Lesson 45 Objective: SWBAT add and subtract rational expressions with unlike denominators.

Kickoff- Simplify

1) $\frac{x^2+16}{4-x} - \frac{8x}{4-x}$

$\frac{x^2-8x+16}{4-x}$ $\frac{(x-4)(x-4)}{4-x}$ -1

$-(x-4)$

$-x+4$

2) $\frac{4}{7} + \frac{1}{3}$ $\frac{(7)}{(7)}$ $\frac{(3)}{(3)}$

$\frac{12}{21} + \frac{7}{21}$

$\frac{19}{21}$

Homework

Add/Subtract Rational Expressions

1) factor denominator completly.
2) Multiply factors to make the denominator the same.
3) Add/Subtract
   *distribute −1
4) factor numerator
5) Simplify.

Examples:

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

$\frac{3x+6}{6} + \frac{2x-6}{6} = \frac{5x}{6}$

2) $\frac{1}{x^2+4x+3} + \frac{1}{x^2-1}$

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

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

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

3) $\frac{3y}{2y-6} + \frac{9}{6-2y}$

$\frac{-1\cdot 3y}{2(y-3)} + \frac{9}{-2(-3+y)}$ $-1\cdot$ $-2(y-3)$

$\frac{-3y}{-2(y-3)} - \frac{9}{-2(y-3)}$

$\frac{-3y+9}{-2(y-3)} \div \frac{-3(y-3)}{-2(y-3)}$

$\frac{3}{2}$

4) $\frac{3}{4x} - \frac{3x}{8x}$ 2.

$\frac{6}{8x} - \frac{3x}{8x}$

$\frac{6-3x}{8x}$

$\frac{-3(-2+x)}{8x}$

5) $\frac{4y+3}{3y} - \frac{y+2}{y}\cdot\frac{3}{3}$

$\frac{4y+3}{3y} - \frac{3y+6}{3y} = \frac{y-3}{3y}$

6) $\frac{x+2}{x^2-x} - \frac{6}{x^2-1}$

$\frac{x+2(x+1)}{x(x-1)} - \frac{6x}{x(x-1)(x+1)}$

$(x+1)$

$\frac{(x+2)(x+1)}{x(x-1)(x+1)} - \frac{6x}{x(x-1)(x+1)}$

$\frac{x^2+3x+2-6x}{x(x+1)(x-1)} = \frac{x^2-3x+2}{x(x+1)(x-1)}$

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

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