



Math Virtual Learning

College Prep Algebra

April 28, 2020



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Lesson: April 28, 2020

Objective/Learning Target:
How to simplify rational expressions by factoring

Let's Get Started:
Here's an example of a Rational Expression.

$$\frac{x^2 + 5}{x + 2}$$

← numerator
← denominator

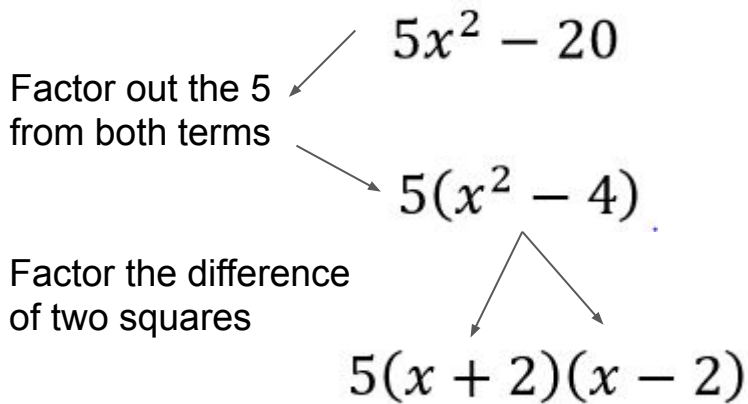
A Rational Expression
*because it is a "ratio"
of two polynomials*

Yep! It is a fraction.
And it will have an algebraic numerator and denominator.

Today, we are going to **focus on reducing or simplifying the fraction.**

Lesson:

To reduce any Rational Expression, you must **FACTOR** the numerator and the denominator. Look at the examples here to **refresh your memory of how to factor.**



[Use this link if you need more help with factoring](#)

To determine what made the “x”, multiply the 3 and -14 and examine the factors that can make a 1.

$(3 \cdot -14)$
-42
<hr/>
$1 \cdot 42$
$2 \cdot 21$
$3 \cdot 14$
$6 \cdot 7$

Factor out the GCF from both sets of pairs

$$3x^2 + x - 14$$

$$3x^2 - 6x + 7x - 14$$

$$3x(x - 2) + 7(x - 2)$$

Factor the (x-2) to the front.

$$(x - 2)(3x + 7)$$

Lesson: Here is how to simplify (reduce) a Rational Expression—using the factoring work from the previous slide.

$$\frac{5x^2 - 20}{3x^2 + x - 14}$$

Factor the numerator
and the denominator

$$\frac{5(x + 2)(x - 2)}{(x - 2)(3x + 7)}$$

Cancel common factors
in the numerator and
denominator

$$\frac{5(x + 2)}{(3x + 7)}$$

Simplified!

If you would like a few more examples and a verbal explanation, watch the [Khan Academy video](#) here.

Practice

[Simplifying Rational Expressions
Problems and Answers](#)

Even more practice

[Challenging Rational Expressions
to Simplify with Answers](#)

[More Simplifying Rational Expressions
Problems #1-14 only and Answers](#)

Click through these videos for a refresher on factoring

[Basic Quadratic](#)

[Quadratic that is like](#) $3x^2 + x - 14$

[Another example of a quadratic that is like](#) $3x^2 + x - 14$

[A review of all three types of factoring](#)