

5.3

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Objective: I can multiply or divide rational fractions.

REVIEW

$$1. \frac{14}{27} \div \frac{7}{9} = \frac{14}{27} \cdot \frac{9}{7} = \frac{2 \cdot \cancel{7} \cdot \cancel{3} \cdot 3}{\cancel{3} \cdot \cancel{3} \cdot 3 \cdot \cancel{7}} = \frac{2}{3}$$

STEPS FOR MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

1. FACTOR!!!!!!!!!!!!
2. IF divide, do stay change filp.
3. Make ones.
4. Write what is left. DO NOT MULTIPLY!

EXAPMLES: Simplify.

$$1. \frac{x}{2} \div \frac{3x}{5} = \frac{x}{2} \cdot \frac{5}{3x} = \frac{5}{6}$$

$$2. \frac{9x}{25y^2} \cdot \frac{5y^5}{18x^3} = \frac{\cancel{3} \cdot 3 \cdot x \cdot \cancel{5} \cdot y \cdot y \cdot y \cdot y \cdot y}{\cancel{5} \cdot \cancel{5} \cdot y \cdot y \cdot \cancel{3} \cdot 2 \cdot x \cdot x \cdot x} = \frac{y^3}{10x^2}$$

$$3. \frac{2(x-5)}{(x-4)(x+3)} \cdot \frac{(x-3)}{(x-5)} = \frac{2(x-3)}{(x-4)(x+3)}$$

$$4. \frac{5x-10}{3x^2-5x-2} \div \frac{10}{-9x^2+1} = \frac{5(x-2)}{(3x+1)(x-2)} \cdot \frac{-(3x+1)(3x-1)}{5 \cdot 2} = \frac{-(3x-1)}{2}$$

$$5. \frac{8x^3-27}{8x^2-10x-3} \cdot \frac{12x+3}{20x^2+30x+45} = \frac{(2x-3)(4x^2+6x+9)}{(4x+1)(2x-3)} \cdot \frac{3(4x+1)}{5(4x^2+6x+9)} = \frac{3}{5}$$

$$6. \frac{7x^2+35x+28}{x+1} \div \frac{x^2-16}{x^2+6x-7}$$

$$\frac{7(x+4)(x+1)}{(x+1)} \cdot \frac{(x+7)(x-1)}{(x+4)(x-4)} = \frac{7(x+7)(x-1)}{(x-4)}$$