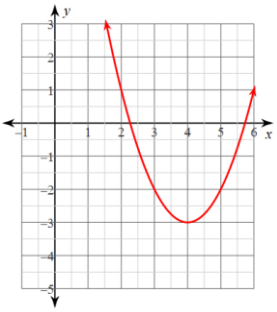
Alg. 1
Unit 3 Study Guide

Name: _____

Complete the following information for Unit 3.

Find the following characteristics of each quadratic function.

1)

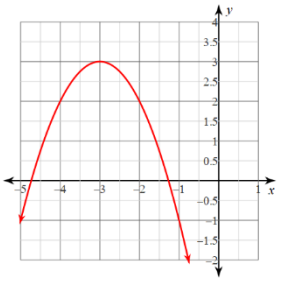


A of S: _____
Vertex: _____

D of O: _____
Min/Max: _____

Domain: _____
Range: _____

2)



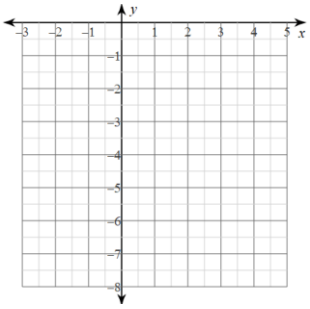
A of S: _____
Vertex: _____

D of O: _____
Min/Max: _____

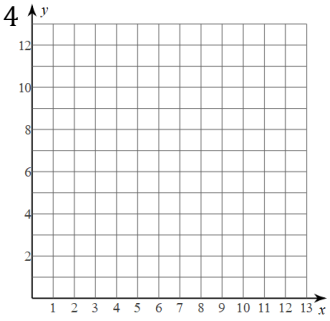
Domain: _____
Range: _____

Graph the following Quadratic Functions.

3) $y = -x^2 + 6x - 12$



4) $f(x) = 2(x-4)^2 + 4$



Find the axis of symmetry and vertex of each quadratic function.

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

6) $f(x) = -x^2 + 4x$

7) $y = -\frac{1}{2}x^2 + 4x - 5$

8) $f(x) = 2(x+1)^2 + 3$

Factor each quadratic expression.

9) $n^2 - 17n + 70$

10) $3x^2 + 7x - 6$

Solve each quadratic equation by factoring.

11) $a^2 + 5a + 14 = 8$

12) $7k^2 - 26k + 15 = 0$

Solve each quadratic equation by using the quadratic formula.

13) $11m^2 - 4m - 21 = 0$

14) $v^2 - 144 = 0$

15) $x^2 + 18 = 11x$

16) $15r^2 + 4r - 24 = 8r^2$

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Find the value of *c* that completes the perfect trinomial.

17) $x^2 - \frac{7}{2}x + c$

18) $x^2 - 8x + c$

Show the completing the square process.

19) $k^2 - 10k = 39$

20) $x^2 + 2x = 19$

Find the rate of change (2nd difference) in the table.

21)

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

22)

x	y
-2	16
-1	9
0	4
1	1
2	0
3	1
4	4

Identify the transformations.

23) $f(x) = -(x+3)^2 - 4$

24) $y = \frac{1}{2}(x-1)^2 + 7$

Identify the following as a Function or Not a Function.

25) The length of a rectangle is four more than its width. The area of the rectangle is 96 square inches. Find the value of *x* and the dimensions of the rectangle.

26) The Demon Drop at Cedar Point in Ohio takes riders to the top of a tower and drops them 60 feet. A function that approximates this ride is $h = -16t^2 + 64t + 60$, where h is the height in feet and t is the time in seconds. About how many seconds does it take for riders to drop to the ground? Round to the nearest tenth.