Name: _____ Date: _____

2-1 QUADRATIC FUNCTION REVIEW

FLUENCY

1. Without the use of your calculator, evaluate each of the following quadratic functions for the specified input values.

(a) $g(x) = x^2 - 9$ (b) $f(x) = -2x^2 + 8x$ (c) $h(x) = x^2 - 2x + 6$

$g(5) =$ $f(3) =$ $h(0) =$

$g(-3) =$ $f(-1) =$ $h(-2) =$

2. Which of the following represents the *y*-intercept of the graph of the quadratic function $y = 2x^2 - 7x + 9$?

(1) 7 (3) -7

(2) 2 (4) 9

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3. For a particular quadratic function, the leading coefficient is *negative* and the function has a turning point whose coordinates are $(-3, 14)$. Which of the following must be the *range* of this quadratic?

(1) $\{y \mid y \geq -3\}$ (3) $\{y \mid y \leq 14\}$

(2) $\{y \mid y \leq -3\}$ (4) $\{y \mid y \geq 14\}$

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4. A parabola has one *x*-intercept of $x = -2$ and an axis of symmetry of $x = 4$. Which of the following represents its other *x*-intercept? (Hint, think of how far the given *x*-intercept is away from the axis.)

(1) $x = 3$ (3) $x = 6$

(2) $x = 10$ (4) $x = 8$

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5. A quadratic function is shown in the table below Which of the following statements is *not* true about the function based on this table? Explain your choice.

(1) The function has an *x* intercept of 3.

(2) The function has a *y*-intercept of -3.

(3) The function's leading coefficient is negative.

(4) The function has a turning point of $(1, -4)$

x	$f(x)$
-1	0
0	-3
1	-4
2	-3
3	0
4	5
5	12

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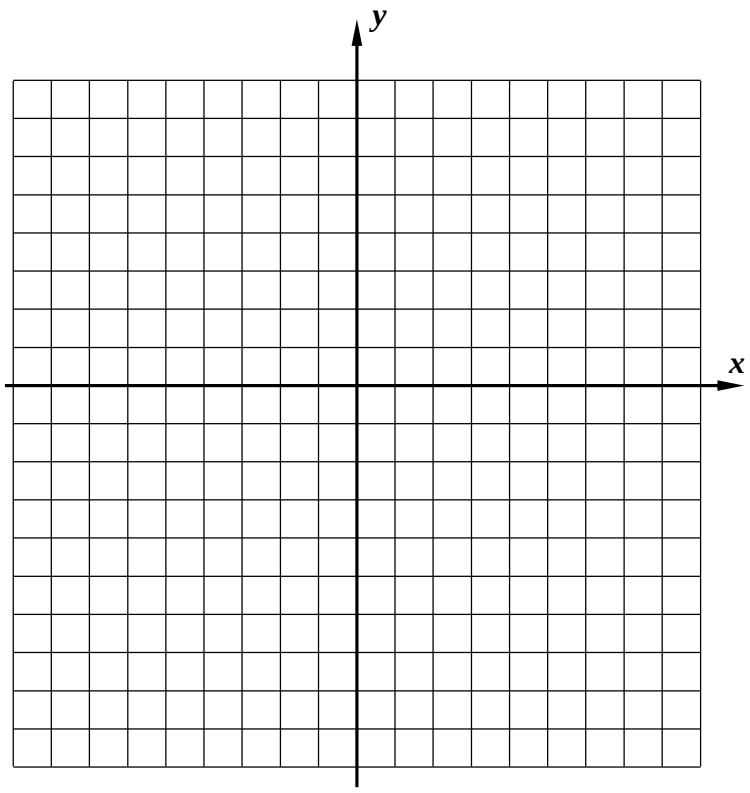
6. Consider the quadratic function whose equation is $f(x) = x^2 + 2x - 8$.

(a) Sketch a graph of *f* on the grid provided.



(b) Over what interval is *f* decreasing?

(c) Over what interval is $f(x) < 0$?

(d) State the range of *f*.

APPLICATIONS – CALCULATOR ACTIVE

7. The number of meters above the ground, *h*, of a projectile fired at an initial velocity of 86 meters per second and at an initial height of 6.2 meters is given by $h(t) = -4.9t^2 + 86t + 6.2$, where *t* represents the time, in seconds, since the projectile was fired. If the projectile hits its peak height at $t = 8.775$ seconds, which of the following is closest to its greatest height?

(1) 265 meters (3) 422 meters

(2) 384 meters (4) 578 meters _____

8. Physics students were modeling the height of a ball once it was dropped from the roof of a 25 story building. The students found that the height in feet, *h*, of the ball above the ground as a function of the number of seconds, *t*, since it was dropped was given by $h(t) = 300 - 16t^2$.

From what height was the ball dropped?

To the nearest *tenth* of a second, determine the time at which the ball hits the ground. Provide evidence from a table to support your answer or solve this algebraically if you recall how to.