Algebra 1: 11.2 – 11.5 Test Review **Name** _____ **Period** _____

Define the following vocabulary words:

1. **Absolute maximum –**

2. **Absolute minimum –**

3. **Axis of symmetry –**

4. **Quadratic –**

5. **Symmetric –**

6. **Vertex –**

7. **X-intercepts or Zeros –**

Calculate the 1st and 2nd differences. Then identify the type of function as linear or quadratic.

8. _____

x	*y*	First Differences	Second Differences
0	1		
1	-1		
2	-7		
3	-17		
4	-31		

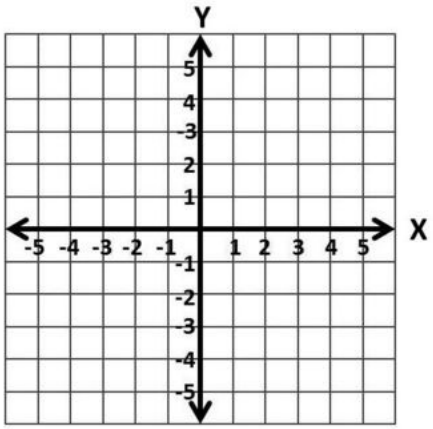
9. _____

x	*y*	First Differences	Second Differences
0	-2		
1	1		
2	4		
3	7		
4	10		

Graph each function. Identify the vertex. Then, draw and label the axis of symmetry.

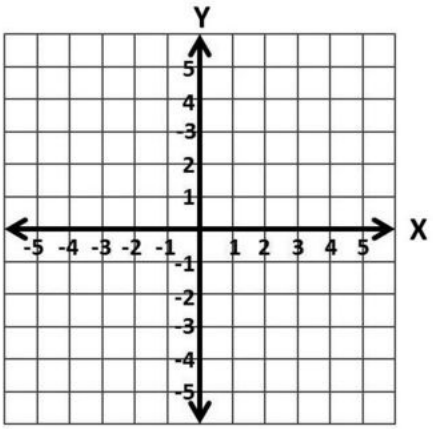
10. $f(x) = -x^2 + 4$ Vertex: _____

x	$f(x)$
-2	
-1	
0	
1	
2	



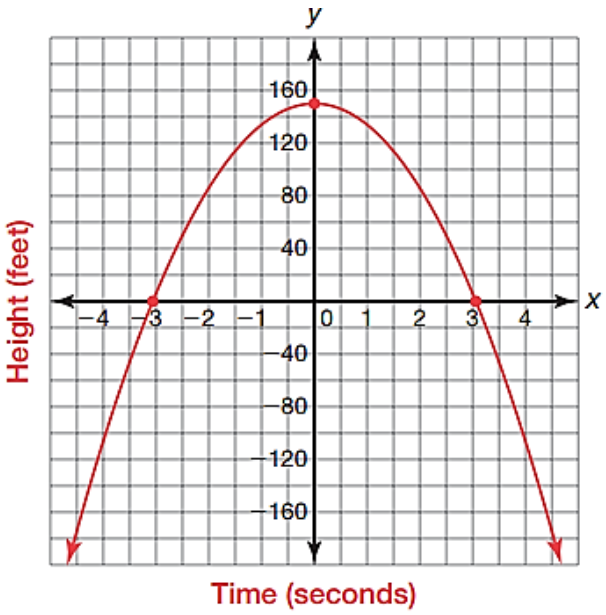
11. $f(x) = x^2 - 2x - 3$ Vertex: _____

x	$f(x)$
-1	
0	
1	
2	
3	



Fill in the answers in the box to the right.

12. A tennis ball is dropped from a height of 150 feet. Its initial velocity is 0 feet per second. The function $g(t) = -16t^2 + 150$ represents the height of the tennis ball, g(t), t seconds after it was dropped. Use the graph to answer the questions.



Absolute Max or Min: _____

Zeros: _____

Y-intercept: _____

Domain of the Graph: _____

Domain of this Problem: _____

Range of the Graph: _____

Range of this Problem: _____

Axis of Symmetry: _____

2 Symmetric Points (other than the x-intercepts):
_____

Write each quadratic function in factored form. Decide if the parabola opens up or down.

13. $f(x) = (-5x + 10)(x - 2)$

Up or Down? _____

14. $f(x) = (3x + 15)(x + 5)$

Up or Down? _____

15. $f(x) = x^2 + 3x$

Up or Down? _____

Determine whether the quadratic function opens up or down and if it has an absolute maximum or minimum. Then, find the x- intercepts or zeros.

16. $f(x) = (x - 6)(x + 3)$

Up or Down? _____

Max or Min? _____

X-int: _____

17. $f(x) = x(x - 9)$

Up or Down? _____

Max or Min? _____

X-int: _____

18. $f(x) = 2(x + 2)(2 - x)$

Up or Down? _____

Max or Min? _____

X-int: _____

19. **Write a quadratic function in factored form that *opens down* and has x-intercepts** (4, 0) and (-2, 0).

_____

20. Write a quadratic function in factored form that *opens up* and has x-intercepts (9, 0) and (6, 0).

_____

Write a function that represents the vertical motion described in each problem situation.

$$h(t) = -16t^2 + v_0 t + h_0$$

21. A catapult hurls a pineapple from a height of 30 feet at an initial velocity of 85 feet per second.

22. A basketball is thrown from a height of 5 feet at an initial velocity of 45 feet per second.

23. An object is thrown from an initial height of 4 feet at an initial velocity of 32 feet per second. The function $h(t) = -16t^2 + 32t + 4$ represents the situation and is graphed below.

a. What is the height of the object at 0.25 seconds?

b. When will the object reach a height of 11 feet for the 2nd time?

c. What is the maximum height of the object?

d. After how many seconds does the object land?

e. What is the domain for *this problem*?

f. What is the range for *this problem*?

Determine the axis of symmetry of each parabola.

24. The x-intercepts of a parabola are (3, 0) and (9, 0).

25. The x-intercepts of a parabola are (-10, 0) and (2, 0).

26. Two symmetric points on a parabola are (5, 4) and (7, 4).

27. Two symmetric points on a parabola are (-4, 2) and (8, 2).

Determine the vertex of each parabola. Hint: If the axis of symmetry isn't given, use the points given to determine the axis of symmetry.

28. $f(x) = x^2 + 2x - 3$
$axis\ of\ symmetry : x = -1$

29. $f(x) = -x^2 + 6x$
$x - intercepts : (0,0)\ and\ (6,0)$

30. $f(x) = x^2 + 4x - 4$
$two\ symmetric\ points\ on\ the\ parabola\ \ (-6,8)\ and\ (2,8)$