Algebra Sem 2 - Semester 2 Final Review
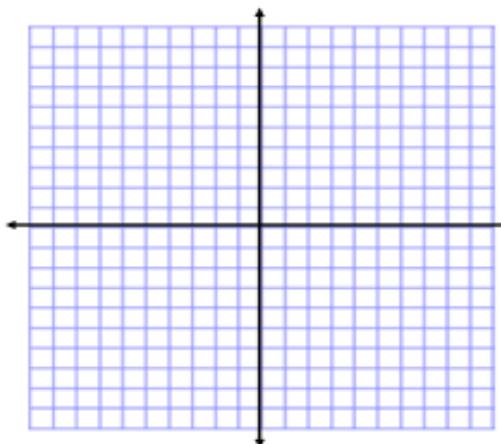
Graphing:

Graphing a quadratic function in standard form:

Notes:	Example:

Axis of Symmetry:
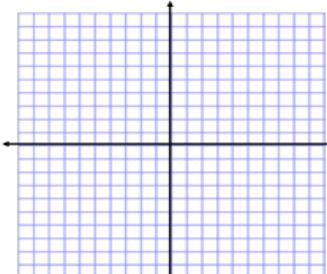
y-intercept:

Vertex:

Practice: Graph the following quadratics.

1.) Graph: $y = 3x^2$

Axis of symmetry: _____
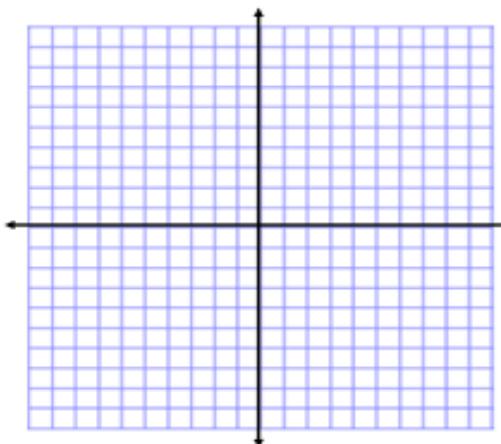
y-intercept: _____

Vertex: _____

x	y

2.) Graph: $y = x^2 + 4x - 2$

Axis of symmetry: _____

y-intercept: _____

Vertex: _____

x	y

Solving Equations:

Solving quadratics using square roots:

Notes:	Example:

Solving quadratics by factoring:

Notes:	Example:

Solving quadratics using the quadratic formula:

Notes:	Example:

Solving equations by cross multiplying:

Notes:	Example:

Practice: Solve the following equations. Some of your answers may be extraneous so be sure to check your solutions.

1.) $(x + 3)^2 - 4 = 12$

2.) $5x^2 - 15x = 0$

3.) $(x + 3)(2x + 5) = 0$ 4.) $x^2 - 6x + 8 = 0$

5.) $\dfrac{x + 3}{4} = \dfrac{2x - 6}{5}$ 6.) $6x^2 - 4 = 20$

7.) $(x - 2)(3x + 8) = 0$ 8.) $(x - 6)^2 + 2 = 18$

9.) $\dfrac{x + 3}{2} = \dfrac{x + 1}{4}$ 10.) $25x^2 + 11 = 15$

Solve the following equations using the quadratic formula.

1.) $4x^2 + 3x = 1$ 2.) $3x^2 - 4x - 9 = 0$

Simplifying Rational Expressions:

Simplifying rational expression:

Notes:	Example:

Multiplying rational expressions:

Notes:	Example:

Dividing rational expressions:

Notes:	Example:

Practice: Simplify the following expressions.

1.) $\dfrac{16x^6}{4x^4}$

2.) $\dfrac{2x^2 + x}{4x}$

3.) $\dfrac{x^2 - x - 6}{x^2 - 4}$

4.) $\dfrac{x^2 + 9x + 14}{x^2 - 49}$

Algebra Sem 2 - Semester 2 Final Review

5.) $\dfrac{3x+6}{2x} \cdot \dfrac{10x^2}{x^2-4}$

6.) $\dfrac{16x}{2} \cdot \dfrac{3}{4x}$

7.) $\dfrac{x-3}{x+3} \cdot \dfrac{x+3}{x^2-9}$

8.) $\dfrac{36}{x+5} \div \dfrac{12}{x^2-25}$

9.) $\dfrac{3x-6}{x^2-6x+9} \div \dfrac{x^2-4}{x^2-x-6}$

10.) $\dfrac{3x+15}{x+4} \div \dfrac{3x}{x+4}$

Adding and Subtracting Rational Expressions:

Adding/subtracting rational expressions:

Notes:	Example:

Practice: Add or subtract the following rational expressions.

1.) $\dfrac{x+7}{x+5} + \dfrac{4x+3}{x+5}$

2.) $\dfrac{2}{x-3} - \dfrac{x+4}{x-3}$

3.) $\dfrac{4}{x} + \dfrac{x-5}{x^2}$

4.) $\dfrac{2}{2x} - \dfrac{x-1}{3x^2}$

5.) $\dfrac{2x}{3} - \dfrac{x+1}{5}$

6.) $\dfrac{1}{x} + \dfrac{1}{x-1}$

Operations with Polynomials:

Adding/subtracting polynomials:

Notes:	Example:

Multiplying polynomials:

Notes:	Example:

Practice: Find the sum or difference.

1.) $(2x^3 + 5x^2 - 2x) + (2x^2 - x^3 + 5x)$

2.) $(6x^3 + 12x^2 - x) - (15x^2 + 7x - 8)$

Find the product:

1.) $(2x - 5)(4x - 3)$

2.) $(2x^2 - 5x + 6)(3x - 2)$

3.) $(x + 3)^2$

4.) $2x(4x^3 - 3x + 5)$

5.) $(x - 6)(x^2 - 4x + 1)$

6.) $(2x - 1)(2x + 1)$

Factoring:

Factoring a monomial (one term):

Notes:	Example:

Factoring a binomial (two terms):

Notes:	Example:

Factoring a trinomial (three terms):

Notes:	Example:

Practice: Factor.

1.) $48x^4$

2.) $x^2 - 4$

3.) $16x^2 - 36$

4.) $x^4 - 4x^2$

5.) $8x^3 - 2x^2$

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

7.) $x^2 + 4x - 12$

8.) $x^2 + 9x + 18$

9.) $2x^2 - 20x + 50$

Simplifying Radical Expressions:

Simplifying radical expressions:

Notes:	Example:

Adding/subtracting radical expressions:

Notes:	Example:

Multiplying radical expressions:

Notes:	Example:

Dividing radical expressions:

Notes:	Example:
Rationalize Denominator:	

Practice: Simplify. NO DECIMALS!!!!!!!

1.) $\sqrt{36}$

2.) $\sqrt{48}$

3.) $\sqrt{300}$

4.) $4\sqrt{3} + \sqrt{12}$

5.) $2\sqrt{6} - \sqrt{6}$

6.) $3\sqrt{3} - \sqrt{5} + \sqrt{3}$

7.) $\sqrt{3} \cdot \sqrt{75}$

8.) $\sqrt{\frac{3}{6}}$

9.) $(2\sqrt{3} - 7)(\sqrt{2} + 4)$

Pythagorean Theorem:

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Notes:	Example:

Practice: Let a and b represent the lengths of the legs of a right triangle and let c represent the length of the hypotenuse. Find the unknown length.

1.) $a = 14, c = 21$ 2.) $a = 10, b = 24$

Determine whether the triangle with the given side lengths is a right triangle.

1.) $3, 9, 10$ 2.) $12, 16, 20$

Distance and Midpoint Formula:

Distance Formula:

Notes:	Example:

Midpoint Formula:

Notes:	Example:

Algebra Sem 2 - Semester 2 Final Review

Practice: Using these ordered pairs, find the distance between the points as well as the midpoint.

1.) $(0, 0)$ and $(-6, 9)$

    a.) Distance:

    b.) Midpoint:

2.) $(-2, -4)$ and $(-8, 5)$

    a.) Distance:

    b.) Midpoint:

3.) $(5, -2)$ and $(4, -5)$

    a.) Distance:

    b.) Midpoint:

4.) $(-1, 7)$ and $(0, 9)$

    a.) Distance:

    b.) Midpoint: