Algebra 1 CC
Assignment #68
Introduction to Quadratic Functions
*** Optional**

1. Which of the following is a quadratic function?

   (1) $y = 3x - 2$ (2) $y = x^3 + 2x^2 - 1$ (3) $y = x^2 - 4$ (4) $y = 6(2)^x$

2. The quadratic function $y = 9 - x^2 + 4x$ written in standard form would be

   (1) $y = -x^2 + 4x + 9$ (2) $y = x^2 - 9x + 4$ (3) $y = x^2 - 4x + 9$ (4) $y = -x^2 - 4x + 9$

3. Which of the following would be the leading coefficient of $f(x) = 6 - x + 7x^2$?

   (1) -1 (2) 6 (3) 7 (4) -7

4. Which of the following points lies on the graph of $y = x^2 - 5$?

   (1) $(3, -2)$ (2) $(-2, -1)$ (3) $(5, 0)$ (4) $(-1, -6)$

5. A quadratic function is partially given in the table below. Which of the following are the coordinates of its turning point?

   (1) $(0, 6)$ (3) $(3, 15)$

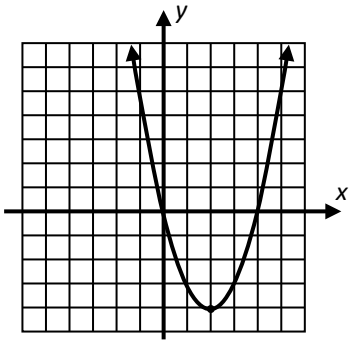
   (2) $(10, 2)$ (4) $(7, -1)$

x	-2	-1	0	1	2	3
y	10	7	6	7	10	15

6. Given the quadratic function shown below whose turning point is $(2, -4)$, which of the following gives the domain interval over which this function is decreasing?

   (1) $x > -4$ (3) $x > 2$

   (2) $x < -4$ (4) $x < 2$



7. A quadratic function $g(x)$ is shown partially in the table below. The turning point of the function has the coordinates $(3, -8)$. Think about how outputs repeat in a quadratic function and answer the following.

x	-1	0	1	2	3	4	5	6	7
$g(x)$	24		0	-6	-8			10	

   (a) Fill in the missing output values from the table.
   (b) What are the zeroes of the function?
   (c) What is this function's *y*-intercept?
   (d) For the domain interval $-1 \le x \le 7$, what is the range of the function?

R1. The number of people, *n*, who know a rumor can be modeled using the equation $n(d) = 20(2)^d$, where *d* is the number of days *since* Monday.

(a) Explain why $n(0) = 20$. What does this represent in terms of the situation modeled?

(b) What is the value of $n(-2)$? What does this represent in terms of the situation modeled?

* R2. Newton's Law of Cooling can be used to predict the temperature of a cooling liquid in a room that is at a certain steady temperature. We are going to model the temperature of a cooling cup of coffee. The Fahrenheit temperature of a cup of coffee, *T*, in a room that is at a 72°F is given as a function of the number of minutes, *m*, it has been cooling by:

$$T(m) = 114(0.86)^m + 72$$

(a) Find $T(0)$ and use proper units.

(b) What does the coefficient of 114 represent in terms of the situation being modeled?

(c) By what percent does the difference between the temperature of the coffee and the temperature of the room decrease each minute?

(d) I like my coffee when it is a nice temperature of around 100°F. How long should I wait?

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1. (3)
2. (1)
3. (3)
4. (2)
5. (1)
6. (4)
7. (a) 10, -6, 0, 24
   (b) 1 and 5
   (c) (0, 10)
   (d) $-8 \le g(x) \le 24$

R1. (a) 20 people knew the rumor on Monday.
(b) 5, The number of people who knew the rumor on Saturday

R2. (a) 186°F
(b) Starting temperature of the coffee.
(c) 14%
(d) Between 9 and 10 minutes.