TOPIC: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH DIFFERENT DENOMINATORS

Adding and Subtracting Rational Expressions with Unlike Denominators

◆ Recall: To add or subtract fractions, the fractions must have the *same* denominators.

► To $+/-$ rational expressions, 1) **find** the LCD, 2) **rewrite** as equiv. expressions with LCD, 3) $+/-$ numerators.

Recall: Add/Subtract Rational #s	New: Add/Subtract Rational Expressions
$\frac{1}{30}+\frac{1}{20}$	$\frac{1}{30x}+\frac{1}{20x^2}$
LCD: 60	**LCD:** $60x^2$
Equivalent Rational Numbers: $\frac{1}{30}\cdot\frac{2}{2}=\frac{2}{60}$ $\frac{1}{20}\cdot\frac{3}{3}=\frac{3}{60}$	**Equivalent Rational Expressions:** $\frac{1}{30x}\cdot\frac{2x}{2x}=\frac{2x}{60x^2}$ $\frac{1}{20x^2}\cdot\frac{3}{3}=\frac{3}{60x^2}$
Add or Subtract: $\frac{2}{60}+\frac{3}{60}=$ ___	**Add or Subtract:** $\frac{2x}{60x^2}+\frac{3}{60x^2}=$ _____

EXAMPLE Write the following as a single, fully simplified rational expression.

$$\frac{2}{x+4}-\frac{7}{x-8}$$

$$=\frac{2(\quad)}{(x+4)(\quad)}-\frac{7(\quad)}{(x-8)(\quad)}$$

TOPIC: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH DIFFERENT DENOMINATORS

PRACTICE Add or subtract the following and simplify if possible.

(A)

$$\frac{2}{x^2-1}+\frac{3}{x+1}$$

(B)

$$\frac{x}{x^2+3x}+\frac{3}{x+3}$$

(C)

$$\frac{x^2}{x^2-4}-\frac{2x}{4-x^2}$$

PRACTICE Add or subtract the following and simplify if possible.

(A)

$$\frac{3}{x}+\frac{2}{x+2}$$

(B)

$$\frac{x+2}{x^2-4}+\frac{1}{x-2}$$

(C)

$$\frac{x^2}{x^2-25}-\frac{5x}{25-x^2}$$

TOPIC: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS WITH DIFFERENT DENOMINATORS

EXAMPLE Determine whether each of the following is a linear equation in one variable.

(*A*)

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

(*B*)

$$\frac{x-1}{x^2-4}+\frac{2}{x+2}-\frac{1}{x-2}$$