

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Algebra II  
Quiz 5

**Problem 1.** Let  $f(x) = 2x^2 - 4x + 1$ . Write  $f(x)$  in the form  $f(x) = a(x \pm h)^2 \pm k$  by completing the square. Describe how  $x^2$  is transformed to obtain  $f(x)$ . Find the zeros of  $f(x)$ . Graph  $f(x)$ , labeling the vertex and all axis intersections.

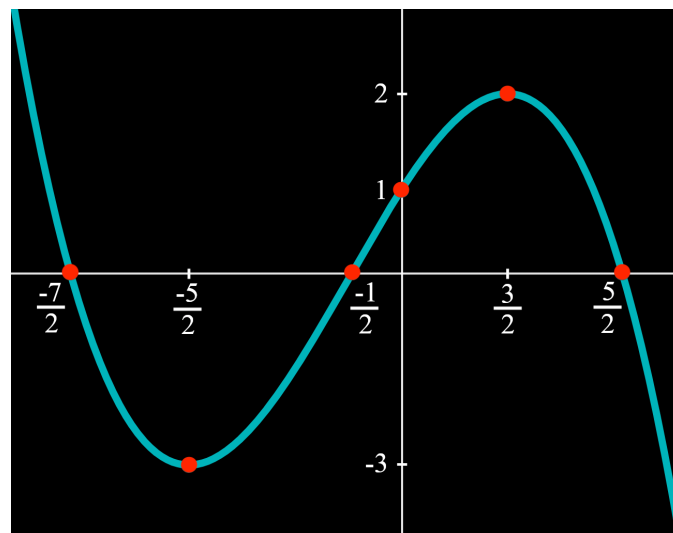
**Problem 2.** Let  $f(x) = 3x^2 + 12x - 63$ . Write  $f(x)$  in the form  $f(x) = a(x \pm h)^2 \pm k$  by completing the square. Describe how  $x^2$  is transformed to obtain  $f(x)$ . Find the zeros of  $f(x)$ . Graph  $f(x)$ , labeling the vertex and all axis intersections.

**Problem 3.** Let  $f(x) = -5x^2 + 2x - \frac{6}{5}$ . Write  $f(x)$  in the form  $f(x) = a(x \pm h)^2 \pm k$  by completing the square. Describe how  $x^2$  is transformed to obtain  $f(x)$ . Find the zeros of  $f(x)$ . Graph  $f(x)$ , labeling the vertex and all axis intersections.

**Problem 4.** Let  $f(x) = -\frac{1}{2}x^2 - 3x + \frac{1}{2}$ . Write  $f(x)$  in the form  $f(x) = a(x \pm h)^2 \pm k$  by completing the square. Describe how  $x^2$  is transformed to obtain  $f(x)$ . Find the zeros of  $f(x)$ . Graph  $f(x)$ , labeling the vertex and all axis intersections.

**Problem 5.** Let  $f(x) = x^2 - 6x - 7$ . Write  $f(x)$  in the form  $f(x) = a(x \pm h)^2 \pm k$  by completing the square. Describe how  $x^2$  is transformed to obtain  $f(x)$ . Find the zeros of  $f(x)$ . Graph  $f(x)$ , labeling the vertex and all axis intersections.

**Problem 6.** Shown below is the graph of the function  $f(x)$ . Graph the function  $g(x) = -3f\left(x - \frac{1}{2}\right) + 1$ . Be sure to label the final locations of all 6 of the given points.



**Extra Credit.** Choose the highest and lowest points from your graph of  $g(x)$  in Problem 6. Check your work by plugging in the  $x$ -value of each of those two points into the given formula for  $g(x)$ , using the given graph of  $f(x)$  to obtain the output value of  $f(x)$ , and verify that the final output is indeed the  $y$ -value of your chosen point.