Rational Expressions – Add/Subtract

Algorithm

1. **find the common denominator by multiplying or by the reducing method**
2. **make equivalent fractions**
3. **add or subtract the numerators**
4. **simplify**

If appropriate, remember to use

$$\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}$$

Example $\frac{x+2}{x-1}+\frac{x}{x+1}$

1. CD = (x – 1)(x + 1)
2. $\frac{(x+2)(x+1}{(x-1)(x+1)}+\frac{x(x-1)}{(x+1)(x-1)}$
3. $\frac{x^2+3x+2}{(x+1)(x-1)}+\frac{x^2-x}{(x+1)(x-1)}$
4. $\frac{2x^2+2x+2}{(x+1)(x-1)}$

Simplify the following expressions.

1. $\frac{4}{x+1}+\frac{5}{x+3}$

2. $\frac{3}{x+5}+\frac{4}{x+2}$

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

4. $\frac{5}{x+y}-\frac{3}{x-y}$

5. $\frac{2x}{x-2y}+\frac{2y}{x+2y}$

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

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

8. $\frac{3x-1}{10}+\frac{5-2x}{15}$

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

10. $\frac{4}{x^2+x-12}+\frac{7}{x^2-9}$

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

12. $\frac{5x}{x^2+x-6}+\frac{2x}{x^2+8x+15}$

13. $\frac{2x}{x^2+4x+3}+\frac{3}{x^2+8x+15}$

14. When do you multiply the denominators to find the LCD?

15. When do you use the reducing Method to find the LCD?

16. Describe the procedure to find the LCD using the Reducing Method.