Test Bank for Precalculus Functions and Graphs 12th Swokowski

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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

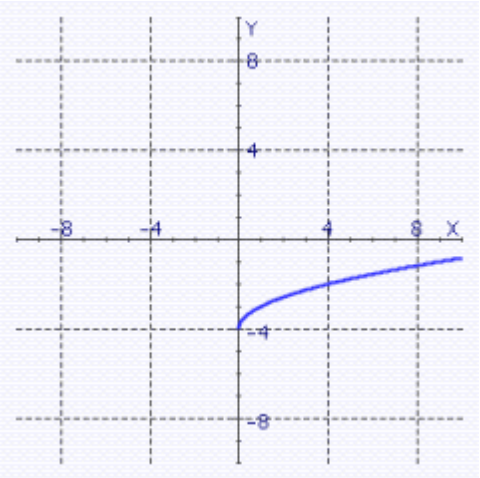
____ 3. Find a formula that expresses the fact that $P(x, y)$ is a distance 2 away from the origin.

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

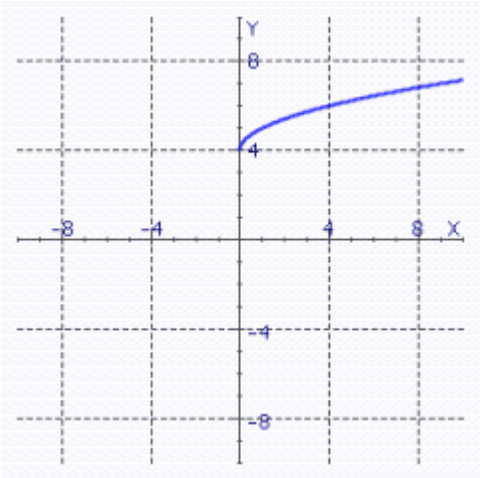
____ 4. Sketch the graph of the equation.

$y = \sqrt{x} - 4$

a.



d.



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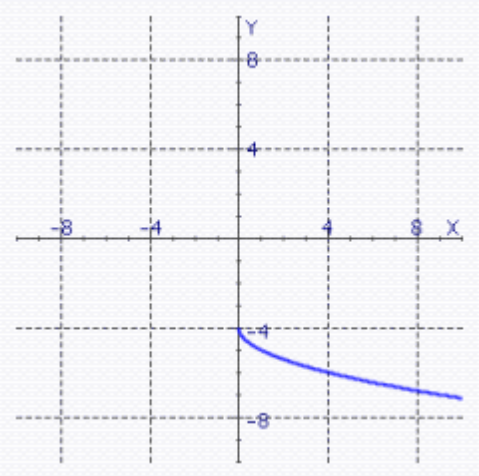
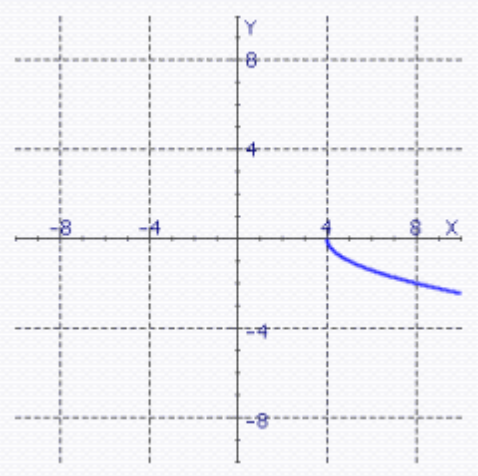
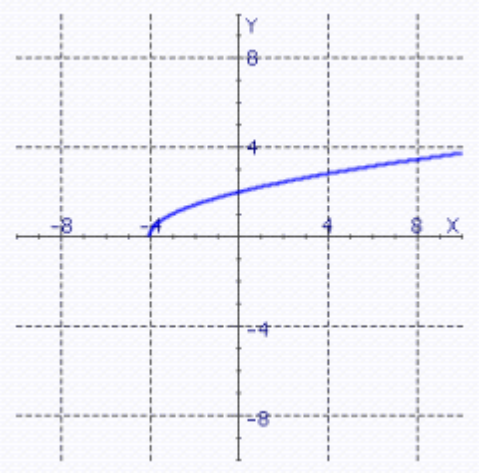
b.



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.

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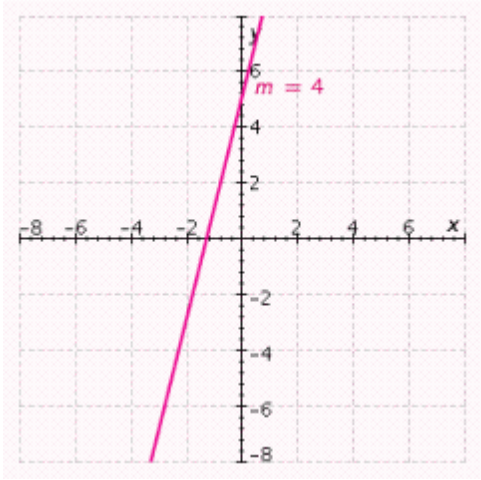

a. $y(x) = -4 + 5x$

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

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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

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

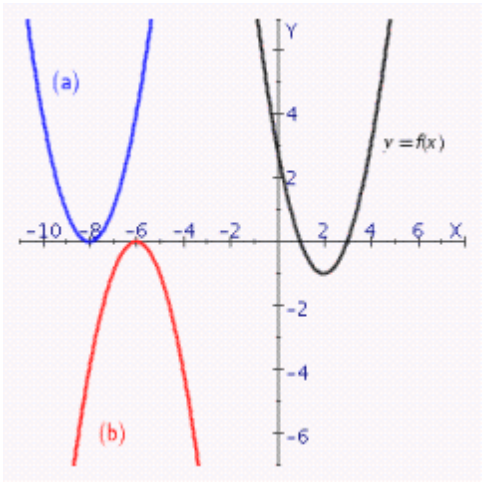
a. $\frac{f(x+h)-f(x)}{h} = x + h$
b. $\frac{f(x+h)-f(x)}{h} = 2x$
c. $\frac{f(x+h)-f(x)}{h} = 2x + h$
d. $\frac{f(x+h)-f(x)}{h} = 2x + h + 8$
e. $\frac{f(x+h)-f(x)}{h} = 2x + h^2$

____ 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) $y = f(x + 1) + 10$

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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

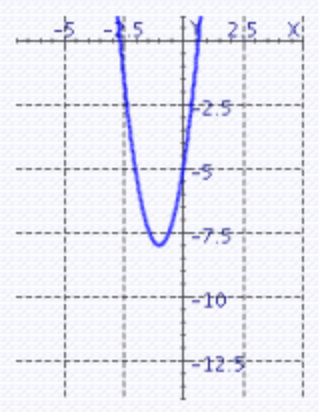
$y = |f(x)|$

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.

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

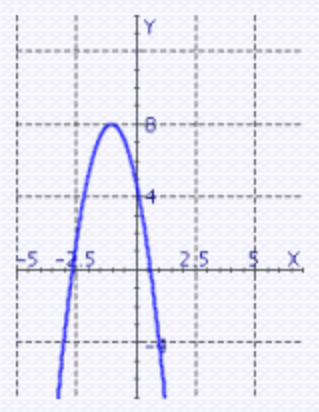
a.



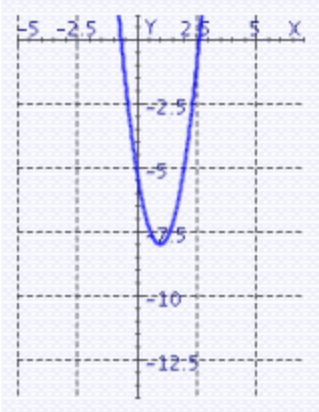
c.



b.



d.



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

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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. $(-\infty, -7)$

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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 $t = 0$.

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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. $(g \circ f)(x) = 4x^2 - 7x + 9$

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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

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