

Practice and Apply

Identify each transformation from the parent function $f(x) = x^2$ to g .

11. $g(x) = 4x^2$

13. $g(x) = (4x)^2$

15. $g(x) = -\frac{1}{2}x^2$

17. $g(x) = x^2 - 2$

19. $g(x) = (x - 2)^2$

21. $g(x) = (-5x)^2 + 2$

23. $g(x) = \frac{1}{3}x^2 - 1$

25. $g(x) = -2(x + 4)^2 + 1$

12. $g(x) = 5x^2$

14. $g(x) = (-5x)^2$

16. $g(x) = -\frac{1}{5}x^2$

18. $g(x) = x^2 + 3$

20. $g(x) = (x + 3)^2$

22. $g(x) = 3(x - 1)^2$

24. $g(x) = -\frac{1}{4}x^2 + 3$

26. $g(x) = -5(x - 2)^2 - 4$

Identify each transformation from the parent function $f(x) = \sqrt{x}$ to g .

27. $g(x) = 4\sqrt{x}$

28. $g(x) = 3\sqrt{x}$

29. $g(x) = -\frac{1}{4}\sqrt{x}$

30. $g(x) = -\frac{1}{3}\sqrt{x}$

31. $g(x) = \sqrt{-4x}$

32. $g(x) = \sqrt{-3x}$

33. $g(x) = \sqrt{x} + 4$

34. $g(x) = \sqrt{x} - 3$

35. $g(x) = \sqrt{x + 4}$

36. $g(x) = \sqrt{x - 3}$

37. $g(x) = \sqrt{-2x} + 1$

38. $g(x) = -\sqrt{x + 3}$

39. $g(x) = -\sqrt{x - 4} + 3$

40. $g(x) = -\sqrt{3x} - 1$

41. $g(x) = -\sqrt{-x}$

Write the function for each graph described below.

42. the graph of $f(x) = |x|$ translated 4 units to the left

43. the graph of $f(x) = x^2$ translated 2 units to the right

44. the graph of $f(x) = |x|$ translated 5 units up

45. the graph of $f(x) = x^2$ translated 6 units down

46. the graph of $f(x) = x^2$ vertically stretched by a factor of 3

47. the graph of $f(x) = \sqrt{x}$ vertically compressed by a factor of $\frac{1}{3}$

48. the graph of $f(x) = x^2$ horizontally compressed by a factor of $\frac{1}{5}$

49. the graph of $f(x) = \sqrt{x}$ horizontally stretched by a factor of 4

50. the graph of $f(x) = 3x + 1$ reflected across the x -axis

51. the graph of $f(x) = 2x - 1$ reflected across the y -axis

52. the graph of $f(x) = x^2$ vertically stretched by a factor of 2 and translated 1 unit to the right

53. the graph of $f(x) = |x|$ horizontally compressed by a factor of $\frac{1}{3}$, reflected across the x -axis, and translated 3 units down

54. the graph of $f(x) = x^2$ translated 7 units to the left

55. the graph of $f(x) = x^2$ translated 5 units up

56. the graph of $f(x) = x^2$ stretched vertically by a factor of 2

57. the graph of $f(x) = x^2$ reflected across the y -axis and stretched horizontally by a factor of 2

