

5.8 Examples – Writing Quadratic Equations

Write a quadratic function in *vertex form* whose graph has the given vertex and passes through the given point.

1. Vertex: (2,3)
Point: (0,7)

2. Vertex: (-1,4)
Point: (1,8)

3. Vertex: (-2,1)
Point: (1,10)

4. Vertex: (4,2)
Point: (3,3)

5. Vertex: (-3,-1)
Point: (-2,0)

6. Vertex: (-1,-5)
Point: (1,-1)

Write a quadratic function in *intercept form* whose graph has the given x-intercepts and passes through the given point.

7. x -intercepts: 2, 4
Point: (1, 3)

8. x -intercepts: 3, 5
Point: (2, 3)

9. x -intercepts: -4, -1
Point: (3, 28)

10. x -intercepts: -6, -2
Point: (-3, -3)

11. x -intercepts: -5, 4
Point: (3, -8)

12. x -intercepts: -1, 7
Point: (5, -12)

Write a quadratic function in *standard form* whose graph has the given equation in vertex form.

13. Vertex Form: $y = (x + 2)^2 + 1$

14. Vertex Form: $y = -(x - 2)^2 - 3$

15. Vertex Form: $y = 2(x + 5)^2$

16. Vertex Form: $y = -2(x - 1)^2 - 7$

Write a quadratic function in *standard form* whose graph has the given equation in intercept form.

17. Intercept Form: $y = (x + 2)(x - 2)$

18. Intercept Form: $y = -3(x - 5)(x - 1)$

19. Intercept Form: $y = 4(x + 2)(x - 2)$

20. Intercept Form: $y = \frac{1}{2}(2x + 2)(3x - 2)$

Write a quadratic function in *vertex form* whose graph has the given equation in standard form.

21. Standard Form: $y = x^2 + 8x + 1$

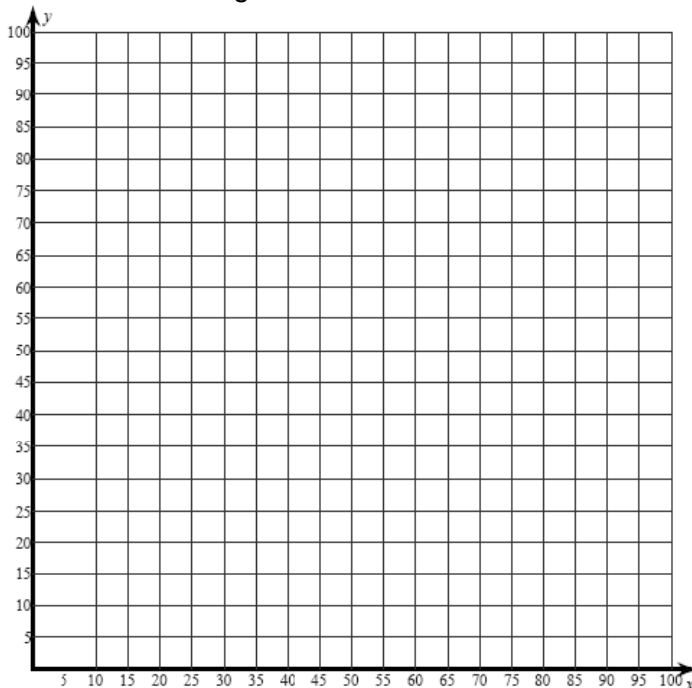
22. Standard Form: $y = \frac{1}{2}x^2 - 2x + 1$

23. Standard Form: $y = 3x^2 + 12x + 1$

24. Standard Form: $y = -x^2 - 8x + 1$

25. A punter is kicking the football on the 30 yard line. He kicks the ball 50 yards from where he is standing. The highest point the ball reaches is 80 feet at the 60 yard line.

a. Graph the path using the information given on the graph below. Label your axes and sketch where the person is standing and where the ball lands.



b. Write the equation in intercept form of the path of the football. You may use decimals.

c. Describe the path of the football in terms of the effects of a (up down, fatter, skinnier than regular path). Do you think this was a good punt?