

Intermediate Algebra
Add & Subtract Rationals Homework

Name: _____

Date: _____ Block: _____

Add or subtract each rational expression

1. $\frac{5x+3}{x^2-4} + \frac{2x+9}{4-x^2}$

$$\frac{5x+3}{x^2-4} + \frac{-2x-9}{x^2-4} = \frac{3x-6}{x^2-4} = \frac{3(x-2)}{(x+2)(x-2)}$$

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

2. $\frac{x+15}{x-2} + \frac{10}{2-x}$

$$\frac{x+15}{x-2} + \frac{-10}{x-2} = \boxed{\frac{x+5}{x-2}}$$

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

$$\frac{2}{3x} + \frac{12}{3x} = \boxed{\frac{14}{3x}}$$

4. $\frac{3}{x} + \frac{6}{7x^2} = \frac{21x}{7x^2} + \frac{6}{7x^2} = \frac{21x+6}{7x^2}$

$$\boxed{\frac{3(7x+2)}{7x^2}}$$

5. $\frac{6}{5x^3y} - \frac{1}{2x^2y^3}$

$$\frac{12y^2}{10x^3y^3} - \frac{5x}{10x^3y^3} = \boxed{\frac{12y^2-5x}{10x^3y^3}}$$

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

$$\frac{10x}{2x^2y} + \frac{7y}{2x^2y} = \boxed{\frac{10x+7y}{2x^2y}}$$

7. $\frac{5x-3}{4x} - \frac{1}{6x}$

$$\frac{3(5x-3)}{12x} - \frac{2}{12x} = \frac{15x-9-2}{12x}$$

$$= \boxed{\frac{15x-11}{12x}}$$

8. $\frac{5}{x} + \frac{8}{1}$

$$\frac{5}{x} + \frac{8x}{x} = \boxed{\frac{8x+5}{x}}$$

Add or subtract each rational expression

$$9. \frac{x-1}{x-2} - \frac{x^2+4x-4}{(x+6)(x-2)}$$

$$\frac{x^2+5x-6}{(x-1)(x+6)} - \frac{x^2+4x-4}{(x+6)(x-2)} = \frac{x-2}{(x+6)(x-2)} = \boxed{\frac{1}{x+6}}$$

$$10. \frac{x+2}{x-7} - \frac{x^2+4x+13}{(x-7)(x+3)}$$

$$\frac{x^2+5x+6}{(x+2)(x+3)} - \frac{x^2+4x+13}{(x-7)(x+3)} = \frac{x-7}{(x-7)(x+3)} = \boxed{\frac{1}{x+3}}$$

$$11. \frac{x-4}{x^2+4x+3} - \frac{x-1}{x^2-9}$$

$$\frac{(x+3)(x+1)}{x^2-7x+12} - \frac{(x+3)(x-3)}{(x-1)(x+1)}$$

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

$$\boxed{\frac{-7x+13}{(x+3)(x+1)(x-3)}}$$

$$12. 2 + \frac{x}{x-3} - \frac{3}{x^2-9}$$

$$\frac{2x^2-18}{(x+3)(x-3)} + \frac{x^2+3x}{(x+3)(x-3)} - \frac{3}{(x+3)(x-3)}$$

$$\boxed{\frac{3x^2+3x-21}{(x+3)(x-3)}}$$

$$13. \frac{2}{x+3} - \frac{x}{x-1} + \frac{x^2+2x}{(x+3)(x-1)}$$

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

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

$$14. \frac{2}{x^2-5x+6} - \frac{4}{x^2-2x-3} + \frac{2}{x^2+4x+3}$$

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

$$\frac{2x^2+8x+6-4x^2-4x+24+2x^2-10x+12}{(x-3)(x-2)(x+1)(x-3)}$$

$$\frac{-6x+42}{(x-3)(x-2)(x+1)(x-3)}$$

$$\boxed{\frac{-6(x+7)}{(x-3)(x-2)(x+1)(x-3)}}$$