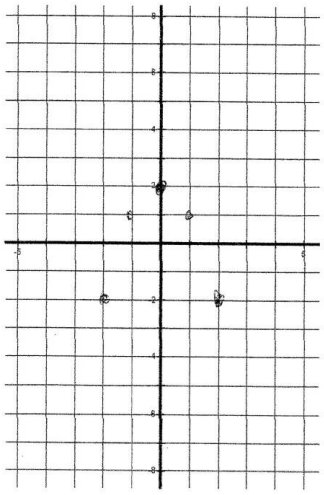
Algebraic Connections Name: KEY

WS G.09 – Review for Test 1 Date: _____

Fill in the chart, graph each equation on the grid provided, and then give the vertex.

1. $y = -x^2 + 2$

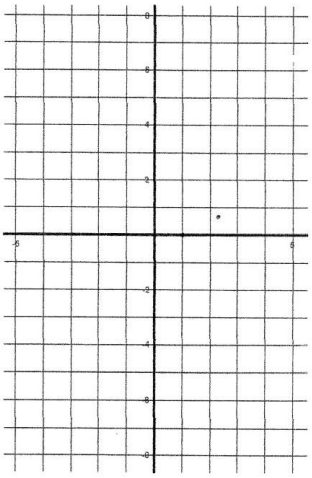
x	y
−2	−2
−1	1
0	2
1	1
2	−2



Vertex = (0, 2)

2. $y = 2x^2 - 4$

x	y
−2	4
−1	−2
0	−4
1	−2
2	4



Vertex = (0, −4)

Answer each part for the equation given.

3. $y = 2x^2 - 8x + 9$

a. $a =$ 2, $b =$ −8, $c =$ 9

b. The graph opens Up.

c. Axis of symmetry:

$$x = -\frac{b}{2a} = x = 2$$

d. y-coordinate of vertex = 1

e. Vertex (2, 1)

f. y-intercept: (0, 9)

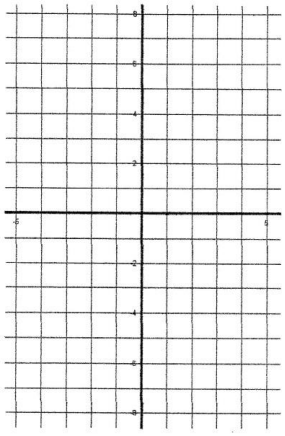
g. the reflection of y-intercept:

(4, 9)

h. The vertex form:

$2(x-2)^2 + 1$

i. Graph the parabola



4. $y = -3x^2 + 18x - 21$

a. $a =$ −3, $b =$ 18, $c =$ −21

b. The graph opens down.

c. Axis of symmetry:

$$x = -\frac{b}{2a} = x = 3$$

d. y-coordinate of vertex = 6

e. Vertex (3, 6)

f. y-intercept: (0, −21)

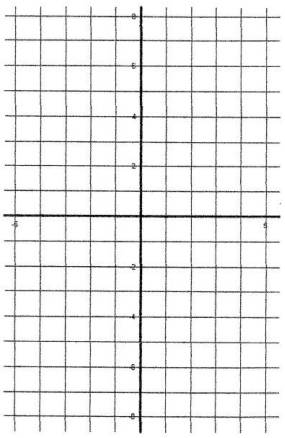
g. the reflection of y-intercept:

(6, −21)

h. The vertex form:

$-3(x-3)^2 + 6$

i. Graph the parabola



KEY

Solve the following quadratic equations by factoring. Then use the Zero Property to find the solutions for the equations. (6 points each) ***Show your work!***

5. $0 = x^2 + 3x - 18$ $x=3 \quad x=-6$

$(x-3)(x+6)=0$

7. $0 = x^2 - 5x - 24$ $x=8 \quad x=-3$

$(x-8)(x+3)=0$

6. $x^2 + 25x - 54 = 0$ $x=2 \quad x=-27$

$(x-2)(x+27)=0$

8. $x^2 + 13x + 12 = 0$ $x=-1 \quad x=-12$

$(x+1)(x+12)=0$

Solve the following quadratic equations by Completing the Square (6 points each) ***Show your work!***

9. $x^2 - 8x = -15$ $\{3, 5\}$

$(x-4)^2 = 1$

11. $x^2 - 16x + 15 = 0$ $\{1, 15\}$

$(x-8)^2 = 49$

10. $x^2 - 20x = -64$ $\{4, 16\}$

$(x-10)^2 = 36$

12. $x^2 + 14x + 24 = 0$ $\{-12, -2\}$

$(x+7)^2 = 25$