Name: Key

Unit 10: Rational Expressions

Date: _____ **Bell:** _____

Homework 4: Adding/Subtracting Rational Expressions

Directions: Find each sum or difference. Final answers must be simplified.

1. $\frac{5n}{15}+\frac{7n}{15}$ $\frac{12n}{15}=\frac{4n}{5}$

2. $\frac{11a}{12a^2}-\frac{7a}{12a^2}$ $\frac{4a}{12a^2}=\frac{1}{3a}$

3. $\frac{10x^3y}{7xy^2}+\frac{4x^3y}{7xy^2}$ $\frac{14x^3y}{7xy^2}$ $\frac{2x^2}{y}$

4. $\frac{9z}{3z-4}-\frac{12}{3z-4}=\frac{9z-12}{3z-4}=\frac{3(3z-4)}{(3z-4)}=3$

5. $\frac{m+2}{2m-1}+\frac{3m-3}{2m-1}=\frac{4m-1}{2m-1}$

6. $\frac{a-4}{a+1}+\frac{a+6}{a+1}$ $\frac{2a+2}{a+1}=\frac{2(a+1)}{a+1}=2$

7. $\frac{5a+2}{a^2}-\frac{4a+2}{a^2}$ $\frac{a}{a^2}=\frac{1}{a}$

8. $\frac{k+4}{k^2-2k-3}+\frac{6k+3}{k^2-2k-3}$ $\frac{7K+7}{K^2-2K-3}$ $\frac{7(K+1)}{(K-3)(K+1)}=\frac{7}{K-3}$

9. $\frac{6x+3}{x^2+6x+5}-\frac{x-2}{x^2+6x+5}=\frac{5x+5}{x^2+6x+5}$ $\frac{5(x+1)}{(x+5)(x+1)}=\frac{5}{x+5}$

10. $\frac{6p+4}{4p^2+4p}+\frac{p+3}{4p^2+4p}$ $\frac{7p+7}{4p^2+4p}$ $\frac{7(p+1)}{4p(p+1)}=\frac{7}{4p}$

11. $\frac{3x+2}{x^2-25}-\frac{2x-3}{x^2-25}$ $\frac{x+5}{(x+5)(x-5)}=\frac{1}{x-5}$

12. $\frac{5y+3}{y^2-64}-\frac{4y-5}{y^2-64}$ $\frac{y+8}{(y+8)(y-8)}$ $\frac{1}{y-8}$

13. $\frac{m+6}{2m^2+4m-16}+\frac{m+2}{2m^2+4m-16}$ $\frac{2m+8}{2m^2+4m-16}=\frac{2(m+4)}{2(m+4)(m-2)}=\frac{1}{m-2}$

14. $\frac{3c}{c^2+3c-10}-\frac{6}{c^2+3c-10}$ $\frac{3c-6}{c^2+3c-10}$ $\frac{3(c-2)}{(c-2)(c+5)}=\frac{3}{c+5}$

15. $\frac{4x}{3x^2-2x-5}+\frac{2x-10}{3x^2-2x-5}$ $\frac{6x-10}{3x^2-2x-5}$ $\frac{2(3x-5)}{(3x-5)(x+1)}=\frac{2}{x+1}$

Name: _____ **Unit 10:** Rational Expressions

Date: _____ **Bell:** _____ **Homework 5:** Adding/Subtracting Rational Expressions (Unlike Bases)

**** This is a 2-page document! ****

Directions: Find each sum or difference. Make sure your answer is simplified.

1. $\frac{7y}{6} - \frac{y}{2} + \frac{2y}{9}$

$\frac{21y}{18} - \frac{9y}{18} + \frac{4y}{18} = \frac{16y}{18} = \boxed{\frac{8y}{9}}$

2. $\frac{5 \cdot 3}{5(4x)} + \frac{1}{20x}$

$\frac{15}{20x} + \frac{1}{20x} = \frac{16}{20x} = \boxed{\frac{4}{5x}}$

3. $\frac{9(m-1)}{2 \cdot 9} - \frac{3m+1}{18}$

$\frac{9m-9}{18} - \frac{3m+1}{18} = \frac{6m-10}{18}$

$= \frac{\cancel{2}(3m-5)}{\cancel{18}\,9} = \boxed{\frac{3m-5}{9}}$

4. $\frac{12}{4k-20} - \frac{1 \cdot 4}{(k-5)4}$

$\frac{12}{4K-20} - \frac{4}{4K-20} = \frac{8}{4K-20}$

$= \frac{8\cancel{2}}{\cancel{4}(K-5)} = \boxed{\frac{2}{K-5}}$

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

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

$= \boxed{\frac{1}{3}}$

6. $\frac{(y+8)y}{(y+8)(y-8)} - \frac{6y+80}{y^2-64}$

$\frac{y^2+8y}{y^2-64} - \frac{6y+80}{y^2-64} = \frac{y^2+2y-80}{y^2-64}$

$= \frac{(y+10)(\cancel{y-8})}{(\cancel{y-8})(y+8)} = \boxed{\frac{y+10}{y+8}}$

7. $\frac{6x}{x^2-4} - \frac{3(x+2)}{(x-2)(x+2)}$

$\frac{6x}{x^2-4} - \frac{3x+6}{x^2-4} = \frac{3x-6}{x^2-4}$

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

8. $\frac{3w}{w^2-4w} - \frac{1 \cdot w}{(w-4)w}$

$\frac{3w}{w^2-4w} - \frac{w}{w^2-4w} = \frac{2w}{w^2-4w}$

$= \frac{2\cancel{w}}{\cancel{w}(w-4)} = \boxed{\frac{2}{w-4}}$

9. $\frac{3}{x+1} - \frac{6}{x^2+4x+3}$ ← $(x+3)(x+1)$

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

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

10. $\frac{1}{x-6} + \frac{x-17}{x^2-x-30}$ ← $(x-6)(x+5)$

$\frac{x+5}{x^2-x-30} + \frac{x-17}{x^2-x-30} = \frac{2x-12}{x^2-x-30}$

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

11. $\frac{8y-26}{y^2-4y-21} - \frac{3(y+3)}{(y-7)(y+3)}$

$(y-7)(y+3)$

$\frac{8y-26}{y^2-4y-21} - \frac{3y+9}{y^2-4y-21} = \frac{5y-35}{y^2-4y-21}$

$= \frac{5(y-7)}{(y-7)(y+3)} = \boxed{\frac{5}{y+3}}$

12. $\frac{x^2-3x-1}{2x^2+5x+2} + \frac{x(x+2)}{2x+1(x+2)}$

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

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

$2x^2+5x+2$

x^2+5x+4

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

$2x^2-x-1$

x^2-x-2

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