**Barron’s Let’s Review Regents – Algebra II**

# Chapter 2: Rational Expressions and Equations

## 2.1 Arithmetic With Rational Expressions

**Key Ideas**

A *rational expression* is a fraction that has a polynomial expression in the denominator. It often also has a polynomial expression in the numerator.

An example of a rational expression is . Just like fractions involving integers, rational expressions can be simplified, reduced, multiplied, divide, added, and subtracted.

**Reducing Rational Expressions**

A rational number is a fraction, like , that has an integer in both the numerator and the denominator. When both the numerator and denominator are multiplied or divided by the same number, the result is a rational number that is equivalent to the original number.

*Reducing* a rational number is when the numerator and denominator are both divided by the same common factor. Factoring the numerator and denominator of a rational number makes it easier to reduce the fraction to *lowest terms*.

**Multiplying Rational Expressions**

**Dividing Rational Expressions**

**Adding Rational Expressions**

**Situation 1:** The expressions already have a common denominator.

**Situation 2:** One denominator is a multiple of the other denominator.

**Situation 3:** The denominators have no common factor.

If the denominators have no common factor, the lowest common denominator is the product of the two denominators.

Situation 4: The two denominators share a common factor, but the denominator is not a multiple of the smaller one.

**Subtracting Rational Expressions**

Subtracting rational expressions is nearly the same as adding them. An extra complication, which happens frequently on the Regens exam, is you must be careful distributing the negative sign through the parentheses of the second expression.