

EXTRA PRACTICE 25
Addition and Subtraction of Rational Expressions
 Use after Sections 6.3 and 6.4 Name _____

Example: Do this calculation.

$$\begin{aligned} & \frac{5x}{x^2 - 3x - 4} - \frac{2x}{x^2 - 6x + 8} \\ &= \frac{5x}{(x-4)(x+1)} - \frac{2x}{(x-4)(x-2)}, \text{ LCM} = (x-4)(x-2)(x+1) \\ &= \frac{5x}{(x-4)(x+1)} \cdot \frac{x-2}{x-2} - \frac{2x}{(x-4)(x-2)} \cdot \frac{x+1}{x+1} \\ &= \frac{5x(x-2) - 2x(x+1)}{(x-4)(x-2)(x+1)} \\ &= \frac{5x^2 - 10x - 2x^2 - 2x}{(x-4)(x-2)(x+1)} \\ &= \frac{3x^2 - 12x}{(x-4)(x-2)(x+1)} \\ &= \frac{3x(x-4)}{(x-4)(x-2)(x+1)} \\ &= \frac{3x}{(x-2)(x+1)} \end{aligned}$$

Add or subtract. Simplify.

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

2. $\frac{x-1}{x+6} + \frac{x+3}{x-2}$ _____

3. $\frac{a^2}{a-4} + \frac{16}{4-a}$ _____

4. $\frac{4y}{y^2 - y - 2} - \frac{5y}{y^2 + y - 6}$ _____

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

6. $\frac{4}{a+2} + \frac{a+1}{a^2-4} - \frac{3}{a-2}$ _____

7. $\frac{y-5}{3y+9} - \frac{y+1}{2y+6}$ _____

8. $\frac{5}{a} + \frac{3}{-a}$ _____

9. $\frac{x+1}{x^2-7x+10} + \frac{3}{x^2-x-2}$ _____

10. $\frac{b-3}{b^2-9} + \frac{b+3}{b^2+6b+9}$ _____

EXTRA PRACTICE 25 (continued)
Addition and Subtraction of Rational Expressions
Use after Sections 6.3 and 6.4

11. $\frac{a-5}{a^2-5a} + \frac{a+5}{a^2-25}$ _____

12. $\frac{y+7}{y^2-49} - \frac{3y+1}{49-y^2}$ _____

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

14. $\frac{b+3}{2b+6} - \frac{2}{3b}$ _____

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

16. $\frac{5}{x^2+3x} - \frac{4}{x^2-x-12}$

17. $\frac{a}{1-a} + \frac{3a}{a+1} - \frac{5}{a^2-1}$

18. $\frac{8x+4}{2x^2-9x-5} + \frac{x-1}{x-5}$

19. $\frac{y-5}{6y} - \frac{4y+1}{y}$ _____

20. $\frac{9x}{x^2-81} + \frac{3x}{x+9}$ _____