ALG 3A FINAL REVIEW

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

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. $2x^2+3x-2\leq 0$
27. Solve using quadratic formula

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

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

28. Solve by completing the square

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

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

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

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

36. $\dfrac{\left(-2r^3\right)\left(r^{-2}\right)^{-1}}{\left(r^2\right)^{-3}}$

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

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. $x^{\frac{2}{3}} \bullet x^{\frac{3}{4}}$

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

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

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

48. *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. $\frac{\left(49a^{-4}\right)^{-\frac{1}{2}}}{\left(81b^6\right)^{-\frac{1}{2}}}$

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

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

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

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

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

63. i^{-32}

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

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

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. $\left(x^2-7\right)^2-(x+5)^2$

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

$$\begin{aligned} 5x-9y&=7 \\ -8x+10y&=2 \end{aligned}$$

76 Solve using Cramers Rule

$$\begin{aligned} x+2y+z&=3 \\ 2x-y-z&=4 \\ -x-y+2z&=-5 \end{aligned}$$

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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. $x^2+2x-15\le 0$

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. $4a^2b\sqrt[3]{b}$
39. $5mb\sqrt[4]{mb^3}$
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. (, ,)
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