Name Answer Key

Date: _____

Algebra II

Lesson 1-7

Simplifying Rational Expressions

A **rational expression** is an expression that is the ratio of two polynomials. Simply put, a **rational expression** is nothing more than a fraction in which the numerator and/or the denominator are polynomials

Steps to simplify rational expressions:

1. Factor both the numerator and the denominator.
2. Then reduce any common factors.
3. What you have left is your answer!

Simplify each rational expression.

1.) $\frac{3x^2+5x-2}{x^3+2x^2} = \frac{(x+2)(3x-1)}{x^2(x+2)} = \boxed{\frac{3x-1}{x^2}}$

$3x^2+5x-2$ (M: -6, A: 5; 6×-1, 5)

$3x^2+6x-1x-2$

$3x(x+2)-1(x+2)$

$(x+2)(3x-1)$

x^3+2x^2

$x^2(x+2)$

2.) $\frac{16x-8x^2}{x^3-4x^2+4x} = \frac{8x(2-x)}{x(x-2)(x-2)} = \frac{-8}{(x-2)}$ (-1)

$16x-8x^2$

$8x(2-x)$

x^3-4x^2+4x

$x(x^2-4x+4)$ (A: -4, M: 4)

$x(x^2-2x-2x+4)$ (4; -2, -2; -4)

$x(x(x-2)-2(x-2))$

$x(x-2)(x-2)$

Undefined Rational Expressions

A rational expression is undefined when the denominator is equal to zero.

3.) Which value(s) of x make the expression $\frac{x^2-9}{x^2+7x+10}$ undefined?

can't have a zero in the denominator!
↳ set = 0

$X^2+7X+10=0$

10 → 5, 2 (5 + 2 = 7)

$(X+5)(X+2)=0$

$X+5=0$	$X+2=0$
$-5\ -5$	$-2\ -2$
$X=-5$	$X=-2$

Re-Writing Rational Expressions

Re-write each of the following rational expressions so that they are expressed in quotient-remainder form.

4.) $\frac{x^2+4}{x^2+3}$

$\frac{X^2+3+1}{X^2+3}$

$\frac{X^2+3}{X^2+3}+\frac{1}{X^2+3}$

$1+\frac{1}{X^2+3}$

5.) $\frac{2x^2+5x-3}{2x^2+5x+6}$

$\frac{2x^2+5x+6-9}{2x^2+5x+6}$

$\frac{2x^2+5x+6}{2x^2+5x+6}-\frac{9}{2x^2+5x+6}$

$1-\frac{9}{2x^2+5x+6}$

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Simplifying Rational Expressions Practice Task Cards

Scan the QR code to access the Task Cards

1. Answers are on the Task Cards! :)	**2.**
3.	**4.**