

College Algebra Summer Review

Solve each equation.

1) $-2 = -n + 3 - 3$

2) $-7 = 6k - 7k$

3) $-168 = -4(7 - 5m)$

4) $7(4 + v) = 84$

5) $-60 = -3(8k - 2) + 7(1 - 7k)$

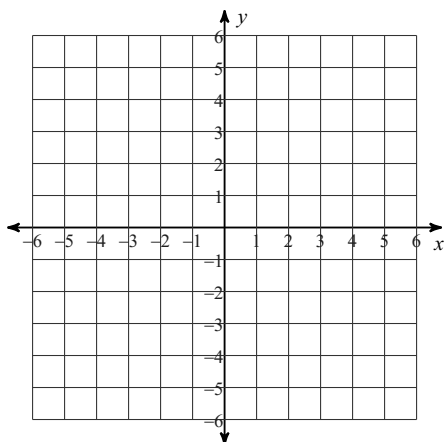
6) $-3(3 - 2a) - (1 - 7a) = 68$

7) $-6(n + 1) - 3n = -6(n + 1)$

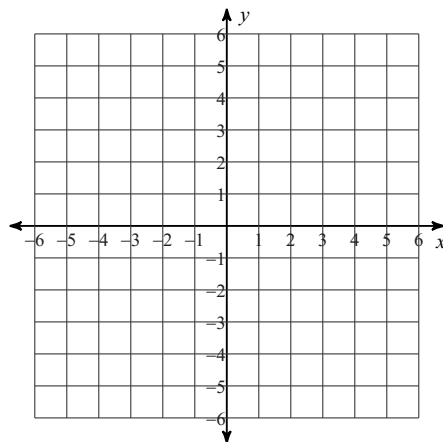
8) $7n + 4(8n - 3) = 7(7n - 2) - 8n$

Sketch the graph of each line.

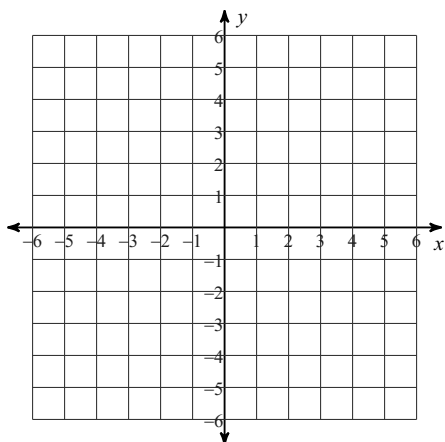
9) $y = \frac{8}{5}x - 5$



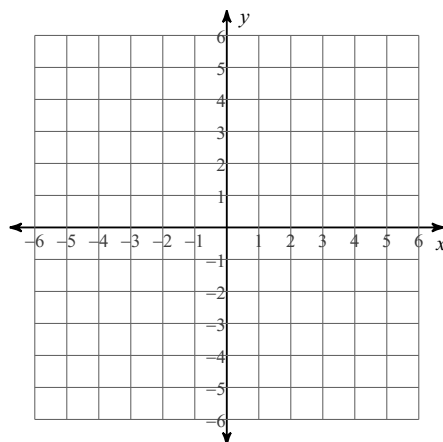
10) $y = -2x + 1$



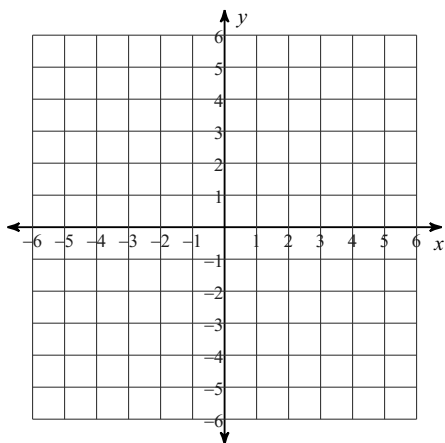
11) $x + 2y = -4$



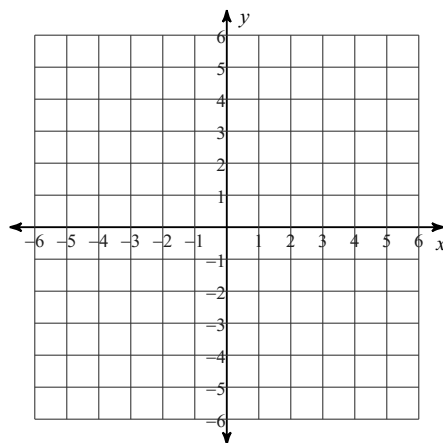
12) $2x + y = 2$



13) x -intercept = 3, y -intercept = -2

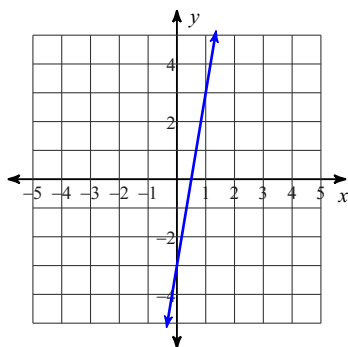


14) x -intercept = -1 , y -intercept = 3

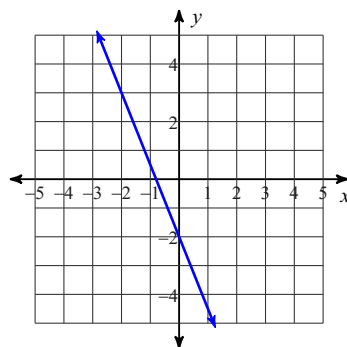


Write the slope-intercept form of the equation of each line.

15)



16)



Write the slope-intercept form of the equation of each line given the slope and y -intercept.

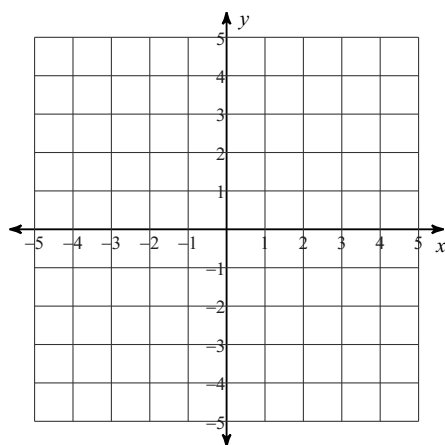
17) Slope = -10 , y -intercept = 5

18) Slope = $\frac{3}{2}$, y -intercept = -1

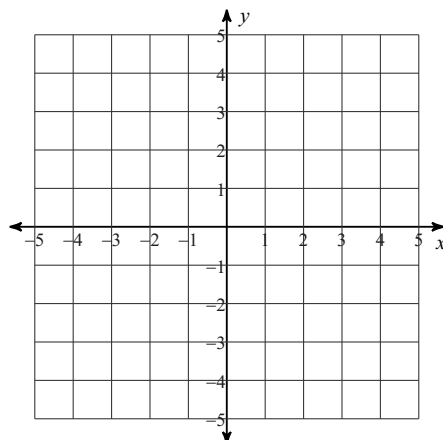
Solve each system by graphing.

19) $y = -\frac{1}{4}x + 2$

$y = -\frac{3}{2}x - 3$



20) $y = 4x + 4$
 $y = x - 2$



Solve each system by elimination.

21) $-4x - 10y = -12$
 $6x + 10y = 8$

22) $-6x - y = 5$
 $6x + y = -11$

23) $-6x - 5y = -27$
 $-3x - 5y = -21$

24) $-3x - 8y = -16$
 $-3x - 4y = 4$

25) $-9x + 12y = 18$
 $-5x + 6y = 14$

26) $8x + 20y = 4$
 $-6x - 10y = 2$

27) $2x - 2y = 2$
 $9x - 7y = -5$

28) $4x + 6y = 0$
 $9x + 7y = 13$

Solve each system by substitution.

29) $y = x + 2$
 $y = -2x - 1$

30) $y = 5x - 13$
 $y = -6x + 9$

31) $y = -7$
 $-6x + 2y = -14$

32) $y = -4x + 11$
 $-6x - y = -19$

33) $-6x + y = 11$
 $7x + 8y = -22$

34) $x - y = 9$
 $5x + 2y = -4$

Simplify each expression.

35) $(-3u + u^2v^2) + (-5u^2v^2 + u)$

36) $(8x^2y^2 - 1) - (5x^2y^2 - 1)$

$$37) (-7xy + 5y) - (-4xy + 4y)$$

$$39) (7k^3 - 5k) + (k^3 + 2k)$$

$$41) (a + 2a^2) + (8a + a^2)$$

$$43) (5x^3y^4 + 4x^3y) + (5x^3y^4 + 8x)$$

$$38) (8n^2 - 6m^2n) + (-n^2 + m^2n)$$

$$40) (-x^2y^4 + 6x^2y^2) - (4x^2y^4 - 4x^2y^2)$$

$$42) (-5k + 2k^3) + (-k^3 - k^2 - k)$$

$$44) (-4a^2b - 6b) - (-5a^2b - 8b)$$

Simplify.

$$45) \sqrt{98}$$

$$47) \sqrt{48}$$

$$49) \sqrt{8n}$$

$$51) -3\sqrt{27xyz}$$

$$53) 2\sqrt{80x}$$

$$55) \sqrt{18x}$$

$$57) \sqrt{27x}$$

$$59) -3\sqrt{18abc}$$

$$61) 3\sqrt{32m^2n}$$

$$63) -\frac{1}{2\sqrt{3}}$$

$$65) \frac{-4 + \sqrt{3}}{\sqrt{10}}$$

$$67) \frac{5}{-10 + \sqrt{2}}$$

$$69) \frac{3 + 3\sqrt{2}}{\sqrt{2}}$$

$$71) \frac{9}{9i}$$

$$73) \frac{-3 - 8i}{6i}$$

$$46) \sqrt{196}$$

$$48) \sqrt{96}$$

$$50) \sqrt{128x^4}$$

$$52) -\sqrt{8}$$

$$54) -3\sqrt{75m^2}$$

$$56) \sqrt{8v}$$

$$58) \sqrt{12x}$$

$$60) -3\sqrt{8mpq}$$

$$62) -4\sqrt{36m}$$

$$64) \frac{\sqrt{2}}{\sqrt{3}}$$

$$66) \frac{\sqrt{2} + 4\sqrt{3}}{4\sqrt{13}}$$

$$68) \frac{8}{2 + \sqrt{5}}$$

$$70) \frac{2 - 4\sqrt{2}}{3\sqrt{14}}$$

$$72) -\frac{4}{i}$$

$$74) \frac{-4 + i}{4i}$$

Find each product.

75) $(n - 8)(8n + 6)$

76) $(7x - 6)(-8x + 2)$

77) $(-x - 6)(7x + 7)$

78) $(-3r - 6)(3r - 7)$

79) $(4x + 1)(4x - 1)$

80) $(3 + 2v)(3 - 2v)$

81) $(2v + 6)^2$

82) $(8v - 4)^2$

83) $(4n - 6)^2$

84) $(2n - 1)^2$

Factor each completely.

85) $y = x^2 + 3x - 10$

86) $y = x^2 + 2x - 3$

87) $y = x^3 + 3x^2 - 4x - 12$

88) $y = x^3 - 3x^2 - 5x + 15$

89) $f(x) = x^3 - 6x^2 + 25x$

90) $f(x) = x^3 + 4x^2 + 5x$

91) $4x^2 - 20xy + 25y^2$

92) $25x^2 - 4y^2$

93) $x^2 - 16y^2$

94) $25x^2 - y^2$

95) $9u^2 - 24uv + 16v^2$

96) $m^2 - 6mn + 9n^2$

97) $b^2 - 16$

98) $4n^2 - 1$

Evaluate each function.

99) $f(n) = 3n - 2$; Find $f(-1)$

100) $h(x) = 2x + 4$; Find $h(2)$

Simplify. Your answer should contain only positive exponents.

101) $2xy^4 \cdot 3x^{-1}$

102) $4u^4v^{-4} \cdot 4uv^{-4}$

103) $(3m^{-2})^2$

104) $(4u^{-4}v^{-1})^4$

105) $\frac{3u^0v^0}{vu^{-2}}$

106) $\frac{4x^{-2}}{3y^{-1}}$

Simplify each expression.

107) $\frac{12x}{16x^4}$

108) $\frac{60n^5}{48n^5}$

109) $\frac{30p^2}{18p}$

110) $\frac{54v^4}{18v^5}$

$$111) \frac{7m}{10} \cdot \frac{2m^2}{10}$$

$$112) \frac{10x^3}{9x} \cdot \frac{9}{3x}$$

$$113) \frac{(b-7)(b-10)}{(b+10)(b-10)} \cdot \frac{2b^2(b+10)}{6}$$

$$114) \frac{5x(x+3)}{5x} \cdot \frac{5x(x-5)}{(x-5)(x+3)}$$

$$115) \frac{3}{2x} \div \frac{5}{10}$$

$$116) \frac{2m}{8} \div \frac{5}{2}$$

$$117) \frac{10b(6-5b)}{10b(5b-6)} \div \frac{b+8}{10b}$$

$$118) \frac{(a+3)(a+6)}{8(3a+4)} \div \frac{9a}{8(3a+4)}$$

$$119) \frac{v-10}{7v^2+14v} (7v^2+14v)$$

$$120) \frac{2n-14}{n-7} \cdot \frac{n-5}{4}$$

$$121) \frac{x-3}{(x+3)(x-3)} + \frac{x-3}{(x+3)(x-3)}$$

$$122) \frac{2k-3}{3(k-1)(k+1)} - \frac{2k+2}{3(k-1)(k+1)}$$

$$123) \frac{m+5n}{4m^2n} + \frac{6m-4n}{4m^2n}$$

$$124) \frac{x-4y}{10x^2y} + \frac{5x-4y}{10x^2y}$$

$$125) \frac{4x}{12x^4y} - \frac{x-4y}{12x^4y}$$

$$126) \frac{x+2y}{30y^3} - \frac{6}{30y^3}$$

$$127) \frac{r+4}{r^2-8r+15} + \frac{3}{r^2-8r+15}$$

$$128) \frac{x-1}{3x^2+4x+1} + \frac{5x-5}{3x^2+4x+1}$$

$$129) \frac{x+5}{20x-8} - \frac{5}{20x-8}$$

$$130) \frac{n+1}{n^2-3n-10} - \frac{n-2}{n^2-3n-10}$$

$$131) \frac{3x}{2x} + \frac{3}{5x^3}$$

$$132) \frac{6}{4} + \frac{2m}{5m^3}$$

$$133) \frac{6}{4} - \frac{4x}{2y^2}$$

$$134) \frac{x+y}{6x^2y} - \frac{3y}{4y}$$

$$135) \frac{4a}{6a} + \frac{3b}{3}$$

$$136) \frac{3b}{2} + \frac{6a}{3a}$$

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Solve each equation.

1) $-2 = -n + 3 - 3$

 $\{2\}$

2) $-7 = 6k - 7k$

 $\{7\}$

3) $-168 = -4(7 - 5m)$

 $\{-7\}$

4) $7(4 + v) = 84$

 $\{8\}$

5) $-60 = -3(8k - 2) + 7(1 - 7k)$

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6) $-3(3 - 2a) - (1 - 7a) = 68$

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7) $-6(n + 1) - 3n = -6(n + 1)$

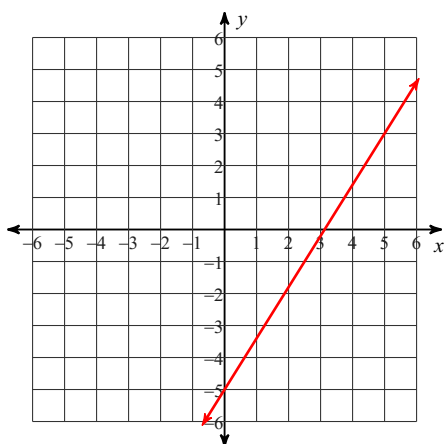
 $\{0\}$

8) $7n + 4(8n - 3) = 7(7n - 2) - 8n$

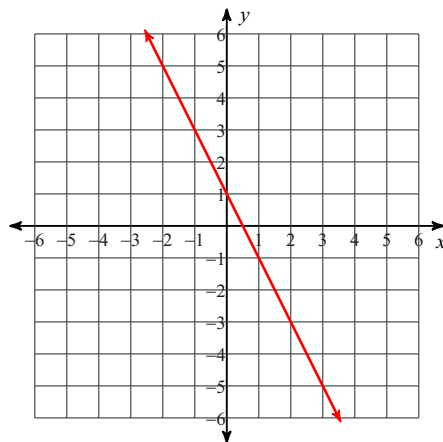
 $\{1\}$

Sketch the graph of each line.

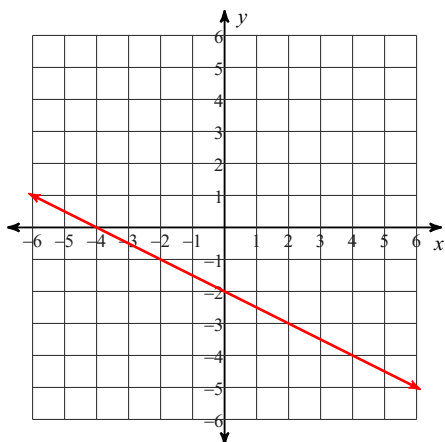
9) $y = \frac{8}{5}x - 5$



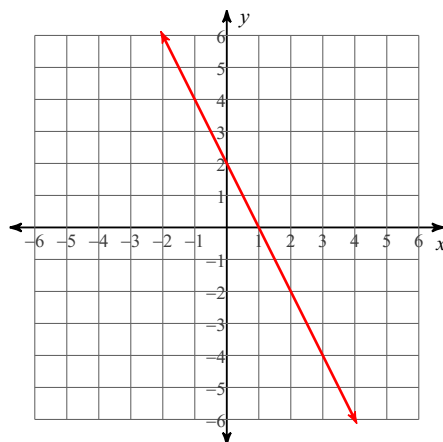
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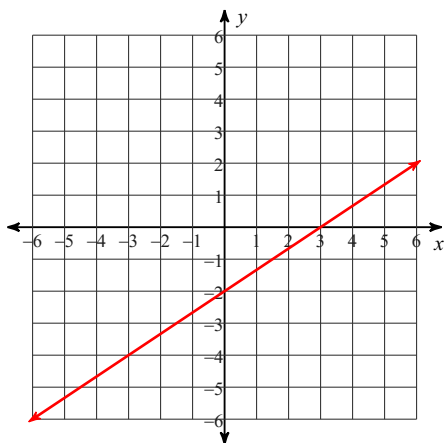
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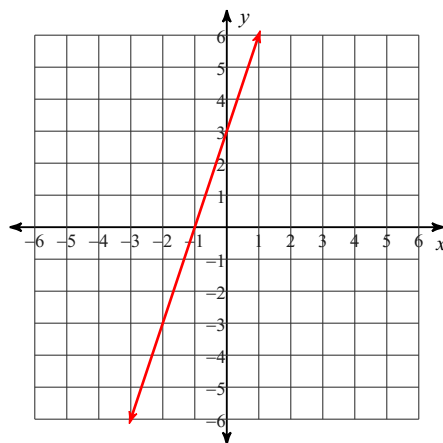
12) $2x + y = 2$



13) x -intercept = 3, y -intercept = -2

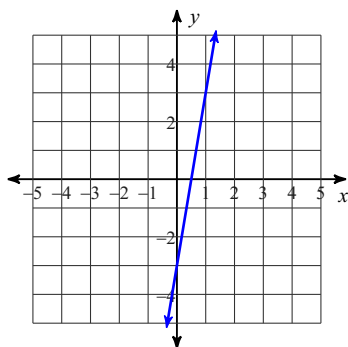


14) x -intercept = -1, y -intercept = 3



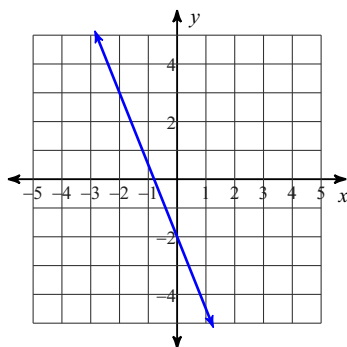
Write the slope-intercept form of the equation of each line.

15)



$$y = 6x - 3$$

16)



$$y = -\frac{5}{2}x - 2$$

Write the slope-intercept form of the equation of each line given the slope and y -intercept.

17) Slope = -10, y -intercept = 5

$$y = -10x + 5$$

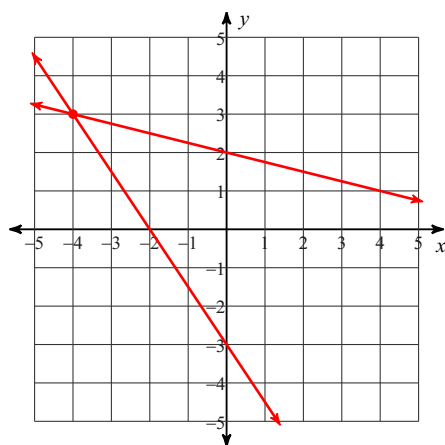
18) Slope = $\frac{3}{2}$, y -intercept = -1

$$y = \frac{3}{2}x - 1$$

Solve each system by graphing.

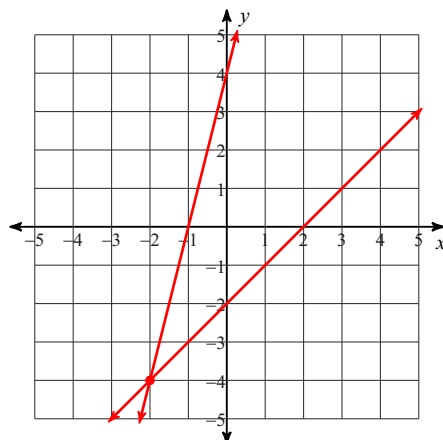
19) $y = -\frac{1}{4}x + 2$

$y = -\frac{3}{2}x - 3$



$(-4, 3)$

20) $y = 4x + 4$
 $y = x - 2$



$(-2, -4)$

Solve each system by elimination.

21) $-4x - 10y = -12$

$6x + 10y = 8$

$(-2, 2)$

23) $-6x - 5y = -27$

$-3x - 5y = -21$

$(2, 3)$

25) $-9x + 12y = 18$

$-5x + 6y = 14$

$(-10, -6)$

27) $2x - 2y = 2$

$9x - 7y = -5$

$(-6, -7)$

22) $-6x - y = 5$

$6x + y = -11$

No solution

24) $-3x - 8y = -16$

$-3x - 4y = 4$

$(-8, 5)$

26) $8x + 20y = 4$

$-6x - 10y = 2$

$(-2, 1)$

28) $4x + 6y = 0$

$9x + 7y = 13$

$(3, -2)$

Solve each system by substitution.

29) $y = x + 2$

$y = -2x - 1$

$(-1, 1)$

31) $y = -7$

$-6x + 2y = -14$

$(0, -7)$

33) $-6x + y = 11$

$7x + 8y = -22$

$(-2, -1)$

30) $y = 5x - 13$

$y = -6x + 9$

$(2, -3)$

32) $y = -4x + 11$

$-6x - y = -19$

$(4, -5)$

34) $x - y = 9$

$5x + 2y = -4$

$(2, -7)$

Simplify each expression.

35) $(-3u + u^2v^2) + (-5u^2v^2 + u)$

$-4u^2v^2 - 2u$

36) $(8x^2y^2 - 1) - (5x^2y^2 - 1)$

$3x^2y^2$

$$37) (-7xy + 5y) - (-4xy + 4y)$$

$$\quad -3xy + y$$

$$39) (7k^3 - 5k) + (k^3 + 2k)$$

$$\quad 8k^3 - 3k$$

$$41) (a + 2a^2) + (8a + a^2)$$

$$\quad 3a^2 + 9a$$

$$43) (5x^3y^4 + 4x^3y) + (5x^3y^4 + 8x)$$

$$\quad 10x^3y^4 + 4x^3y + 8x$$

Simplify.

$$45) \sqrt{98} \quad 7\sqrt{2}$$

$$47) \sqrt{48} \quad 4\sqrt{3}$$

$$49) \sqrt{8n} \quad 2\sqrt{2n}$$

$$51) -3\sqrt{27xyz} \quad -9\sqrt{3xyz}$$

$$53) 2\sqrt{80x} \quad 8\sqrt{5x}$$

$$55) \sqrt{18x} \quad 3\sqrt{2x}$$

$$57) \sqrt{27x} \quad 3\sqrt{3x}$$

$$59) -3\sqrt{18abc} \quad -9\sqrt{2abc}$$

$$61) 3\sqrt{32m^2n} \quad 12m\sqrt{2n}$$

$$63) -\frac{1}{2\sqrt{3}} \quad -\frac{\sqrt{3}}{6}$$

$$65) \frac{-4 + \sqrt{3}}{\sqrt{10}} \quad \frac{-4\sqrt{10} + \sqrt{30}}{10}$$

$$67) \frac{5}{-10 + \sqrt{2}} \quad \frac{-50 - 5\sqrt{2}}{98}$$

$$69) \frac{3 + 3\sqrt{2}}{\sqrt{2}} \quad \frac{3\sqrt{2} + 6}{2}$$

$$71) \frac{9}{9i}$$

$$\quad -i$$

$$73) \frac{-3 - 8i}{6i} \quad \frac{3i - 8}{6}$$

$$38) (8n^2 - 6m^2n) + (-n^2 + m^2n)$$

$$\quad -5m^2n + 7n^2$$

$$40) (-x^2y^4 + 6x^2y^2) - (4x^2y^4 - 4x^2y^2)$$

$$\quad -5x^2y^4 + 10x^2y^2$$

$$42) (-5k + 2k^3) + (-k^3 - k^2 - k)$$

$$\quad k^3 - k^2 - 6k$$

$$44) (-4a^2b - 6b) - (-5a^2b - 8b)$$

$$\quad a^2b + 2b$$

$$46) \sqrt{196}$$

$$\quad 14$$

$$48) \sqrt{96} \quad 4\sqrt{6}$$

$$50) \sqrt{128x^4} \quad 8x^2\sqrt{2}$$

$$52) -\sqrt{8} \quad -2\sqrt{2}$$

$$54) -3\sqrt{75m^2} \quad -15m\sqrt{3}$$

$$56) \sqrt{8v} \quad 2\sqrt{2v}$$

$$58) \sqrt{12x} \quad 2\sqrt{3x}$$

$$60) -3\sqrt{8mpq} \quad -6\sqrt{2mpq}$$

$$62) -4\sqrt{36m} \quad -24\sqrt{m}$$

$$64) \frac{\sqrt{2}}{\sqrt{3}} \quad \frac{\sqrt{6}}{3}$$

$$66) \frac{\sqrt{2} + 4\sqrt{3}}{4\sqrt{13}} \quad \frac{\sqrt{26} + 4\sqrt{39}}{52}$$

$$68) \frac{8}{2 + \sqrt{5}} \quad -16 + 8\sqrt{5}$$

$$70) \frac{2 - 4\sqrt{2}}{3\sqrt{14}} \quad \frac{\sqrt{14} - 4\sqrt{7}}{21}$$

$$72) -\frac{4}{i}$$

$$\quad 4i$$

$$74) \frac{-4 + i}{4i} \quad \frac{4i + 1}{4}$$

Find each product.

$$75) (n-8)(8n+6)$$

$$8n^2 - 58n - 48$$

$$77) (-x-6)(7x+7)$$

$$-7x^2 - 49x - 42$$

$$79) (4x+1)(4x-1)$$

$$16x^2 - 1$$

$$81) (2v+6)^2$$

$$4v^2 + 24v + 36$$

$$83) (4n-6)^2$$

$$16n^2 - 48n + 36$$

$$76) (7x-6)(-8x+2)$$

$$-56x^2 + 62x - 12$$

$$78) (-3r-6)(3r-7)$$

$$-9r^2 + 3r + 42$$

$$80) (3+2v)(3-2v)$$

$$9 - 4v^2$$

$$82) (8v-4)^2$$

$$64v^2 - 64v + 16$$

$$84) (2n-1)^2$$

$$4n^2 - 4n + 1$$

Factor each completely.

$$85) y = x^2 + 3x - 10$$

$$y = (x-2)(x+5)$$

$$87) y = x^3 + 3x^2 - 4x - 12$$

$$y = (x+3)(x-2)(x+2)$$

$$89) f(x) = x^3 - 6x^2 + 25x$$

$$f(x) = x(x^2 - 6x + 25)$$

$$91) 4x^2 - 20xy + 25y^2 \quad (2x-5y)^2$$

$$93) x^2 - 16y^2$$

$$(x+4y)(x-4y)$$

$$95) 9u^2 - 24uv + 16v^2 \quad (3u-4v)^2$$

$$97) b^2 - 16$$

$$(b+4)(b-4)$$

$$86) y = x^2 + 2x - 3$$

$$y = (x-1)(x+3)$$

$$88) y = x^3 - 3x^2 - 5x + 15$$

$$y = (x-3)(x^2 - 5)$$

$$90) f(x) = x^3 + 4x^2 + 5x$$

$$f(x) = x(x^2 + 4x + 5)$$

$$92) 25x^2 - 4y^2$$

$$(5x+2y)(5x-2y)$$

$$94) 25x^2 - y^2$$

$$(5x+y)(5x-y)$$

$$96) m^2 - 6mn + 9n^2 \quad (m-3n)^2$$

$$98) 4n^2 - 1$$

$$(2n+1)(2n-1)$$

Evaluate each function.

$$99) f(n) = 3n - 2; \text{ Find } f(-1)$$

$$-5$$

$$100) h(x) = 2x + 4; \text{ Find } h(2)$$

$$8$$

Simplify. Your answer should contain only positive exponents.

$$101) 2xy^4 \cdot 3x^{-1}$$

$$6y^4$$

$$103) (3m^{-2})^2 \cdot \frac{9}{m^4}$$

$$105) \frac{3u^0 v^0}{vu^{-2}} \cdot \frac{3u^2}{v}$$

$$102) 4u^4 v^{-4} \cdot 4uv^{-4} \cdot \frac{16u^5}{v^8}$$

$$104) (4u^{-4} v^{-1})^4 \cdot \frac{256}{u^{16} v^4}$$

$$106) \frac{4x^{-2}}{3y^{-1}} \cdot \frac{4y}{3x^2}$$

Simplify each expression.

$$107) \frac{12x}{16x^4} \cdot \frac{3}{4x^3}$$

$$108) \frac{60n^5}{48n^5} \cdot \frac{5}{4}$$

$$109) \frac{30p^2}{18p} \cdot \frac{5p}{3}$$

$$110) \frac{54v^4}{18v^5} \cdot \frac{3}{v}$$

$$111) \frac{7m}{10} \cdot \frac{2m^2}{10} \frac{7m^3}{50}$$

$$112) \frac{10x^3}{9x} \cdot \frac{9}{3x} \frac{10x}{3}$$

$$113) \frac{(b-7)(b-10)}{(b+10)(b-10)} \cdot \frac{2b^2(b+10)}{6} \frac{b^2(b-7)}{3}$$

$$114) \frac{5x(x+3)}{5x} \cdot \frac{5x(x-5)}{(x-5)(x+3)} \frac{5x}{5x}$$

$$115) \frac{3}{2x} \div \frac{5}{10} \frac{3}{x}$$

$$116) \frac{2m}{8} \div \frac{5}{2} \frac{m}{10}$$

$$117) \frac{10b(6-5b)}{10b(5b-6)} \div \frac{b+8}{10b} - \frac{10b}{b+8}$$

$$118) \frac{(a+3)(a+6)}{8(3a+4)} \div \frac{9a}{8(3a+4)} \frac{(a+3)(a+6)}{9a}$$

$$119) \frac{v-10}{7v^2+14v} (7v^2+14v) \frac{v-10}{v-10}$$

$$120) \frac{2n-14}{n-7} \cdot \frac{n-5}{4} \frac{n-5}{2}$$

$$121) \frac{x-3}{(x+3)(x-3)} + \frac{x-3}{(x+3)(x-3)} \frac{2}{x+3}$$

$$122) \frac{2k-3}{3(k-1)(k+1)} - \frac{2k+2}{3(k-1)(k+1)} - \frac{5}{3k^2-3}$$

$$123) \frac{m+5n}{4m^2n} + \frac{6m-4n}{4m^2n} \frac{7m+n}{4m^2n}$$

$$124) \frac{x-4y}{10x^2y} + \frac{5x-4y}{10x^2y} \frac{3x-4y}{5x^2y}$$

$$125) \frac{4x}{12x^4y} - \frac{x-4y}{12x^4y} \frac{3x+4y}{12x^4y}$$

$$126) \frac{x+2y}{30y^3} - \frac{6}{30y^3} \frac{x+2y-6}{30y^3}$$

$$127) \frac{r+4}{r^2-8r+15} + \frac{3}{r^2-8r+15} \frac{r+7}{r^2-8r+15}$$

$$128) \frac{x-1}{3x^2+4x+1} + \frac{5x-5}{3x^2+4x+1} \frac{6x-6}{3x^2+4x+1}$$

$$129) \frac{x+5}{20x-8} - \frac{5}{20x-8} \frac{x}{20x-8}$$

$$130) \frac{n+1}{n^2-3n-10} - \frac{n-2}{n^2-3n-10} \frac{3}{n^2-3n-10}$$

$$131) \frac{3x}{2x} + \frac{3}{5x^3} \frac{15x^3+6}{10x^3}$$

$$132) \frac{6}{4} + \frac{2m}{5m^3} \frac{15m^2+4}{10m^2}$$

$$133) \frac{6}{4} - \frac{4x}{2y^2} \frac{3y^2-4x}{2y^2}$$

$$134) \frac{x+y}{6x^2y} - \frac{3y}{4y} \frac{2x+2y-9x^2y}{12x^2y}$$

$$135) \frac{4a}{6a} + \frac{3b}{3} \frac{3b+2}{3}$$

$$136) \frac{3b}{2} + \frac{6a}{3a} \frac{4+3b}{2}$$