Summative Exam 1 Review

Unit 1:

Simplify each expression.

1. $a^7(a)(a^2)$
2. $(-2xy)^2(6y^8)$
3. $(w^3)^2)^8$
4. $(2x^3y)^4((-2y)^2)^3$
5. $x^{-3}y^0z^{-2}$
6. $\frac{(f^{-5}g^7)^2}{(fg)^{-6}}$
7. $\frac{2rs^{2/3}}{3s^{-3}}$
8. $\left(\frac{26a^3}{-13a^6b^8}\right)^{-1}$
9. $\frac{16x^6y^7z^8}{-2x^4y^4z^0}$
10. $\frac{x^{-3}y^7z^{-1}}{x^2y^0z^{-5}}$
11. $\sqrt{50}$
12. $\frac{\sqrt{72}}{\sqrt{6}}$

13. $\sqrt[3]{24x^4y^{12}}$

14. $\sqrt[5]{64a^5b^2}$

15. $\sqrt{\frac{8}{7}}$

16. $5\sqrt{6} \times 2\sqrt{3}$

17. $\frac{2}{\sqrt{3}-5}$

18. $\sqrt{\frac{27p^4}{3p^2}}$

19. $3\sqrt{11} + 6\sqrt{11} - 2\sqrt{11}$

20. $8\sqrt{32} + 4\sqrt{50}$

21. $7\sqrt{6} \cdot 2\sqrt{30}$

22. $\sqrt[3]{24x^6y^4}$

23. $3(x - 2)^{1/5} = 6$

24. $6 + \sqrt[3]{m+5} = 4$

25. $(5\sqrt{2} + \sqrt{3})(3\sqrt{3} - 2\sqrt{2})$

26. $(\sqrt{2} + 5)^2$

27. $\sqrt{5x} = 5$

28. $5 + \sqrt{5y + 4} = 12$

29. $\sqrt{3 - 2c} + 3 = 2c$

30. $\sqrt{3y + 1} = y - 3$

31. $\left(\frac{1}{3}\right)^{x} = 27^{x+2}$

32. $6^{5x} = 36^{x+6}$

33. $25^{4k+1} = 125^{2k}$

34. $16^{2p-3} \cdot 4^{-2p} = 2^{4}$

35. A car's value of 23,000 is depreciating at an annual rate of 15%. Predict the price of the car in 7 years.

36. A cities population is about 763,000 and is increasing at an annual rate of 1.5%. Predict the population of the city in 50 years.

37. Determine the amount of an investment if $1500 is invested at an interest rate of 7% compounded monthly for three years.

Unit 2

Chapter 8

Find the degree of each polynomial.

38. $a^8bc^2 - 9ac^2$

39. $k^8 + h^9$

40. $2x^3y^2z + 6xy - 4z$

Write the terms in each polynomial so the powers of x are in ascending order. Then arrange them in descending order.

41. $6x - 3x^2y + 4 - 2x^8$

42. $A^2bx^6 - bcx^5 + 24 - x^2$

Simplify.

43. $(a^3 - 4b^3) + (2a^3 + 5a^2b - 6b^2 + 4b^3)$

44. $(2c^2 - 9) - (4c^2 + 4c + 1)$

45. $(4y^2 + 3y) + (-8y^3 - 2y + 6)$

46. $(5x^2y^2 - xy - 1) - (7xy - 2)$

47. $4z^2(z^2 + 7z - 3z^2)$

48. $8g^2h(g^2 + 9h - 6gh - 2h)$

49. $5b(-b^2 + 7b - 1) + 9(3b^3 - 6b + 2)$

50. $4r^2(3r - 7) + r(7r^2 - 5r + 2) - 4r^2$

Solve each equation.

51. $4(n - 5) + 2 = 5(6 - n) + 3n$

52. $4(-6x + 9) + 4 = -4(-5x + 12)$

Find each product.

53. $(2x + 3)(4x - 1)$

54. $(3y + 2)(5y^2 - 2)$

55. $(x + 4)(x - 7)(x + 2)$

56. $(2x + 7)(3x^2 + 8x - 4)$

57. $(3x + 1)^2$

58. $(3x + 6)(3x - 6)$

Chapter 9

Write the prime factorization of each number.

59. 124

60. -36

61. 63

Find the GCF of the given monomials.

62. $12x^2y^4, 18y^2z$

63. 18, 50

64. $8bc, 16c^2, 28b^2c^5$

Factor each expression completely.

65. $9a^2b^5 – 3ab^2 + 6ab$

66. $8wy + 12xy + 10wz + 15xz$

67. $7b^2 + 42b$

68. $6x^3 + 2x^2 + 12x + 4$

69. $6y^3 – 21y^2 – 4y + 14$

70. $x^2y^2 + 20xy + 21$

71. $12 – 7x + x^2$

72. $x^2 – x – 56$

73. $2x^2 + 3x – 20$

74. $3x^2 + 9x – 30$

75. $6x^2 – 22x – 8$

76. $5n^4 – 22n^2 + 8$

77. $b^{10} – 49$

78. $81z^4 – 1$

79. $4x^2 - 16$

80. $y^4 - (7y - 12)^2$

81. $3x^2 + 24x + 48$

82. $4x^2 + 4xy + y^2$

83. $6x^3 - 14x^2 - 12x$

84. $4y^2 - 20y + 25$

Solve by factoring.

85. $x^2 + 5x + 4 = 0$

86. $x^2 - 5x - 24 = 0$

87. $8x^2 - 4x - 12 = 0$

88. $x^2 = 25$

89. $a^2 - 9a - 52 = 0$

90. $3x^2 + 14 = 13x$

91. If a quadratic equation has solutions of 5 and -3/4, write the polynomial in the form $ax^2 + bx + c$ where a, b, and c are integers

Solve each equation for the variable.

92. $5 = \sqrt{x+3}$

93. $\sqrt{x+5} = x-1$

94. $\sqrt{5x+6} = 3+\sqrt{x+3}$

95. $\sqrt{x-3}+\sqrt{x+5} = 4$

96. $\sqrt{6y+7}-\sqrt{3y+3} = 1$

97. $\sqrt{x+7} = x-5$