

Lesson 43 Objective: SWBAT divide rational expressions.

Kickoff- Complete the participation rubric and then Simplify:

1) $\frac{4x+8}{x^2-25} \cdot \frac{x-5}{5x+10}$

$\frac{4(x+2)}{(x+5)(x-5)} \cdot \frac{x-5}{5(x+2)}$

2) $\frac{x^2+3x}{x^2-3x-4} \cdot \frac{x^2-5x+4}{x^2+2x-3}$

$\frac{x(x+3)}{(x-4)(x+1)} \cdot \frac{(x-4)(x-1)}{(x-1)(x+3)}$

HW

6) $\frac{(x-9)(x+9)}{(x-9)(x+9)} \cdot \frac{4(x-9)}{5(x+9)} = \frac{4}{5}$

7) $\frac{(x-3)(x+3)}{x(x-5)} \cdot \frac{x(x-3)}{(x-4)(x+3)} \cdot \frac{(x+4)}{x-4}$

$\frac{(x-3)(-1)}{x-4} = -x+3$

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

$\frac{2x+3}{x+3}$

9) $\frac{2x+2}{x+4}$

10) $\frac{(x-5)}{(x-10)}$

9) $\frac{2(x-1)(x+1)}{(2x-1)(x-1)} \cdot \frac{(x+2)(x+2)}{(x+2)(x+2)} \cdot \frac{(2x-1)}{(2x-1)}$

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

$x^2 - 8xy + 15y^2$

Test Review

Dividing Rational Expressions

Try This: Divide the following by hand (no calculators)

1) $\frac{1}{8} \div \frac{3}{4}$

$\frac{1}{8} \cdot \frac{4}{3} = \frac{1}{6}$

2) $\frac{5}{14} \div \frac{25}{21}$

$\frac{5}{14} \cdot \frac{21}{25} = \frac{3}{10}$

Dividing Algebraic Expressions

- 1) keep change flip
- 2) factor completely
- 3) cross cancel
- 4) simplify

Examples:

1) $\frac{x^2-9}{4x} \div \frac{3x+9}{2x}$

$\frac{x^2-9}{4x} \cdot \frac{2x}{3x+9} = \frac{(x-3)(x+3)}{4x} \cdot \frac{2x}{3(x+3)}$

$\frac{(x-3)}{6}$

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

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

$$\frac{x+1}{-9} \cdot \frac{(-1)(x+1)}{9} = \frac{-x-1}{9}$$

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

$$\frac{3x}{x-1} \cdot \frac{(x-1)(x+1)}{x} \cdot \frac{3}{(x+1)} = 9$$

$$4) \frac{x^2-3x+2}{4x} \cdot \frac{12x^2}{2x-x^2} \div \frac{x-1}{x}$$

$$\frac{\cancel{(x-2)}(x-1)}{4x} \cdot \frac{3x}{\cancel{12}x^2} \cdot \frac{-1}{\cancel{x}}$$

$$\frac{-3x}{-3x}$$

$$5) \frac{6c^2}{(2c-d)^2} \div \frac{2c}{2c-d}$$

$$\frac{6c^2}{(2c-d)(2c-d)} \cdot \frac{2c-d}{2c} = \frac{3c}{2c-d}$$

$$6) \frac{m^2-81}{(m-9)^2} \div \frac{5m+45}{4m-36}$$

$$7) \frac{2a^2-ab-3b^2}{a^2-36b^2} \div \frac{4a+4b}{8a-48b}$$

$$8) \frac{x^2-9}{x^2-5x} \cdot \frac{5x-x^2}{x^2-x-12} \div \frac{x-4}{x^2-8x+16}$$

$$9) \frac{2x^2-x-6}{2x^2+3x-2} \div \frac{x^2-9}{x^2-x-6} \cdot \frac{4x^2-4x+1}{2x^2-5x+2}$$

$$10) \frac{2x^2-2}{2x^2-3x+1} \div \frac{x^2+7x+12}{x^2+x-6} \cdot \frac{4x^2-1}{2x^2-3x-2}$$