

Quadratic Function Graph Worksheet - Graphing Parabolas Practice

Name: _____ Date: _____

Instructions: For each equation, identify the vertex, axis of symmetry, direction of opening, and y-intercept. Then sketch the parabola on the coordinate grid provided. Show all working.

1. Graph $y = x^2$. State the vertex and axis of symmetry.
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2. Graph $y = x^2 - 4$. State the vertex and y-intercept.
.....
3. Graph $y = (x - 3)^2$. State the vertex and axis of symmetry.
.....
4. Graph $y = -(x)^2 + 1$. State the vertex and direction of opening.
.....
5. Graph $y = (x + 2)^2 - 1$. State the vertex and axis of symmetry.
.....
6. Graph $y = 2x^2 - 4x$. Find the vertex using $x = -b/(2a)$.
.....
7. Graph $y = x^2 + 4x + 3$. Find the x-intercepts by factoring.
.....
8. Graph $y = -x^2 + 6x - 5$. Find the vertex and x-intercepts.
.....
9. Graph $y = 2(x - 1)^2 + 3$. State the vertex, direction, and whether it is wider or narrower than $y = x^2$.
.....
10. Graph $y = -1/2 * (x + 4)^2 + 6$. State the vertex, axis of symmetry, and maximum value.
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Answer Key

1. Vertex: (0, 0); Axis of symmetry: $x = 0$; opens upward
2. Vertex: (0, -4); y-intercept: (0, -4); opens upward
3. Vertex: (3, 0); Axis of symmetry: $x = 3$; opens upward
4. Vertex: (0, 1); opens downward; y-intercept: (0, 1)
5. Vertex: (-2, -1); Axis of symmetry: $x = -2$; opens upward
6. $x = 1$; $y = 2(1)^2 - 4(1) = -2$; Vertex: (1, -2); opens upward
7. $(x+1)(x+3) = 0$; x-intercepts: $x = -1$ and $x = -3$; Vertex: (-2, -1)
8. Vertex: (3, 4); x-intercepts: $x = 1$ and $x = 5$; opens downward
9. Vertex: (1, 3); opens upward; narrower than $y = x^2$ because $|a| = 2 > 1$
10. Vertex: (-4, 6); Axis of symmetry: $x = -4$; maximum value: $y = 6$; opens downward; wider than $y = x^2$

