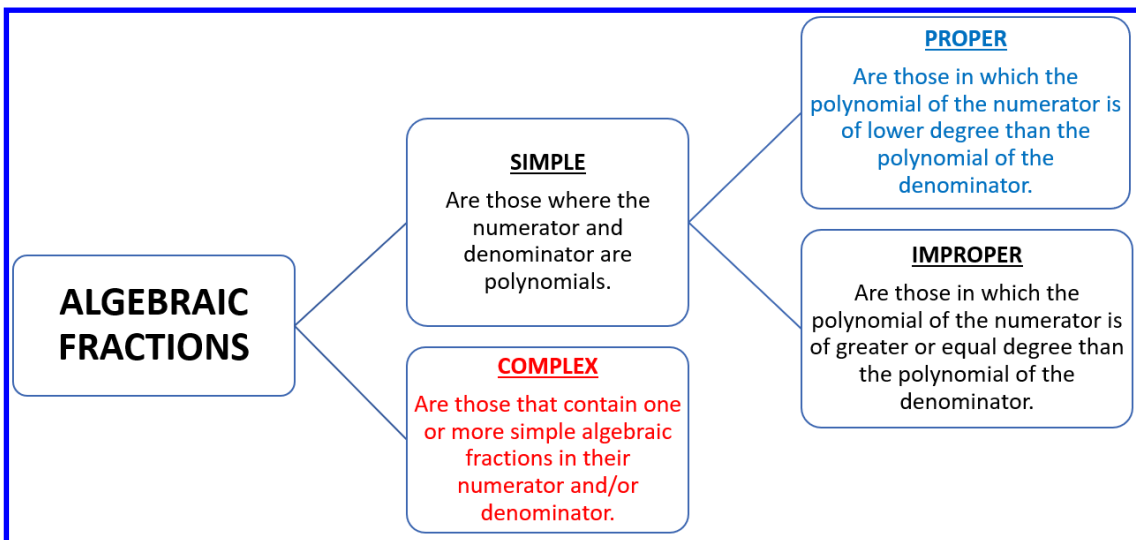


# SIMPLIFY RATIONAL EXPRESSIONS

DEFINITION: An algebraic fraction or a rational expression is formed by the quotient of two algebraic expressions.



SIMPLIFY: An algebraic fraction is simplified when it has no common factors in the numerator and denominator.

To simplify it, Laws of Exponents or Factoring processes are used to cancel identical factors.

$$\frac{a \cdot c}{b \cdot c} = \frac{a \cdot \epsilon}{b \cdot \epsilon} = \frac{a}{b}$$

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EXAMPLE: Simplify the following expression:

$$\frac{14x^5y - 63x^4y + 28x^3y}{28x^2y^2 - 14xy^2} =$$

SOLUTION: 1): Factoring numerator and denominator.

$$= \frac{7x^3y(2x^2 - 9x + 4)}{14xy^2(2x - 1)} =$$

$$= \frac{7x^3y(2x - 1)(x - 4)}{14xy^2(2x - 1)} =$$

2) Simplifying; canceling identical factors:

$$= \frac{7x^3y(2x - 1)(x - 4)}{(2)(7)xy^2(2x - 1)} =$$

$$= \frac{x^3y(2x - 1)(x - 4)}{2xy^2(2x - 1)} = \frac{x^3x^{-1}(2x - 1)(x - 4)}{2y^2y^{-1}(2x - 1)} =$$

$$= \frac{x^{3-1}(2x - 1)(x - 4)}{2y^{2-1}(2x - 1)} = \frac{x^2(2x - 1)(x - 4)}{2y^1(2x - 1)} =$$

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



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