8.3 Multiplying & Dividing Rational Expressions

Obj: 1. Mult. & div. rational exp.
2. Simplify (including complex fractions)

Simplify:

$$\frac{x^2+5x-6}{x^2-36}$$

6 -1

You can only cancel common factors!

$$\frac{(x+6)(x-1)}{(x+6)(x-6)} = \frac{x-1}{x-6}$$

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Simplify:

$$\frac{b^2-49}{16b^2-8b+7}$$

-7 -1

$$\frac{(b+7)(b-7)}{(b-7)(b-1)} = \frac{b+7}{b-1}$$

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Simplify:

$$\frac{3}{4x^2}\cdot\frac{4x^3}{21}\cdot\frac{14x^2}{4x^5}=\frac{x^3}{2x^7}=\frac{x^{3-7}}{2}=\frac{x^{-4}}{2}=\frac{1}{2x^4}$$

$$\frac{28}{4a^3}\cdot\frac{4a^5}{21}\cdot\frac{3}{49a^4}=\frac{4a^5}{49a^7}=\frac{4a^{5-7}}{49}=\frac{4a^{-2}}{49}=\frac{4}{49a^2}$$

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Simplify:

$$\frac{x+1}{x^2+2x-3}\cdot\frac{x^2+1x-6}{x^2-2x-3}$$

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

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

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Simplify:

$$\frac{x^2-25}{x^2-5x+6} \cdot \frac{x^2-4}{x^2+2x-15}$$

$-3 \quad -2 \qquad 5 \quad -3$

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

$$\frac{(x-5)(x+2)}{(x-3)(x-3)} = \frac{x^2-3x-10}{x^2-6x+9}$$

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Simplify:

$$\frac{x-4}{(x-2)^2} \div \frac{x^2-3x-4}{x^2-4}$$

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

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

$$\frac{x+2}{x^2-x-2}$$

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Complex Fractions

Simplify:

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

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

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

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

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

$$\frac{x^2-x-6}{x-2}$$

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