8.5 Add and Subtract Rational Expressions

TEKS 2A.2.A, 2A.10.F

Before You multiplied and divided rational expressions.

Now You will add and subtract rational expressions.

Why? So you can determine monthly car loan payments, as in Ex. 43.

Key Vocabulary
- complex fraction

As with numerical fractions, the procedure used to add (or subtract) two rational expressions depends upon whether the expressions have *like* or *unlike* denominators.

KEY CONCEPT *For Your Notebook*

Adding or Subtracting with Like Denominators

To add (or subtract) rational expressions with *like* denominators, simply add (or subtract) their numerators. Then place the result over the common denominator.

Let a, b, and c be expressions with $c \neq 0$.

	Addition	Subtraction
Properties	$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$	$\frac{a}{c} - \frac{b}{c} = \frac{a-b}{c}$
Examples	$\frac{3x}{5x^2} + \frac{7}{5x^2} = \frac{3x+7}{5x^2}$	$\frac{9x^3}{x+1} - \frac{x^2}{x+1} = \frac{9x^3-x^2}{x+1}$

EXAMPLE 1 Add or subtract with like denominators

Perform the indicated operation.

a. $\frac{7}{4x} + \frac{3}{4x}$ **b.** $\frac{2x}{x+6} - \frac{5}{x+6}$

Solution

a. $\frac{7}{4x} + \frac{3}{4x} = \frac{7+3}{4x} = \frac{10}{4x} = \frac{5}{2x}$ Add numerators and simplify result.

b. $\frac{2x}{x+6} - \frac{5}{x+6} = \frac{2x-5}{x+6}$ Subtract numerators.

GUIDED PRACTICE for Example 1

Perform the indicated operation and simplify.

1. $\frac{7}{12x} - \frac{5}{12x}$ **2.** $\frac{2}{3x^2} + \frac{1}{3x^2}$ **3.** $\frac{4x}{x-2} - \frac{x}{x-2}$ **4.** $\frac{2x^2}{x^2+1} + \frac{2}{x^2+1}$