

EXAMPLES
3 and 4

on pp. 711–712
for Exs. 17–29

GRAPHING FUNCTIONS Graph the function and identify its domain and range. Compare the graph with the graph of $y = \sqrt{x}$.

- | | | |
|------------------------|----------------------------------|----------------------------------|
| 17. $y = \sqrt{x} + 1$ | 18. $y = \sqrt{x} + 5$ | 19. $y = \sqrt{x} - 3$ |
| 20. $y = \sqrt{x} - 4$ | 21. $y = \sqrt{x} + \frac{3}{4}$ | 22. $y = \sqrt{x} - 4.5$ |
| 23. $y = \sqrt{x - 1}$ | 24. $y = \sqrt{x - 6}$ | 25. $y = \sqrt{x + 2}$ |
| 26. $y = \sqrt{x + 4}$ | 27. $y = \sqrt{x + 1.5}$ | 28. $y = \sqrt{x - \frac{1}{2}}$ |

29. **TAKS REASONING** The graph of which function is a horizontal translation of 3 units to the right of the graph of $y = \sqrt{x}$?

- | | |
|------------------------|------------------------|
| (A) $y = \sqrt{x} + 3$ | (B) $y = \sqrt{x} - 3$ |
| (C) $y = \sqrt{x + 3}$ | (D) $y = \sqrt{x - 3}$ |

EXAMPLE 5

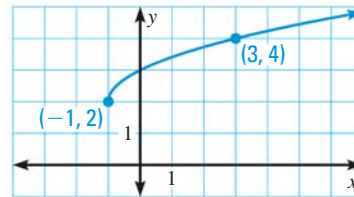
on p. 712
for Exs. 30–39

GRAPHING FUNCTIONS Graph the function.

- | | | |
|---------------------------------------|--|--|
| 30. $y = \sqrt{x + 3} - 2$ | 31. $y = \sqrt{x - 2} + 5$ | 32. $y = 2\sqrt{x} + 1$ |
| 33. $y = -\sqrt{x + 1} + 2$ | 34. $y = -3\sqrt{x + 2} - 6$ | 35. $y = 4\sqrt{x + 4} - 4$ |
| 36. $y = \frac{1}{2}\sqrt{x - 5} - 3$ | 37. $y = -\frac{3}{2}\sqrt{x - 1} - 5$ | 38. $y = -\frac{3}{4}\sqrt{x + 8} - 3$ |

39. **TAKS REASONING** The graph of which function is shown?

- (A) $y = \sqrt{x + 1} + 2$
 (B) $y = \sqrt{x - 1} + 2$
 (C) $y = \sqrt{x + 1} - 2$
 (D) $y = \sqrt{x - 1} - 2$



40. **ERROR ANALYSIS** Describe and correct the error in explaining how to graph the function $y = -5\sqrt{x - 9} - 10$.

To graph $y = -5\sqrt{x - 9} - 10$, sketch the graph of $y = -5\sqrt{x}$. Then shift the graph 9 units to the left and 10 units down.



41. **TAKS REASONING** How is the graph of $g(x) = 4\sqrt{x} - 3$ related to the graph of $h(x) = 4\sqrt{x} + 3$?

- (A) It is a vertical stretch by a factor of 3 of the graph of h .
 (B) It is a vertical translation of 3 units down of the graph of h .
 (C) It is a vertical translation of 6 units down of the graph of h .
 (D) It is a horizontal translation of 6 units to the left of the graph of h .

42. **CHALLENGE** Write a rule for a radical function that has a domain of all real numbers greater than or equal to -5 and a range of all real numbers less than or equal to 3.