Section 2.4 WS 2 Name _____

Graph the quadratic function, then state the axis of symmetry.

1. $f(x) = (x+5)^2$
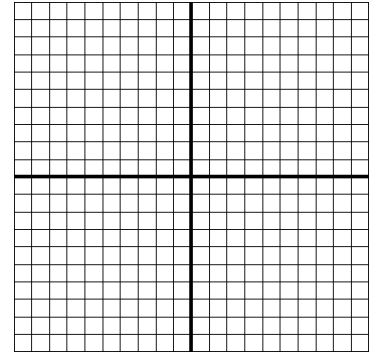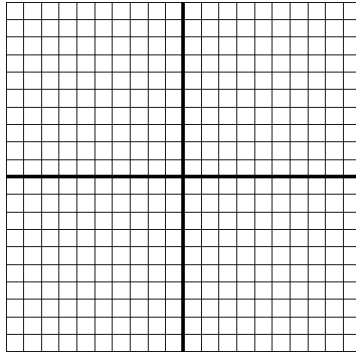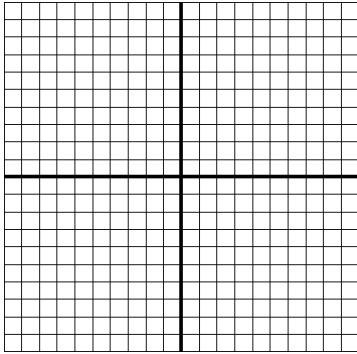
   Axis of Symmetry: _____

2. $f(x) = -(x-6)^2 + 1$

   Axis of Symmetry: _____

3. $f(x) = \dfrac{1}{4}x^2 - 4$

   Axis of Symmetry: _____

4. $g(x) = x^2 + 6x + 8$

   Axis of Symmetry: _____

5. $f(x) = -2x^2 - 4x + 6$

   Axis of Symmetry: _____

6. $h(x) = x^2 + 6x - 1$

   Axis of Symmetry: _____
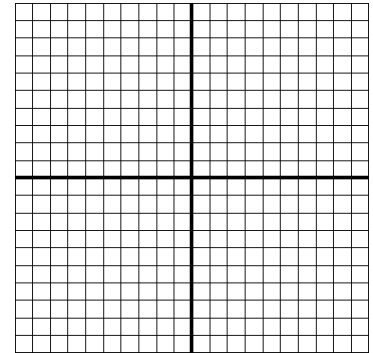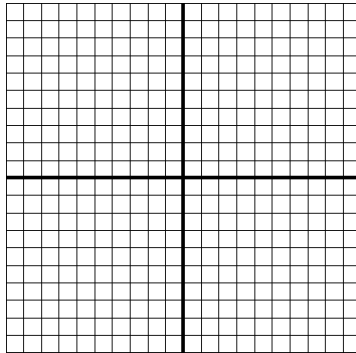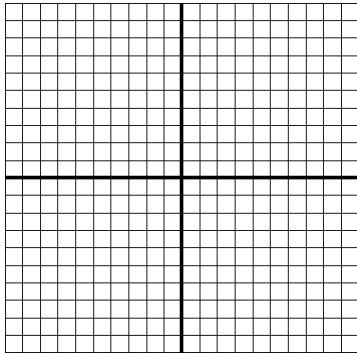
Write the quadratic function in vertex form.

7. $h(t) = t^2 - 6t$

8. $f(x) = x^2 - 4$

9. $g(t) = -t^2 + 6t + 1$

10. $h(x) = 3x^2 - 10x + 2$

Find the range of the quadratic function.

11. $f(x) = -x^2 + 6x + 7$

12. $h(x) = 2x^2 - 9x + 10$

Find the zeros of f and the x-intercepts of the graph of f.

13. $f(x) = x^2 - 10x + 16$

14. $h(x) = 3x^2 - 7x - 6$

Find the minimum or maximum value of the function. State whether this value is a minimum or a maximum.

15. $g(t) = -t^2 - 6t$

16. $f(x) = -x^2 + 10x - 3$

17. $f(x) = 3x^2 + x - 1$

18. $g(t) = 5t^2 - 41$

19. **Soccer Ball Kick:** The height $h(t)$, in meters, above the ground of a certain soccer ball kicked t seconds after the ball is kicked can be approximated by $h(t) = -4.9t^2 + 12.8t$. Determine the time for which the ball is in the air. Round to the nearest tenth of a second.

20. **Height of an Arch:** The height of an arch is given by: $h(x) = -\dfrac{3}{64}x^2 + 27, \ -24 \leq x \leq 24$ where $|x|$ is the horizontal distance in feet from the center of the arch to the ground.
    a. What is the maximum height of the arch?
    b. What is the height of the arch 10 feet to the right of center?
    c. How far from the center is the arch 8 feet tall?