Answers for Lesson 9-5 Exercises

1. $\frac{120}{59} \approx 2.03$ in.

2. $\frac{240}{119} \approx 2.02$ in.

3. For distances greater than 10 ft, di is nearly constant.

4. $9(x + 2)(2x - 1)$

5. $(x - 1)(x + 1)(x + 1)$

6. $10(x - 2)(x + 3)^2$

7. $18(2x - 7)(x + 3)$

8. $5(y + 4)(y - 4)$

9. $2(x + 5)(x^2 - 32x - 10)$

10. $\frac{1}{x}$

11. $\frac{2(d - 2)}{2d + 1}$

12. $\frac{xy + 8y + 4}{2xy^2}$

13. $\frac{7x^2 + 20x - 18}{(x - 3)(x + 3)(x + 4)}$

14. $\frac{-x + 6}{(x - 3)(x + 3)}$

15. $\frac{5x^2 + 14x - 12}{(x - 3)(x + 2)^2}$

16. $-\frac{3}{x}$

17. $\frac{-3(2y + 1)}{2y - 1}$

18. $\frac{y - 6}{2(y + 2)}$

19. $\frac{x^2 - 24}{3x(x + 3)}$

20. $\frac{-5(y + 8)}{(y - 5)(y + 5)}$

21. $\frac{-2x(x + 3)}{(x - 2)(x - 1)(x + 1)}$

22. $\frac{y}{2x}$

23. $\frac{15}{28}$

24. $\frac{2}{3(x + y)}$

25. $\frac{b}{9}$

26. $\frac{y}{x + y}$

27. $\frac{3x}{2 + xy}$

28. $\frac{2}{5}$

29. $\frac{3}{x - 6}$

30. $\frac{-3x}{5 + xy}$

31. $\frac{3x - 8}{4x^2}$

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

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

34. $\frac{7x - 17}{(x - 3)(x + 3)}$

35. $\frac{x^2 + 9x - 1}{(x - 1)(2x + 1)}$

36. $\frac{4x - 1}{2x(2x - 1)}$

37. $\frac{5x^2 + 6x + 12}{(x - 3)(x + 2)^2}$

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

39. $\frac{4y^3 + 12y^2 - y - 2}{y(y + 3)}$

40. $\frac{3(4y - 21)}{y(y - 7)}$

41. Check students' work.

42. Factoring is used to determine the least common multiple of the denominators; check students' work.

43. Answers may vary. Sample: Substitute 0 for x in the three expressions, and show that $\frac{4}{-9} + \frac{7}{3} \neq \frac{25}{-9}$.

44. $\dfrac{3x + 2y}{7x - 5y}$

45. $\dfrac{2x - 5y}{2(3x + 2y)}$

46. $\dfrac{2(x + 2)}{4x + 3}$

47. x

48. $\dfrac{2(x + 5)}{x + 7}$

49. $\dfrac{-5x + 13}{2(x - 4)}$

50. Check students' work.

51. $x \neq -2, -3, -4$; those values result in division by 0, which is undefined.

52. $\dfrac{2}{3}, \dfrac{3}{5}, \dfrac{2}{3}$

53. a. $\dfrac{24}{7}$ mi/h

   b. $\dfrac{24}{7}$

   c. $\dfrac{400}{9}$ mi/h

   d. $\dfrac{2x(x + a)}{2x + a}$ mi/h

54. a. $\dfrac{R_1 R_2 R_3}{R_1 R_2 + R_1 R_3 + R_2 R_3}$

   b. ≈ 0.88 ohms

55. a. $f = \dfrac{d_i d_o}{d_i + d_o}$

   b. $\dfrac{x(2x + 1)}{3x + 1} = f$