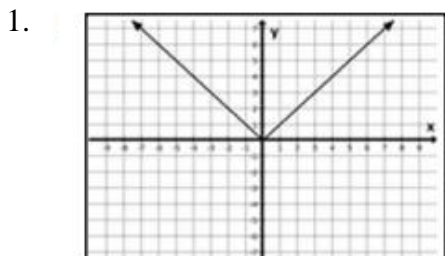


SHOW ALL WORK!!

In 1 - 3, identify the parent function graphed by writing the name or the equation. Then identify the type of symmetry and the domain and range (using interval notation).

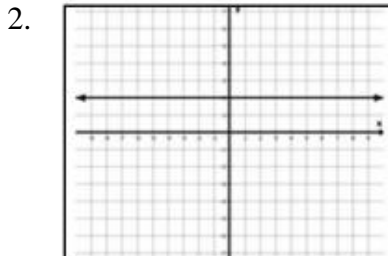


Parent Function: _____

Symmetry: _____

D: _____

R: _____

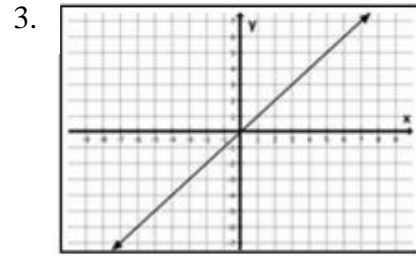


Parent Function: _____

Symmetry: _____

D: _____

R: _____



Parent Function: _____

Symmetry: _____

D: _____

R: _____

In 4 – 6, using the graph of $f(x) = |x|$ as a guide, describe the transformations of each function and identify its domain and range.

4. $g(x) = 2|x| - 4$

Transformations: _____

D: _____

R: _____

5. $h(x) = -2|x - 3| + 1$

Transformations: _____

D: _____

R: _____

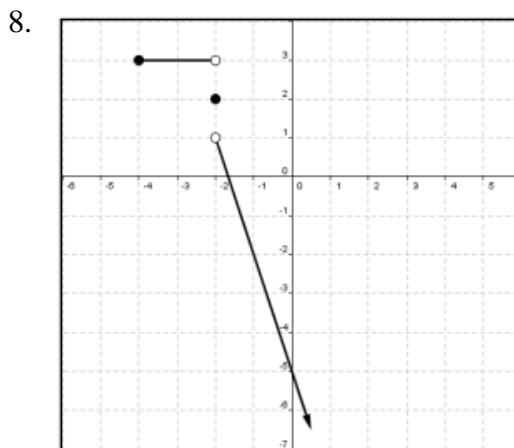
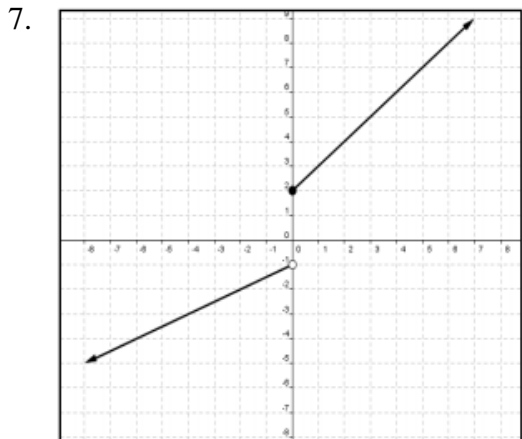
6. $k(x) = 0.2|x + 1| - 2$

Transformations: _____

D: _____

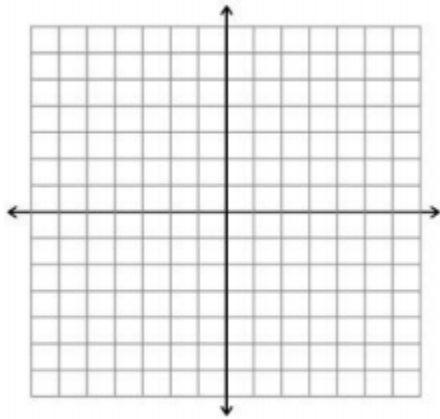
R: _____

In 7 – 8, write a rule for the piecewise function.



In 9 – 10, graph the absolute value function. State the domain and range.

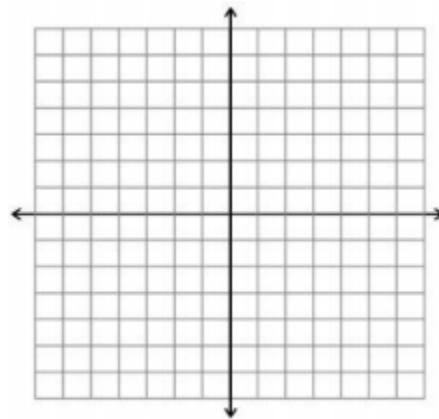
9. $f(x) = 2|x + 1| + 3$



D: _____

R: _____

10. $f(x) = \frac{1}{3}|x - 2|$



D: _____

R: _____

In 11 – 12, solve each three variable system.

11. $2x - 2y + z = 3$
 $5y - z = -31$
 $x + 3y + 2z = -21$

12. $3x + 2y = 12$
 $2y - 5z = 1$
 $x + y + z = 6$

In 13 – 17, perform the indicated operation.

13. $(-4x^4 + 3x^2 - 3x) + (-12x^4 - 3x^3 + 5x^2 - 8x + 1)$

14. $(3x^2 - 7x + 4) - (-4x^2 - 12x + 8)$

15. $(3x - 7)(2x + 1)$

16. $(x - 1)(x + 3)(x + 4)$

17. $(3x - 1)^2$

18. *Classify each function by its function family. Then describe the transformation of the parent function. State the Domain and Range.*

a. $g(x) = 7$

b. $h(x) = x^2 + 5$

c. $h(x) = x - 9$

d. $g(x) = \frac{1}{3}|x - 1| + 4$

e. $g(x) = -(x + 6)^2 - 5$

f. $h(x) = 3x - 7$

Factor completely.

19. $x^2 - 3x - 28$

20. $x^2 + 19x + 90$

21. $4x^2 - 1$

22. $x^4 - 14x^2 + 49$

23. $8 - x^3$

24. $3x^2 - 27$

25. $x^3 + x^2 - 9x - 9$

26. $8x^3 - 18x^2 - 5x$

27. $x^2 - 5x - 36$

28. $x^4 - 64$

29. $4x^2 - 3x - 1$

30. $x^3 + 5x^2 + x + 5$

Find the value of c that makes the expression a perfect square trinomial. Then write the expression as the square of a binomial.

31. $x^2 + 8x + c$

32. $x^2 + 14x + c$

Solve using any method.

33. $x^2 = -64$

34. $2x^2 + 5 = 41$

35. $x^2 + x - 1 = 0$

36. $2x^2 + 3x + 5 = 0$

37. $x^4 - 5x^2 + 4 = 0$

38. $(3x + 8)^2 = 36$

Identify the number and type of solutions.

39. $x^2 - 5x - 14 = 0$

40. $4x^2 - 12x = -9$

and type of solutions: _____

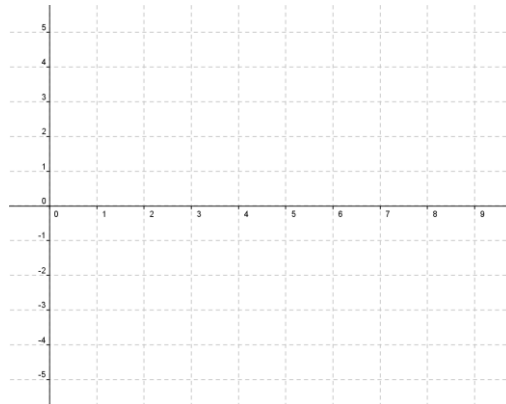
and type of solutions: _____

Identify the form of the quadratic equation and determine if the graph opens up or down. Then find the vertex, axis of symmetry, and x-intercepts and complete the table and graph the function.

41. $y = x^2 + 8x + 12$

Form: _____ \uparrow or \downarrow

x	y



42. Order the functions from narrowest graph to widest.

A. $f(x) = -2x^2$ $g(x) = \frac{1}{3}x^2$ $h(x) = 4x^2$

B. $f(x) = -4x^2$ $g(x) = 6x^2$ $h(x) = .2x^2$

43. Compare the graph of each function with the graph of $f(x) = x^2$.

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

B. $g(x) = 2x^2 - 3$

Find the equation of the axis of symmetry, y- intercept, and the coordinates of the vertex. Is the vertex a max or min?

44. $f(x) = (x - 2)^2$

45. $g(x) = (x + 2)^2 + 4$

46. $y = x^2 - 2x + 1$

47. $y = 3x^2 + 6x + 1$

48. $y = -3x^2 + 6x + 4$

49. $f(x) = -x^2 + 6x - 3$

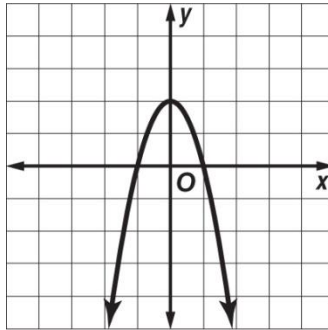
50. $g(x) = -x^2 + 2$

51. $f(x) = 5x^2 - 4$

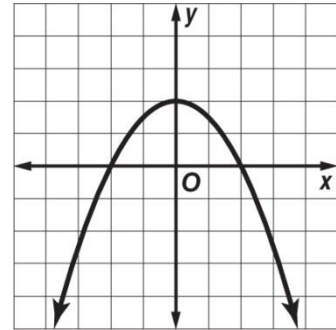
Match each equation to its graph.

52. $y = 2x^2 - 2$

A.



C.

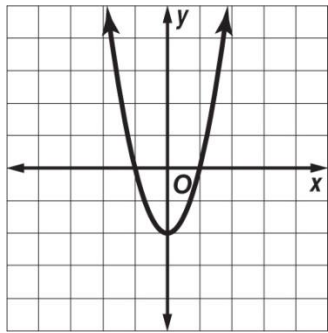


53. $y = \frac{1}{2}x^2 - 2$

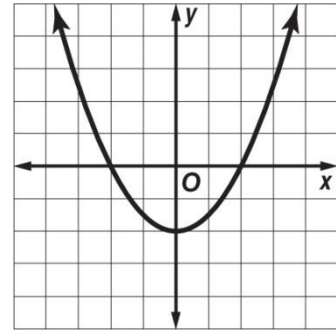
54. $y = -\frac{1}{2}x^2 + 2$

55. $y = -2x^2 + 2$

B.



D.



56. A rocket is launched from atop a 101 foot cliff with an initial velocity of 116 ft/s.

a. Substitute the values into the vertical motion formula $h = -16t^2 + vt + c$. Let $h(t) = 0$

b. Use the quadratic formula to find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.

57. The Freedom Tower in New York City is 1776 feet tall. The equation $f(t) = -16t^2 + 1776$ models the height $f(t)$ (in feet) of an object t seconds after it is dropped from the top of the tower.
- After how many seconds will the object hit the ground? Round your answer to the nearest hundredth of a second.
 - What is the height of the object 3 seconds after it has been dropped from the top of the tower?
58. The path of a soccer ball can be modeled by the equation $h = -16t^2 + 8t + 3$, where h is the height (in feet) of the soccer ball t seconds after the ball is kicked.
- After how many seconds does the ball reach its maximum height?
 - What is the maximum height of the soccer ball?
59. Write the equation of the quadratic function with vertex $(3, -1)$ that passes through the point $(0, 2)$.
60. A parabola has a vertex of $(-5, 8)$ and passes through the point $(-7, -4)$. In the $y = a(x - h)^2 + k$ form of the parabola, what is the value of a ?
61. A parabola has a vertex of $(-3, -21)$ and passes through the point $(-5, 1)$. In the $y = a(x - h)^2 + k$ form of the parabola, what is the value of a ?

Simplify completely.

62. $\sqrt{-28}$

63. $\sqrt{-32}$

Perform the indicated operation.

64. $(6 + 3i) + (-4 + 10i)$

65. $(-2 + 6i) - (2 - 3i)$

66. $3i(2+i)$

67. $(2+i)(5-i)$

Divide the polynomials using long and synthetic division.

68. $(x^3 + x^2 + 2x + 24) \div (x + 3)$

69. $(4x^3 + 52x + 15) \div (x + 5)$

Determine whether the binomial is a factor of the polynomial function.

70. $f(x) = 3x^3 + 7x^2 - 8x - 5; x + 5$

71. $f(x) = 2x^3 + 15x^2 - 23x + 36; x + 9$

List all the possible rational zeros of the function. Then find all of the zeros.

72. $f(x) = x^3 + 9x^2 - 4x - 36$

73. $f(x) = 2x^3 + 11x^2 + 18x + 9$