Name: _____

3.REV.1 • End of Chapter Review

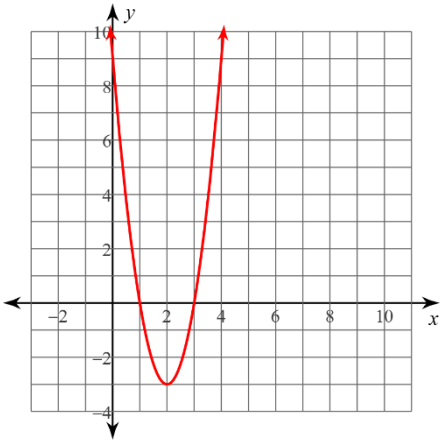
Past due on: _____ Period: _____

1. Which statements are true about the function $h(x) = x^2 - 5x - 14$? Select ALL that apply.
   a. The y-intercept is $(0, -14)$.
   b. The zeros are -7 & 2.
   c. The graph is a parabola that is concave up.
   d. The vertex is $(-5, -9)$.
   e. The function is increasing on its entire domain.
   f. The domain is $(-\infty, \infty)$.

2. Determine the concavity of the graph of $d(x) = -(3 - x)^2 + 4$ between $x = -2$ & $x = 4$ by calculating average rates of change over intervals of length 2.

x	$d(x)$	RATE OF CHANGE
-2		
0		
2		
4		

3. Which statements are true about the graph shown? Select ALL that apply.
   a. The equation shown in the graph is $y = 3(x + 2)^2 - 3$.
   b. The equation shown in the graph is $y = 3(x + 3)(x - 1)$.
   c. The equation shown in the graph is $y = 3x^2 - 12x + 9$.
   d. The graph is symmetric with respect to the line $x = -2$.
   e. The vertex of the parabola represents the maximum of the function shown in the graph.
   f. The leading coefficient of the graphed quadratic equation is negative.



For each quadratic function, find the zeros, if any, and the y-intercept. *If necessary, round to two decimal places.*

4. $q(x) = 6(x + 6)^2 - 96$

5. $u(x) = 6x^2 + 30x - 44$

6. $a(x) = (2x - 3)(5 - x)$

Complete the square and write the quadratic function in vertex form. Then state the coordinates of the vertex, the axis of symmetry, the y-intercept, and whether the graph is concave up or concave down.

7. $r(x) = 5x^2 + 30x - 10$

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

Write the equation of the parabola described. Use the appropriate form – factored form or vertex form – based on the information provided. Is the parabola concave up or concave down?

9. The parabola has zeros at $x = -1$ & $x = 3$ and a y-intercept of $(0, -3)$.

10. The parabola has a vertex at $(-6, 9)$ and an x-intercept of $(-15, 0)$.

11. The parabola has a y-intercept of $(0, -4)$ and its maximum occurs at $(2, 0)$.

12. The parabola has a vertex of $(6, 5)$ and passes through the point $(10, 8)$.

13. Smoke jumpers are in free fall from the time they jump out of a plane until they open their parachutes. A smoke jumper jumps from a height of 1600 feet.
    a. Write a vertical motion model that represents this situation.
    b. When will the smoke jumper reach the ground?

14. A comedian throws a watermelon downward with an initial velocity of -30 feet per second from a height of 200 feet.
    a. Write a vertical motion model that represents this situation.
    b. How long will it take the watermelon to hit the ground?

15. A firework is launched into the air with a velocity of 58.8 meters per second from a height of 2 meters. Its height, h, in meters, is given by $h(t) = -4.9t^2 + 58.8t + 2$, where t is the time in seconds.
    a. When does the firework reach a height of 100 meters?
    b. The firework explodes at its highest point. How high is it? How long after being launched does the firework explode?