Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points: \_\_\_\_\_\_

**1. Solving Quadratic Equations by Factoring**

To solve a quadratic equation by factoring:

1. Put the equation in standard form: .
2. Factor completely.
3. Use the zero-product rule, set each factor containing the variable equal to zero and solve for x. Note: Do not solve for the constant factor.

a) Solve for x:  b) Solve for x: 

c) Solve for x:  d) Solve for x: 

**2. Simplifying Rational Expressions**

A **rational expression** is an expression that can be written in the form, where and are polynomials and 

To simplifying rational expressions to lowest terms

1. Factor the polynomial in the numerator and denominator.
2. Apply the fundamental principle of rational expressions to divide out factors common to both the numerator and denominator.

 where  [Fundamental Principle of Rational Expressions]

a) Simplify:  b) Simplify: 

c) Simplify:  d) Simplify: 

e) Simplify: 

3.  **Multiplying Rational Expressions**

Recall in fractions: 

**To Multiply Rational Expressions:**

1. Factor all the polynomials in the numerators and denominators.

2. Multiply the numerators and multiply the denominators.

3. Simplify the product by applying the fundamental property and dividing the numerator and denominator

by their common factors.

a) Multiply:  b) Multiply: 

c) Multiply: 

d) Multiply: 

4.  **Dividing Rational Expressions**

Recall in fractions: 

**To Divide Rational Expressions:**

1. Change the division sign to a multiplication sign.

2. Take the reciprocal of the second rational expression (flip the rational expression)

3. Follow the steps used in multiplying rational expressions.

a) Divide: 

b) Divide: 

c) Divide: 

e) Multiply and divide: 