

Agenda

- 1) Take out HW to be checked
- 2) DO NOW (a, b, c)
- 3) Define: *Rational Expression*
- 4) Explore: Simplifying Rational Expressions
 - Think, Pair, Share
 - Practice
- 5.4: Objective: To Simplify Rational Algebraic Expressions
- 5) Levels 1-2 Practice Worksheets
- 6) Exit Ticket

HW: p. 228 #1, 3, 7, 11, 13, 15, 19

5.4: Rational Algebraic Expressions

Objective: To Simplify Rational Algebraic Expressions

DO NOW

Simplify the following rational expressions:

$$a) \frac{3 \cdot 5 \cdot 4 \cdot 7 \cdot -1}{-1 \cdot 3 \cdot 4 \cdot 7}$$

$$b) \frac{56}{14}$$

$$c) \frac{4xy^2}{8y}$$

Vocabulary:

Rational Number- a number that can be expressed as a a **quotient** of **integers** (a **fraction**)

ex. $\frac{5}{6}$

Rational Expression - an expression that can be represented as

a _____ of _____

ex.

$$\frac{4xy^2}{8y}$$

$$\frac{x^2 - 3x - 4}{x^2 - 1}$$

$$x(x^2 - 4)^{-1} = \frac{x}{(x^2 - 4)}$$

We know how to reduce the first example above, but

HOW do we reduce the other two . . .?

Think, Pair, Share...

Are the following questions True or False?

$$1) \quad \frac{1+1}{1} = \frac{\cancel{1+1}}{\cancel{1}} = 1$$

$$2) \quad \frac{3+4}{4} = \frac{\cancel{3+4}}{\cancel{4}} = 3$$

$$3) \quad \frac{5^2+5}{5} = \frac{\cancel{5^2+5}}{\cancel{5}} = 25$$

$$4) \quad \frac{5(5+1)}{5} = \frac{\cancel{5(5+1)}}{\cancel{5}} = (5+1)$$

What is the difference between #3 and #4?

Let's use this strategy to try some more!

$$a) \quad \frac{x^2 - 2x}{x} =$$

$$b) \quad \frac{x^2 - 2x}{x^2 - 4} =$$

$$c) \quad \frac{(x-2)(x+2)}{(x+2)} =$$

$$d) \quad \frac{x^2 - 6x + 5}{x - 5} =$$

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Practice:

Kuta Software - Infinite Algebra 1

Simplifying Rational Expressions

Simplify each expression.

Level 1:

$$1) -\frac{36x^3}{42x^2}$$

$$2) \frac{16r^2}{16r^3}$$

$$3) \frac{16p^2}{28p}$$

$$4) \frac{32n^2}{24n}$$

$$5) -\frac{70n^2}{28n}$$

$$6) \frac{15n}{30n^3}$$

Level 1: ANSWER KEY

Simplify each expression.

$$1) -\frac{36x^3}{42x^2}$$

$$-\frac{6x}{7}$$

$$2) \frac{16r^2}{16r^3}$$

$$\frac{1}{r}$$

$$3) \frac{16p^2}{28p}$$

$$\frac{4p}{7}$$

$$4) \frac{32n^2}{24n}$$

$$\frac{4n}{3}$$

$$5) -\frac{70n^2}{28n}$$

$$-\frac{5n}{2}$$

$$6) \frac{15n}{30n^3}$$

$$\frac{1}{2n^2}$$

Level 2: Simplify each expression.

7) $\frac{2r-4}{r-2}$

8) $\frac{45}{10a-10}$

9) $\frac{x-4}{3x^2-12x}$

10) $\frac{15a-3}{24}$

11) $\frac{v-5}{v^2-10v+25}$

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

Level 2: ANSWER KEY

7) $\frac{2r-4}{r-2}$

$$2$$

8) $\frac{45}{10a-10}$

$$\frac{9}{2(a-1)}$$

9) $\frac{x-4}{3x^2-12x}$

$$\frac{1}{3x}$$

10) $\frac{15a-3}{24}$

$$\frac{5a-1}{8}$$

11) $\frac{v-5}{v^2-10v+25}$

$$\frac{1}{v-5}$$

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

$$\frac{1}{x-1}$$

_____ out of 7

Name _____

Block _____

EXIT TICKET

Simplify the following:

1) $\frac{x^2 - 2x - 3}{x + 1} =$

2) $(x^3)^{-2} =$

3) $\left(\frac{x^3}{x^7}\right) =$

_____ out of 7

Name _____

Block _____

EXIT TICKET

Simplify the following:

1) $\frac{x^2 - 6x - 7}{x + 1} =$

2) $(x^4)^{-2} =$

3) $\left(\frac{x^4}{x^9}\right) =$