Secondary Math 2   Name_____

Semester 1 Final Review

Date_____ Period_____

1) What does it mean for two terms to be like terms? Give an example along with your definition.

Simplify each expression.

2) $-4n + n$

3) $7 - 5p + 7 - 7p$

4) $3n + 2 - 3n$

5) $8x - x$

Find each product.

6) $(5x + 1)(3x - 2)$

7) $(7v - 8)(3v + 1)$

8) $(2n + 5)(2n + 6)$

9) $(6x - 5)(x + 3)$

Simplify. Your answer should contain only positive exponents.

10) $ba^{-3} \cdot 2a^3b^2$

11) $2x^{-2}y^3 \cdot 2x^2y^3$

12) $x^{-1}y^{-3} \cdot 2x^4$

13) $\left(4u^4v^3\right)^3$

14) $\left(4x^2\right)^{-2}$

15) $\left(4x^2y^2\right)^{-1}$

16) $\dfrac{3uv^2}{2uv^{-4}}$

17) $\dfrac{4x^2y^3}{4x^{-2}}$

18) $\dfrac{2x^{-2}y^4}{x^4y^{-4}}$

19) $\dfrac{u^{-3}}{3u^4v^2 \cdot u^4v^{-2}}$

20) $\dfrac{2n \cdot 4m^4 n^2}{3m^3}$

21) $\left(x^{-3}y^2 \cdot yx^3\right)^3$

22) $x^4 y^3 \cdot \left(yx^3\right)^3$

23) $\dfrac{2x^4}{\left(2y^4\right)^3}$

24) $\dfrac{x^2}{\left(2x^4 y^{-4}\right)^{-4}}$

25) $\dfrac{\left(2m^4 n^4\right)^3}{2m}$

26) What does it mean to have a rational (fraction) exponent?

Write each expression in exponential form.

27) $\left(\sqrt[4]{10r}\right)^3$

28) $\left(\sqrt[4]{n}\right)^3$

29) $\sqrt{2n}$

30) $\sqrt{x}$

Write each expression in radical form.

31) $\left(7r\right)^{\frac{1}{3}}$

32) $\left(7r\right)^{\frac{3}{2}}$

33) $\left(2k\right)^{\frac{1}{2}}$

34) $x^{\frac{3}{2}}$

List all the sets two which the follwoing numbers belong.

35) -5

36) 0

37) 12

38) 0.75

39) 4.8673999573658...

40) $\sqrt{7}$

41) $5 + i$

42) $-7i$

43) What are the values for i and i^2 ?

Simplify.

44) $(-8 - 3i) - (7 - 5i)$

45) $(-2 - i) - (-1 - 4i)$

46) $(-6 + i) - (5 - 8i)$

47) $(4 - 5i) + 6 - (7i)$

48) $(-4 - 8i)(-2 - 5i)$

49) $(4 - i)(6 - 5i)$

50) $(-2 - 4i)(1 - 3i)$

51) $(7 + 6i)(-8 + 5i)$

Simplify. Use absolute value signs when necessary.

52) $\sqrt{100n^2}$

53) $\sqrt{448x^4}$

54) $\sqrt{256m^3}$

55) $\sqrt{100u^4v}$

56) $\sqrt{12xy^3}$

57) $\sqrt{150x^4y^2}$

58) Why are absolute value signs necessary on some answers when simplifying radicals?

Determine whether your answer will be rational or irrational with the follwing operations.

59) Sum of a rational number with a rational number

60) Product of a rational number with an irrational number

61) Product of an irrational number with an irrational number

62) Sum of an irrational number with a rational number

63) Sum of an irrational number with an irrational number

64) Product of a rational number with a rational number

Factor each completely.

65) $x^3 + 5x^2 - 14x$

66) $p^2 - 3p - 18$

67) $b^2 - 10b + 16$

68) $v^2 + 17v + 70$

69) $2k^2 - 9k + 9$

70) $5n^4 - 51n^3 + 54n^2$

71) $3n^2 + 5n$

72) $3n^2 + 32n + 64$

73) $9x^2 + 13x + 4$

74) $48n^3 + 60n^2$

75) $8x^3 + 24x^2$

76) $45m^3 - 400m^2 - 500m$

Solve each equation by factoring.

77) $k^2 - 24 = 5k$

78) $p^2 + 5p = 0$

79) $8m^2 = 17m - 2$

80) $5b^2 = 42 - 23b$

Solve each equation by completing the square.

81) $m^2 + 8m = -3$

82) $v^2 - 8v - 83 = -10$

83) $x^2 + 14x - 63 = -9$

84) $n^2 - 10n + 20 = 4$

Solve each equation with the quadratic formula.

85) $12r^2 - 2r = 12$

86) $12x^2 = -5 - 8x$

87) $6k^2 - 4 = 11k$

88) $2n^2 + 10 = -4n$

89) Where do solutions to a quadratic show up on a graph?