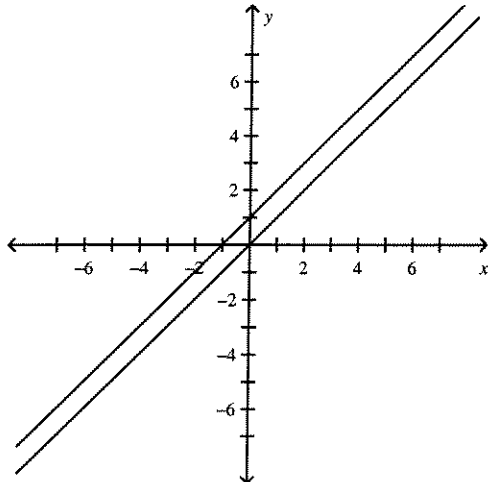


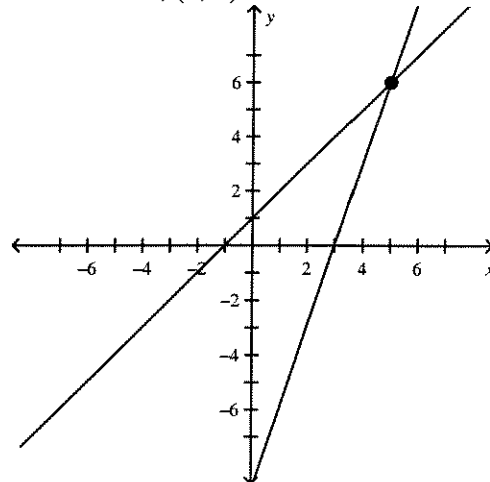
_____ 4. $-x + y = 1$

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

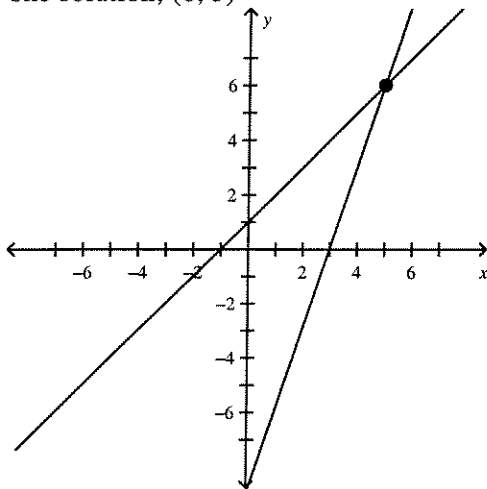
a. no solution



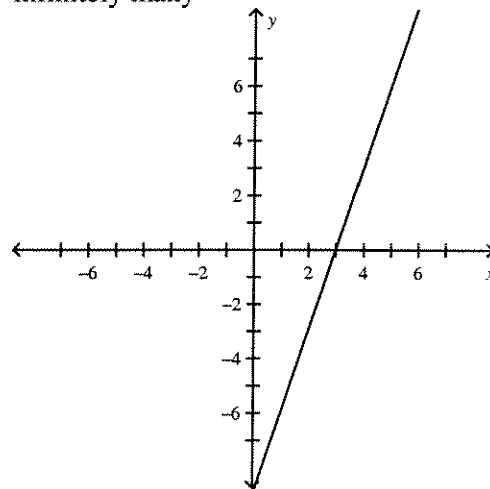
c. one solution; (5, 6)



b. one solution; (6, 5)



d. infinitely many



Use substitution to solve the system of equations.

_____ 5. $y = x + 3$

$$8x - 7y = 12$$

a. (36, 33)

b. (-9, -6)

c. (12, 15)

d. (33, 36)

_____ 6. $9 = x - 2y$

$$3x + 5 = 2y$$

a. (-7, -8)

b. infinitely many solutions

c. (17, 4)

d. (-13, -11)

_____ 7. The sum of two numbers is 90. Their difference is 12. What are the numbers?

a. no solution

b. 31 and 59

c. 35 and 47

d. 39 and 51

Simplify. Assume that no denominator is equal to zero.

- _____ 16. $(a^5b^5)(a^5b^3)$
 a. $a^{25}b^{15}$ c. $a^{10}b^{15}$
 b. $a^{25}b^8$ d. $a^{10}b^8$
- _____ 17. $(-6hi^2j^4)(3h^3ij^3)$
 a. $18h^4i^3j^7$ c. $18h^3i^2j^{12}$
 b. $-18h^4i^3j^7$ d. $-18h^3i^2j^{12}$
- _____ 18. $\frac{3^{10}}{3^7}$
 a. 3^{-3} c. 3^3
 b. 1^3 d. 3^7
- _____ 19. $\frac{(2a^5b)^2}{24b^6}$
 a. $\frac{a^{10}b^4}{6}$ c. $\frac{a^7}{6b^4}$
 b. $\frac{a^{10}}{12b^4}$ d. $\frac{a^{10}}{6b^4}$

Express the number in scientific notation.

- _____ 20. 0.0003054
 a. 30.54×10^{-5} c. 3.054×10^{-4}
 b. 0.3054×10^{-3} d. 305.4×10^{-6}
- _____ 21. 373×10^{-8}
 a. 3.73×10^{-6} c. 37.3×10^{-7}
 b. 0.373×10^{-5} d. 3.73×10^{-10}

Express the number in the statement in standard notation.

- _____ 22. In 2002, the United States Postal Service served 1.77×10^6 new delivery points.
 a. 177,000 c. 177,000,000
 b. 17,700,000 d. 1,770,000

Arrange the terms of the polynomial so that the powers of x are in descending order.

- _____ 23. $2xy^2 + x^2y^4 - 2x^3 + y^3$
 a. $y^3 + 2xy^2 + x^2y^4 - 2x^3$ c. $-2x^3 + y^3 + x^2y^4 + 2xy^2$
 b. $2x^3 + x^2y^4 + 2xy^2 + y^3$ d. $-2x^3 + x^2y^4 + 2xy^2 + y^3$

- _____ 24. $4x^2y^5 - 3xy^4 - 6y^2 + 2x^3$
- a. $-2x^3 + 4x^2y^5 - 3xy^4 - 6y^2$ c. $-6y^2 - 3xy^4 + 4x^2y^5 + 2x^3$
- b. $2x^3 + 4x^2y^5 - 6y^2 - 3xy^4$ d. $2x^3 + 4x^2y^5 - 3xy^4 - 6y^2$

Find the sum or difference.

- _____ 25. $(6a - 2b^2 - a) + (b - 3 + 9a^2)$
- a. $7a^2 + 5a + b - 3$ c. $9a^2 - 2b^2 + 5a + b - 3$
- b. $9a^2 - 2b^2 + 6a + b - 3$ d. $9a^2 - 2b^2 + 5a + b + 3$
- _____ 26. $(5a - 3a^2) - (-6a - 6)$
- a. $3a^2 + 11a + 6$ c. $-3a^2 + 11a + 6$
- b. $-3a^2 + 11a - 6$ d. $-3a^2 - 1a + 6$
- _____ 27. $(11p - 6q^2 - q) - (q^2 - 5p + 7p^2)$
- a. $7p^2 - 7q^2 + 16p - q$ c. $-7p^2 - 5q^2 + 16p - q$
- b. $-7p^2 - 7q^2 + 6p - q$ d. $-7p^2 - 7q^2 + 16p - q$

Solve the equation.

- _____ 28. $3(4x + 4) = 2(5x + 9) - 12$
- a. -9 c. $-\frac{7}{2}$
- b. $-\frac{3}{11}$ d. -3
- _____ 29. $q(q + 4) = 0$
- a. $\{0, -4\}$ c. $\{1, -4\}$
- b. $\{0, 4\}$ d. $\{0\}$
- _____ 30. $(r - 3)(r + 6) = 0$
- a. $\{-3, 6\}$ c. $\{3, -6\}$
- b. $\{0, 18\}$ d. $\{-3\}$
- _____ 31. $4k^2 = 5k$
- a. $\{0\}$ c. $\left\{1, \frac{4}{5}\right\}$
- b. $\left\{0, -\frac{5}{4}\right\}$ d. $\left\{0, \frac{5}{4}\right\}$

___ 32. $12x^2 - 14x + 4 = 0$

a. $\left\{\frac{2}{3}, \frac{1}{2}\right\}$

b. $\left\{2, \frac{6}{2}\right\}$

c. $\{-6, -8\}$

d. $\{6, 8\}$

___ 33. $8y^2 - 12y + 4 = y + 10$

a. $\{8, 2\}$

b. $\left\{-\frac{3}{8}, 2\right\}$

c. $\left\{\frac{3}{8}, 2\right\}$

d. $\{-16, 3\}$

Find the product.

___ 34. $-2s^2t^4(-6s^3t^5 - 6st^4 - 4t)$

a. $12s^6t^{20} + 12s^2t^{16} + 8s^2t^4$

b. $12s^5t^9 + 12s^3t^8 + 8s^2t^5$

c. $12s^5t^9 + 12s^3t^8 + 8t^5$

d. $-12s^5t^9 - 12s^3t^8 - 8s^2t^5$

___ 35. $(-6t - 4v)(-7t - 4v)$

a. $42t^2 + 16v^2$

b. $42t^2 + 52tv + 16v^2$

c. $-13t - 8v$

d. $42t^2 - 52tv + 16v^2$

___ 36. $(-6k + 4)(-7k^2 + 2k - 7)$

a. $-7k^2 - 4k - 3$

b. $42k^3 - 40k^2 + 50k - 28$

c. $-42k^3 - 40k^2 - 34k - 28$

d. $-7k^2 - 12k - 28$

___ 37. $(6g - 4h)^2$

a. $36g^2 - 16gh + 16h^2$

b. $36g^2 + 16h^2$

c. $36g^2 - 48gh - 16h^2$

d. $36g^2 - 48gh + 16h^2$

___ 38. $2\sqrt{5}(4\sqrt{2} + 11\sqrt{7})$

a. $6\sqrt{7} + 26\sqrt{3}$

b. $90\sqrt{5}$

c. $88\sqrt{70}$

d. $8\sqrt{10} + 22\sqrt{35}$

Name the set or sets of numbers to which the real number belongs.

___ 39. $\frac{-5}{6}$

a. irrational

b. whole, integers, rational

c. irrational, rational

d. rational

___ 32. $12x^2 - 14x + 4 = 0$

a. $\left\{\frac{2}{3}, \frac{1}{2}\right\}$

b. $\left\{2, \frac{6}{2}\right\}$

c. $\{-6, -8\}$

d. $\{6, 8\}$

___ 33. $8y^2 - 12y + 4 = y + 10$

a. $\{8, 2\}$

b. $\left\{-\frac{3}{8}, 2\right\}$

c. $\left\{\frac{3}{8}, 2\right\}$

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Find the product.

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c. $12s^5t^9 + 12s^3t^8 + 8t^5$

d. $-12s^5t^9 - 12s^3t^8 - 8s^2t^5$

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a. $42t^2 + 16v^2$

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a. $-7k^2 - 4k - 3$

b. $42k^3 - 40k^2 + 50k - 28$

c. $-42k^3 - 40k^2 - 34k - 28$

d. $-7k^2 - 12k - 28$

___ 37. $(6g - 4h)^2$

a. $36g^2 - 16gh + 16h^2$

b. $36g^2 + 16h^2$

c. $36g^2 - 48gh - 16h^2$

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___ 38. $2\sqrt{5}(4\sqrt{2} + 11\sqrt{7})$

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Name the set or sets of numbers to which the real number belongs.

___ 39. $\frac{-5}{6}$

a. irrational

b. whole, integers, rational

c. irrational, rational

d. rational

- _____ 40. $\sqrt{17}$
 a. rational, irrational
 b. irrational
 c. whole, irrational
 d. rational
- _____ 41. If the system is graphed, the solution to the system lies in which quadrant?
 $x = -9$
 $y = 4$
 a. I
 b. II
 c. III
 d. IV
- _____ 42. The sum of the digits of a two digit number is 14. If the digits are reversed, the new number is 18 less than the original number. If x = the tens digit, and y = the units digit, which system is true?
 a. $10x + y = 14$
 $10y + x = (10x + y) - 18$
 b. $x + y = 14$
 $y + x = (x + y) - 18$
 c. $x + y = 14$
 $10y + x = (10x + y) - 18$
 d. $(10y + x) - 18 = 10x + y$
 $x + y = 14$
- _____ 43. A coal barge on the Ohio River travels 24 miles upstream in 3 hours. The return trip takes the barge only 2 hours. Find the rate of the barge in still water.
 a. 2 mph
 b. 10 mph
 c. 16 mph
 d. none of these

Find the GCF of the set of monomials.

- _____ 44. $36s^5t^2, 120s^2t$
 a. $24s^2t$
 b. $12s^2t$
 c. $12s^2$
 d. $6s^2t$
- _____ 45. $39x^4y^3, 96xy^2, 114x^2y^3$
 a. $6x^2y$
 b. $3x^2y^2$
 c. $3xy^2$
 d. xy^2

Factor the polynomial.

- _____ 46. $16j^2k - 8j^6k^5 + 60j^3$
 a. $4j^2(4k - 2j^4k^5 + 15j)$
 b. $4(4j^2k - 2j^6k^5 + 15j^3)$
 c. $4j^2k(4 - 2j^4k^4 + 15j)$
 d. $2j^2(4k - 2j^4k^5 + 15j)$
- _____ 47. $3x^2 - 2x + 9xy - 6y$
 a. $(3x + y)(3x - 2)$
 b. $(x + 3y)(3x - 2)$
 c. $(x - 3y)(3x + 2)$
 d. $(3x + 3y)(x - 2)$

- _____ 48. $12b^2 - 192$
 a. $(b + 4)(b - 4)$ c. $12(b + 4)(b - 4)$
 b. $(b + 16)(b - 16)$ d. $12(b + 16)(b - 16)$

- _____ 49. $45m^4 + 18m^3 - 20m^2n^2 - 8mn^2$
 a. $m(5m + 2)(3m + 3)(3m - 3)$ c. $m(45m + 2)(m + 2)(m - 2)$
 b. $m(5m + 2)(3m + 2)(3m - 2)$ d. $(5m + 2)(3m + 2)(3m - 2)$

Factor the trinomial.

- _____ 50. $x^2 + 15x + 14$
 a. $(x + 2)(x + 13)$ c. $(x - 1)(x - 14)$
 b. $(x + 7)(x + 2)$ d. $(x + 1)(x + 14)$

Solve the trinomial equation.

- _____ 51. $r^2 - 18r + 56 = 0$
 a. $\{8, 7\}$ c. $\{-14, -4\}$
 b. $\{14, 4\}$ d. $\{16, 2\}$
- _____ 52. $k^2 + 8k = 84$
 a. $\{-12, 7\}$ c. $\{-14, 6\}$
 b. $\{14, -6\}$ d. $\{-12, 4\}$

Factor the trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

- _____ 53. $2t^2 + 4t + 8$
 a. $(2t + 1)(t + 8)$ c. $(2t + 4)(t + 2)$
 b. *prime* d. $(2t + 2)(t + 2)$

Solve the equation by factoring.

- _____ 54. $(w - 13)^2 = 16$
 a. $\{9, -9\}$ c. $\{9, 17\}$
 b. $\{9, 13\}$ d. $\{13, -13\}$

- _____ 55. Which polynomial is prime?
 a. $9x^2 + 30xy + 25y^2$ c. $3p^2 + 25p + 16$
 b. $2x^2 + 7x + 5$ d. $36a^2 + 9ab - 10b^2$

Solve the quadratic equation by finding the square root. Round to the nearest tenth if necessary.

- _____ 56. $b^2 - 16b + 64 = 19$
 a. 7.4, 2.4 c. 11, 27
 b. -45, -29 d. 12.4, 3.6

Solve the quadratic equation by completing the square.

- ___ 57. $g^2 - 10g + 7 = 0$
 a. $-5, 5$ c. $-7, 3$
 b. $9.2, 0.8$ d. $7.6, 2.4$
- ___ 58. $s^2 + 12s - 12 = 14$
 a. $1.9, -13.9$ c. $8, 20$
 b. $6, 6$ d. $2, 14$

Solve the equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

- ___ 59. $h^2 + 28h - 3 = 0$
 a. $0, -28$ c. $0.2, -56.2$
 b. $14.1, -14.1$ d. $0.1, -28.1$
- ___ 60. $v(2v - 20) = -21$
 a. $8.8, 1.2$ c. $0, -20$
 b. $3.8, -43.8$ d. $11.9, -11.9$

Simplify the expression.

- ___ 61. $\sqrt{13} \cdot \sqrt{17}$
 a. $\sqrt{221}$ c. $\sqrt{30}$
 b. 221 d. $2\sqrt{221}$
- ___ 62. $\sqrt{8z^2y^3}$
 a. $\sqrt{2y}$ c. $2zy\sqrt{2y}$
 b. $4zy\sqrt{2y}$ d. $2zy$
- ___ 63. $\frac{15}{\sqrt{7}}$
 a. $\frac{\sqrt{7}}{15}$ c. $\frac{15\sqrt{7}}{7}$
 b. $\frac{15\sqrt{7}}{\sqrt{7}}$ d. $\sqrt{\frac{15}{7}}$
- ___ 64. $\sqrt{\frac{3}{7}}$
 a. $\frac{21}{\sqrt{7}}$ c. $\frac{\sqrt{21}}{7}$
 b. $\frac{8}{13}$ d. $\sqrt{\frac{7}{3}}$

_____ 65. $\frac{8}{5 + \sqrt{2}}$

a. $\frac{(5 - \sqrt{2})}{23}$

b. $\frac{8}{23}$

c. $\frac{8(5 - \sqrt{2})}{23}$

d. $\frac{8(5 + \sqrt{2})}{(5 - \sqrt{2})}$

_____ 66. $8\sqrt{5} - 1\sqrt{5}$

a. $7\sqrt{5}$

b. $9\sqrt{5}$

c. $7\sqrt{10}$

d. $8\sqrt{5}$

_____ 67. $3\sqrt{19h} + 2\sqrt{6g} - 2\sqrt{19h} + 10\sqrt{6g}$

a. $6\sqrt{19h} + 20\sqrt{6g}$

b. $\sqrt{19h} + 12\sqrt{6g}$

c. $\sqrt{38h} + 12\sqrt{12g}$

d. $5\sqrt{19h} - 8\sqrt{6g}$

_____ 68. If c is the measure of the hypotenuse of a right triangle, find each missing measure. If necessary, round to the nearest hundredth.

$a = 60, b = ?, c = 100$

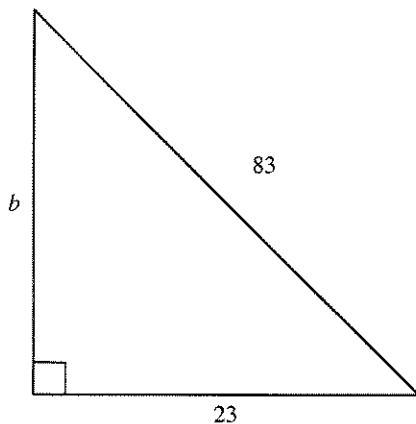
a. 40

b. 116.62

c. 80.00

d. 160

_____ 69. Find the length of the missing side. If necessary, round to the nearest hundredth.



a. 106

b. 86.13

c. 79.75

d. 60

_____ 70. Simplify the expression.

$$\frac{6c^3n^3}{27c^2n^2}$$

a. $\frac{2}{9cn}$

c. $\frac{2c}{9}$

b. $\frac{2cn}{9}$

d. $\frac{2n}{9}$

_____ 71. Simplify the expression. State the excluded values of the variables.

$$\frac{a^2 + 16a + 63}{a + 7}$$

a. $a + 7; -9$

c. $a + 9; -7$

b. $a + 9; 7$

d. $a + 7; 9$

Find the product and simplify.

_____ 72. $\frac{8b}{6d} \cdot \frac{6d^3}{9b^3}$

a. $\frac{8}{9b^2}$

c. $\frac{8b^2}{9d^2}$

b. $\frac{8d^2}{9}$

d. $\frac{8d^2}{9b^2}$

_____ 73. $\frac{(x-3)}{(x+4)(x+7)} \cdot \frac{(x-1)(x+7)}{(x-3)}$

a. $\frac{(x-3)(x-1)(x+7)}{(x+4)(x+7)(x-3)}$

c. $\frac{x+4}{x-1}$

b. $\frac{x-1}{x+4}$

d. $\frac{(x-3)(x-1)}{(x+4)(x-3)}$

_____ 74. Find the quotient.

$$\frac{5a^3}{8k} \div \frac{2a}{8k^2}$$

a. $\frac{10a^4}{64k^3}$

c. $\frac{5a^2k}{2}$

b. $\frac{2}{5a^2k}$

d. $\frac{40a^2k}{16}$

_____ 75. Find the quotient.

$$\frac{(r+3)}{(r-2)(r+4)} \div \frac{(r+3)}{(r-8)(r+4)}$$

a. $\frac{(r+3)^2}{(r-2)(r-8)(r+4)^2}$

b. $\frac{(r+3)(r-8)(r+4)}{(r-2)(r+4)(r+3)}$

c. $\frac{r-8}{r-2}$

d. $\frac{r-2}{r-8}$

_____ 76. Find the sum.

$$\frac{-7f}{2} + \frac{9f}{2}$$

a. f

b. $\frac{2f}{2}$

c. 2

d. f^2

_____ 77. Find the sum.

$$\frac{7y-5}{4y+4} + \frac{4y+8}{4y+4}$$

a. $\frac{11y+3}{8y+8}$

b. $\frac{3y-13}{4y+4}$

c. $11y+3$

d. $\frac{11y+3}{4y+4}$

_____ 78. Find the difference.

$$\frac{14m}{7m+8} - \frac{-16}{7m+8}$$

a. $\frac{14m-16}{7m+8}$

b. 2

c. $\frac{14m+16}{7m+8}$

d. $\frac{1}{2}$

_____ 79. Find the difference.

$$\frac{4}{g-5} - \frac{2}{g-6}$$

a. $\frac{2g-14}{(g-11)}$

b. $\frac{2g-14}{(g-5)}$

c. $\frac{2g-14}{(g-5)(g-6)}$

d. $\frac{2g-14}{(g-6)}$

_____ 80. Simplify the expression.

$$\frac{2\frac{5}{8}}{4\frac{1}{5}}$$

a. 2

b. $\frac{8}{5}$

c. $\frac{1}{2}$

d. $\frac{5}{8}$

_____ 81. Simplify the expression.

$$\frac{\frac{b-4}{f-7}}{\frac{b^2}{f^2}}$$

a. $\frac{f-4}{b-7}$

b. $\frac{b^2(b-4)}{f^2(f-7)}$

c. $\frac{b-4}{f-7}$

d. $\frac{f^2(b-4)}{b^2(f-7)}$

_____ 82. What is the remainder of this division problem?

$$3g-2 \overline{) 9g^3 + 5g - 8}$$

a. -8

b. -2

c. -14

d. none of these

_____ 83. Find: $\frac{3m}{m-2} - \frac{6}{2-m}$

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

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

c. $\frac{3m-6}{m-2}$

d. none of these

_____ 84. Find: $\frac{2m}{m-9} + \frac{4m}{9-m}$

a. $\frac{-2m}{m-9}$

b. $\frac{6m}{m-9}$

c. $\frac{-2m}{9-m}$

d. none of these