Algebra II Midterm/NeSA Review   Name _____ Period _____

Solve the equation.

1. $5x - 2x = 12$

2. $-7b + 13b - 11 = 1$

3. $-3(y + 2) + 12 = 21$

4. $7(s - 8) + 44 = 2$

5. $2(x - 6) + 44 = 50 + 11x$

6. $14x + 2(9 - x) - 12 = -5x + 40$

Simplify the following

7. $\sqrt{50}$

8. $\sqrt{45}$

9. $\sqrt{96}$

10. $\sqrt{192}$

11. $\sqrt{300}$

12. $-\sqrt{54}$

13. $-\sqrt{175}$

14. $-\sqrt{72}$

15. $\sqrt{\dfrac{1}{16}}$

16. $-\sqrt{\dfrac{4}{25}}$

17. $-\sqrt{\dfrac{7}{81}}$

18. $-\sqrt{\dfrac{5}{64}}$

Find the sum or difference.

19. $(-24x - 4) + (11 - 22x - 2)$

20. $(17x + 20) - (-8x - 5)$

21. $(19x^2 + 12x + 5) + (-23 - 12x^2 + 10)$

22. $(x - 9) - (-x^2 - 19x + 6)$

23. $(18x + 2x - 21) + (13x + 8 - 11)$

24. $(-16x^2 - 14) - (21 - 25x - 15x^2)$

Find the Product

25. $-5(2x^2 - x - 3)$

26. $(5x + 10)(-4x + 9)$

27. $(3x^2 - 11)(2x - 7)$

28. $(12x + 2)(x^2 - 12x + 7)$

29. $(-5x^2 - 1)(-6x^2 + 8x - 3)$

30. $(x^2 + 9x - 6)(6x^2 + 11x - 10)$

Simplify and write your answer in standard form.

31. $4x^2 + 7x + 3$

32. $-5(2x^2 + 5x - 10)$

33. $(x + 4)(7x - 5) + 3$

34. $9(6x^2 + x + 4 - 5$

35. $(2x + 9)(-3x - 4) - 12x + 8$

36. $2(x + 7)(2x - 5) + 3x - 17$

Factor the expression.

37. $x^2 + 10x + 24$

38. $x^2 - 8x - 33$

39. $x^2 - 9x + 14$

40. $x^2 - 15x + 50$

Solve the quadratic equation by factoring.

41. $x^2 - 7x + 8 = 0$

42. $x^2 - 8x - 9 = 0$

43. $2x^2 + x - 21 = 0$

Use the Quadratic Formula to solve.

44. $x^2 - 7x + 8 = 0$

45. $x^2 + 13x - 1 = 0$

46. $4x^2 - 36x + 1 = 0$

47. $5x^2 = 42x + 4$

Find all the zeros of the function.

48. $f(x) = x^2 - 9x + 21$

49. $g(x) = x^2 - x - 20$

50. $f(x) = 5x^2 - 11x + 8$

51. $g(x) = 2x^2 - 9x - 7$

Solve the system of linear equations.

52. $x - 2y = 13$
$3x + 2y = 15$

53. $2x + y = -10$
$x - 3y = 2$

54. $x + y = 9$
$-x - y = 7$

55. $x + 3y = -12$
$2x + 2y = 0$

56. $-2x + y = -16$
$2x - y = 16$

57. $-x - 4y = 23$
$-3x + y = -22$

Add or subtract. Write your answer in standard form.

58. $(12 + 4i) + (-6 + 11i)$

59. $(1 + 15i) - (13 + 5i)$

60. $(-7 + 3i) - (-2 + 8i)$

61. $(4 - 91) + (3 - 9i)$

62. $\left(-5 - 7i\right) - \left(7 + i\right)$

63. $12 - \left(-10 + 3i\right) + 4$

Multiply. Write the answer in standard form.

64. $-11i\left(-2 + i\right)$

65. $8\left(2 + 9i\right)$

66. $6i\left(-4 + 10i\right)$

67. $\left(2 + 7i\right)\left(-2 + 5i\right)$

68. $\left(-8 + 3i\right)\left(-8 - 5i\right)$

69. $\left(3 + 5i\right)\left(4 - 7i\right)$

70. $\left(6 - 3i\right)^2$

71. $\left(11 + 12i\right)^2$

72. $\left(-9 - i\right)^2$

Simplify each expression. Your answers should only have _positive_ exponents.

73. $w^9 \bullet w^2$

74. $b^2 \bullet b^{-1}$

75. $g^{-5} \bullet g^3$

76. $\dfrac{c^7}{c^2}$

77. $\dfrac{m^9}{m^2}$

78. $\dfrac{v^{12}}{v^6}$

79. $\dfrac{j^4}{j^3 \bullet j^1}$

80. $\dfrac{p^7}{p^3 \bullet p^9}$

81. $\dfrac{x^8}{x^2 \bullet x^4}$

82. $\dfrac{a^3}{a} \bullet 5a^6$

83. $\dfrac{y^8}{y^5} \bullet -4y^2$

84. $3n^3 \bullet \dfrac{n^7}{n^5}$

85. $\left(\dfrac{6m^3}{3n}\right)^5$

86. $\left(\dfrac{7y}{q^4}\right)^3$

87. $\left(\dfrac{8x^5}{2j^3}\right)^4$

88. $4^2 \bullet 4$

89. $5^3 \bullet 5^2$

90. $6^5 \bullet 6^{-2}$

91. $\dfrac{3^3}{3^4}$

92. $\dfrac{7^4}{7^6}$

93. $\dfrac{4^2}{4^{-2}}$

94. $\left(m^4\right)^{-3}$

95. $\left(p^{-2}\right)^5$

96. $\left(k^{-4}\right)^{-7}$

97. $\left(\dfrac{4y}{5}\right)^2$

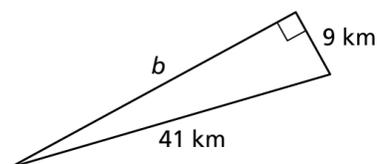98. $\left(\dfrac{2}{3z}\right)^3$

99. $\left(\dfrac{5w}{6}\right)^{-2}$

100. $\left(\dfrac{3r^5 \bullet c^2}{r^3 \bullet r}\right)^4$

Find the missing side length of the triangle.

101.

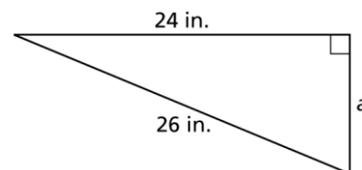12 ft, c, 16 ft

102.

9 km, b, 41 km

103.

24 in., 26 in., a
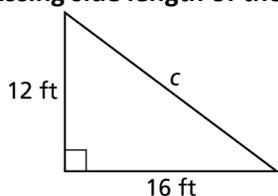
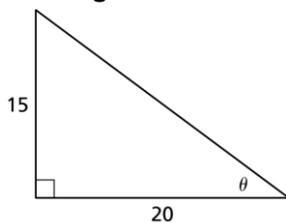**Evaluate the expression without using a calculator.**

104. $81^{1/4}$

105. $256^{1/4}$

106. $36^{3/2}$

107. $81^{3/4}$

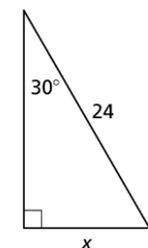**Evaluate the six trigonometric functions of the angle θ.**

108.

15, 20, θ

109.

θ, 30, 18
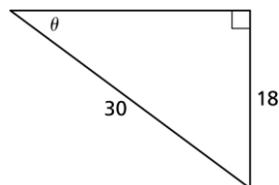
Find the value of x for the right triangle.

110.

30°, 24, x

111.

7, x, 45°
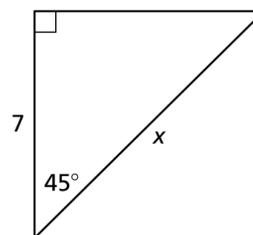
Find one positive and one negative angle coterminal with the given angle

112. $88°$

113. $-305°$

114. $-\dfrac{3\pi}{4}$

115. $\dfrac{5\pi}{6}$

Convert the degree measure to radians or the radian measure to degrees.

116. $110°$

117. $310°$

118. $-\dfrac{4\pi}{3}$

119. $\dfrac{5\pi}{6}$