**Lessons 34-36 Handout**

**Lesson 34**

**Multiplying Rational Expressions:**

1. Write all polynomials in factored form.

2. Use parentheses and write everything as one problem.

3. Check to see if any factors can be canceled before multiplying.

4. Multiply remaining factors straight across.

5. Answers may be left in factored form.

**Dividing Rational Expressions:**

1. Write all polynomials in factored form.

*2. “KFC”:* Keep the first fraction the same, flip the second fraction, change divide to multiply.

*3. Use parentheses and write everything as one problem.*

4. Cancel factors if possible. (This can ONLY be done AFTER you flip the second fraction.)

5. Multiply remaining factors straight across.

6. Answers may be left in factored form.

**Lesson 35**

**Adding or Subtracting Rational Expressions:**

**Step 1:** Add or subtract according to the following rule:

 If $\frac{a}{c}$ and $\frac{b}{c}$ are two rational expressions where $c\ne 0$, then $\frac{a}{c}+\frac{b}{c}=\frac{a+b}{c}$ and $\frac{a}{c}-\frac{b}{c}=\frac{a-b}{c}$.

**Step 2:** Simplify the result. *(Factor the numerator and denominator, then reduce like terms.)*

**Adding and Subtracting Rational Expressions:**

1. Write all polynomial denominators in factored form.
2. Determine the least common denominator (LCD).
3. Multiply numerator and denominator of each fraction by any **missing** factors to get the LCD.
4. *“Across the top you add or subtract, but leave the denominator intact.”*
5. Factor the new numerator if possible, and cancel factors if possible.
6. Answers may be left in factored form.

**Adding or Subtracting Rational Expressions with Unlike Denominators:**

**Step 1:** Find the least common denominator.

**Step 2:** Rewrite each rational expression with the common denominator. *You will need to multiply out the numerator, but leave the denominator in factored form.*

**Step 3:** Add or subtract the new rational expressions

**Step 4:** Simplify, if necessary.

**Lesson 36**

**Solving a Rational Equation**

**Step 1:** Find the domain of the variable in the equation. (Look at every term!) Find what values x cannot be - these are values that make the denominator equal 0.

**Step 2**: Find the LCD of all of the denominators.

**Step 3:** Multiply **every** term in the equation (on both sides) by the LCD. (This should get rid of all of the denominators.)

**Step 4:** Solve the resulting equation.

**Step 5:** Verify your solution.