

## TOPIC: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH THE SAME DENOMINATOR

### Adding and Subtracting Rational Expressions with Like Denominators

◆ Recall: We can + or – fractions w/ like denominators by combining numerators & keeping the **same** denominator.

| Recall | + or – Rational <i>Numbers</i>                                                                                                                                                                                                                       | New | + or – Rational <i>Expressions</i>                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------|
|        | $\frac{5}{18} + \frac{1}{18}$ <p><b>Combine numerators:</b> <math>\frac{5+1}{18} = \frac{6}{18}</math></p> <p><b>Simplify:</b> <math>\frac{6}{18} = \frac{\cancel{3} \cdot \cancel{2}}{\cancel{3} \cdot 3 \cdot \cancel{2}} = \frac{1}{3}</math></p> |     | $\frac{5}{18x} + \frac{1}{18x}$ <p><b>Combine numerators:</b></p> <p><b>Simplify:</b></p> |

◆ When subtracting, remember to \_\_\_\_\_ the negative sign to ALL terms of the numerator of the 2<sup>nd</sup> fraction.

**EXAMPLE** Add or subtract the rational expressions and simplify.

$$\frac{x^2}{x-1} - \frac{-x+2}{x-1}$$

## **TOPIC: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH THE SAME DENOMINATOR**

### **PRACTICE**

Add the following and simplify the sum if possible.

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

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

### **PRACTICE**

Subtract the following and simplify the difference if possible.

(A)  $\frac{x+5}{4x} - \frac{2x-1}{4x}$

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

### **EXAMPLE**

Perform the indicated operation and write the resulting expression in its simplest form.

$$\frac{2y^2 + 7y + 2}{2y - 5} - \frac{10y - 7}{2y - 5} + \frac{4y^2}{2y - 5}$$