

8-5**Practice**

Form G

Adding and Subtracting Rational Expressions**Find the least common multiple of each pair of polynomials.**

1. $3x(x + 2)$ and $6x(2x - 3)$

2. $2x^2 - 8x + 8$ and $3x^2 + 27x - 30$

3. $4x^2 + 12x + 9$ and $4x^2 - 9$

4. $2x^2 - 18$ and $5x^3 + 30x^2 + 45x$

Simplify each sum or difference. State any restrictions on the variables.

5. $\frac{x^2}{5} + \frac{x^2}{5}$

6. $\frac{6y - 4}{y^2 - 5} + \frac{3y + 1}{y^2 - 5}$

7. $\frac{2y + 1}{3y} + \frac{5y + 4}{3y}$

8. $\frac{12}{xy^3} - \frac{9}{xy^3}$

9. $-\frac{2}{n + 4} - \frac{n^2}{n^2 - 16}$

10. $\frac{3}{8x^3y^3} - \frac{1}{4xy}$

11. $\frac{6}{5x^2y} + \frac{5}{10xy^2}$

12. $\frac{x + 2}{x^2 + 4x + 4} + \frac{2}{x + 2}$

13. $\frac{4}{x^2 - 25} + \frac{6}{x^2 + 6x + 5}$

14. $\frac{y}{4y + 8} - \frac{1}{y^2 + 2y}$

Simplify each complex fraction.

15. $\frac{\frac{2}{x}}{\frac{3}{y}}$

16. $\frac{1 + \frac{2}{x}}{4 - \frac{6}{x}}$

17. $\frac{\frac{1}{x-2}}{2 + \frac{1}{x}}$

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

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

20. $\frac{1 + \frac{2}{3}}{\frac{4}{9}}$

21. $\frac{\frac{2}{x} + 6}{\frac{1}{y}}$

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

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

8-5**Practice** (continued)

Form G

Adding and Subtracting Rational Expressions

24. The total resistance for a parallel circuit is given by. $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$.

a. If $R = 1$ ohm, $R_2 = 6$ ohms, and $R_3 = 8$ ohms, find R_1 .

b. If $R_1 = 3$ ohms, $R_2 = 4$ ohms, and $R_3 = 6$ ohms, find R .

Add or subtract. Simplify where possible. State any restrictions on the variables.

25. $\frac{3}{7x^2y} + \frac{4}{21xy^2}$

26. $\frac{xy - y}{x - y} - \frac{y}{x + 2}$

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

28. $\frac{6}{y^2 + 5y} + \frac{3y}{4y + 20} - \frac{1}{4}$

29. A teacher uses an overhead projector with a focal length of x cm. She sets a transparency $x + 20$ cm below the projector's lens. Write an expression in simplest form to represent how far from the lens she should place the screen to place the image

in focus. Use the thin-lens equation $\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$.

30. Open-Ended Write two complex fractions that simplify to $\frac{x + 5}{x^2}$.

31. Writing Explain the differences in the process of adding two rational expressions using the lowest common denominator (LCD) and adding them using a common denominator that is not the LCD. Include an example in your explanation.