Name_____ Class_____ Date_____

4-2 Reteaching

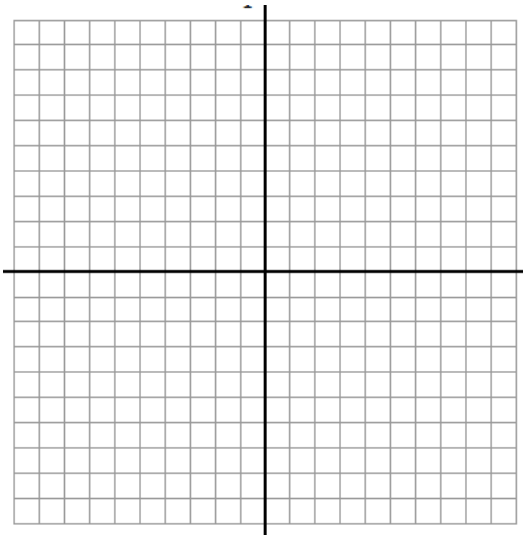
Standard Form of a Quadratic Function

- The graph of a quadratic function, $y = ax^2 + bx + c$, where $a \neq 0$, is a parabola.
- The axis of symmetry is the line $x = -\frac{b}{2a}$.
- The x-coordinate of the vertex is $-\frac{b}{2a}$. The y-coordinate of the vertex is $y = f\left(-\frac{b}{2a}\right)$, or the y-value when $x = -\frac{b}{2a}$.
- The y-intercept is $(0, c)$.

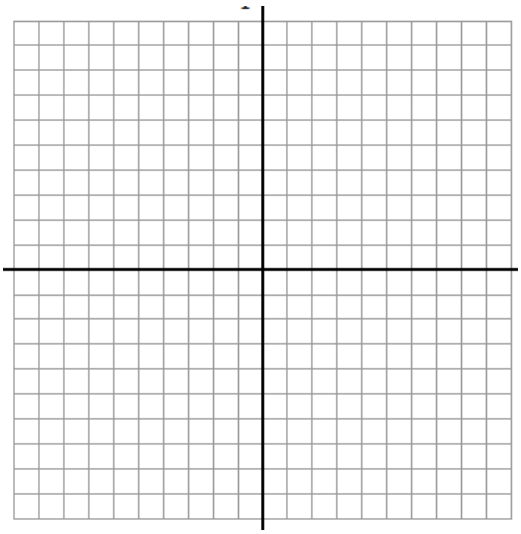
Exercises

Graph each parabola. Label the vertex and the axis of symmetry.

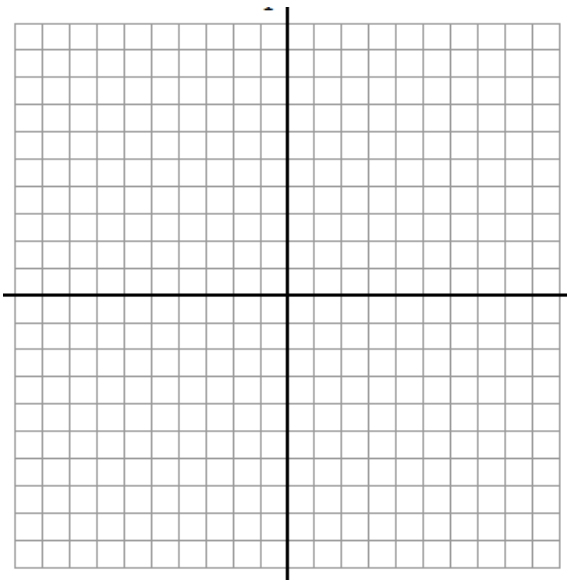
1. $y = -3x^2 + 6x - 9$



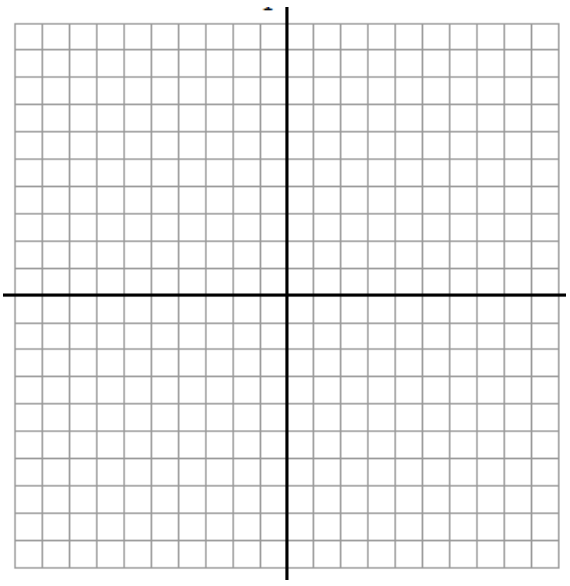
2. $y = -x^2 - 8x - 15$



3. $y = 2x^2 - 8x + 1$



4. $y = -2x^2 - 12x - 7$



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Exercises

Write each function in vertex form. Check your answers.

5. $y = x^2 - 2x - 3$

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

7. $y = x^2 + 3x - 10$

8. $y = x^2 - 9x$

9. $y = x^2 + x$

10. $y = x^2 + 5x + 4$

11. $y = 4x^2 + 8x - 3$

12. $y = \frac{3}{4}x^2 + 9x$

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

Write each function in standard form.

14. $y = (x - 3)^2 + 1$

15. $y = 2(x - 1)^2 - 3$

16. $y = -3(x + 4)^2 + 1$