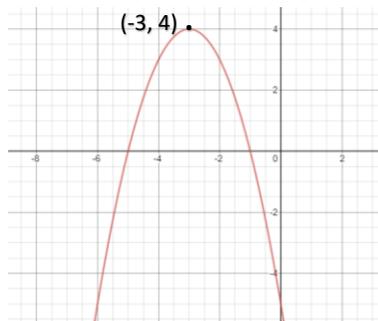


The following assignment can be finished on a separate sheet of paper and will be due the first day back to school from an AMI day. This assignment must be completed and turned in to receive credit of attendance for that day. We will be available to answer any questions via email, [hasha@sccsd.k12.ar.us](mailto:hasha@sccsd.k12.ar.us) and [mullinsj@sccsd.k12.ar.us](mailto:mullinsj@sccsd.k12.ar.us) from 8:00am to 3:25pm. Please be patient on responses, the weather may affect internet service and/or multiple students may be needing assistance at once.

### Understanding Functions:

1. The graph of the function  $f(x) = x^2$  will be translated up 3 units and 1 unit to the left. What is the resulting function  $g(x)$ ?
2. A classmate said that the vertex of  $g(x) = -5(x + 2)^2 - 4$  is  $(2, 4)$ . Is your classmate correct? If not, what is the correct vertex?

3. The graph below is a translated reflection of the graph of the parent function. Write the quadratic function to model the graph.



4. Explain why the graph of the equation  $g(x) = -(x + 1)^2 - 3$  would be a parabola opening downward.
5. Amaya is standing 30ft from a volleyball net. The net is 8ft high. Amaya serves the ball. The path of the ball is modeled by the equation  $y = -0.02(x - 18)^2 + 12$ , where  $x$  is the ball's horizontal distance in feet from Amaya's position and  $y$  is the distance in feet from the ground to the ball.
  - a. How far away is the ball from Amaya when it is at its maximum height? Explain.
  - b. Describe how you would find the ball's height when it crosses the net at  $x = 30$ .

Describe the transformation of the parent function  $f(x) = x^2$ .

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

7.  $f(x) = -(x - 1)^2 + 7$

8.  $f(x) = \frac{1}{2}(x - 2)^2 + 3$

Identify the vertex, axis of symmetry, max or min, domain and range of each function.

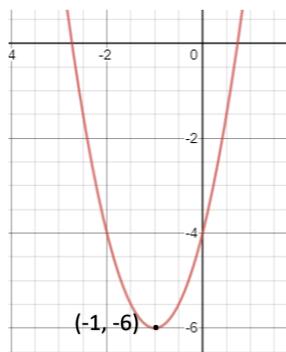
9.  $f(x) = -(x - 1)^2 + 2$

10.  $y = \frac{1}{3}(x + 2)^2 - 1$

Write the equation of each parabola in vertex form.

11. Vertex: (3, 6); y-int: 2

12. Write the equation of the function represented by the parabola in vertex form and in the form  $y = ax^2 + bx + c$ .



13. Let  $g(x)$  be the function whose graph is a reflection in the x-axis and translated 3 units right of the graph of  $f(x) = x^2$ . Write  $g(x)$  in vertex form.

14. Find three additional points on the parabola that has a vertex (1, -2) and passes through (0, -5).