15.4 Adding Rational Expressions
15.5 Subtracting Rational Expressions

Recall: $\frac{2}{7}+\frac{4}{7}$

Recall: $\frac{5}{8}-\frac{3}{8}$

When two fractions have the **same denominator**, we *add* or *subtract* numerators and keep the common denominator.

1. $\dfrac{\textit{numerator} \pm \textit{numerator}}{\text{keep the common denominator}}$
2. Factor the numerator and denominator.
3. Find all common factors to reduce.

Ex. Add. Simplify if possible.

(a) $\dfrac{3a+13}{a+4}+\dfrac{2a+7}{a+4}$

(b) $\dfrac{x-5}{x^2-4x+3}+\dfrac{2}{x^2-4x+3}$

Ex. Subtract. Simplify if possible.

(a) $\dfrac{5+3t}{4t}-\dfrac{2t+1}{4t}$

(b) $\dfrac{2a^2+15}{a^2-7a+12}-\dfrac{11a}{a^2-7a+12}$

(Sec. 15.3) Recall: $\frac{2}{15}+\frac{7}{18}$

To Add or Subtract Rational Expressions Having Unlike Denominators

1. Find the LCD.
2. Write each rational expression as an equivalent expression with the LCD.
3. Add or subtract the numerators and keep the LCD.
4. Simplify, if possible. (Factoring & Reduce)

Ex. Perform the indicated operation. Simplify, if possible.

(a) $\frac{5}{10xy^3}-\frac{3}{14xy^2}$

(b) $\frac{3}{2a+10}+\frac{15}{a^2-25}$

(c) $\frac{7x}{x-3}+\frac{4x+9}{3-x}$

(d) $\frac{6x}{x^2+4x+4}+\frac{x}{x^2-4}$

Exercises:

Perform the indicated operation. Simplify, if possible.

(a) $\dfrac{2y}{x^2-y^2}-\dfrac{1}{x+y}+\dfrac{1}{x-y}$

(b) $\dfrac{2a-b}{a-b}-\dfrac{3a-b}{a-b}+\dfrac{a-2b}{b-a}$