

Multiplying and Dividing Rational Functions Class Work

Objective: You will be able to multiply and divide rational functions.

★ Quick Recall:

Perform each operation.

1. $\frac{1}{3} \cdot \frac{6}{7} = \frac{6}{21} = \frac{2}{7}$ 2. $\frac{4}{5} \div \frac{2}{3}$
 same change flip $\frac{4}{5} \cdot \frac{3}{2} = \frac{12}{10} = \frac{6}{5}$

3. $\frac{2}{5} \cdot \frac{3}{8} = \frac{6}{40} = \frac{3}{20}$ 4. $\frac{1}{9} \div 5$
 $\frac{1}{9} \cdot \frac{1}{5} = \frac{1}{45}$

☒ Guided Example A: Multiplying Rational Functions

*Be sure your final solutions are simplified and include any restrictions on the variables.

Multiply: $\frac{x^2+5x-6}{x^2-9} \cdot \frac{x^2-4x+3}{x^2+2x-3}$ Factor Restrictions Simplify

$\frac{+7x}{-2x} \div \frac{5x}{5x}$

$\frac{(2x+7)(x-1)(x-3)(x-1)}{(x+3)(x-3)(x+3)(x-1)}$

Restrictions: $x \neq -3, 3, 1$ $\frac{(2x+7)(x-1)}{(x+3)^2}$

FOIL Top only

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

☒ Guided Example B: Dividing Rational Functions

*Be sure your final solutions are simplified and include any restrictions on the variables.

Divides: $\frac{r^2+6r-72}{r^2-36} \div \frac{r^2+7r+12}{r^2-36}$ KEEP Sr Sr *GCF first!!

change flip $\frac{r^2+6r-72}{r^2-36} \cdot \frac{r^2-36}{r^2+7r+12}$

$= \frac{5r(r+6)(r-6)}{(r+12)(r-6)(r+3)(r+4)}$ Simplified

Restrictions: $r \neq -12, 6, 0, -3, -4$ $= \frac{5r+30}{(r+12)(r+3)(r+4)}$

Practice: See next page(s)

*Write any important hints/tips/reminders for multiplying and dividing rational expressions.

Homework: pages 501-505 #1-21 odd, 22, 27-35 odd, 39, 45, 47, and 49

Throwback: #51-56

Homework Solutions: