Name _____ Date _____/_____/_____
Algebra 1 Mr. Towne

Chapter 9 Review

You should be able to solve quadratic equations using symbolic methods. Solve the following quadratic equations for x.

$(x+3)^2 = 7$ $(x-2)^2 - 8 = 13$ $52 = -2(x-3)^2 + 20$

You should be able to find the x-intercepts (roots) of a quadratic equation. Find the roots of the following and name the roots as an ordered pair, (x, y).

$y = (x-2)^2$ $y = (x+3)^2 - 81$ $y = -5(x-3)^2 - 20$

You should be able to find the vertex of a quadratic from knowing the x-intercepts and its equation. Find the vertex of each of the following parabolas.

- $y = x^2 - 4x - 5$;
- roots are -1 and $+5$

- $y = (x+4)(x-10)$
- roots are -4 and $+10$

- $y = (x+100)(x-50)$
- roots are ____ and ____

You should be able to recognize and write the three different forms of quadratic equations

Write a quadratic equation in vertex form with vertex $(-4, 2)$

Write a quadratic equation whose roots are positive six and negative two.

Write an example of a quadratic equation in standard (general) form.

You should be able to change a quadratic equation from vertex form to general form.

$y=(x-2)^2$ $y=(x-1)^2-6$ $y=2(x+5)^2-20$

You should be able to square binomials.

$(x+9)(x+9)$ $(x-7)^2$ $(x+1)^2$

You should be able to multiply binomials.

$(x+3)(x-6)$ $(x+4)(x+7)$ $(x-2)(x-9)$

You should be able to factor binomials. (Write each in factored form)

x^2-5x-6 $x^2+11x+24$ $x^2-13x+36$

You should be able to find the roots of a quadratic equation by looking at its factored form. Write the roots (x-intercepts) of each quadratic equation.

$y=(x-4)(x+7)$ $y=(x+6)(x+6)$ $y=(2x-5)(3x+1)$

You should be able to find the roots of a quadratic equation in standard form by changing the quadratic equation to factored form first. Find the roots of the following equations.

$y=x^2-5x-6$ $y=x^2+11x+24$ $y=x^2-13x+36$

You should be able to find the number of real roots of a quadratic equation by finding its determinant. **Every** quadratic must have 0, 1, or 2 real roots. Find how many real roots there are to each of the following quadratic equations.

$y = x^2 + 4x + 14$ $y = x^2 - 6x + 9$ $y = x^2 + 14x + 20$

You should be able to find the *exact* values of the roots by using the quadratic formula if they exist.

$y = x^2 - 6x - 7$ $y = x^2 - 7x + 1$ $x^2 = -50 - 3x$

Given an equation of a quadratic in standard form, you should be able to:

- write its y-intercept using the standard form,
- change it to factored form,
- write its roots,
- find its vertex,
- write the equation in vertex form,
- sketch the parabola using its y-intercept, x-intercepts (roots), and its vertex.

When you sketch the parabola, label each point above as an ordered pair: (x, y)

$y = x^2 + 4x - 21$ $y = x^2 + 14x + 48$ $y = x^2 - 3x + 2$