Secondary Math 2   Name:___Key___   Date:_____ Period:___
Unit 8 Review for Test

1. Write the equation for an absolute value function that is reflected over the x-axis, stretched vertically by a factor of 4, transformed 3 units to the right and 6 units up.

$$y = -4|x-3| + 6$$

2. Write the equation for a quadratic function that is vertically compressed by a factor of 2/5 and transformed 3 units down.

$$y = \frac{2}{5}x^2 - 3$$

3. Write the equation for an absolute value function that is compressed by a factor of 2, shifted left 8 and down 14

$$y = 2|x+8| - 14$$

4. Describe the transformations of the following:

a. $y = -2(x-4)^2 + 16$

Reflection over x-axis   Shift right 4, up 16
Vertical stretch by 2

b. $y = |x-8| - 32$

Shift right 8, down 32

c. $y = .4(x+100)^2 - 12$

Vertical compression by .4
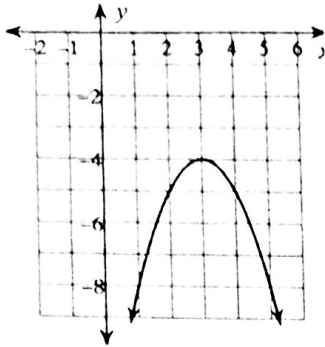Shift left 100, down 12

d. $y = -|x-5| + 2$

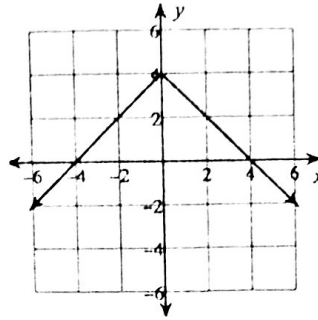Reflection over x-axis
Shift right 5, up 2

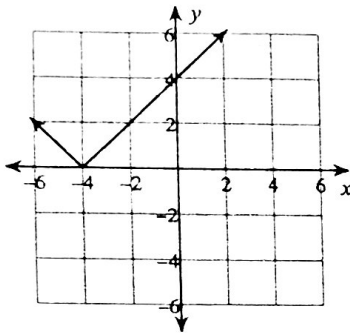Write the equation of the function shown for #'s 5-8.

5.

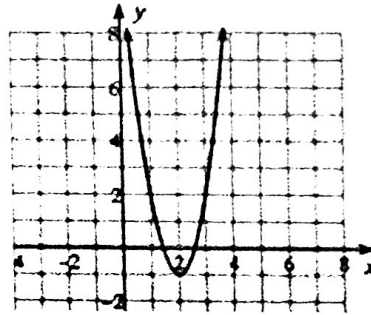$$y = -(x-3)^2 - 4$$

6.

$$y = |x| + 4$$

7.

$$y = |x + 4|$$

8.

$$y = (x-2)^2 - 1$$

Find the average rate of change for the following functions over the given intervals.

9. $y = \frac{5}{3}x + 6$ for [2,5]

$$\frac{5}{3}$$

10. $f(x) = 3x^2 + 4x - 2$ for [-3,1]

$$-2$$

11. Which has the higher maximum value?

a. $y = -3x^2 + 2x - 8$ or b. $y = -|x + 4| - 3$

Explain your reasoning.

_____

__b__ since -3 is more than -7.7 _____

12. Which of the following functions has the larger maximum?

a.

x	0	1	2	3	4
y	5	6	5	2	-3

b. $y = -x^2 - 2x + 7$

Answer the following questions:

13. $y = 350(1.38)^{2t}$
    a. Initial Value: 350
    b. Is this GROWTH or DECAY?
    c. Growth/Decay factor: 1.90
    d. Growth/Decay Rate: 90%

14. $y = 350(.76)^{3t}$
    a. Initial Value: 350
    b. Is this GROWTH or DECAY?
    c. Growth/Decay factor: .44
    d. Growth/Decay Rate: 56%

For #'s 15-18, identify the function as linear, quadratic, exponential or none of the above.

15.

x	-2	-1	0	1	2
y	-4	-1	2	5	8

_____ Linear _____

16. From each point of the graph you go up one and over 4 to the next point.

_____Linear_____

17. $y = -x^2 - 7$ _____Quadratic_____

18. Your car wash membership is $20 per year plus $5 for each car was you get.

_____Linear_____

19. Bob had a stamp collection. The value of the collection is estimated by the equation $d = 500(1.1)^{3t}$ where d is dollars and t is time in years.

    a. How much money was the stamp collection initially worth? $500

    b. What is the yearly rate or change (growth or decay rate) for the value of stamp collection? _____67%_____

    c. How much was the stamp collection worth 20 years after he inherited it?
    _____$152,240.82_____

20. Write the situation that could be modeled by the following graph.
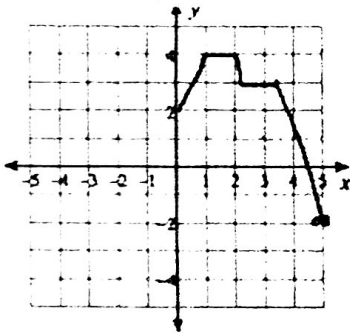
George went to the park. He stopped to play. He started to walk home, but stopped at a friend's house. Then he passed his home & walked to the gas station.

Evaluate each function.

21. $f(x) = \begin{cases} (x+1)^2, & x < 2 \\ x^2 + 3, & x \geq 2 \end{cases}$

    a) f(-3)

        4

    b) f(7)

        52

    c) f(2)

        7

22. $f(x) = \begin{cases} -x^2 + 1, & x < -4 \\ 2|x| - 4, & -4 \leq x < 5 \\ x - 7, & x \geq 5 \end{cases}$

    a) f(3)
        2

    b) f(-12)
        -143

    c) f(5)
        -2

23.

Given $f(x) = \begin{cases} 3x^2 + 2, & -9 \leq x < -1 \\ x - 5, & -1 < x \leq 4 \\ |x|, & x > 4 \end{cases}$

Find:

a) $f(-4)$

50

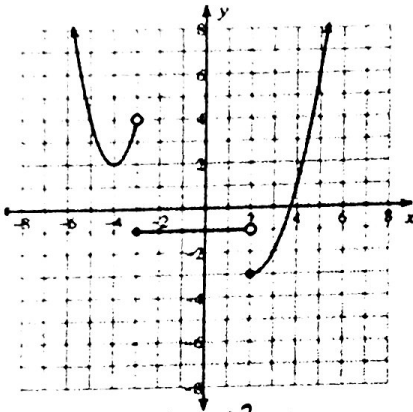b) $f(0)$

-5

c) $f(4)$

-1

d) $f(18)$

18

Write the equation for each piecewise function. Be sure to include the domain.
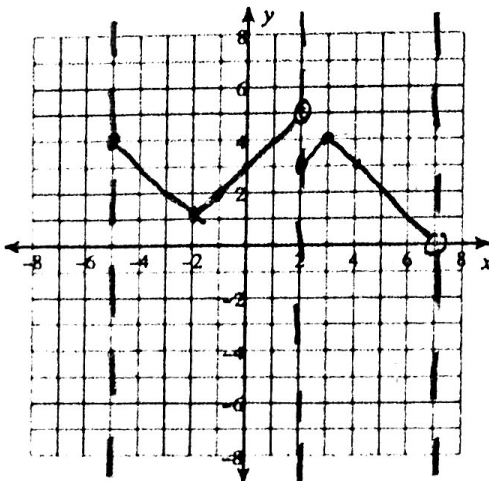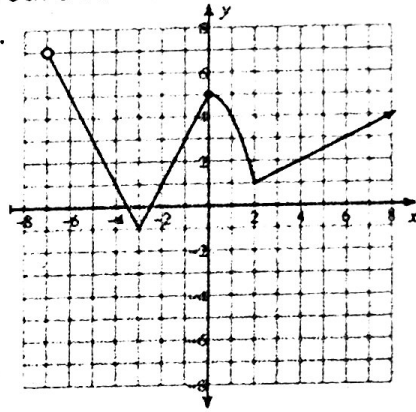
24.

$f(x) = \begin{cases} 2(x+4)^2 + 2, & x < -3 \\ -1, & -3 \leq x < 2 \\ (x-2)^2 - 3, & x \geq 2 \end{cases}$

25.

$f(x) = \begin{cases} 2|x+3| - 1, & -7 \leq x \leq 0 \\ -x^2 + 5, & 0 \leq x \leq 2 \\ \frac{1}{2}x, & x > 2 \end{cases}$

Graph each piecewise function.

26.

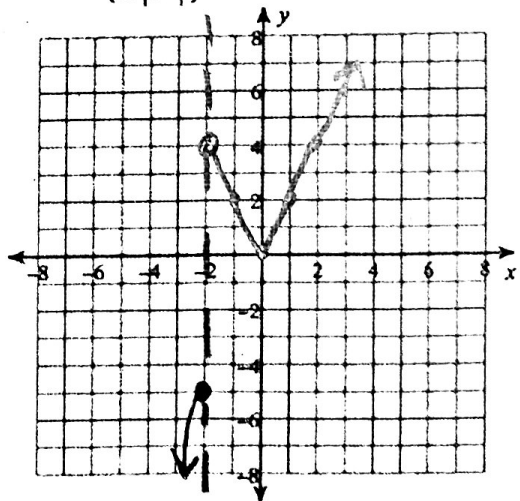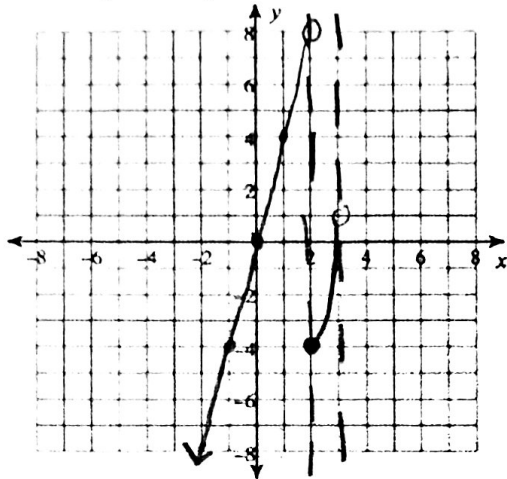$f(x) = \begin{cases} |x+2| + 1, & -5 \leq x < 2 \\ -|x-3| + 4, & 2 \leq x < 7 \end{cases}$

27.

$f(x) = \begin{cases} -x^2 - 1, & x \leq -2 \\ 2|x|, & x > -2 \end{cases}$

28. $f(x) = \begin{cases} 4x, & x < 2 \\ x^2 - 8, & 2 \le x < 3 \end{cases}$

Identify each table as Linear, Quadratic, Exponential or Other. Justify your answer.

1)

x	-2	-1	0	1	2	3
y	8	4	2	1	0.5	0.25

6)

x	-2	-1	0	1	2	3
y	8	6	4	6	8	10

2)

x	-2	-1	0	1	2	3
y	-3.8	-1.8	0.25	2.25	4.25	6.25

7)

x	-2	-1	0	1	2	3
y	-2	-1	0	1	2	3

3)

x	-2	-1	0	1	2	3
y	0.32	0.8	2	5	12.5	25

8)

x	-2	-1	0	1	2	3
y	4	2	1	2	4	8

4)

x	-2	-1	0	1	2	3
y	0.5	1	2	4	6	12

9)

x	-2	-1	0	1	2	3
y	6	3	0	-3	-6	-9

5)

x	-2	-1	0	1	2	3
y	2	0.5	0	0.5	2	4.5

10)

x	-2	-1	0	1	2	3
y	3.5	0.5	-0.5	0.5	3.5	9.5

1) Exponential

2) Other

3) Other

4) Exponential

5) Quadratic

6) Other

7) Linear

8) Quadratic

9) Linear

10) Other