

40.
$$\frac{x-4}{x-\frac{16}{x}}$$

41.
$$\frac{\frac{1}{x-1}}{1-\frac{1}{x^2}}$$

42.
$$\frac{\frac{2}{x-1}-\frac{1}{x+2}}{\frac{3}{x+2}-\frac{2}{x-1}}$$

[2.5]

■ Write each expression as a product or quotient in which each variable occurs only once and all exponents are positive.

43.
$$\frac{(2x)^3}{(-3x^2)^2}$$

44.
$$\frac{-2}{(x-y)^2} \left(\frac{x-y}{2} \right)^3$$

45.
$$\frac{-4x^{-2}}{6y^{-2}}$$

46.
$$\frac{(x-y)^{-3}}{x-y}$$

47.
$$(2a^{-2}b^3)^{-3}$$

48.
$$\left(\frac{a^{-2}}{b^3} \right)^{-2}$$

■ Write each product as a sum of powers.

49.
$$a^{-3}(a^3 - a)$$

50.
$$a^{-2}b^{-1}(a^2b^2 + ab^3)$$

■ Factor as indicated.

51.
$$x^{-2}y + 2xy^{-2} = x^{-2}y^{-2}(\ ? \ + \ ?)$$

52.
$$2x^{-2}y^{-1} - x^{-3}y^2 = x^{-3}y^{-1}(\ ? \ - \ ?)$$

■ Write each expression as a single fraction involving positive exponents only.

53.
$$x^{-3} + y^{-1}$$

54.
$$\frac{x^{-1}}{y} - \frac{x}{y^{-1}}$$

55.
$$\frac{x^{-1} - y}{y^{-1}}$$

56.
$$\frac{x^{-1} + y^{-1}}{x^{-1}}$$

57.
$$\frac{x^{-1} - y^{-1}}{(x-y)^{-1}}$$

58.
$$\frac{(xy)^{-1}}{x^{-1} - y^{-1}}$$

■ Estimate the result of each computation using scientific notation.

59.
$$\frac{0.04 \times 0.00049 \times 0.0025}{0.007 \times 0.5 \times 0.00002}$$

60.
$$\frac{6,400,000 \times 0.0015 \times 2100}{0.0007 \times 1600 \times 450,000}$$

61. Norm travels by motorboat to an island 30 miles upstream and returns in the afternoon. The current in the river is 4 miles per hour. Write an expression for the time required for the round trip in terms of the speed of Norm's boat.
62. Professor Marvel makes a round trip between Topeka and Kansas City, 65 miles to the east, by hot air balloon. Write an expression for the time required for the trip in terms of the speed of the balloon if the prevailing wind blows from the west at 12 miles per hour.
63. To light its 30-foot by 40-foot reading room the public library needs enough skylights to cover 15% of the floor space. Express the perimeter of each skylight in terms of its length if the library installs six rectangular skylights of equal size.
64. A tool and die company, needing an additional 6000 cubic feet of storage space, builds a rectangular storage shed with a 10-foot ceiling. Express the width of the shed in terms of its length.