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

**Adding and Subtracting Rational Expressions**

**1. Adding and Subtracting Rational Expressions with the Same Denominators**

Recall in fractions if the denominators are the same: 

To add or subtract rational expressions with the same denominators:

1. Add or subtract the numerators.

2. Write the result over the common denominator.

3. Simplify the rational expression, if necessary.

a) Add:  b) Add: 

c) Subtract:  d) Subtract: 

**2. Finding the Least Common Denominator (LCD) of Rational Expressions**

To find the Least Common Denominator (LCD) of rational expressions:

 1. Factor each denominator completely.

 2. The least common denominator (LCD) is the product of all unique factors each raised to the greatest

 power that appears in any factored denominator.

a) Find the LCD for the rational expressions: 

b) Find the LCD for the rational expressions: 

c) Find the LCD for the rational expressions: 

**3. Adding and Subtracting Rational Expressions with Different Denominators**

Recall in fractions if the denominators are different: 

**To add and subtract rational expressions with different denominators**

1. Find the LCD of the rational expressions.
2. Write each rational expression as an equivalent rational expression whose denominator is the LCD found in step 1.
3. Add or subtract the numerators and write the result over the common denominator.
4. Simplify the resulting rational expression.

 a)  LCD = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b)  LCD = \_\_\_\_\_\_\_\_\_\_\_\_\_

 c)  LCD = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d)  LCD = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 e)  LCD = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. What is the difference between the following two problems:

**Problem 1**: Add or subtract as indicated, simplify the answer: 

**Problem 2**: Solve the rational equation: 

5. Solve each equation.

a.  b. 

c.  d. 

e.  f. 