

4.3.D2 • Intercepts of Quadratic Functions

For each quadratic function, determine the direction of opening, the y -intercept, and find the zeros. If necessary, round values to two decimal places.

1. $q(x) = -2(x - 3)(x + 4)$

2. $u(x) = 3(x + 2)(x + 6)$

3. $a(x) = -3x^2 - 6x + 5$

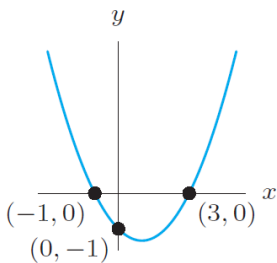
4. $d(x) = -2x^2 + 8x + 7$

5. $r(x) = -2(x - 3)^2 + 1$

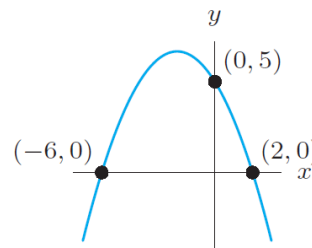
6. $c(x) = 3(x + 2)^2 - 5$

Write the equation of the parabola (in intercept form) whose graph is given or described.

7.



8.

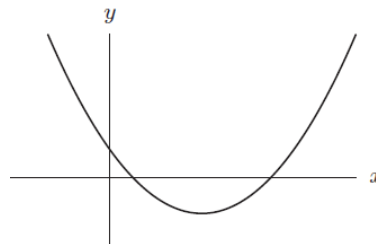


9. x -intercepts of 12 & -6; passes through (14, 4)

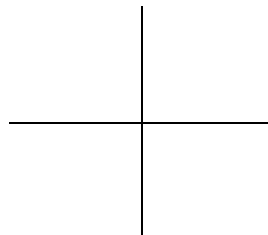
10. x -intercepts of -16 & -2; passes through (-18, 72)

11. Which one of the following equations has the graph shown? Explain your reasoning.

- $y = (1 - x)(1 + x)$
- $y = (x - 1)(x - 7)$
- $y = (x + 1)(x + 7)$
- $y = (x - 1)(x + 7)$



12. Sketch the graph of a quadratic function which has all of the following properties: concave up, y -intercept is -6 , zeros at $x = -2$ & $x = 3$.



13. Can you graph a quadratic function which has all of the following properties: concave down, y -intercept is -10 , zeros at $x = -1$ & $x = 5$. Why or why not?
14. The graph of a quadratic function passes through the points $(1, 2)$, $(3, 4)$, & $(5, 2)$. Is the graph concave up or concave down?
15. A quadratic function has no zeros and its graph passes through the point $(1, 1)$. Is the graph concave up or concave down?
16. A bridge follows the path described by the function $h(x) = -0.25(x - 48)(x - 184)$ where $h(x)$ describes the height of the bridge and x is the distance from the nearest building (both in meters). How far from the building does the bridge touch the ground? *There will be two answers.*

17. The parabola shows the path of your first golf shot, where x is the horizontal distance (in yards) and y is the corresponding height (in yards). The path of your second shot can be modeled by the function $y = -0.02x(x - 80)$. Which shot travels farther before hitting the ground?

