

55.  $-\frac{12}{x}$

56.  $\frac{(1-n)^4(1+n)^2}{n(1+n^2)}$

57.  $\frac{x^2 + 3}{6x}$

58.  $\frac{3(a-b+c)}{b-a+c}$

59. The fraction is zero when  $x = 1$ .

$$c \ 43. \frac{x^2 - 2x}{x^2 - 3x - 4} \cdot \frac{x^2 - 25}{x^2 - 4x - 5} \div \frac{x^2 + 5x}{5x^2 + 10x + 5} \frac{5(x-2)}{x-4}$$

$$44. \frac{b^2 + 6b - 7}{6b^2 - 7b - 20} \cdot \frac{2b^2 + b - 15}{b^2 + 2b - 3} \div \frac{b^2 + 5b - 14}{3b^2 - 2b - 8} 1$$

$$45. \frac{2d + 2c - cd - c^2}{2 + d} \div \frac{d^2 - c^2}{2 + c} \cdot \frac{c - d}{c^2 - 4} \frac{1}{2 + d}$$

$$46. \frac{x^2 + 2xy + y^2 - 16}{16x^4 - 16y^4} \div \frac{x + y - 4}{4x^2 + 4y^2} \cdot \frac{x + y}{x + y + 4} \frac{1}{4(x - y)}$$

**Additional Answers  
Written Exercises**

42.  $\frac{3y + y^2}{(y + 5)(y - 5)}$   
 43. 1  
 44. 3  
 45.  $\frac{7 - d}{2(d^2 - 1)}$   
 46.  $\frac{4}{(n - 5)(n + 5)}$   
 47.  $\frac{a + b}{ab}$   
 48.  $\frac{x^2 + x - 1}{x(1 - x)(1 + x)}$   
 49.  $\frac{4}{(n + 4)^2}$   
 50.  $\frac{2a}{(a - 2)(a + 2)^2}$   
 51.  $\frac{-7}{x(x + 3)}$   
 52.  $\frac{-8c}{(c - 1)(c + 2)(c - 2)}$

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

38.  $\frac{3}{x + 4} - \frac{4}{x - 2} \frac{-x - 22}{(x + 4)(x - 2)}$

41.  $\frac{x}{x^2 - 1} + \frac{4}{x + 1} \frac{5x - 4}{x^2 - 1}$

44.  $\frac{3a}{a - 2b} + \frac{6b}{2b - a}$

47.  $\frac{a}{ab - b^2} + \frac{b}{ab - a^2}$

50.  $\frac{1}{a^2 + 4a + 4} + \frac{1}{a^2 - 4}$

**C** 53.  $\frac{x^2 + 1}{x^2 - 1} + \frac{1}{x + 1} + \frac{1}{x - 1} \frac{x + 1}{x - 1}$

55.  $\frac{a + 2}{a^2 + 5a + 6} - \frac{2 + a}{4 - a^2} + \frac{2 - a}{a^2 + a - 6} \frac{1}{a - 2}$

57.  $\frac{b + 1}{(b - 1)^2} + \frac{2 - 2b}{(b - 1)^3} + \frac{1}{b - 1}$

56.  $-\frac{2x^2 + 15x + 9}{3(x + 3)(x - 3)}$  57.  $\frac{2}{b - 1}$  58.  $\frac{-3}{cd}$

36.  $\frac{3}{y - 6} - \frac{1}{y} \frac{2y + 6}{y(y - 6)}$

39.  $\frac{a + 1}{a} - \frac{a}{a + 1} \frac{2a + 1}{a(a + 1)}$

42.  $\frac{2y}{y^2 - 25} - \frac{y}{y - 5}$

45.  $\frac{d + 2}{d^2 - 1} - \frac{3}{2d + 2}$

48.  $\frac{x}{x - x^2} - \frac{1}{x - x^3}$

51.  $\frac{x - 11}{x^2 - 9} - \frac{x - 7}{x^2 - 3x}$

37.  $\frac{2}{x - 3} + \frac{4}{x + 3} \frac{6x - 6}{(x - 3)(x + 3)}$

40.  $\frac{x}{x + y} + \frac{y}{x - y} \frac{x^2 + y^2}{x^2 - y^2}$

43.  $\frac{2m}{2m - 1} + \frac{1}{1 - 2m}$

46.  $\frac{2n}{n^3 - 5n^2} + \frac{2}{n^2 + 5n}$

49.  $\frac{n}{n^2 + 4n} - \frac{n}{(n + 4)^2}$

52.  $\frac{c - 2}{c^2 + c - 2} - \frac{c + 2}{c^2 - 3c + 2}$

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

56.  $\frac{x - 3}{2x + 6} - \frac{x + 3}{3x - 9} - \frac{5x^2 + 27}{6x^2 - 54}$

58.  $\frac{4}{c^2 - 4cd} - \frac{1}{cd - 4d^2} - \frac{2}{cd}$

**Mixed Review Exercises**

Simplify.

1.  $-8^2 \cdot 3 = -192$

2.  $(4 - 6 - 12)^2 = (-14)^2 = 196$

3.  $(-2 + 3 - 4) \cdot 5 = (-3) \cdot 5 = -15$