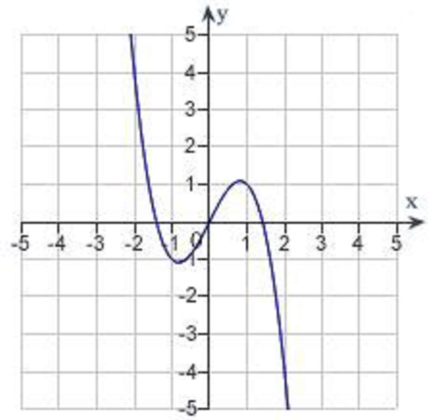
Name: ________________________ Class: ___________________ Date: __________ ID: A

Qtr 1 (Chapters P, 1, 2.1-2.5) Multiple Choice Questions from the Textbook

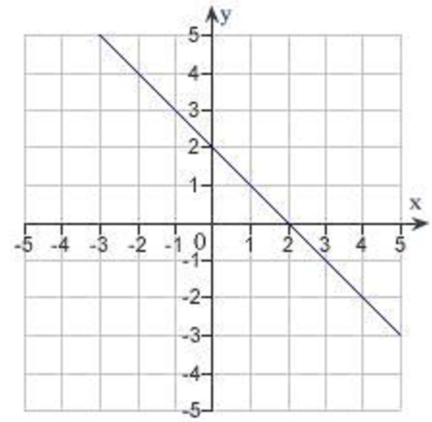
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Which of the following is the correct graph of $y=-\sqrt{2-x^2}$?

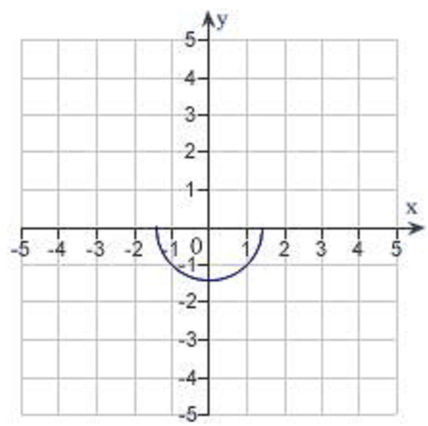
a.


y
x
5 4 3 2 1 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

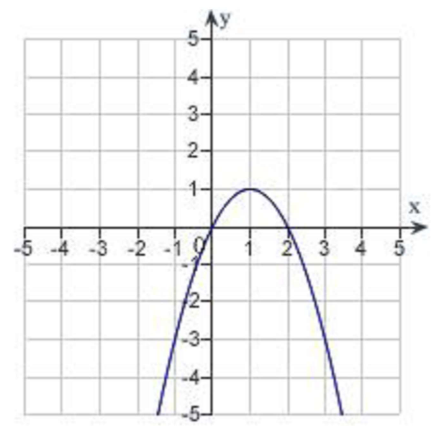
d.


y
x
5 4 3 2 1 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

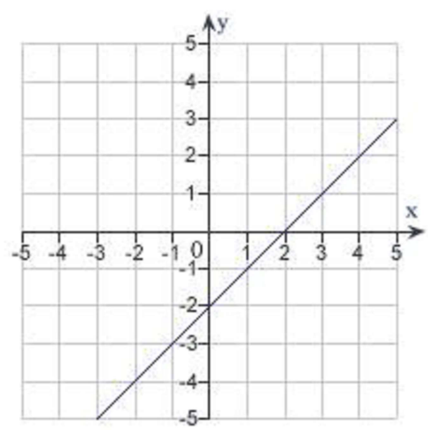
b.


y
x
5 4 3 2 1 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

e.


y
x
5 4 3 2 1 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

c.


y
x
5 4 3 2 1 -1 -2 -3 -4 -5
-5 -4 -3 -2 -1 0 1 2 3 4 5

____ 2. Find all intercepts:

$$y = (x+5)\sqrt{4-x^2}$$

a. x-intercepts: (–5, 0), (–2, 0), (2, 0); y-intercepts: (0, 0), (0, 10)
b. x-intercepts: (–5, 0), (2, 0); y-intercept: (0, 10)
c. x-intercepts: (–5, 0), (2, 0); y-intercept: (0, –10)
d. x-intercepts: (–5, 0), (–2, 0), (2, 0); y-intercept: (0, 10)
e. x-intercepts: (–5, 0), (–2, 0), (2, 0); y-intercept: (0, –10)

____ 3. Test for symmetry with respect to each axis and to the origin.

$$y = \frac{x^2+2}{x}$$

a. symmetric with respect to the origin
b. symmetric with respect to the y-axis
c. symmetric with respect to the x-axis
d. both B and C
e. no symmetry

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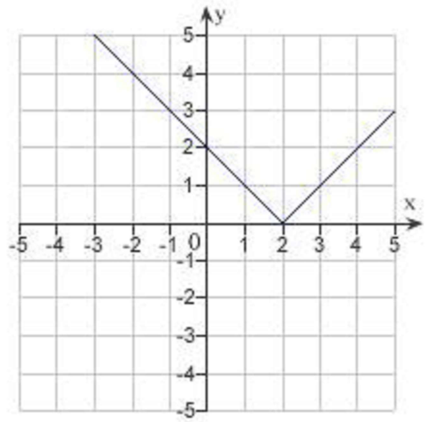
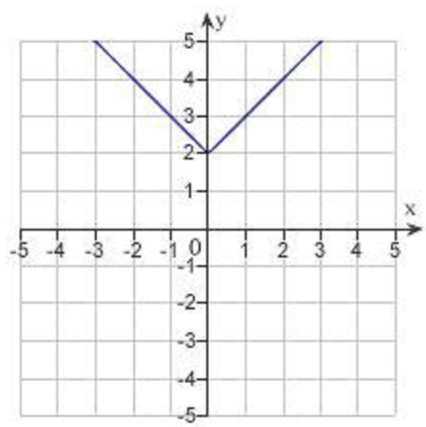
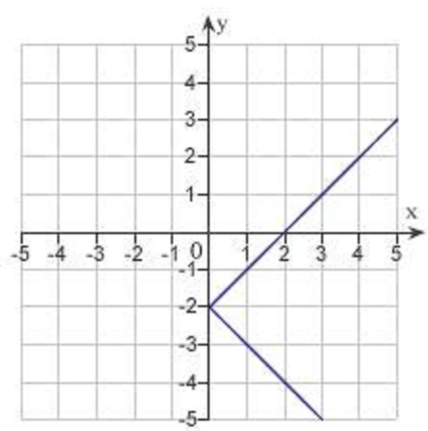
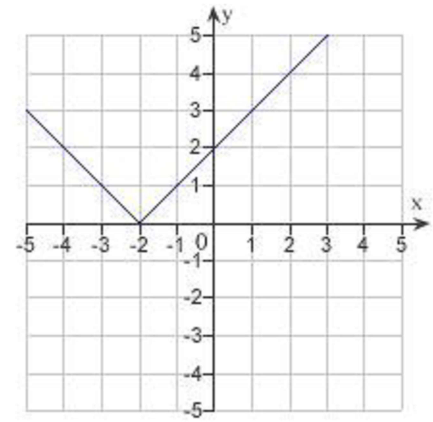
____ 4. Sketch the graph of the equation:

$y = |x + 2|$

a. 

b. 

c. 

d. 

e. none of the above

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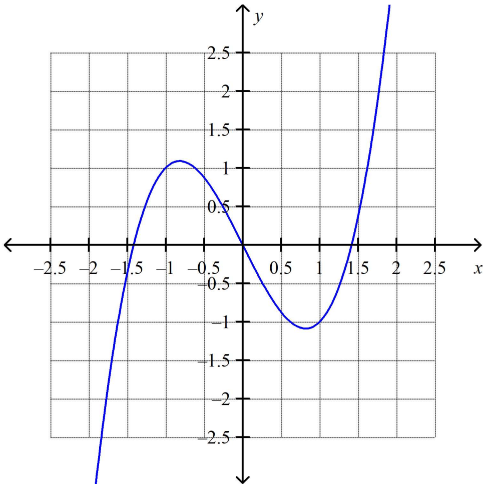
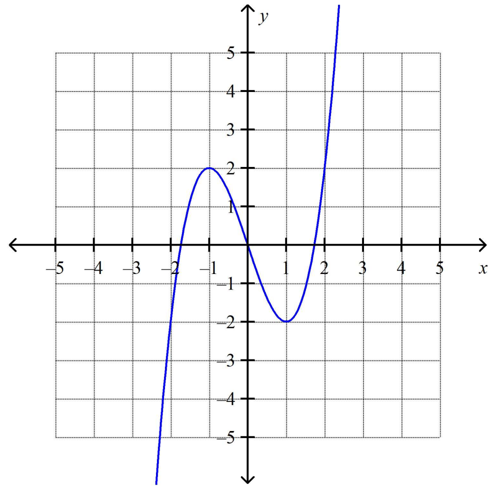
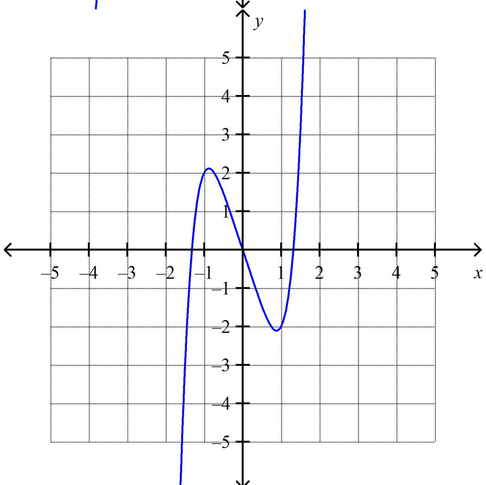
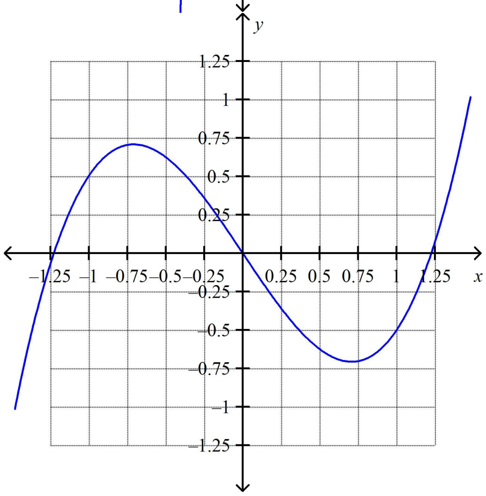
____ 5. Sketch the graph of the equation:
$y = x^3 - 3x$

a.


d.


b.


e. none of the above

c.


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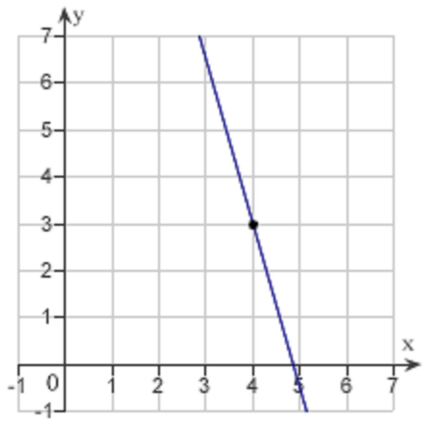
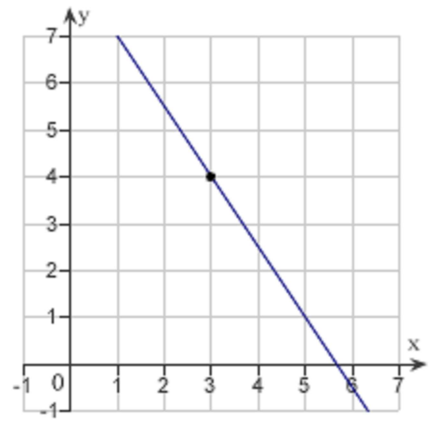
____ 6. Sketch the line passing through the point (3, 4) with the slope $-\frac{3}{2}$.

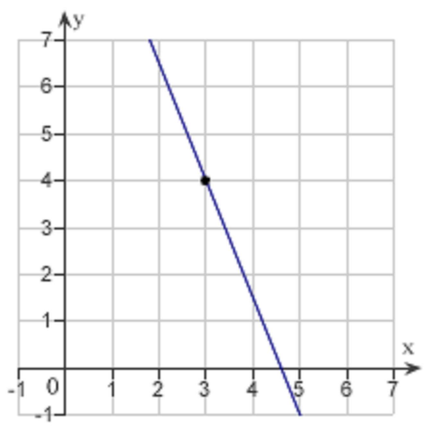
a.



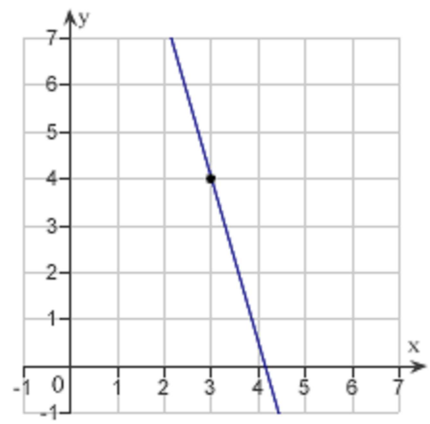
d.



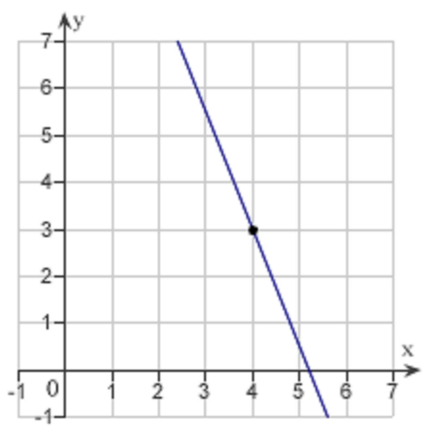
b.



e.



c.



____ 7. Find the slope of the line passing through the points $\left(-\frac{1}{8}, \frac{8}{3}\right)$ and $\left(-\frac{3}{16}, \frac{1}{24}\right)$.

a. 63
b. –21
c. 42
d. 21
e. –42

____ 8. Find the slope of the line $x + 3y = 15$.

a. $\frac{1}{3}$
b. $-\frac{1}{5}$
c. $\frac{1}{5}$
d. $-\frac{1}{15}$
e. $-\frac{1}{3}$

____ 9. Write an equation of the line that passes through the point $(-6,4)$ and is perpendicular to the line $x + y = 5$.

a. $x - y + 10 = 0$
b. $x - y + 2 = 0$
c. $x + y - 2 = 0$
d. $x + y + 10 = 0$
e. $x + y - 5 = 0$

____ 10. Let $f(x) = 14x + 8$. Then simplify the expression $\frac{f(x) - f(9)}{x - 9}$.

a. 15
b. 14
c. 19
d. 11
e. undefined

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____ 11. Let $g(x) = \dfrac{1}{\sqrt{x+15}}$. Evaluate the expression $\dfrac{g(x) - g(-11)}{x+11}$ and then simplify the result.

a. $\dfrac{2\sqrt{x+15} - x - 15}{2(x+11)(x+15)}$

b. $\dfrac{2\sqrt{x+15} + x - 15}{2(x-11)(x+15)}$

c. $\dfrac{2\sqrt{x+15} + x - 15}{2(x+11)(x+15)}$

d. $\dfrac{2\sqrt{x+15} - x - 15}{2(x-11)(x+15)}$

e. undefined

____ 12. Find the domain and range of the function $g(t) = \sqrt{t-10}$.

a. domain: $[10, \infty)$
range: $(0, \infty)$

b. domain: $(10, \infty)$
range: $[0, \infty)$

c. domain: $[10, \infty)$
range: $(-\infty, \infty)$

d. domain: $[0, \infty)$
range: $[10, \infty)$

e. none of the above

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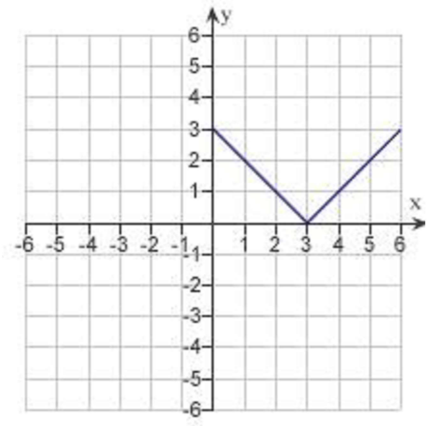
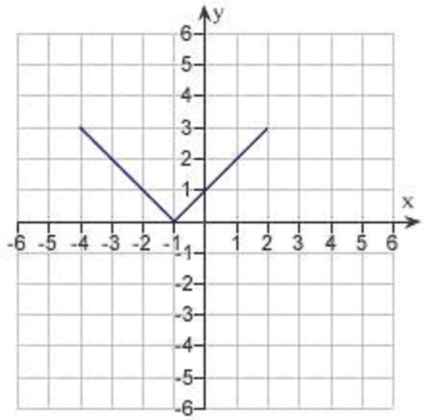
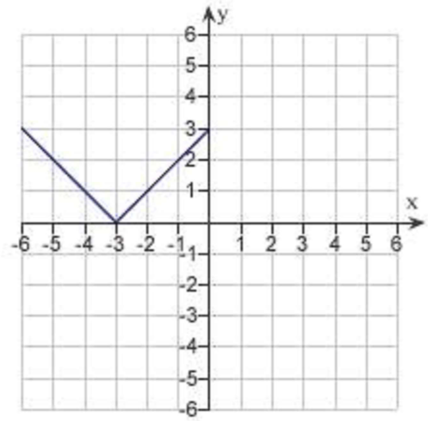
____ 13. Use the graph of $y = f(x)$ given below to find the graph of the function $y = f(x + 5)$.



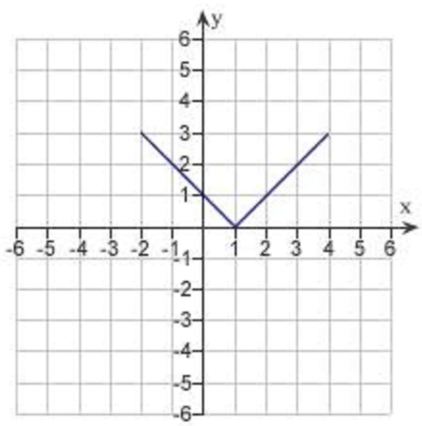
a.


y
x
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6
-6 -5 -4 -3 -2 -1 1 2 3 4 5 6

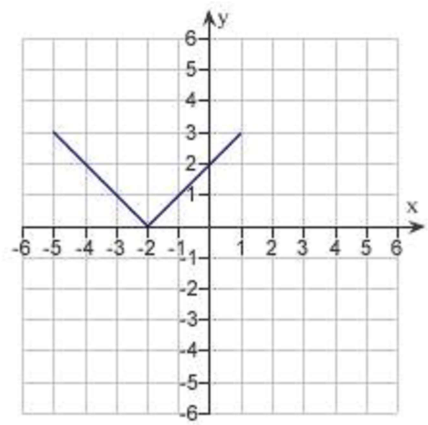
d.


y
x
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6
-6 -5 -4 -3 -2 -1 1 2 3 4 5 6

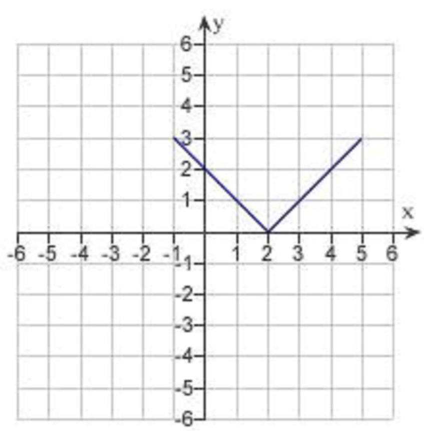
b.


y
x
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6
-6 -5 -4 -3 -2 -1 1 2 3 4 5 6

e.


y
x
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6
-6 -5 -4 -3 -2 -1 1 2 3 4 5 6

c.


y
x
6 5 4 3 2 1 -1 -2 -3 -4 -5 -6
-6 -5 -4 -3 -2 -1 1 2 3 4 5 6

____ 14. Given $f(x) = \cos x$ and $g(x) = \frac{\pi}{2}x$, evaluate $f(g(2))$.

a. 0
b. $\frac{1}{2}$
c. $\frac{\pi}{2}\sin(2)$
d. -1
e. $\frac{\pi}{2}\cos(2)$

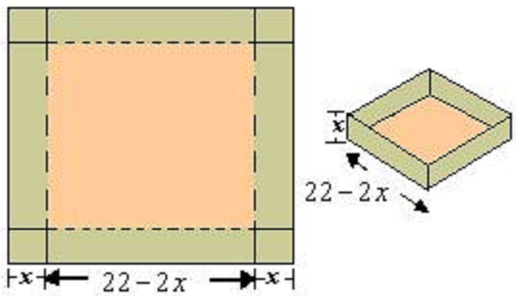
____ 15. Find the coordinates of a second point on the graph of a function f if the given point $\left(-\frac{6}{5}, 8\right)$ is on the graph and the function is even.

a. $\left(8, -\frac{6}{5}\right)$
b. $\left(-8, -\frac{6}{5}\right)$
c. $\left(-\frac{6}{5}, -8\right)$
d. $\left(\frac{6}{5}, -8\right)$
e. $\left(\frac{6}{5}, 8\right)$

____ 16. Find the coordinates of a second point on the graph of a function f if the given point $\left(-\frac{9}{8}, 5\right)$ is on the graph and the function is odd.

a. $\left(-5, -\frac{9}{8}\right)$
b. $\left(\frac{9}{8}, -5\right)$
c. $\left(-5, \frac{9}{8}\right)$
d. $\left(-\frac{9}{8}, -5\right)$
e. $\left(\frac{9}{8}, 5\right)$

____ 17. An open box of maximum volume is to be made from a square piece of material 22 centimeters on a side by cutting equal squares from the corners and turning up the sides (see figure). Write the volume V as a function of x, the length of the corner squares.



a. $V = x(22 - 2x)^2$
b. $V = x + (22 - x)^2$
c. $V = x^2 + (22 - 2x)$
d. $V = x^2(22 - 2x)$
e. $V = x(22 - 2x)$

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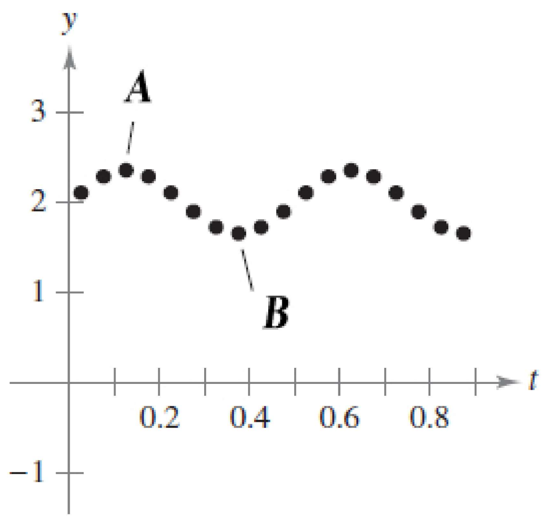
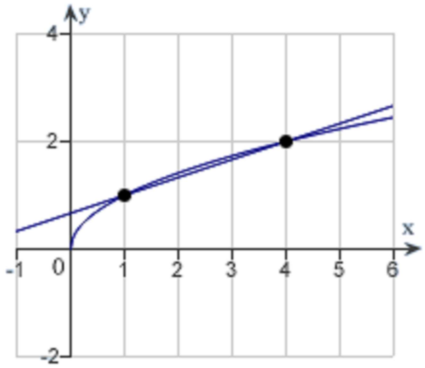
____ 18. The motion of an oscillating weight suspended by a spring was measured by a motion detector. The data collected and the approximate maximum (positive and negative) displacements from equilibrium are shown in the figure. The displacement is measured in centimeters, and the time is measured in seconds. Take $A(0.133, 2.49)$ and $B(0.343, 1.78)$. Approximate the amplitude and period of the oscillations.



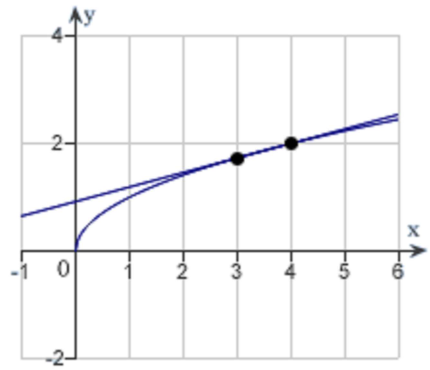
a. Amplitude = 0.335. Period = 4.3.
b. Amplitude = 0.71. Period = 2.1.
c. Amplitude = 0.355. Period = 4.2.
d. Amplitude = 4.2. Period = 0.355.
e. Amplitude = 2.1. Period = 0.71.

____ 19. Consider the function $f(x) = \sqrt{x}$ and the point $P(4,2)$ on the graph of *f*. Graph *f* and the secant line passing through $P(4,2)$ and $Q\left(x, f(x)\right)$ for $x = 3$.

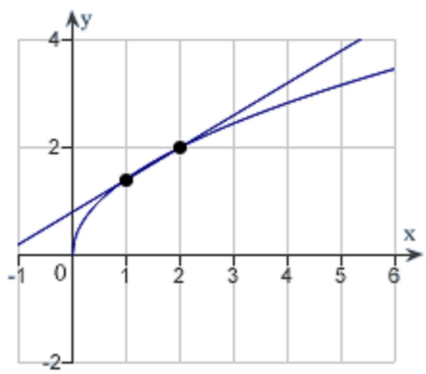
a.



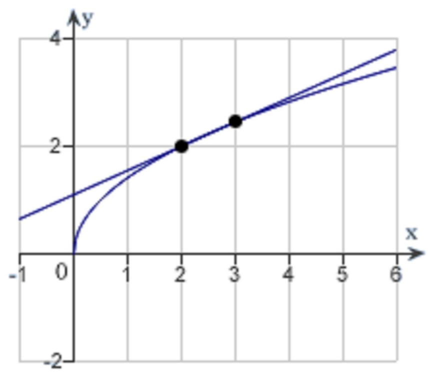
d.



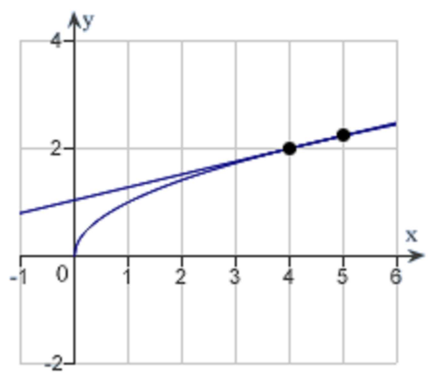
b.



e.



c.



____ 20. Complete the table and use the result to estimate the limit.

$$\lim_{x \to 3} \frac{x-3}{x^2 - 16x + 39}$$

x	2.9	2.99	2.999	3.001	3.01	3.1
$f(x)$						

a. 0.525000
b. 0.275000
c. –0.100000
d. 0.400000
e. –0.475000

____ 21. Complete the table and use the result to estimate the limit.

$$\lim_{x \to 0} \frac{\cos(3x) - 1}{3x}$$

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

a. –1
b. –0.5
c. 0
d. 0.5
e. 1

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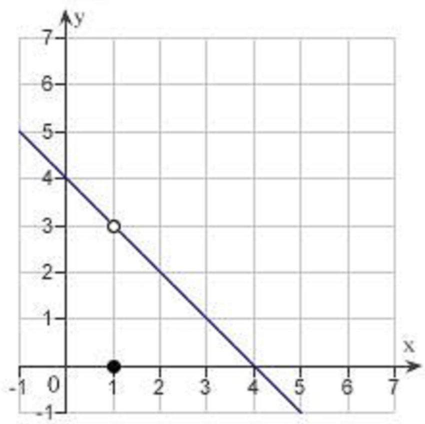
____ 22. Let $f(x) = \begin{cases} 4 - x, & x \neq 1 \\ 0, & x = 1 \end{cases}$.

Determine the following limit. (Hint: Use the graph to calculate the limit.)

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



a. 5
b. 4
c. 3
d. 0
e. does not exist

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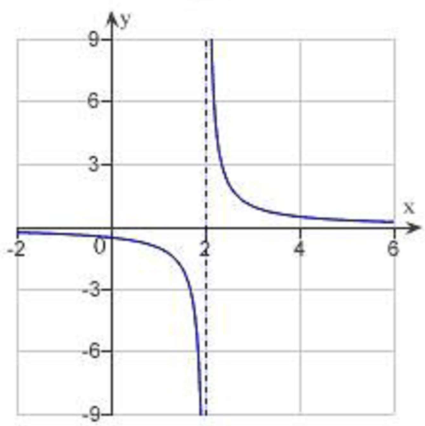
____ 23. Determine the following limit. (Hint: Use the graph to calculate the limit.)

$$\lim_{x \to 2} \frac{1}{x-2}$$



a. -2
b. 0
c. -4
d. 2
e. does not exist

____ 24. Find the limit L.

$$\lim_{x \to -2} (x^2 + 4x)$$

a. L = 12
b. L = 6
c. L = 2
d. L = –4
e. none of the above

____ 25. What is the limit of $f(x) = 4$ as x approaches π?

a. $\lim_{x \to \pi} (4) = \pi$
b. $\lim_{x \to \pi} (4) = 4$
c. $\lim_{x \to \pi} (4) = \frac{\pi}{4}$
d. $\lim_{x \to \pi} (4) = 4\pi$
e. none of the above

____ 26. Find the limit.

$$\lim_{x \to 4} \frac{\sqrt{x+5}}{x-1}$$

a. 3
b. –1
c. –3
d. 1
e. 9

____ 27. Let $f(x) = x^2 - x - 5$ and $g(x) = \sqrt[3]{x+14}$. Find the limits.

$$\lim_{x \to 3} g\big(f(x)\big)$$

a. $-\sqrt[3]{1}$
b. $\sqrt[3]{29}$
c. $-\sqrt[3]{15}$
d. $\sqrt[3]{15}$
e. $\sqrt[3]{1}$

____ 28. Find the lmit.

$$\lim_{x \to \pi} \tan\left(\frac{x}{3}\right)$$

a. $\dfrac{-1}{\sqrt{3}}$
b. $\sqrt{3}$
c. $-\sqrt{3}$
d. $\dfrac{1}{\sqrt{3}}$
e. does not exixt

____ 29. Suppose that $\lim_{x \to c} f(x) = 5$. Find the following limit.

$$\lim_{x \to c} \left[f(x)^3 \right]$$

a. 2
b. 125
c. 8
d. 0
e. 15

____ 30. Find the limit (if it exists).

$$\lim_{x \to -8} \frac{x+8}{x^2 - 64}$$

a. $-\frac{1}{16}$
b. $-\frac{1}{32}$
c. –32
d. –8
e. $\frac{1}{16}$

____ 31. Find the limit (if it exists).

$$\lim_{x \to 5} \frac{\sqrt{x+4} - 3}{x - 5}$$

a. 6
b. 1
c. 0
d. $\frac{1}{6}$
e. Limit does not exist.

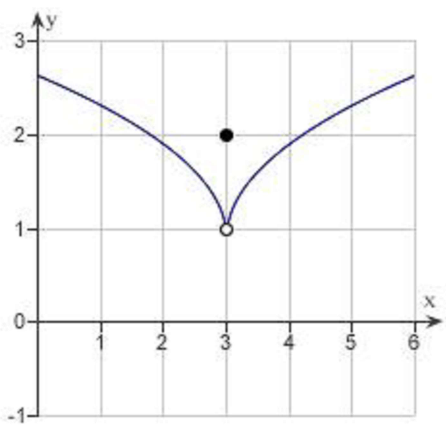
____ 32. Find the limit (if it exists).

$$\lim_{\Delta x \to 0} \frac{(x+\Delta x)^2 - 9(x+\Delta x) + 2 - \left(x^2 - 9x + 2\right)}{\Delta x}$$

a. $\frac{1}{3}x^3 - \frac{9}{2}x^2 + 2x$
b. $2x - 9$
c. $x^3 - 9x^2 + 2x$
d. $x^2 - 9x + 2$
e. does not exist

____ 33. Use the graph as shown to determine the following limits, and discuss the continuity of the function at $x = 3$.

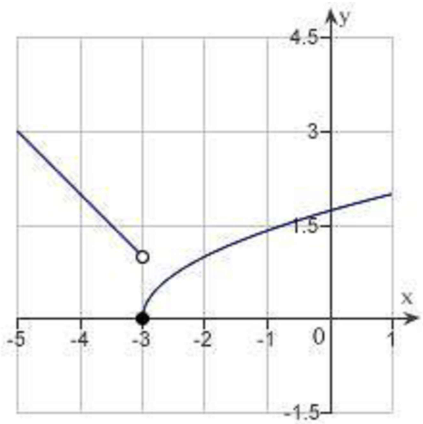
(i) $\lim_{x \to 3^+} f(x)$ (ii) $\lim_{x \to 3^-} f(x)$ (iii) $\lim_{x \to 3} f(x)$



a. 1 , 1 , 1 , not continuous
b. 2 , 2 , 2 , continuous
c. 4 , 4 , 4 , not continuous
d. 2 , 2 , 2 , not continuous
e. 1 , 1 , 1 , continuous

____ 34. Use the graph to determine the following limits, and discuss the continuity of the function at $x = -3$.

(i) $\lim\limits_{x \to -3^+} f(x)$ (ii) $\lim\limits_{x \to -3^-} f(x)$ (iii) $\lim\limits_{x \to -3} f(x)$



a. 1, − 1, does not exist, not continuous
b. 1, 0, does not exist, not continuous
c. 0, 1, does not exist, not continuous
d. −3, 0, does not exist, not continuous
e. 0, 1, 0, continuous

____ 35. Find the limit (if it exists).

$$\lim_{x \to 11^+} \frac{11 - x}{x^2 - 121}$$

a. $\frac{1}{22}$
b. 0
c. Limit does not exist.
d. $-\frac{1}{22}$
e. $\frac{1}{242}$

____ 36. Find the x-values (if any) at which the function $f(x) = \dfrac{x}{x^2 - 100}$ is not continuous. Which of the discontinuities are removable?

a. 10 and -10, removable
b. discontinuous everywhere
c. continuous everywhere
d. 10 and -10, not removable
e. 0, removable

____ 37. Find the x-values (if any) at which $f(x) = \dfrac{|x-3|}{x-3}$ is not continuous.

a. $f(x)$ is not continuous at $x = 3$ and the discontinuity is nonremovable.
b. $f(x)$ is not continuous at $x = 0$ and the discontinuity is removable.
c. $f(x)$ is continuous for all real x.
d. $f(x)$ is not continuous at $x = 3$ and the discontinuity is removable.
e. $f(x)$ is not continuous at $x = 0$, -3 and $x = 0$ is a removable discontinuity.

____ 38. Find the constant a such that the function

$$f(x) = \begin{cases} -4 \cdot \dfrac{\sin x}{x}, & x < 0 \\ a + 7x, & x \ge 0 \end{cases}$$

is continuous on the entire real line.

a. 1
b. -7
c. 7
d. 4
e. -4

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____ 39. Find the constants a and b such that the function

$$f(x) = \begin{cases} 6, & x \le -5 \\ ax + b, & -5 < x < 1 \\ -6, & x \ge 1 \end{cases}$$

is continuous on the entire real line.

a. $a = 2$, $b = 0$
b. $a = 2$, $b = -4$
c. $a = -2$, $b = -4$
d. $a = -2$, $b = 4$
e. $a = 2$, $b = 4$

____ 40. Find the value of c guaranteed by the Intermediate Value Theorem.

$f(x) = x^2 - 2x + 8, \left[2, 6\right], f(c) = 11$

a. 0
b. 3
c. 5
d. 1
e. 4

____ 41. Find the value of c guaranteed by the Intermediate Value Theorem.

$f(x) = \dfrac{x^2 - 5x}{x - 3}, \left[\dfrac{9}{2}, 18\right], f(c) = 6$

a. 11
b. 2
c. 1
d. 9
e. 10

____ 42. Find all values of c such that f is continuous on $(-\infty, \infty)$.

$$f(x) = \begin{cases} 4 - x^2, & x \le c \\ x, & x > c \end{cases}$$

a. $c = 3$
b. $c = 0$
c. $\dfrac{-1 + \sqrt{17}}{2}$
d. $\dfrac{1 + \sqrt{17}}{2}, \dfrac{1 - \sqrt{17}}{2}$
e. $\dfrac{-1 + \sqrt{17}}{2}, \dfrac{-1 - \sqrt{17}}{2}$

____ 43. Find all the vertical asymptotes (if any) of the graph of the function $f(x) = \dfrac{5}{(x-3)^2}$.

a. $x = -3$
b. $x = 5$
c. $x = 3, -3$
d. $x = 3$
e. no vertical asymptotes

____ 44. Find the vertical asymptotes (if any) of the function $f(x) = \dfrac{x^2 - 4}{x^2 + 3x + 2}$.

a. $x = 2$
b. $x = -1$
c. $x = 1$
d. $x = -2$
e. $x = -2$

____ 45. Find the vertical asymptotes (if any) of the function $f(x) = \tan(15x)$.

a. $x = \dfrac{k}{15}\pi \quad (k = 0, \pm 1, \pm 2, \ldots)$
b. $x = \dfrac{2k+1}{30}\pi \quad (k = 0, \pm 1, \pm 2, \ldots)$
c. $x = \dfrac{2k}{15}\pi \quad (k = 0, \pm 1, \pm 2, \ldots)$
d. $x = \dfrac{2k+1}{15}\pi \quad (k = 0, \pm 1, \pm 2, \ldots)$
e. no vertical asymptotes

____ 46. Find the limit (if it exists).

$$\lim_{x \to \frac{1}{2}} x \tan \pi x$$

a. ∞
b. $-\infty$
c. 0
d. $\frac{1}{2}$
e. Limit does not exist

____ 47. Find the slope m of the line tangent to the graph of the function $f(x) = 2 - 7x$ at the point $(-1, 9)$.

a. $m = -7$
b. $m = -2$
c. $m = 2$
d. $m = 7$
e. $m = -9$

____ 48. Find the slope m of the line tangent to the graph of the function $g(x) = 9 - x^2$ at the point $(4, -7)$.

a. $m = 4$
b. $m = 9$
c. $m = -8$
d. $m = -7$
e. $m = -18$

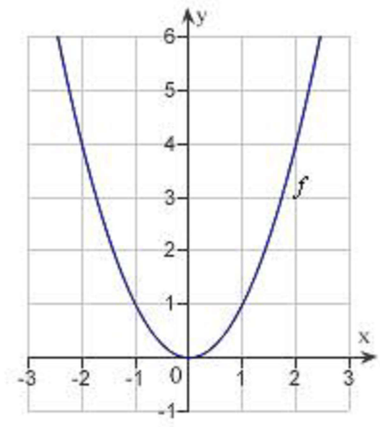
____ 49. Find the derivative of the following function $f(x) = -3x^2 + 6x - 8$ using the limiting process.

a. $f'(x) = -6x + 6$
b. $f'(x) = -3x + 6$
c. $f'(x) = -6x + 6x - 8$
d. $f'(x) = -3x - 6$
e. $f'(x) = -6x - 6$

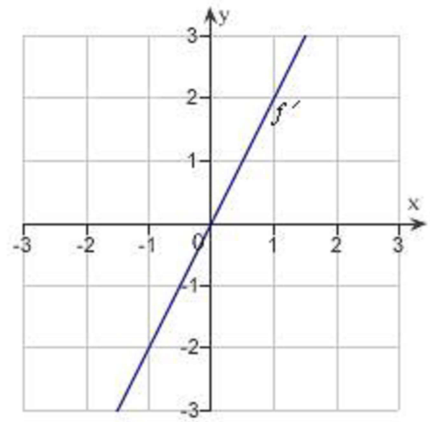
____ 50. Find an equation of the line that is tangent to the graph of the function $f(x) = 8x^2$ and parallel to the line $16x + y + 6 = 0$.

a. $16x + y + 8 = 0$
b. $12x - y + 6 = 0$
c. $16x - y + 8 = 0$
d. $16x + y + 6 = 0$
e. $12x + y + 6 = 0$

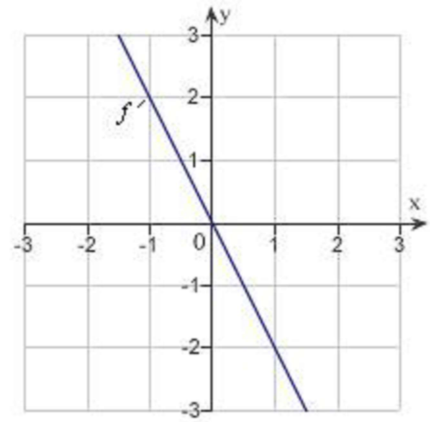
____ 51. The graph of the function f is given below. Select the graph of f'.



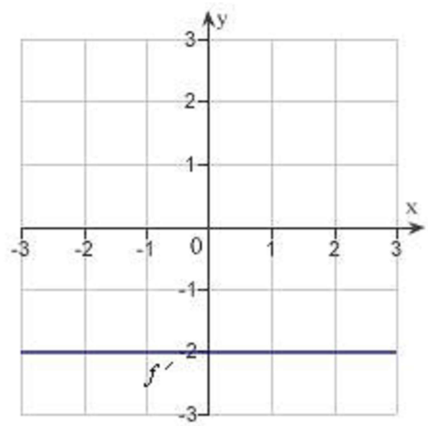
a.


y
x
f′
3
2
1
-1
-2
-3
-3
-2
-1
0
1
2
3

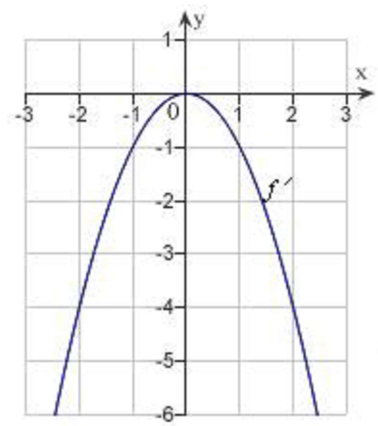
d.


y
x
f′
3
2
1
-1
-2
-3
-3
-2
-1
0
1
2
3

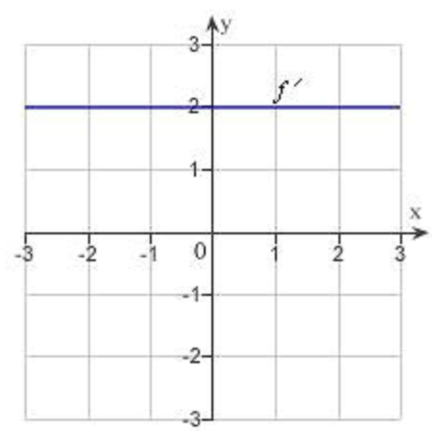
b.


y
x
f′
3
2
1
-1
-2
-3
-3
-2
-1
0
1
2
3

e.


y
x
f′
1
-1
-2
-3
-4
-5
-6
-3
-2
-1
0
1
2
3

c.


y
x
f′
3
2
1
-1
-2
-3
-3
-2
-1
0
1
2
3

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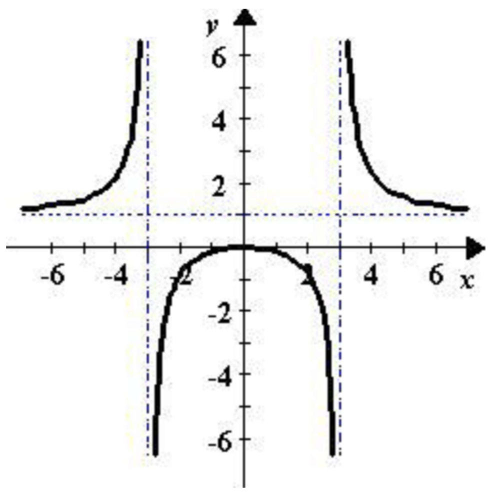
____ 52. Use the alternative form of the derivative to find the derivative of the function $f(x) = \dfrac{3}{x^2}$ at $x = 2$.

a. $f'(2) = \dfrac{3}{4}$
b. $f'(2) = -\dfrac{3}{4}$
c. $f'(2) = \dfrac{3}{8}$
d. $f'(2) = -\dfrac{3}{2}$
e. $f'(2) = -\dfrac{9}{16}$

____ 53. Describe the x-values at which the graph of the function $f(x) = \dfrac{x^2}{x^2 - 9}$ given below is differentiable.



a. $f(x)$ is differentiable at $x = \pm 3$.
b. $f(x)$ is differentiable everywhere except at $x = \pm 3$.
c. $f(x)$ is differentiable everywhere except at $x = 0$.
d. $f(x)$ is differentiable on the interval $(-2,2)$.
e. $f(x)$ is differentiable on the interval $(2,\infty)$.

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____ 54. Find the derivative of the function.

$f(x) = x^4$

a. $f'(x) = 4x^4$
b. $f'(x) = 3x^3$
c. $f'(x) = 4x^5$
d. $f'(x) = 3x^5$
e. $f'(x) = 4x^3$

____ 55. Find the derivative of the function.

$f(x) = \frac{1}{x^8}$

a. $f'(x) = -\frac{9}{x^9}$
b. $f'(x) = -\frac{8}{x^7}$
c. $f'(x) = \frac{8}{x^9}$
d. $f'(x) = -\frac{8}{x^9}$
e. $f'(x) = -\frac{7}{x^9}$

____ 56. Find the derivative of the function $f(x) = -5x^3 - 2\sin(x)$.

a. $f'(x) = -15x^2 + 2\cos(x)$
b. $f'(x) = -10x^2 - 2\cos(x)$
c. $f'(x) = -5x^2 - 2\cos(x)$
d. $f'(x) = -5x^2 + 2\cos(x)$
e. $f'(x) = -15x^2 - 2\cos(x)$

____ 57. Find the slope of the graph of the function at the given value.

$f(x) = \frac{-5}{x^3}$ when $x = 9$

a. $f'(9) = -\frac{5}{2187}$
b. $f'(9) = -\frac{5}{729}$
c. $f'(9) = \frac{5}{27}$
d. $f'(9) = -\frac{5}{27}$
e. $f'(9) = \frac{5}{2187}$

____ 58. Find the slope of the graph of the function $f(x) = x\left(2x^3 + 7\right)$ at $x = 4$.

a. $f'(4) = 519$
b. $f'(4) = 512$
c. $f'(4) = 103$
d. $f'(4) = 540$
e. $f'(4) = 391$

____ 59. Determine all values of x, (if any), at which the graph of the function has a horizontal tangent.

$y(x) = x^3 + 12x^2 + 8$

a. $x = 0$
b. $x = -8$
c. $x = 0$ and $x = -8$
d. $x = 0$ and $x = 8$
e. The graph has no horizontal tangents.

____ 60. Determine all values of x, (if any), at which the graph of the function has a horizontal tangent.

$y(x) = \frac{9}{x - 6}$

a. $x = 9$ and $x = -6$
b. $x = 9$
c. $x = 9$ and $x = 6$
d. $x = 6$
e. The graph has no horizontal tangents.

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____ 61. Suppose the position function for a free-falling object on a certain planet is given by $s(t) = -16t^2 + v_0 t + s_0$. A silver coin is dropped from the top of a building that is 1372 feet tall. Determine the average velocity of the coin over the time interval $[3, 4]$.

a. –113 ft/sec
b. 80 ft/sec
c. 112 ft/sec
d. –112 ft/sec
e. –80 ft/sec

____ 62. A ball is thrown straight down from the top of a 300-ft building with an initial velocity of –12 ft per second. The position function is $s(t) = -16t^2 + v_0 t + s_0$. What is the velocity of the ball after 4 seconds?

a. The velocity after 4 seconds is –76 ft per second.
b. The velocity after 4 seconds is –116 ft per second.
c. The velocity after 4 seconds is –140 ft per second.
d. The velocity after 4 seconds is –52 ft per second.
e. The velocity after 4 seconds is –280 ft per second.

____ 63. The volume of a cube with sides of length s is given by $V = s^3$. Find the rate of change of volume with respect to s when s = 6 centimeters.

a. 648 cm^2
b. 216 cm^2
c. 36 cm^2
d. 108 cm^2
e. 72 cm^2

____ 64. Find the derivative of the algebraic function $H(v) = \left(v^5 - 3\right)\left(v^3 + 3\right)$.

a. $H'(s) = 8v^7 + 15v^4 + 9v^2$
b. $H'(s) = 8v^7 + 9v^4 + 15v^2$
c. $H'(s) = 8v^7 - 15v^4 - 9v^2$
d. $H'(s) = 8v^7 + 15v^4 - 9v^2$
e. $H'(s) = 8v^7 + 9v^4 - 3v^2$

____ 65. Use the Product Rule to differentiate $f(s) = s^5 \cos s$.

a. $f'(s) = -5s^4 \sin s$

b. $f'(s) = -s^5 \cos s + 5s^4 \sin s$

c. $f'(s) = -s^5 \sin s - 5s^4 \cos s$

d. $f'(s) = -s^5 \sin s + 5s^4 \cos s$

e. $f'(s) = s^5 \sin s + 5s^4 \cos s$

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____ 66. Use the Quotient Rule to differentiate the function $f(x) = \dfrac{8x}{x^5 + 3}$.

a. $f'(x) = -\dfrac{8\left(-3 + 4x^5\right)}{\left(x^5 + 3\right)^2}$

b. $f'(x) = \dfrac{8\left(-3 - 4x^5\right)}{\left(x^5 + 3\right)^2}$

c. $f'(x) = -\dfrac{8\left(3 + 5x^5\right)}{\left(x^5 + 3\right)^2}$

d. $f'(x) = \dfrac{8\left(3 + 4x^5\right)}{\left(x^5 + 3\right)^2}$

e. $f'(x) = -\dfrac{8\left(3 + 6x^5\right)}{\left(x^5 + 3\right)^2}$

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____ 67. Use the Quotient Rule to differentiate the function $f'(x) = \dfrac{4+x}{x^2+9}$.

a. $f'(x) = \dfrac{\left(9+8x-x^2\right)}{\left(x^2+9\right)^2}$

b. $f'(x) = \dfrac{\left(9-8x-x^2\right)}{\left(x^2+9\right)^2}$

c. $f'(x) = \dfrac{\left(9-4x-x^2\right)}{\left(x^2+9\right)^2}$

d. $f'(x) = -\dfrac{\left(9-8x-x^2\right)}{\left(x^2+9\right)^2}$

e. $f'(x) = \dfrac{\left(9-8x+x^2\right)}{\left(x^2+9\right)^2}$

____ 68. Find the second derivative of the function $f(x) = 8x^{\frac{5}{9}}$.

a. $f''(x) = \dfrac{-160}{81}x^{\frac{4}{9}}$

b. $f''(x) = \dfrac{5}{81}x^{\frac{-13}{9}}$

c. $f''(x) = \dfrac{-160}{81}x^{\frac{-13}{9}}$

d. $f''(x) = \dfrac{160}{81}x^{\frac{-13}{9}}$

e. $f''(x) = 8x^{\frac{-13}{9}}$

____ 69. Find the second derivative of the function $f(x) = \dfrac{3x^2 + 5x - 4}{x}$.

a. $f''(s) = -\dfrac{8}{x^3}$

b. $f''(s) = \dfrac{8}{x^3}$

c. $f''(s) = -\dfrac{x+8}{x^3}$

d. $f''(s) = \dfrac{4}{x^3}$

e. $f''(s) = -\dfrac{8}{x^2}$

____ 70. Find the second derivative of the function $f(x) = x^4 \sec x$.

a. $f''(x) = x^2 \sec x \left(12 + x \sec^2 x + 8x \tan x + x^2 \tan^2 x \right)$

b. $f''(x) = x^2 \sec x \left(12 + x^2 \sec^2 x + 8x \tan x + x^2 \tan^2 x \right)$

c. $f''(x) = x^2 \sec x \left(12 + x^2 \sec^2 x + 4x \tan x + x^2 \tan^2 x \right)$

d. $f''(x) = x^2 \sec x \left(12 + x^2 \sec^2 x + 8x \tan x + x^2 \tan x \right)$

e. $f''(x) = x^2 \sec x \left(12 + x^2 \sec^2 x + 8x \tan x + x \tan^2 x \right)$

____ 71. Suppose that an automobile's velocity starting from rest is $v(t) = \dfrac{240t}{5t+13}$ where v is measured in feet per second. Find the acceleration at 9 seconds. Round your answer to one decimal place.

a. 1.9 ft/sec^2
b. 0.9 ft/sec^2
c. 0.6 ft/sec^2
d. 0.2 ft/sec^2
e. 8.3 ft/sec^2

____ 72. Find the derivative of the algebraic function $f(x) = \left(x^6 + 4\right)^5$.

a. $f'(x) = 5x^5\left(x^6+4\right)^4$
b. $f'(x) = 6x^5\left(x^6+4\right)^4$
c. $f'(x) = 30x^5\left(x^6+4\right)^4$
d. $f'(x) = 30x^7\left(x^6+4\right)^4$
e. $f'(x) = 30x^6\left(x^6+4\right)^4$

____ 73. Find the derivative of the function.

$f(t) = (1+8t)^{\frac{5}{9}}$

a. $f'(t) = \dfrac{40}{9}(1+8t)^{\frac{-4}{9}}$
b. $f'(t) = \dfrac{8}{9}(1+8t)^{\frac{-4}{9}}$
c. $f'(t) = \dfrac{1}{9}(1+8t)^{\frac{-4}{9}}$
d. $f'(t) = \dfrac{40}{9}(1+8t)^{\frac{-4}{5}}$
e. $f'(t) = 8(1+8t)^{\frac{-4}{9}}$

____ 74. Find the derivative of the function.

$y = \cos\left(2x^4 - 6\right)$

a. $y' = 8x^4 \cos\left(2x^4 - 6\right)$
b. $y' = 8\sin\left(2x^4 - 6\right)$
c. $y' = -8x^3 \sin\left(2x^4 - 6\right)$
d. $y' = -8\sin\left(2x^4 - 6\right)$
e. $y' = -2\sin\left(2x^4 - 6\right)$

____ 75. Evaluate the derivative of the function $f(t) = \dfrac{6t+3}{5t-1}$ at the point $\left(5, \dfrac{11}{8}\right)$.

a. $f'(t) = -\dfrac{7}{8}$
b. $f'(t) = \dfrac{7}{192}$
c. $f'(t) = \dfrac{7}{8}$
d. $f'(t) = -\dfrac{21}{26}$
e. $f'(t) = -\dfrac{7}{192}$

____ 76. Find an equation to the tangent line to the graph of the function $f(x) = \tan^8 x$ at the point $\left(\dfrac{4\pi}{5}, 0.078\right)$.

The coefficients below are given to two decimal places.

a. $y = -1.31x + 3.36$
b. $y = 1.31x + 3.36$
c. $y = 1.06x + 3.36$
d. $y = -1.31x - 3.36$
e. $y = 1.06x - 3.36$

____ 77. Find the second derivative of the function.

$f(x) = \left(3x^3 + 7\right)^7$

a. $f'' = 63x\,(7+3x)^5\left(14+63x^3\right)$
b. $f'' = 63x\left(7+3x^3\right)^5\left(14+60x^3\right)$
c. $f'' = 63x\left(7+3x^2\right)^5\left(14+60x^3\right)$
d. $f'' = 63x\left(7+3x^3\right)^5\left(14+63x^3\right)$
e. $f'' = 63x\left(7+3x^3\right)^5\left(14-60x^3\right)$

____ 78. Suppose a 15-centimeter pendulum moves according to the equation $\theta = 0.6\cos 8t$ where θ is the angular displacement from the vertical in radians and t is the time in seconds. Determine the rate of change of θ when $t = 7$ seconds. Round your answer to four decimal places.

a. 2.5034 radians per second
b. 3.6185 radians per second
c. 0.3129 radians per second
d. 3.1535 radians per second
e. 4.1724 radians per second

____ 79. Find $\frac{dy}{dx}$ by implicit differentiation.

$x^2 + y^2 = 25$

a. $\frac{dy}{dx} = \frac{x}{y}$
b. $\frac{dy}{dx} = -\frac{x}{y}$
c. $\frac{dy}{dx} = \frac{y}{x}$
d. $\frac{dy}{dx} = -\frac{y}{x}$
e. $\frac{dy}{dx} = -\frac{x}{y^2}$

____ 80. Find $\frac{dy}{dx}$ by implicit differentiation.

$$x^{\frac{6}{7}} + y^{\frac{8}{5}} = 9$$

a. $\frac{dy}{dx} = -\frac{28x^{\frac{-1}{7}}}{15y^{\frac{3}{5}}}$

b. $\frac{dy}{dx} = -\frac{15x^{\frac{-1}{7}}}{7y^{\frac{3}{5}}}$

c. $\frac{dy}{dx} = -\frac{3x^{\frac{-1}{7}}}{28y^{\frac{3}{5}}}$

d. $\frac{dy}{dx} = \frac{15x^{\frac{-1}{7}}}{28y^{\frac{3}{5}}}$

e. $\frac{dy}{dx} = -\frac{15x^{\frac{-1}{7}}}{28y^{\frac{3}{5}}}$

____ 81. Find $\frac{dy}{dx}$ by implicit differentiation.

$x^4 + 7x + 6xy - y^7 = 9$

a. $\frac{dy}{dx} = -\frac{4x^3 + 7 + 6y}{7y^6 - 6x}$

b. $\frac{dy}{dx} = \frac{4x^3 + 7 - 6y}{7y^6 - 6x}$

c. $\frac{dy}{dx} = \frac{4x^3 + 7 + 6y}{6y^6 - 6x}$

d. $\frac{dy}{dx} = \frac{4x^3 + 7 + 6y}{7y^6 - 6x}$

e. $\frac{dy}{dx} = \frac{3x^3 + 7 + 6y}{7y^6 - 6x}$

____ 82. Find $\frac{dy}{dx}$ by implicit differentiation.

$\sin x + 7\cos 14y = 2$

a. $\frac{dy}{dx} = \frac{\cos x}{98\cos 14y}$

b. $\frac{dy}{dx} = \frac{\cos x}{98\sin 14y}$

c. $\frac{dy}{dx} = \frac{\cos x}{14\sin 14y}$

d. $\frac{dy}{dx} = \frac{\cos x}{98\sin y}$

e. $\frac{dy}{dx} = -\frac{\cos x}{98\sin 14y}$

____ 83. Evaluate $\frac{dy}{dx}$ for the equation $7xy = 21$ at the given point $(-3, -1)$. Round your answer to two decimal places.

a. $\frac{dy}{dx} = 7.00$
b. $\frac{dy}{dx} = 63.00$
c. $\frac{dy}{dx} = -0.33$
d. $\frac{dy}{dx} = -63.00$
e. $\frac{dy}{dx} = -3.00$

____ 84. Find $\frac{dy}{dx}$ by implicit differentiation given that $\tan(4x + y) = 4x$. Use the original equation to simplify your answer.

a. $\frac{dy}{dx} = \frac{4x}{x^2 + 1}$
b. $\frac{dy}{dx} = -\frac{4x^2}{x^2 - 1}$
c. $\frac{dy}{dx} = \frac{4x^2}{x^2 + 1}$
d. $\frac{dy}{dx} = -\frac{4x^2}{x^2 + 1}$
e. $\frac{dy}{dx} = \frac{4x^2}{x^2 - 1}$

____ 85. Find an equation of the tangent line to the graph of the function $(y - 6)^2 = 5(x - 5)$ at the point $(8.20, 2.00)$.The coefficients below are given to two decimal places.

a. $y = -0.63x + 7.13$
b. $y = 3.38x + 25.68$
c. $y = 3.38x - 25.68$
d. $y = -0.63x + 25.68$
e. $y = 0.63x + 7.13$

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____ 86. Use implicit differentiation to find an equation of the tangent line to the ellipse $\frac{x^2}{2} + \frac{y^2}{98} = 1$ at $(1,7)$.

a. $y = -11x + 11$
b. $y = -2x + 9$
c. $y = -8x + 9$
d. $y = -9x + 11$
e. $y = -4x + 9$

____ 87. Find $\frac{d^2y}{d^2x}$ in terms of x and y given that $x^2 + 6y^2 = 9$. Use the original equation to simplify your answer.

a. $y'' = -\frac{1}{4y^3}$
b. $y'' = -1y^3$
c. $y'' = -4y^3$
d. $y'' = -24y^3$
e. $y'' = -\frac{1}{24y^3}$

____ 88. Find the points at which the graph of the equation has a vertical or horizontal tangent line.

$5x^2 + 4y^2 - 10x + 24y + 8 = 0$

a. There is a vertical tangent at $y = -3$ but no horizontal tangents.
b. There is a horizontal tangent at $x = 1$ and a vertical tangent at $y = -3$.
c. There is a horizontal tangent at $x = 1$ but no vertical tangents.
d. There is a horizontal tangent at $x = -2$ and a vertical tangent at $y = -2$.
e. There are no horizontal or vertical tangent lines.

Qtr 1 (Chapters P, 1, 2.1-2.5) Multiple Choice Questions from the Textbook
Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: Easy REF: Section 0.1
   OBJ: Identify the graph of a semicircle MSC: Skill
2. ANS: D PTS: 1 DIF: Easy REF: Section 0.1
   OBJ: Calculate the intercepts of an equation MSC: Skill
3. ANS: A PTS: 1 DIF: Easy REF: Section 0.1
   OBJ: Identify the type of symmetry of the graph of an equation
   MSC: Skill
4. ANS: D PTS: 1 DIF: Medium REF: Section 0.1
   OBJ: Graph an absolute value equation MSC: Skill
5. ANS: D PTS: 1 DIF: Easy REF: Section 0.1
   OBJ: Graph an equation in y MSC: Skill
6. ANS: D PTS: 1 DIF: Easy REF: Section 0.2
   OBJ: Sketch the line passing through a point with specified slope
   MSC: Skill
7. ANS: C PTS: 1 DIF: Medium REF: Section 0.2
   OBJ: Calculate the slope of a line passing through two points MSC: Skill
8. ANS: E PTS: 1 DIF: Medium REF: Section 0.2
   OBJ: Manipulate a linear equation to determine its slope MSC: Skill
9. ANS: A PTS: 1 DIF: Medium REF: Section 0.2
   OBJ: Write an equation of a line given a point on the line and a line to which it is perpendicular
   MSC: Skill
10. ANS: B PTS: 1 DIF: Medium REF: Section 0.3
    OBJ: Simplify a difference quotient MSC: Skill
11. ANS: A PTS: 1 DIF: Medium REF: Section 0.3
    OBJ: Simplify a difference quotient MSC: Skill
12. ANS: E PTS: 1 DIF: Easy REF: Section 0.3
    OBJ: Identify the domain and range of a function MSC: Skill
13. ANS: E PTS: 1 DIF: Easy REF: Section 0.3
    OBJ: Graph transformations of functions MSC: Skill
14. ANS: D PTS: 1 DIF: Easy REF: Section 0.3
    OBJ: Evaluate composite functions MSC: Skill
15. ANS: E PTS: 1 DIF: Easy REF: Section 0.3
    OBJ: Identify points on a graph using symmetry MSC: Skill
16. ANS: B PTS: 1 DIF: Easy REF: Section 0.3
    OBJ: Identify points on a graph using symmetry MSC: Skill
17. ANS: A PTS: 1 DIF: Medium REF: Section 0.3
    OBJ: Create functions in applications MSC: Application
18. ANS: C PTS: 1 DIF: Easy REF: Section 0.4
    OBJ: Fit a trigonometric model to a real-life data set. MSC: Application

19. ANS: D PTS: 1 DIF: Easy REF: Section 1.1
OBJ: Graph a function and the secant line passing through given points
MSC: Skill
20. ANS: C PTS: 1 DIF: Medium REF: Section 1.2
OBJ: Estimate a limit from a table of values MSC: Skill
21. ANS: C PTS: 1 DIF: Medium REF: Section 1.2
OBJ: Estimate a limit from a table of values MSC: Skill
22. ANS: C PTS: 1 DIF: Medium REF: Section 1.2
OBJ: Estimate the limit of a function from its graph MSC: Skill
23. ANS: E PTS: 1 DIF: Medium REF: Section 1.2
OBJ: Estimate the limit of a function from its graph MSC: Skill
24. ANS: D PTS: 1 DIF: Easy REF: Section 1.2
OBJ: Estimate a limit using a numerical or graphical approach MSC: Skill
25. ANS: B PTS: 1 DIF: Easy REF: Section 1.2
OBJ: Estimate a limit using a numerical or graphical approach MSC: Skill
26. ANS: D PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate a limit using properties of limits MSC: Skill
27. ANS: D PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of composite functions MSC: Skill
28. ANS: B PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of the function MSC: Skill
29. ANS: B PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of a function using properties of limits MSC: Skill
30. ANS: A PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of a function analytically MSC: Skill
31. ANS: D PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of a function analytically MSC: Skill
32. ANS: B PTS: 1 DIF: Medium REF: Section 1.3
OBJ: Evaluate the limit of a function analytically MSC: Skill
33. ANS: A PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Estimate a limit and points of discontinuity from a graph MSC: Skill
34. ANS: C PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Estimate a limit and points of discontinuity from a graph MSC: Skill
35. ANS: D PTS: 1 DIF: Easy REF: Section 1.4
OBJ: Evaluate one-sided limits MSC: Skill
36. ANS: D PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the removable discontinuities of a function MSC: Skill
37. ANS: A PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the removable discontinuities of a function MSC: Skill
38. ANS: E PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the value of a parameter to ensure a function is continuous
MSC: Skill
39. ANS: C PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the value of a parameter to ensure a function is continuous
MSC: Skill

40. ANS: B PTS: 1 DIF: Easy REF: Section 1.4
OBJ: Identify the value of c guaranteed by the Intermediate Value Theorem
MSC: Skill
41. ANS: D PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the value of c guaranteed by the Intermediate Value Theorem
MSC: Skill
42. ANS: E PTS: 1 DIF: Medium REF: Section 1.4
OBJ: Identify the value of a parameter to ensure a function is continuous
MSC: Skill
43. ANS: D PTS: 1 DIF: Easy REF: Section 1.5
OBJ: Identify the vertical asymptotes (if any) of the graph of a function
MSC: Skill
44. ANS: B PTS: 1 DIF: Medium REF: Section 1.5
OBJ: Identify the vertical asymptotes (if any) of the graph of a function
MSC: Skill
45. ANS: B PTS: 1 DIF: Medium REF: Section 1.5
OBJ: Identify the vertical asymptotes (if any) of the graph of a function
MSC: Skill
46. ANS: E PTS: 1 DIF: Medium REF: Section 1.5
OBJ: Identify a limit that does not exist MSC: Skill
47. ANS: A PTS: 1 DIF: Easy REF: Section 2.1
OBJ: Calculate the slope of a line tangent to the graph of a function at a specified point
MSC: Skill
48. ANS: C PTS: 1 DIF: Medium REF: Section 2.1
OBJ: Calculate the slope of a line tangent to the graph of a function at a specified point
MSC: Skill
49. ANS: A PTS: 1 DIF: Easy REF: Section 2.1
OBJ: Calculate the derivative of a function by the limit process
MSC: Skill
50. ANS: A PTS: 1 DIF: Medium REF: Section 2.1
OBJ: Write an equation of a line tangent to the graph of a function that is parallel to a given line
MSC: Skill
51. ANS: A PTS: 1 DIF: Medium REF: Section 2.1
OBJ: Identify the graph of f' using the given graph of f MSC: Skill
52. ANS: B PTS: 1 DIF: Medium REF: Section 2.1
OBJ: Calculate the derivative of a function at a specified point using the alternative form
MSC: Skill
53. ANS: B PTS: 1 DIF: Medium REF: Section 2.1
OBJ: Identify the x-value (or values) at which a function is differential
MSC: Skill
54. ANS: E PTS: 1 DIF: Easy REF: Section 2.2
OBJ: Differentiate a function using basic differentiation rules MSC: Skill
55. ANS: D PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Differentiate a function using basic differentiation rules MSC: Skill
56. ANS: E PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Differentiate trigonometric functions MSC: Skill

57. ANS: E PTS: 1 DIF: Easy REF: Section 2.2
OBJ: Calculate the slope of the graph of a function at a given point
MSC: Skill
58. ANS: A PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Calculate the slope of the graph of a function at a given point
MSC: Skill
59. ANS: C PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Calculate the values for which the slope of a function is zero
MSC: Skill
60. ANS: E PTS: 1 DIF: Difficult REF: Section 2.2
OBJ: Calculate the values for which the slope of a function is zero
MSC: Skill
61. ANS: D PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Calculate the average velocity from a given position function
MSC: Application
62. ANS: C PTS: 1 DIF: Difficult REF: Section 2.2
OBJ: Derive the free-fall position function and evaluate velocity at different points
MSC: Application
63. ANS: D PTS: 1 DIF: Medium REF: Section 2.2
OBJ: Interpret a derivative as a rate of change MSC: Application
64. ANS: D PTS: 1 DIF: Medium REF: Section 2.3
OBJ: Differentiate a function using the product rule MSC: Skill
65. ANS: D PTS: 1 DIF: Medium REF: Section 2.3
OBJ: Differentiate a function using the product rule MSC: Skill
66. ANS: A PTS: 1 DIF: Difficult REF: Section 2.3
OBJ: Differentiate a function using the quotient rule MSC: Skill
67. ANS: B PTS: 1 DIF: Difficult REF: Section 2.3
OBJ: Differentiate a function using the quotient rule MSC: Skill
68. ANS: C PTS: 1 DIF: Difficult REF: Section 2.3
OBJ: Calculate the second derivative of a function MSC: Skill
69. ANS: A PTS: 1 DIF: Medium REF: Section 2.3
OBJ: Calculate the second derivative of a function MSC: Skill
NOT: Section 2.3
70. ANS: B PTS: 1 DIF: Difficult REF: Section 2.3
OBJ: Calculate the second derivative of a function MSC: Skill
71. ANS: B PTS: 1 DIF: Medium REF: Section 2.3
OBJ: Calculate the acceleration from a velocity function MSC: Application
72. ANS: C PTS: 1 DIF: Difficult REF: Section 2.4
OBJ: Differentiate a function using the chain rule MSC: Skill
73. ANS: A PTS: 1 DIF: Medium REF: Section 2.4
OBJ: Differentiate a function using the chain rule MSC: Skill
74. ANS: C PTS: 1 DIF: Medium REF: Section 2.4
OBJ: Differentiate a trigonometric function using the chain rule
MSC: Skill
75. ANS: E PTS: 1 DIF: Medium REF: Section 2.4
OBJ: Evaluate the derivative of a function at a point MSC: Skill

76. ANS: A PTS: 1 DIF: Medium REF: Section 2.4
OBJ: Write an equation of a line tangent to the graph of a function at a specified point
MSC: Skill
77. ANS: B PTS: 1 DIF: Difficult REF: Section 2.4
OBJ: Calculate the second derivative of a function using the chain rule
MSC: Skill
78. ANS: A PTS: 1 DIF: Difficult REF: Section 2.4
OBJ: Interpret a derivative as a rate of change MSC: Application
79. ANS: B PTS: 1 DIF: Easy REF: Section 2.5
OBJ: Differentiate an equation using implicit differentiation MSC: Skill
80. ANS: E PTS: 1 DIF: Easy REF: Section 2.5
OBJ: Differentiate an equation using implicit differentiation MSC: Skill
81. ANS: D PTS: 1 DIF: Medium REF: Section 2.5
OBJ: Differentiate an equation using implicit differentiation MSC: Skill
82. ANS: B PTS: 1 DIF: Medium REF: Section 2.5
OBJ: Differentiate an equation using implicit differentiation MSC: Skill
83. ANS: C PTS: 1 DIF: Easy REF: Section 2.5
OBJ: Evaluate the derivative of an implicit function at a given point
MSC: Skill
84. ANS: D PTS: 1 DIF: Medium REF: Section 2.5
OBJ: Differentiate an equation using implicit differentiation MSC: Skill
85. ANS: A PTS: 1 DIF: Medium REF: Section 2.5
OBJ: Write an equation of a line tangent to the graph of an implicit function at a specified point
MSC: Skill
86. ANS: B PTS: 1 DIF: Easy REF: Section 2.5
OBJ: Write an equation of a line tangent to the graph of an ellipse at a specified point.
MSC: Skill
87. ANS: A PTS: 1 DIF: Medium REF: Section 2.5
OBJ: Calculate the second derivative implicitly MSC: Skill
88. ANS: B PTS: 1 DIF: Easy REF: Section 2.5
OBJ: Identify the points where an implicit function has horizontal and vertical tangent lines
MSC: Skill