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* \( \frac{\text{LCD}}{\text{LCD}} \)

**Method 2:** *Dividing Two Rational Expressions*

Ex. Simplify.

\[
\frac{1}{5} \cdot \frac{1}{a} \quad \frac{5 - a}{5}
\]

Ex. Simplify.

\[
\frac{a}{6b^3} + \frac{4}{9b^2} \quad \frac{5}{6b} - \frac{1}{9b^3}
\]
Ex. Simplify.

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

(b) \[\frac{3}{x + 1} + \frac{1}{x}\]

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