

EQUATIONS

1. $|2x+3|=7$

2. $\frac{2}{3}-\frac{3}{5}x=\frac{2}{5}x+\frac{4}{3}$

3. $3b^2+13b-10=0$

4. $7b^2=49$

5. $3c^2=5c$

6. $n^2-8n+14=0$

7. $x^2-7x+5=0$

8. $6b^2+2b+3=0$

9. $x^2+6=0$

10. $a^3=1$

11. $x^4-5x^2+4=0$

12. $b^4+9b^2+18=0$

13. $\frac{3}{x^2-25}=\frac{5}{x-5}-\frac{5}{x+5}$

15. $\frac{2-x}{x+1}+\frac{x+8}{x-2}=\frac{-(4-x)}{x^2-x-2}$

27. Solve using quadratic formula

$$x^2-2x+2=0$$

$$2-4x-x^2=0$$

28. Solve by completing the square

$$2x^2-2x-15=0$$

INEQUALITIES

16. $3(3w+1)\geq 48$

17. $1+2(x+4)\geq 1+3(x+2)$

18. $-5x+7\geq -3$

19. $|x-12|< 42$

20. $|x+3|> 17$

21. $\frac{x+5}{2-x}< 0$

22. $\frac{x}{x+6}\geq 0$

23. $\frac{2x+1}{x-2}\leq 0$

24. $\frac{x+5}{2-x}< 0$

25. $8+2x-x^2< 0$

26. $2x^2+3x-2\leq 0$

29. Solve the system any way just solve for y

$$\frac{1}{3}(x-1) + \frac{1}{2}(y+1) = 0$$

$$\frac{2}{5}(x-1) + \frac{5}{2}(y+1) = 12$$

30. Solve using Matrices

$$-2x + y + 2z = 14$$

$$5x + z = -10$$

$$x - 2y - 3z = -14$$

31. Solve by Cramer's Rule

$$x - 8y - 2z = 12$$

$$-3x + 3y + z = -10$$

$$4x + y + 5z = 2$$

32. $x^2 + y^2 = 13$
 $y = x + 1$

Simplify

33. $\frac{2x^{-3}}{6(x^2)^2}$

34. $\frac{16b^6c^5}{(2b^2c)^2}$

35. $\frac{3^0(4x^3y)(4^2x^{-1}y)}{4^3xy^2}$

36. $\frac{(-2r^3)(r^{-2})^{-1}}{(r^2)^{-3}}$

37. $\sqrt[3]{27r^3s^3}$

38. $\sqrt[3]{64a^6b^4}$

39. $\sqrt[4]{5m^3b^5} \cdot \sqrt[4]{125m^2b^2}$

40. $\sqrt[3]{3ab^5} \cdot \sqrt[3]{24a^2b^2}$

41. $\left(\frac{8}{27}\right)^{-\frac{2}{3}} + \left(-\frac{32}{243}\right)^{\frac{2}{5}}$

42. $\sqrt[3]{\sqrt[3]{-512}}$

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$$43. \sqrt[3]{\frac{32}{x^2}} - \frac{2\sqrt[3]{x}}{\sqrt[3]{2x^3}}$$

$$44. x^{\frac{2}{3}} \cdot x^{\frac{3}{4}}$$

$$45. \sqrt[3]{x}\sqrt{x}$$

$$46. (x^{3n} + 1)(x^{3n} - 2)$$

$$47. \text{Rationalize} \left(\frac{1}{3 + \sqrt{5}} \right)$$

$$48. \text{Rationalize} \left(\frac{1 + \sqrt{2}}{3 - \sqrt{2}} \right)$$

$$49. \sqrt[3]{\frac{1}{3}}$$

$$50. \sqrt[4]{\frac{x}{4x^2}}$$

$$51. 81^{\frac{1}{2}}$$

$$52. \frac{\sqrt{9}}{27^{-\frac{1}{3}}}$$

$$53. \frac{(49a^{-4})^{-\frac{1}{2}}}{(81b^6)^{-\frac{1}{2}}}$$

$$55. \frac{a^3 - 27}{a^2 - 9} \div \left(\frac{a^2 + 2ab + b^2}{a^3 + b^3} \cdot \frac{a^3 - a^2b + ab^2}{a^2 + ab} \right)$$

$$56. \frac{\frac{x^{-1} - y^{-1}}{1} - \frac{1}{y^2}}{\frac{1}{x^2} - \frac{1}{y^2}}$$

$$57. \frac{a^2 - 16b^2}{a^3 + 64b^3}$$

$$58. \frac{x}{x-1} + \frac{x+7}{x^2-1} - \frac{x-2}{x+1}$$

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SIMPLIFY

$$59. \sqrt{-64} + \sqrt{-121}$$

$$60. (5\sqrt{-3})(4\sqrt{-12})$$

$$61. (\sqrt{3} + 2i)^2$$

$$62. \frac{8+3i}{3-2i}$$

$$63. i^{-32}$$

$$64. 2i^6 + 5i^{10} - 4i^{-2} + 6i^{27}$$

$$65. \frac{(2+i)^2(3-i)}{2+3i}$$

FACTOR

$$66. y^2 - 81b^2$$

$$67. r^4 - s^4$$

$$68. 3m^3 + 21m^2 + 36m$$

$$69. 8x^2 + 5x - 3$$

$$70. 10x^2 + 19x + 6$$

$$71. (x^2 - 7)^2 - (x + 5)^2$$

$$72. x^3 - 2x^2 - 9x + 18$$

Evaluate:

$$73. \begin{vmatrix} 10 & 2 \\ -3 & 5 \end{vmatrix}$$

$$74. \begin{vmatrix} -3 & 20 \\ 4 & 7 \end{vmatrix}$$

75. Solve using Cramers Rule

$$5x - 9y = 7$$

$$-8x + 10y = 2$$

76 Solve using Cramers Rule

$$x + 2y + z = 3$$

$$2x - y - z = 4$$

$$-x - y + 2z = -5$$

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77. Simplify $(x^2 + 2y^2)^3$

78. Solve for x : $x^4 + 4x^2 - 5$

Solve the equations or inequality

78.5 b. $\sqrt{x^2 + 6x} = 4$

c. $(x^2 - 5x)^2 - 36 = 0$

d. $x^2 + 2x - 15 \leq 0$

GRAPHING AND EQUATIONS OF LINES

79. Find the x-intercept, y-intercept and graph $y + 2x = -5$

80. Write the equation for the line perpendicular to the given line at the given point.

$3x + 2y = 6$ (6,7)

81. Find the slope (-3, -5) (-6, 2)

82. Make sure you can complete the square!! There are problems in the book to do for help

84. Graph $x = 4$

85. Graph $y = -(x-3)^2 + 5$ and state the vertex

86. Graph $f(x) = -2x^2 + 4x - 1$

87. Write the equation of the line through (3,1) and (7,-3)

88. Write the equation of the line through (-1,0) and parallel to $4x + y = 2$

89. Write the equation for the perpendicular bisector of the segment with endpoints

(-3,4) (5,2)

ROOTS

90. Find all the factors of the polynomial if one of the factors is (x+2).

$f(x) = 12x^3 - 22x^2 - 100x - 16$

91. Find all the factors of the polynomial if one factor is (x+2)

$g(x) = x^3 - 3x^2 - 16x - 12$

92. Find the x-intercepts

a) $y = x^2 + 4x + 1$

b) $y = -x^2 + 4x - 7$

LOGS : SOLVE

93. $8^{x-1} = 16^{3x}$

94. $25^{2n} = 125^{n-3}$

95. $\frac{1}{27} = 3^{x-5}$

96. $\log_x 8 = \frac{3}{4}$

97. $\log_3 81 = x$

98. $\log_{10} x = 0$

99. $\log_2 2 + \log_2 (x-5) - \log_2 (x+5) = 4$

100. $2\log_5 x = \log_5 16$

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Answers

1. 2, -5
2. $-2/3$
3. $2/3, -5$
4. $\pm\sqrt{7}$
5. 0, $5/3$
6. $4 \pm \sqrt{2}$
7. $\frac{7 \pm \sqrt{29}}{2}$
8. $\frac{-1 \pm i\sqrt{17}}{6}$
9. $\pm i\sqrt{6}$
10. 1
11. $\pm 2, \pm 1$
12. $\pm i\sqrt{3}, \pm i\sqrt{6}$
13. no sol
14. $\frac{-(x+5)(x-7)}{5(2x+1)(x-2)}$
15. $-2/3$
16. $w \geq 5$
17. $x \leq 2$
18. $x \leq 2$
19. $-30 < x < 54$
20. $x < -20$ or $x > 14$
21. $x < -5$ or $x > 2$
22. $x < -6$ or $x \geq 0$
23. $-1/2 \leq x < 2$
24. $x < -5$ or $x > 2$
25. $x < -2$ or $x > 4$
26. $-2 \leq x \leq 1/2$
27. $x = 1 \pm i$ $x = -2 \pm \sqrt{6}$
28. $\frac{1 \pm \sqrt{31}}{2}$
29. $y = 101/19$
30. (-3, -2, 5)
31. (2, -1, -1)
32. (2, 3) (-3, -2)
33. $\frac{1}{3x^7}$
34. $4b^2c^3$
35. x
36. $-2r^{11}$
37. 3rs
38. $4a^2b^3\sqrt{b}$
39. $5mb^4\sqrt[4]{mb^3}$
40. $2ab^2\sqrt[3]{9b}$

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41. $97/36$

42. -2

43. $\frac{\sqrt[3]{4x}}{x}$

44. $x^{\frac{17}{12}}$

45. $x^{\frac{5}{6}}$

46. $x^{6n} - x^{3n} - 2$

47. $\frac{3 - \sqrt{5}}{4}$

48. $\frac{5 + 4\sqrt{2}}{7}$

49. $\frac{\sqrt[3]{9}}{3}$

50. $\frac{\sqrt[4]{4x^3}}{2x}$

51. $1/9$

52. 9

53. $\frac{9}{7}a^2b^3$

54. none

55. $\frac{a^2 + 3a + 9}{a + 3}$

56. $\frac{xy}{x + y}$

57. $\frac{a - 4b}{a^2 - 4ab + 16b^2}$

58. $\frac{5}{x - 1}$

59. $19i$

60. -120

61. $-1 + 4i\sqrt{3}$

62. $18/13 + 25/13 i$

63. 1

64. $-3 - 6i$

65. $\frac{53 - 21i}{13}$

66. $(y - 9b)(y + 9b)$

67. $(r^2 + s^2)(r + s)(r - s)$

68. $3m(m + 3)(m + 4)$

69. $(8x - 3)(x + 1)$

70. $(5x + 2)(2x + 3)$

71. $(x + 2)(x - 1)(x + 3)(x - 4)$

72. $(x - 2)(x + 3)(x - 3)$

73. 56

74. -101

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75. $(-4, -3)$

76. $(\quad, \quad, \quad)$

77. $x^6 + 6y^2x^4 + 12y^4x^2 + 8y^6$

78. $x = \pm 1, \pm i\sqrt{5}$

78.5 b) $x = -8, 2$ c) $x = 2, 3, 6, -1$ d) -5 less than or equal x less than or equal 3

79. $(-5/2, 0)$ $(0, -5)$

80. $y = 2/3x + 3$

81. $-7/3$

82. none

83. ---

84. Graphs

85. Graphs

86. Graphs

87. $y = -x + 4$

88. $y = -4x - 4$

89. $y = 4x - 1$

90. $2(x+2)(6x+1)x-4$

91. $(x-6)(x+1)$

92. a) $(-2 \pm \sqrt{3}, 0)$ b) imaginary roots

93. $x = -1/3$

94. $n = -9$

95. $x = 2$

96. $x = 16$

97. $x = 4$

98. $x = 1$

99. no solution (answer makes "n" a negative number)

100. $x = 4$