8.5 EXERCISES

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: A fraction that contains a fraction in its numerator or denominator is called a(n) __?__.

2. **WRITING** *Explain* how to add rational expressions with unlike denominators.

EXAMPLE 1
on p. 582
for Exs. 3–8

LIKE DENOMINATORS Perform the indicated operation and simplify.

3. $\dfrac{15}{4x} + \dfrac{5}{4x}$

4. $\dfrac{x}{16x^2} - \dfrac{4}{16x^2}$

5. $\dfrac{9}{x+1} - \dfrac{2x}{x+1}$

6. $\dfrac{3x^2}{x-8} + \dfrac{6x}{x-8}$

7. $\dfrac{5x}{x+3} + \dfrac{15}{x+3}$

8. $\dfrac{4x^2}{2x-1} - \dfrac{1}{2x-1}$

EXAMPLE 2
on p. 583
for Exs. 9–15

FINDING LCMS Find the least common multiple of the polynomials.

9. $3x$ and $3(x-2)$

10. $2x^2$ and $4x+12$

11. $2x$ and $2x(x-5)$

12. $24x^2$ and $8x^2 - 16x$

13. $x^2 - 25$, x, and $x - 5$

14. $9x^2 - 16$ and $3x^2 - 2x - 8$

15. 🢓 **TAKS REASONING** What is the least common multiple of the polynomials $3x^2 - 9x$ and $6x^2$?

(A) $3x(x-3)$ (B) $6x^2$ (C) $6x(x-3)$ (D) $6x^2(x-3)$

EXAMPLES 3 and 4
on pp. 583–584
for Exs. 16–26

UNLIKE DENOMINATORS Perform the indicated operation and simplify.

16. $\dfrac{12}{5x} + \dfrac{7}{6x}$

17. $\dfrac{8}{3x^2} - \dfrac{5}{4x}$

18. $\dfrac{x-4}{5x} - \dfrac{12}{5(x-4)}$

19. $\dfrac{12}{x^2+5x-24} + \dfrac{3}{x-3}$

20. $\dfrac{3}{x+4} - \dfrac{1}{x+6}$

21. $\dfrac{9}{x-3} + \dfrac{2x}{x+1}$

22. $\dfrac{x+4}{x^2-4} - \dfrac{15}{x-2}$

23. $\dfrac{-15x}{x^2-8x+16} + \dfrac{12}{x-4}$

24. $\dfrac{x^2-5}{x^2+5x-14} - \dfrac{x+3}{x+7}$

25. **ERROR ANALYSIS** *Describe* and correct the error in adding the rational expressions.

$$\dfrac{x}{x+2} + \dfrac{4}{x-5} = \dfrac{x+4}{(x+2)(x-5)} \quad ✗$$

26. 🢓 **TAKS REASONING** Which expression is equivalent to $\dfrac{2x}{x+4} - \dfrac{x^2+4}{x^2-16}$?

(A) $\dfrac{1}{x+4}$ (B) $\dfrac{(x+2)(x-2)}{(x+4)(x-4)}$ (C) $\dfrac{x^2-8x-4}{(x+4)(x-4)}$ (D) $\dfrac{3x^2-8x+4}{(x+4)(x-4)}$

UNLIKE DENOMINATORS Perform the indicated operation(s) and simplify.

27. $\dfrac{x}{x^2-9} + \dfrac{x+1}{x^2+6x+9}$

28. $\dfrac{x+3}{x^2-2x-8} - \dfrac{x-5}{x^2-12x+32}$

29. $\dfrac{x+2}{x-4} + \dfrac{2}{x} + \dfrac{5x}{3x-1}$

30. $\dfrac{x+3}{x^2-25} - \dfrac{x-1}{x-5} + \dfrac{3}{x+3}$