HOMEWORK: ADD SUBTRACT RATIONAL EXPRESSIONS

NAME: _____ Homework 18 Due: _____

1. $\frac{23}{10x^2} - \frac{x}{10x^2} =$ $\frac{23-x}{10x^2}$

2. $\frac{x}{x^2-5x} - \frac{5}{x^2-5x} = \frac{x-5}{x^2-5x}$

$= \frac{(x-5)}{x(x-5)} = \frac{1}{x}$

3. $5 \cdot \frac{6}{4x^2} + \frac{2}{5x} \cdot 4x$ LCD $= 20x^2$

$5 \cdot 4x$

$\frac{30}{20x^2} + \frac{8x}{20x^2}$

$\frac{30+8x}{20x^2}$

$\frac{2(15+4x)}{20x^2} = \frac{(15+4x)}{10x^2}$

10

4. $\frac{5}{6x^2} + \frac{x}{4x^2-12x}$ LCD $= 12x^2(x-3)$

$\frac{2(x-3)5}{2(x-3)6x^2} + \frac{x}{4x(x-3)} \cdot 3x$

$\frac{10(x-3)}{12x^2(x-3)} + \frac{3x^2}{12x^2(x-3)}$

$\frac{10x-30+3x^2}{12x^2(x-3)}$

$\frac{3x^2+10x-30}{12x^2(x-3)}$

5. $(x+8)\frac{4x^2}{(3x+5)} - \frac{10}{(x+8)}(3x+5)$

$\frac{(4x^3+32x^2)}{(x+8)(3x+5)} - \frac{(30x+50)}{(x+8)(3x+5)}$

$\frac{4x^3+32x^2-30x-50}{(x+8)(3x+5)}$

6. $3 \cdot -\frac{4}{7x} - \frac{5}{3x} \cdot 7$ LCD $= 21x$

$3 \cdot 7$

$\frac{-12}{21x} - \frac{35}{21x}$

$\frac{12-35}{21x}$

$\frac{-23}{21x}$

LCD $= (3x+5)(x+8)$

LCD = $(x-4)(x+2)(x-8)$

LCD = $(x+4)^2(x-4)$

7. $\dfrac{x+3}{x^2-2x-8} - \dfrac{x-5}{x^2-12x+32}$

$\dfrac{(x-8)(x+3)}{(x-8)(x-4)(x+2)} - \dfrac{(x-5)(x+2)}{(x-8)(x-4)(x+2)}$

$\dfrac{(x^2-5x-24)}{(x-8)(x-4)(x+2)} - \dfrac{(x^2-3x-10)}{(x-8)(x-4)(x+2)}$

$\dfrac{x^2-5x-24-x^2+3x+10}{(x-8)(x-4)(x+2)}$

$\dfrac{-2x-14}{(x-8)(x-4)(x+2)}$

8. $\dfrac{2x+1}{x^2+8x+16} - \dfrac{3}{x^2-16}$

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

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

$\dfrac{(2x^2-7x-4)-(3x+12)}{(x+4)^2(x-4)}$

$\dfrac{2x^2-7x-4-3x-12}{(x+4)^2(x-4)} = \dfrac{2x^2-10x-16}{(x+4)^2(x-4)}$

$= \dfrac{2(x^2-5x-8)}{(x+4)(x-4)}$

9. $\dfrac{10x}{3x^2-3} + \dfrac{4}{x-1} + \dfrac{5}{6x}$ LCD = $6x(x+1)(x-1)$

$\dfrac{10x}{3(x^2-1)} + \dfrac{4}{(x-1)} + \dfrac{5}{6x}$

$\dfrac{2x\cdot 10x}{2x\cdot 3(x-1)(x+1)} + \dfrac{4\cdot 6x(x+1)}{(x-1)\cdot 6x(x+1)} + \dfrac{5\cdot(x+1)(x-1)}{6x\cdot(x+1)(x-1)}$

$\dfrac{20x^2+24x(x+1)+5(x+1)(x-1)}{6x(x+1)(x-1)}$

$\dfrac{20x^2+24x^2+24x+5(x^2-1)}{6x(x+1)(x-1)}$

$\dfrac{44x^2+24x+5x^2-1}{6x(x+1)(x-1)}$

$\dfrac{49x^2+24x-1}{6x(x+1)(x-1)}$

10. $\dfrac{\frac{5}{x+4}}{\frac{1}{x+4}+\frac{2}{x}}$

Numerator: $\dfrac{5}{x+4}$

LCD = $x(x+4)$

Denominator: $\dfrac{x(1)}{x(x+4)} + \dfrac{2(x+4)}{x(x+4)}$

$\dfrac{x+2(x+4)}{x(x+4)}$

$\dfrac{x+2x+8}{x(x+4)}$

$\dfrac{3x+8}{x(x+4)}$

$\dfrac{5}{x+4} \div \dfrac{3x+8}{x(x+4)}$

$\dfrac{5}{x+4} \cdot \dfrac{x(x+4)}{3x+8}$

$\dfrac{5x}{3x+8}$