EMTA Name_____

Adding and Subtracting Rational Expression with Unlike Denominators

1. $\frac{x}{3x+9} - \frac{8}{x^2+3x}$

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

$= \frac{x^2}{3x(x+3)} - \frac{24}{3x(x+3)} = \boxed{\frac{x^2-24}{3x(x+3)}}$

2. $\frac{x}{2x-12} - \frac{3}{x-6}$

$\frac{x}{2(x-6)} - \frac{3}{(x-6)} \cdot 2$

$= \frac{x}{2(x-6)} - \frac{6}{2(x-6)} = \frac{x-6}{2(x-6)}$

$= \boxed{\frac{1}{2}}$

3. $\frac{x}{x+3} - \frac{6x}{x^2-9}$

$\frac{(x-3)x}{(x-3)(x+3)} - \frac{6x}{(x-3)(x+3)}$

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

$= \frac{x^2-9x}{(x-3)(x+3)} = \boxed{\frac{x(x-9)}{(x-3)(x+3)}}$

4. $\frac{5x}{x^2-7x} - \frac{4}{2x-14}$

$\frac{5x}{x(x-7)} - \frac{4}{2(x-7)}$

$= \frac{5}{(x-7)} - \frac{2}{(x-7)}$

$= \boxed{\frac{3}{(x-7)}}$

5. $\frac{7}{6x} + \frac{5}{8x^2}$

$\frac{7}{6x} \cdot 4x + \frac{5}{8x^2} \cdot 3$

$= \frac{28x}{24x^2} + \frac{15}{24x^2} = \boxed{\frac{28x+15}{24x^2}}$

6. $\frac{2x}{5ab^3} + \frac{4y}{3a^2b^2}$

$\frac{2x}{5ab^3} \cdot 3a + \frac{4y}{3a^2b^2} \cdot 5b$

$= \frac{6ax}{15a^2b^3} + \frac{20by}{15a^2b^3} = \boxed{\frac{6ax+20by}{15a^2b^3}}$

7. $\frac{3x+2}{x+y} + \frac{4}{2x+2y}$

$\frac{3x+2}{x+y} + \frac{4}{2(x+y)}$

$= \boxed{\frac{3x+4}{x+y}}$

8. $5 + \frac{x-3}{x+2}$

$\frac{5}{1} \cdot \frac{(x+2)}{(x+2)} + \frac{x-3}{x+2}$

$= \frac{5x+10}{x+2} + \frac{x-3}{x+2} = \boxed{\frac{6x+7}{x+2}}$

WHAT ABOUT THESE?????

9. $\frac{6}{(x+1)(x-2)} + \frac{65}{(x+1)(x-2)}$

$\frac{6x+6}{(x+1)(x-2)} + \frac{65x-130}{(x+1)(x-2)}$

$= \boxed{\frac{71x-124}{(x+1)(x-2)}}$

10. $\frac{3}{(x+3)(x-8)} + \frac{7}{(x+3)(x-8)}$

$\frac{3x+9}{(x+3)(x-8)} + \frac{7x-56}{(x+3)(x-8)}$

$= \boxed{\frac{10x-47}{(x+3)(x-8)}}$

11. $\frac{2x}{(x+5)(x+3)} - \frac{2}{(x+5)(x+3)}$

$\frac{2x^2+10x}{(x+5)(x+3)} - \frac{2x+6}{(x+5)(x+3)}$

$= \frac{2x^2+8x-6}{(x+5)(x+3)} = \boxed{\frac{2(x^2+4x-3)}{(x+5)(x+3)}}$

12. $\frac{2}{2x+12} + \frac{8}{2x}$

$\frac{2}{2(x+6)} + \frac{8}{2x}$

$= \frac{x \cdot 1}{x \cdot (x+6)} + \frac{4(x+6)}{x(x+6)}$

$= \frac{x}{x(x+6)} + \frac{4x+24}{x(x+6)} = \boxed{\frac{5x+24}{x(x+6)}}$

15. $\frac{4x}{x^2+4x-5} - \frac{5}{4}$

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

$= \frac{16x}{4(x+5)(x-1)} - \frac{5x^2+20x-25}{4(x+5)(x-1)}$

$= \boxed{\frac{-5x^2-4x+25}{4(x+5)(x-1)}}$

16. $\frac{2}{x^2-3x+2} - \frac{5}{x-1}$

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

$= \frac{2}{(x-2)(x-1)} - \frac{5x-10}{(x-2)(x-1)}$

$= \boxed{\frac{-5x+12}{(x-2)(x-1)}}$