Chaper 2

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

____ 1. Find the distance $d(A, B)$ between the points $A(1, -1)$ and $B(8, 1)$.

a. 7.28
b. 6.28
c. 6.98
d. 7.78
e. 7.18

____ 2. Find the distance $d(A, B)$ between the points $A(6, 6)$ and $B(6, -4)$.

a. 6
b. 0
c. 10
d. 4

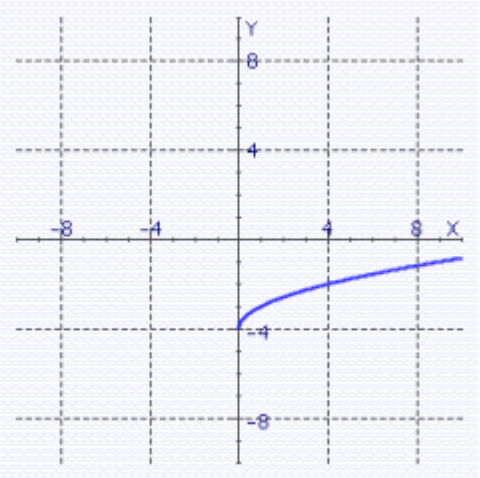
____ 3. Find a formula that expresses the fact that $P(x, y)$ is a distance 2 away from the origin.

a. $x + y^2 = 2$
b. $x^2 + y^2 = 2$
c. $x + y = 2$
d. $\sqrt{x + y} = 4$
e. $\sqrt{x^2 + y^2} = 2$

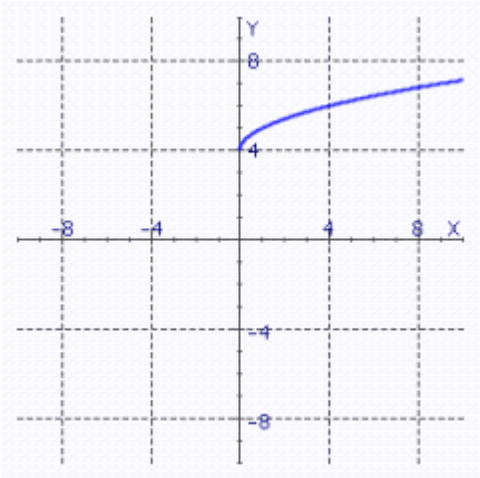
____ 4. Sketch the graph of the equation.

$y = \sqrt{x} - 4$

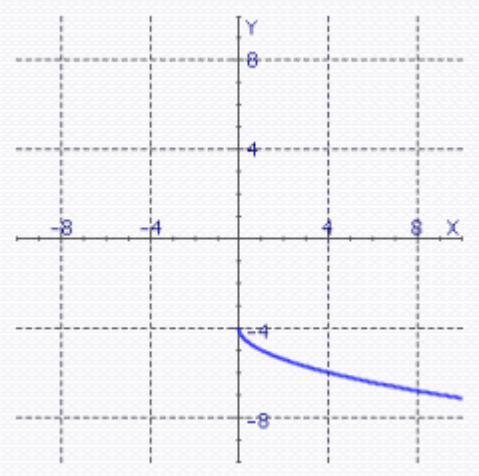
a.



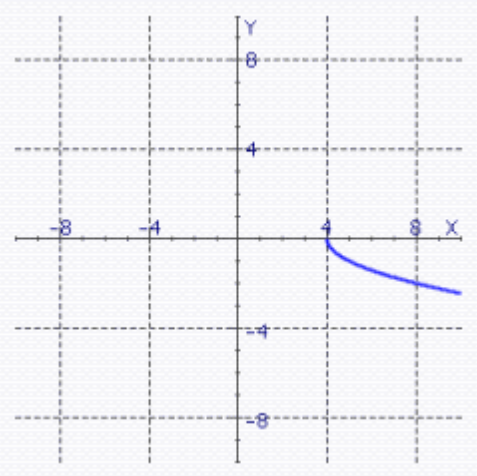
d.



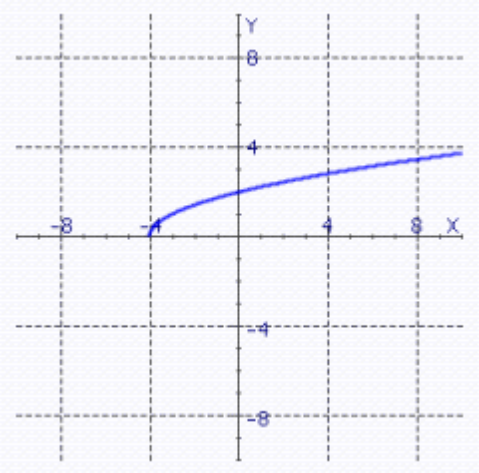
b.



e.



c.



____ 5. Find an equation of the line that is tangent to the circle $x^2 + y^2 = 25$ at the point P (3, 4).

a. $y=\frac{3}{4}x+\frac{25}{4}$

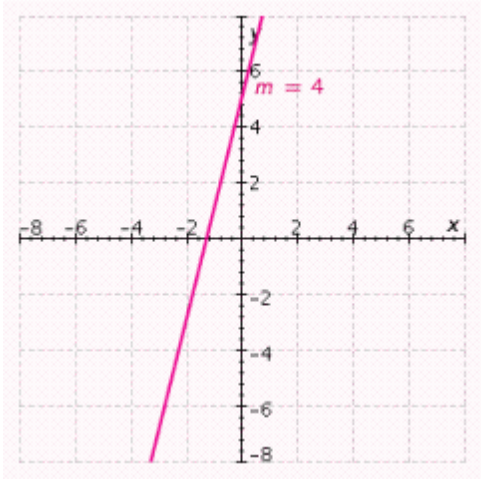
b. $y=-\frac{4}{3}x+\frac{25}{3}$

c. $y=-\frac{3}{4}x+\frac{25}{4}$

d. $y=\frac{3}{4}x-25$

e. $y=-\frac{3}{4}x+25$

____ 6. Find an equation of the line shown in the figure.



a. $y(x) = -4 + 5x$

b. $y(x) = -4x + 5$

c. $y(x) = 4x - 5$

d. $y(x) = 4x + 5$

e. $y(x) = 5x + 4$

____ 7. In exercise physiology, aerobic power *P* is defined in terms of maximum oxygen intake. For altitudes up to 1,800 meters, aerobic power is optimal-that is, 100%. Beyond 1,800 meters, *P* decreases linearly from the maximum of 100% to a value near 40% at 5,000 meters. Estimate aerobic power at the altitude of 2,400 meters.

a. 72.5%
b. 93.8%
c. 72.6%
d. 88.3%
e. 88.75%

____ 8. Find the domain of f.

$$f(x) = \sqrt{x^2 - 9}$$

a. $[3, \infty)$
b. $(-\infty, -3] \cup [3, \infty)$
c. $(-\infty, -3) \cup (3, \infty)$
d. $(-3, 3)$
e. $[9, \infty)$

____ 9. Find the domain of f.

$$f(x) = \frac{8}{6x^2 + 18x - 108}$$

a. $(-\infty, -6] \cup [3, \infty)$

b. $(-\infty, -6) \cup (3, \infty)$
c. $(-\infty, -6) \cup (-6, 3) \cup (3, \infty)$
d. $(-\infty, -7] \cup [7, \infty)$
e. $(-\infty, -7) \cup (-7, 7) \cup (7, \infty)$

____ 10. Simplify the difference quotient $\frac{f(x+h)-f(x)}{h}$, if $h \neq 0$ for

$f(x) = x^2 + 4$

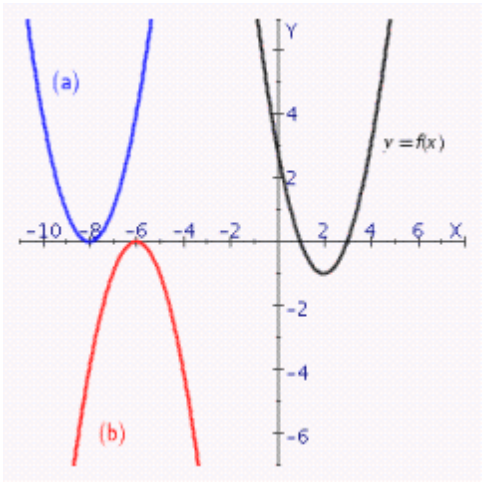
a. $\frac{f(x+h)-f(x)}{h} = x + h$
b. $\frac{f(x+h)-f(x)}{h} = 2x$
c. $\frac{f(x+h)-f(x)}{h} = 2x + h$
d. $\frac{f(x+h)-f(x)}{h} = 2x + h + 8$
e. $\frac{f(x+h)-f(x)}{h} = 2x + h^2$

____ 11. If the point *P* (3, 1) is on the graph of a function *f*, find the corresponding point on the graph of the function

$y = -9f(x-2) + 1$

a. (1, -3)
b. (5, 10)
c. (5, -8)
d. (1, -8)
e. (6, -9)

____ 12. The graph of a function *f* is shown, together with graphs of two other functions (a) and (b). Use properties of symmetry, shifts, and reflecting to find equations for graphs (a) and (b) in terms of *f*.



a. a) $y = f(x + 1) + 10$

b) $y = f(x + 1) + 8$

b. a) $y = f(x + 10) + 1$
b) $y = f(x + 8) - 1$

c. a) $y = f(x - 8) + 1$
b) $y = -f(x - 10) - 1$

d. a) $y = f(x + 1) + 10$
b) $y = -f(x + 1) + 8$

e. a) $y = f(x + 10) + 1$
b) $y = -f(x + 8) + 1$

____ 13. Let $y = f(x)$ be a function with domain D = [-10, -9] and range R = [-10, -7]. Find the domain D and range R for the function

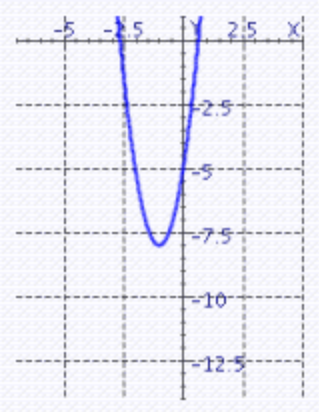
$y = |f(x)|$

a. $D = [-10, -9],\ R = [-7, 10]$
b. $D = [9, 10],\ R = [-10, -7]$
c. $D = [9, 10],\ R = [-10, 7]$
d. $D = [9, 10],\ R = [7, 10]$
e. $D = [-10, -9],\ R = [7, 10]$

____ 14. Sketch the graph of the function.

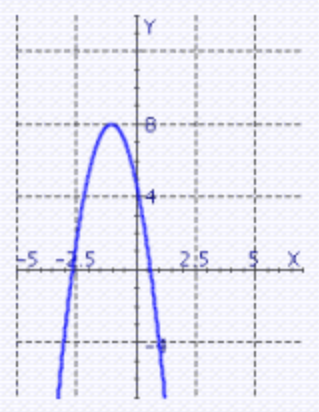
$f(x) = 3x^2 - 6x - 5$

a.

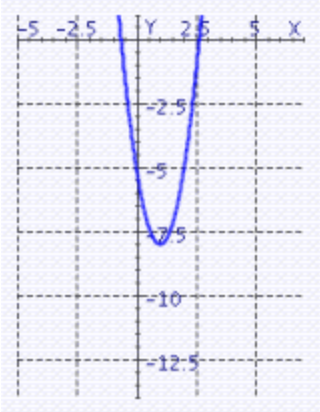


c.

b.



d.



____ 15. Find two positive real numbers whose sum is 48 and whose product is a maximum.

a. 24 and 24
b. 44 and 4
c. 2 and 46
d. 27 and 21
e. 31 and 17

____ 16. An object is projected vertically upward with an initial velocity of v_0 ft/sec, and its distance $s(t)$ in feet above the ground after t seconds is given by the formula $s(t) = -16t^2 + v_0 t$. If the object hits the ground after 15 seconds, find its initial velocity v_0 in ft/sec.

a. 209 ft/sec
b. 226 ft/sec
c. 17 ft/sec
d. 240 ft/sec
e. 256 ft/sec

____ 17. Find $(f+g)(3)$.

$f(x) = 8x + 2$, and $g(x) = x^2$

a. $(f+g)(3) = 32$
b. $(f+g)(3) = 33$
c. $(f+g)(3) = 19$
d. $(f+g)(3) = 39$
e. $(f+g)(3) = 35$

____ 18. Find $(f / g)(5)$.

$f(x) = -x^2$, and $g(x) = 6x - 2$

a. $(f / g)(5) = -\frac{5}{4}$
b. $(f / g)(5) = -\frac{25}{28}$
c. $(f / g)(5) = \frac{5}{14}$
d. $(f / g)(5) = \frac{25}{28}$
e. $(f / g)(5) = -\frac{5}{14}$

____ 19. Find the domain of f/g.

$f(x) = \sqrt{x+7}$, and $g(x) = \sqrt{x+7}$

a. $(-\infty, -7)$

b. $(-\infty, -7]$
c. $(-\infty, 7)$
d. $[-7, \infty)$
e. $(-7, \infty)$

____ 20. Find the domain of fg.

$f(x) = \frac{3x}{x-5}$, and $g(x) = \frac{x}{x+1}$

a. $(-\infty, -1) \cup (-1, 5) \cup (5, \infty)$
b. $(-\infty, -1] \cup [5, \infty)$
c. $(-\infty, 1] \cup [-5, \infty)$
d. $(-1, 5)$
e. $(-\infty, 1) \cup (-5, \infty)$

____ 21. Find $(f \circ g)(x)$.

$f(x) = x^2 - 4x$, and $g(x) = \sqrt{x+9}$

a. $(f \circ g)(x) = x + 9 - 4\sqrt{x+9}$
b. $(f \circ g)(x) = \sqrt{x^2 - 4x}$
c. $(f \circ g)(x) = \sqrt{x^2 - 4x} + 9$
d. $(f \circ g)(x) = (x^2 - 4x)\sqrt{x+9}$
e. $(f \circ g)(x) = \sqrt{x^2 - 4x + 9}$

____ 22. Several values of two functions *T* and *S* are listed in the following tables:

t	0	1	2	3
***T*(*t*)**	2	3	1	0

x	0	1	2	3
***S*(*x*)**	1	0	3	2

Find:

$(S \circ S)(3)$

a. $(S \circ S)(3) = 0$
b. $(S \circ S)(3) = 3$
c. $(S \circ S)(3) = 2$
d. $(S \circ S)(3) = 1$
e. not possible

____ 23. The volume of a conical pile of sand is increasing at a rate of 576π ft^3/min, and the height of the pile always equals the radius r of the base. Express *r* as a function of time *t* (in minutes), assuming that $r = 0$ when $t = 0$.

a. $r = 12\sqrt[3]{t}$
b. $r = \sqrt[3]{576\pi t}$
c. $r = \sqrt[3]{12t}$
d. $r = 576\pi\sqrt[3]{t}$
e. $r = 576\sqrt[3]{\pi t}$

____ 24. Find a composite function form for *y* if:

$y = 4 + \sqrt{x^2 + 3}$

a. $u = x^2, y = 4 + \sqrt[3]{u}$
b. $u = x^2 + 3, y = \sqrt[4]{u}$
c. $u = x^2 + 3, y = 4 + u$
d. $u = x^2 + 3, y = \sqrt{u}$
e. $u = x^2 + 3, y = 4 + \sqrt{u}$

____ 25. Find $(g \circ f)(x)$

$f(x) = 6x - 7,\ g(x) = 4x^2 - x + 2$

a. $(g \circ f)(x) = 24x^2 - 6x + 5$
b. $(g \circ f)(x) = 24x^2 - 7x + 2$
c. $(g \circ f)(x) = 24x^3 - 34x^2 + 7x + 14$
d. $(g \circ f)(x) = 144x^2 - 342x + 205$
e. $(g \circ f)(x) = 4x^2 - 7x + 9$

Chaper 2
Answer Section

MULTIPLE CHOICE

1.	ANS: A	PTS: 1	MSC:	scat12.03.01.4.09am
2.	ANS: C	PTS: 1	MSC:	scat12.03.01.4.12am
3.	ANS: E	PTS: 1	MSC:	scat12.03.01.4.25m
4.	ANS: A	PTS: 1	MSC:	scat12.03.02.4.19m
5.	ANS: C	PTS: 1	MSC:	scat12.03.03.4.50m
6.	ANS: D	PTS: 1	MSC:	scat12.03.03.4.46m
7.	ANS: E	PTS: 1	MSC:	scat12.03.03.4.60m
8.	ANS: B	PTS: 1	MSC:	scat12.03.04.4.24m
9.	ANS: C	PTS: 1	MSC:	scat12.03.04.4.26m
10.	ANS: C	PTS: 1	MSC:	scat12.03.04.4.49m
11.	ANS: C	PTS: 1	MSC:	scat12.03.05.4.29m
12.	ANS: E	PTS: 1	MSC:	scat12.03.05.4.43m
13.	ANS: E	PTS: 1	MSC:	scat12.03.05.4.63hm
14.	ANS: D	PTS: 1	MSC:	scat12.03.06.4.22cm
15.	ANS: A	PTS: 1	MSC:	scat12.03.06.4.43m
16.	ANS: D	PTS: 1	MSC:	scat12.03.06.4.42am
17.	ANS: E	PTS: 1	MSC:	scat12.03.07.4.01am
18.	ANS: B	PTS: 1	MSC:	scat12.03.07.4.02dm
19.	ANS: E	PTS: 1	MSC:	scat12.03.07.4.05cm
20.	ANS: A	PTS: 1	MSC:	scat12.03.07.4.07bm
21.	ANS: A	PTS: 1	MSC:	scat12.03.07.4.21am
22.	ANS: B	PTS: 1	MSC:	scat12.03.07.4.38m
23.	ANS: A	PTS: 1	MSC:	scat12.03.07.4.47m
24.	ANS: E	PTS: 1	MSC:	scat12.03.07.4.56m
25.	ANS: D	PTS: 1	MSC:	scat12.03.07.4.16bm