**Mathematics 30-2**

**4.2 Simplifying Rational Expressions**

In this chapter we will learn about rational expressions. We will learn how to simplify rational expressions as well as perform operations on them [ multiply, divide, add, and subtract ].

What is a rational expression?

A **rational expression** is a fraction that has a polynomial for both the numerator and the denominator.

Here are some examples: 

Factoring is a very important skill when simplifying rational expressions.

Let’s factor!

**Example:** Factor each of the following completely.

1.  2.  3. 

4.  5.  6. 

**Investigate the Math**

1. Let’s evaluate the following expressions for the given values.

a) Evaluate the expression  for . b) Evaluate the expression  for .

c) Evaluate the expression  for . d) Evaluate the expression  for .

f) Evaluate the expression  for . g) Evaluate the expression  for .

2. What did you notice about all six answers above?

3. Is there a relationship between the number you were asked to substitute and the denominator in

each expression?

**Non-Permissible Value:** the value of a variable that makes the denominator of a rational expression equal to zero.