

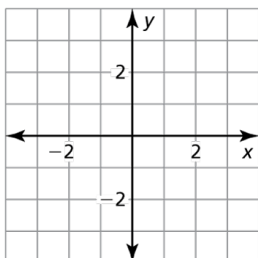
Algebra Chapter 10 Review

Describe the domain of the function.

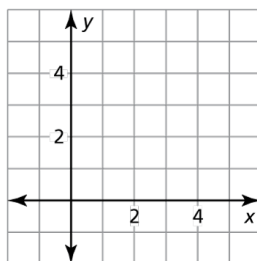
1. $f(x) = \sqrt{x+3}$ 2. $g(x) = \sqrt{-x} + 2$ 3. $h(x) = -\sqrt{x-2} + 1$

Graph the function.

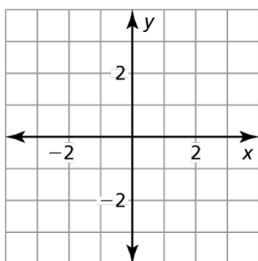
4. $p(x) = \sqrt[3]{x+1} - 1$



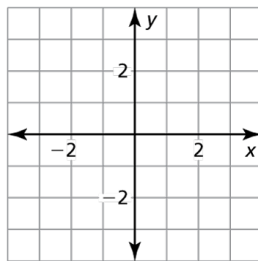
5. $n(x) = \sqrt{x} + 3$



6. $t(x) = \sqrt[3]{x} - 2$



7. $f(x) = -\sqrt{x+1}$



Describe the transformations from the graph of f to the graph of h .

8. $f(x) = \sqrt{x}$; $h(x) = -2\sqrt{x-3} + 4$

9. $f(x) = \sqrt[3]{x}$; $h(x) = \frac{1}{2}\sqrt[3]{-x+3} - 1$

Solve the equation. Check your solution.

10. $\sqrt{y} = 4$

11. $2\sqrt{x} - 15 = -7$

12. $2\sqrt{x-1} = 14$

13. $10 - 4\sqrt{2a-7} = -78$

14. $\sqrt[3]{x} + 1 = 5$

15. $\sqrt[3]{2b-7} = -3$

16. $\sqrt{-30+11k} = k$

17. $\sqrt{\frac{p}{9}} = \sqrt{2p-170}$

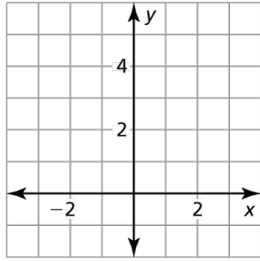
Describe the range of the function.

18. $h(x) = \sqrt{x-5}$

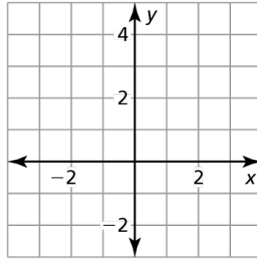
19. $q(x) = -\sqrt{x+3} + 2$

Find the inverse of the function. Then graph the function and its inverse. Be sure to give the restrictions if needed.

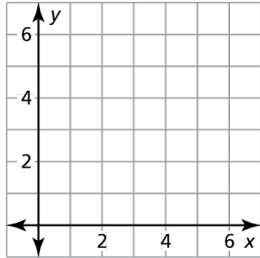
20. $f(x) = -2x + 4$



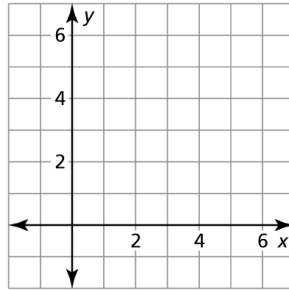
21. $f(x) = 3x + 1$



22. $f(x) = x^2 + 4; x \geq 0$



23. $f(x) = -2x^2 + 6; x \leq 0$



24. The velocity (in meters per second) of a car speeding up with time can be modeled by the equation $v(t) = 6\sqrt{t}$.

a. What is the car's velocity at 4 seconds?

b. When does the car's velocity reach 24 meters per second?

25. A cylindrical can of soup has a volume of 170 cubic inches. The radius of the soup is found using the formula

$$r = \sqrt{\frac{V}{\pi h}},$$

where r is the radius, V is the volume of the can, and h is the height of the can.

a. If the height of the can is 6 inches, find its radius to the nearest inch.

b. If the radius of the can is 3 inches, find its height to the nearest inch.

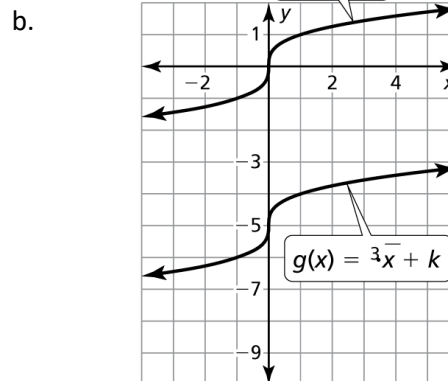
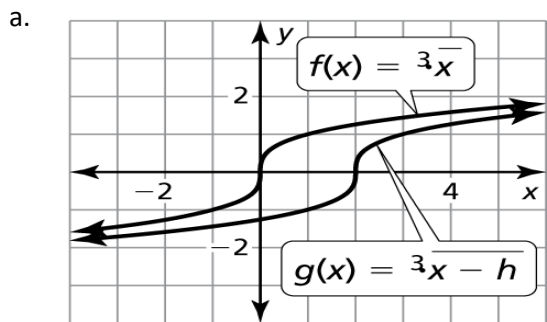
26. Consider the graph of $y = \sqrt{x}$.

a. Write a function that is a horizontal translation of the graph of $y = \sqrt{x}$.

b. Write a function that is vertical shrink of the graph of $y = \sqrt{x}$.

c. Write a function that is reflection in the x -axis followed by a vertical translation of the graph of $y = \sqrt{x}$.

27. In Exercises a and b, compare the graphs. Find the value of h , k , or a .



In Exercises 28 and 29, determine which solution, if any, is an extraneous solution.

28. $\sqrt{3x - 2} = x$; $x = 1$, $x = 2$ 29. $\sqrt{x + 6} = x$; $x = 3$, $x = -2$

30. The radius r of a circle that goes through the point (x, y) is given by $r = \sqrt{x^2 + y^2}$.

a. Circle A has a radius of 5 centimeters and goes through the point $(x, 4)$.

Find the x -coordinate of the point.

b. Circle B has a radius of 13 centimeters and goes through the point $(5, y)$.

Find the y -coordinate of the point.

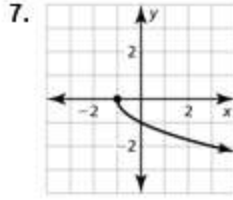
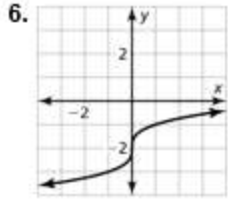
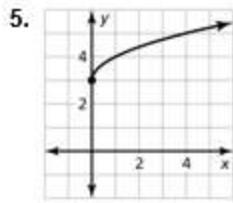
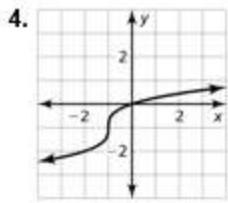
31. The temperature -273.15°C is defined as being absolute zero. It is the basis for the Kelvin (K) temperature scale. The formula $C = K - 273.15$ converts a Kelvin temperature to a Celsius temperature.

a. Determine whether the inverse of the formula $C = K - 273.15$ is a function.

b. Using the formula $C = K - 273.15$, solve for K . Is this new formula the inverse of the formula $C = K - 273.15$? Explain.

Algebra Chapter 10 Review Answers

1. $x \geq -3$ 2. $x \leq 0$ 3. $x \geq 2$



8. reflection in the x-axis, a vertical stretch by a factor of 2, and a translation 3 units right and 4 units up

9. vertical shrink by a factor of $\frac{1}{2}$, a reflection in the y-axis, and a translation 3 units right and 1 unit down

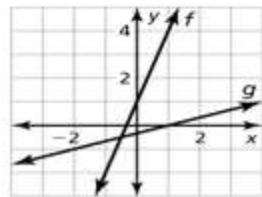
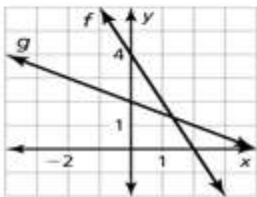
10. $y = 16$ 11. $x = 16$ 12. $x = 50$

13. $a = 245.5$ 14. $x = 64$ 15. $b = -10$

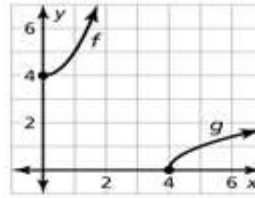
16. $k = 5, 6$ 17. $p = 90$ 18. $y \geq 0$

19. $y \leq 2$

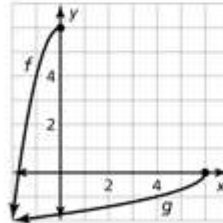
20. $g(x) = -\frac{1}{2}x + 2$ 21. $g(x) = \frac{1}{3}x - \frac{1}{3}$



22. $g(x) = \sqrt{x-4}; x \geq 4$



23. $g(x) = -\sqrt{-\frac{1}{2}x + 3}; x \geq 6$



24. a. 12 m/s b. 16 sec

25. a. 3 in. b. 6 in.

26. a. Sample answer: $y = \sqrt{x+1}$

b. Sample answer: $g(x) = \frac{1}{3}\sqrt{x}$

c. Sample answer: $g(x) = -\sqrt{x} + 3$

27. a. translation 2 units right; $h = 2$

b. translation 5 units down; $k = -5$

28. no extraneous solutions

29. $x \neq -2$

30. a. $x = \pm 3$ b. $y = \pm 12$

31. a. yes

b. $K = C + 273.15$; yes; The graphs are symmetric about the line $y = x$.