

***Precalculus Functions and Graphs 12th edition  
Swokowski Test Bank***

SKU: 9781305663091-TEST-BANK

## Chapter 2

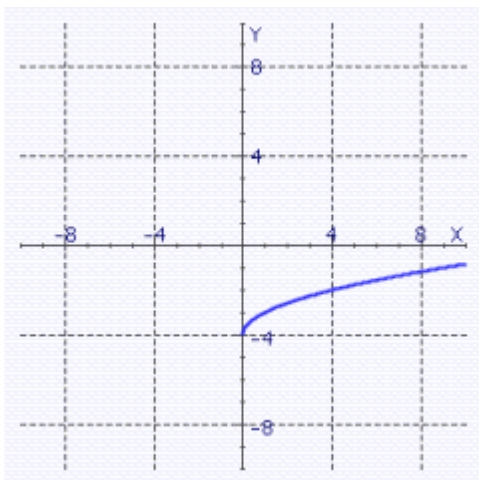
### Multiple Choice

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

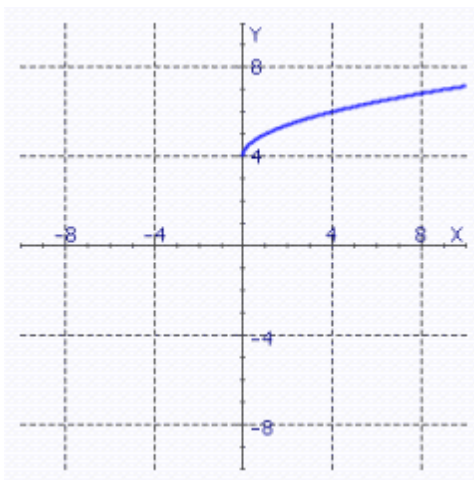
- \_\_\_\_\_ 1. Find the distance  $d(A, B)$  between the points  $A(1, -1)$  and  $B(8, 1)$ .
- 7.28
  - 6.28
  - 6.98
  - 7.78
  - 7.18
- \_\_\_\_\_ 2. Find the distance  $d(A, B)$  between the points  $A(6, 6)$  and  $B(6, -4)$ .
- 6
  - 0
  - 10
  - 4
- \_\_\_\_\_ 3. Find a formula that expresses the fact that  $P(x, y)$  is a distance 2 away from the origin.
- $x + y^2 = 2$
  - $x^2 + y^2 = 2$
  - $x + y = 2$
  - $\sqrt{x + y} = 4$
  - $\sqrt{x^2 + y^2} = 2$
- \_\_\_\_\_ 4. Sketch the graph of the equation.

$$y = \sqrt{x} - 4$$

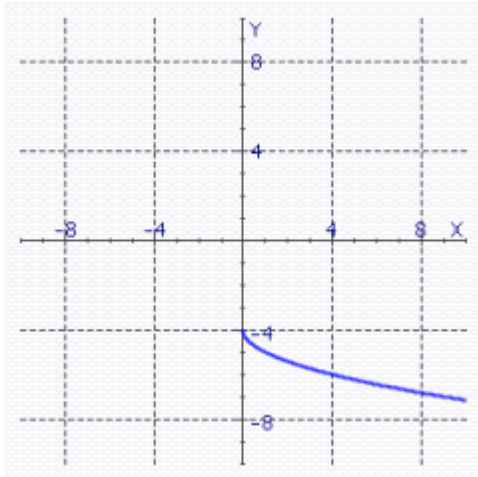
a.



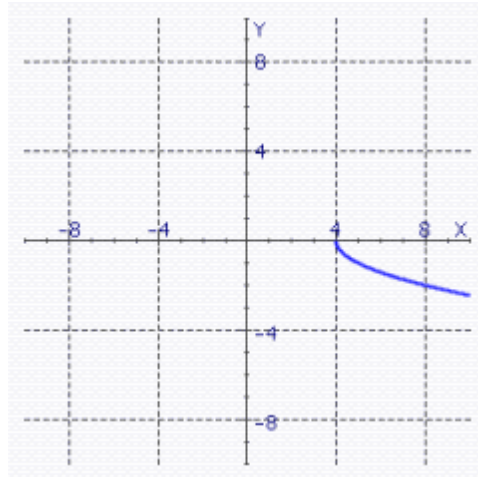
d.



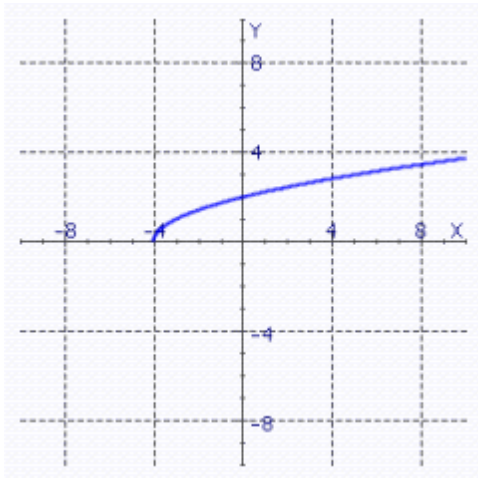
b.



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

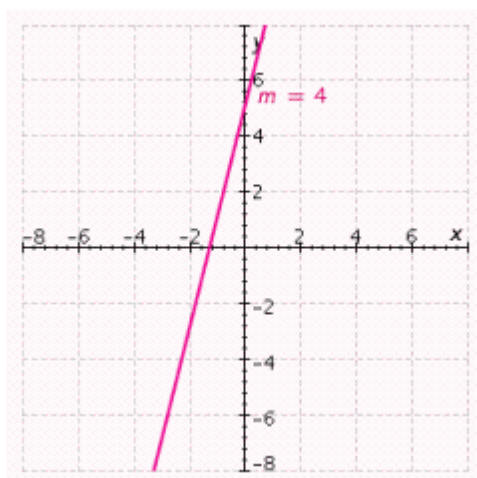
b.  $y = -\frac{4}{3}x + \frac{25}{3}$

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

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

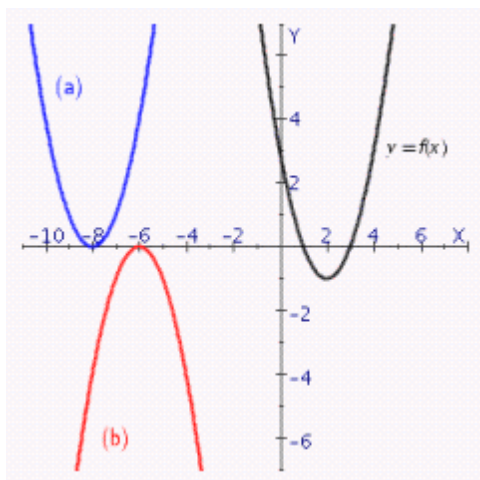
- a.  $\frac{f(x+h) - f(x)}{h} = x + h$
- b.  $\frac{f(x+h) - f(x)}{h} = 2x$
- c.  $\frac{f(x+h) - f(x)}{h} = 2x + h$
- d.  $\frac{f(x+h) - f(x)}{h} = 2x + h + 8$
- e.  $\frac{f(x+h) - f(x)}{h} = 2x + h^2$

\_\_\_\_ 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.  $y = f(x+1) + 10$

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

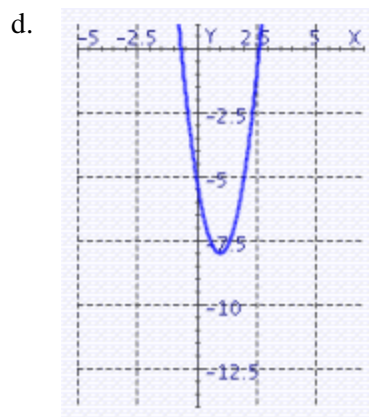
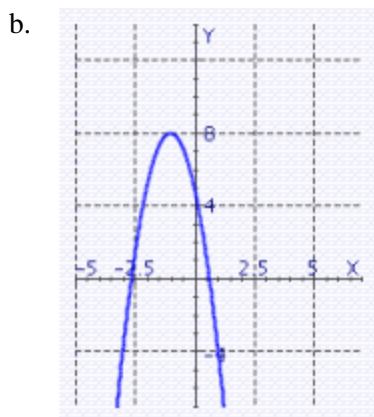
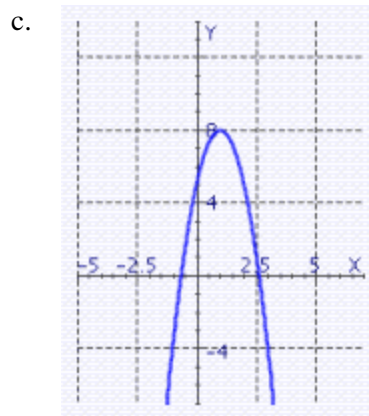
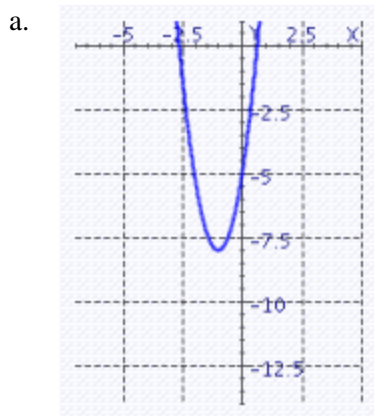
\_\_\_\_ 13. Let  $y = f(x)$  be a function with domain  $D = [-10, -9]$  and range  $R = [-10, -7]$ . Find the domain  $D$  and range  $R$  for the function

$$y = |f(x)|$$

- 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.

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



\_\_\_\_ 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  $s(t) = -16t^2 + v_0t$ . 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  $(f + g)(3)$ .

$$f(x) = 8x + 2, \text{ and } g(x) = x^2$$

- 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  $(f / g)(5)$ .

$$f(x) = -x^2, \text{ and } g(x) = 6x - 2$$

- 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  $f \circ g$ .

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

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

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

\_\_\_\_ 20. Find the domain of  $fg$ .

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

- 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  $(f \circ g)(x)$ .

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

- 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  $576\pi$  ft<sup>3</sup>/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  $(g \circ f)(x)$

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

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

## Chapter 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 |