

## 15.6 Complex Rational Expressions

**Complex Rational Expression (Complex Fraction)**: a rational expression that contains rational expressions within its numerator and/or its denominator.

Two methods to simplify complex rational expressions:

**Method 1: Multiplying by 1**  $\Rightarrow \frac{LCD}{LCD}$

**Method 2: Dividing Two Rational Expressions**

Ex. Simplify.

$$\frac{\frac{1}{5} - \frac{1}{a}}{\frac{5-a}{5}}$$

Ex. Simplify.

$$\frac{\frac{a}{6b^3} + \frac{4}{9b^2}}{\frac{5}{6b} - \frac{1}{9b^3}}$$

Ex. Simplify.

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

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

$$(c) \frac{\frac{1}{a^2} - \frac{1}{b^2}}{\frac{1}{a} + \frac{1}{b}}$$