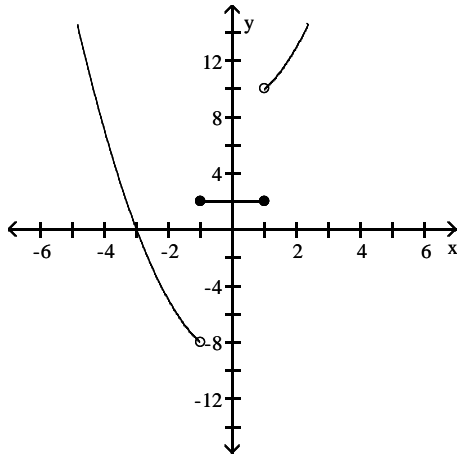
- A) Define $f(9) = \sin 9$ B) Define $f(-9) = \sin 18$
 C) Define $f(-9) = -\sin 18$ D) Define $f(-9) = -\sin 9$

42) $f(x) = \frac{x^2 - 25}{x - 5}$ 42) _____

- A) Define $f(5) = 10$ B) Define $f(5) = 25$
 C) Define $f(5) = -10$ D) Define $f(5) = 5$

From the graph of f , indicate the intervals on which f is continuous.

43) 43) _____



- A) $(-\infty, -1], (-1, 1), [1, \infty)$ B) $(-\infty, -1), [-1, 1], (1, \infty)$
 C) $(-\infty, 1], (1, \infty)$ D) $(-\infty, -1), (-1, 1), (1, \infty)$

Find an equation for the line tangent to the given curve at the indicated point.

44) $y = x^2 - 4$ at $(-4, 12)$ 44) _____

- A) $y = -8x - 36$ B) $y = -8x - 20$ C) $y = -4x - 20$ D) $y = -8x - 40$

45) $y = x^2 - x$ at $(4, 12)$ 45) _____

- A) $y = 7x + 20$ B) $y = 7x + 16$ C) $y = 7x - 16$ D) $y = 7x - 20$

Find the slope of the line tangent to the curve at x.

46) $y = \sqrt{x}$; $x = 144$

46) _____

A) $\frac{1}{24}$

B) 144

C) 12

D) $\frac{1}{12}$

Find the exact value of the expression. Do not use a calculator.

47) $\cot \frac{7\pi}{3}$

47) _____

A) $\sqrt{3}$

B) $\frac{\sqrt{3}}{2}$

C) 1

D) $\frac{\sqrt{3}}{3}$

48) $\sin \frac{19\pi}{3}$

48) _____

A) $-\frac{\sqrt{3}}{2}$

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

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

D) $\frac{\sqrt{3}}{2}$

Answer Key

Testname: 13SPR_CH2_LIMITS_PRACTICE2

- 1) B
- 2) D
- 3) D
- 4) A
- 5) A
- 6) D
- 7) D
- 8) D
- 9) C
- 10) B
- 11) B
- 12) C
- 13) B
- 14) C
- 15) C
- 16) A
- 17) A
- 18) C
- 19) D
- 20) C
- 21) A
- 22) B
- 23) B
- 24) D
- 25) C
- 26) C
- 27) B
- 28) B
- 29) C
- 30) C
- 31) A
- 32) B
- 33) C
- 34) A
- 35) C
- 36) B
- 37) A
- 38) C
- 39) D
- 40) B
- 41) C
- 42) A
- 43) B
- 44) B
- 45) C
- 46) A
- 47) A
- 48) D