

Algebra 2 Honors Summer Packet

Many topics that we will study next year in your mathematics class build on topics that you have already learned in previous classes. Since many of you have been away from these ideas for a long period of time, you might need a refresher in order to be up to speed at the beginning of the course.

Please work through the problems in this packet, showing all appropriate work on a separate sheet of paper. All work and answers not on a separate sheet of paper will not be graded and result in a zero. Do Not write on this packet. Please keep your work labeled and organized, in numerical order. **Box all answers.**

If you are unfamiliar with a term or type of problem, refer to your notes or go online to various help sites for mathematics. The skills covered are part of the foundation for your course. Master of these skills is assumed. We look forward to working with you next year!

Have this packet ready for the first day of class. This packet will be collected and graded based on the problems you have completed with appropriate work.

Helpful Websites:

www.khanacademy.com

www.algebra.com

www.gomath.com

www.algebrahelp.com

Summer Packet

Date _____ Period _____

Simplify each expression.

1) $(5r^2 - 8r^4 + 8r) - (3r - 4r^4 - 2r^3) + (5 + 2r^3)$

2) $(6n^3 + 2 - 4n^4) - (6 + 3n^2 - 5n^4) - (3n^2 + 4n^3)$

3) $(6p^4 + 7p^2 + 2p) + (5p + 5p^4 - 3p^2) - (8p^4 - 5p)$

4) $(8n^2 - 3 - n) - (5n^2 + 8 - 2n) + (3n^2 - 8)$

5) $(x^3 - 5x^4 + 7) + (6x^3 - 6x^4 - 3) + (8x^2 - 8x)$

6) $(3a^3 + 6a^2 + 2) - (2a^3 + 7 - 3a^2) - (7 - 4a^2)$

7) $(5p + 8 + 4p^2) + (1 + 3p^4 - 2p) - (5p^2 - 3p^3)$

8) $(6v^2 - 6 - 6v^4) - (3v^2 - 1 + 4v^4) - (2v^2 - 5)$

9) $(8n^2 + 3n^3 - 7n) + (5n + 7n^3 - 3n^2) + (n^2 + 8n^3)$

10) $(8n^2 - 2n^4 + 5n^3) - (n^2 - 5n^3 - 7n^4) - (5n^2 - 2n^4)$

Find each product.

11) $(4x - 3)(6x + 3)$

12) $(7m + 4)(3m + 5)$

13) $(7x + 1)(5x - 7)$

14) $(8v + 2)(4v - 8)$

15) $(8x - 5)(5x^2 - 4x - 6)$

16) $(7r - 6)(2r^2 - 6r - 3)$

17) $(3n + 4)(8n^2 + 4n - 2)$

18) $(3n - 8)(3n^2 + 7n + 1)$

19) $(4v^2 - 3v - 1)(2v^2 + v + 2)$

20) $(r^2 + 4r + 1)(2r^2 + 5r - 7)$

21) $(8x^2 - 7x - 8)(7x^2 - x + 2)$

22) $(r^2 - 5r + 8)(5r^2 + 8r + 3)$

23) $(4a^2 + 2a - 7)(8a^2 + 2a - 8)$

24) $(2p^2 + 3p + 2)(2p^2 + 5p + 2)$

Factor each completely.

25) $v^2 + 5v - 36$

26) $2n^2 + 10n - 12$

27) $x^4 - x^3 - 90x^2$

28) $p^2 + 2p - 80$

29) $3r^2 - 12r - 180$

30) $4n^2 + 16n - 128$

31) $25n^3 + 5n^2 - 30n$

32) $2n^2 - 13n - 70$

33) $10n^2 + 34n + 12$

34) $30x^3 - 6x^2$

35) $7p^2 - 75p + 50$

36) $10n^2 + 96n + 54$

Solve each equation.

37) $-16 = -6(-4 - 2x) + 8(-5 + 2x)$

38) $4(-5n - 1) + 8(1 - 5n) = -56$

39) $-(2b - 3) - 4(6 - 6b) = 1$

40) $64 = -8(-1 + 2n) - 6(4 + 4n)$

$$41) 16 = 2(p + 5) - 5(2p - 6)$$

$$43) -4a + 4(6a - 6) = 4(3 - 4a)$$

$$45) -7p - (3p + 5) = -5 - 2(p + 4)$$

$$42) 7n - 3n = 3(6n - 6) - 8(n - 6)$$

$$44) -2 - 5p + 1 = 3(5p + 1) - 4(p - 3)$$

$$46) 3(4n + 8) = -8(n - 8)$$

Solve each system by graphing.

$$47) y = \frac{3}{2}x - 4$$

$$y = \frac{1}{2}x - 2$$

$$48) y = x + 4$$

$$y = -\frac{5}{3}x - 4$$

$$49) y = -\frac{7}{3}x - 3$$

$$y = -\frac{1}{3}x + 3$$

$$50) y = -\frac{1}{2}x + 3$$

$$y = 3x - 4$$

Solve each system by substitution.

$$51) -3x + y = -21$$

$$-2x - 8y = -14$$

$$52) y = 6$$

$$6x + 6y = 6$$

$$53) 7x + y = 14$$

$$-4x - 6y = -8$$

$$54) x + 5y = 0$$

$$2x + 10y = -7$$

Solve each system by elimination.

$$55) 4x + 6y = -30$$

$$2x - y = 13$$

$$56) -15x + 3y = -27$$

$$5x - 2y = 3$$

$$57) -10x - y = 15$$

$$-2x + 6y = -28$$

$$58) 6x - 9y = 3$$

$$-4x - 18y = -26$$

$$59) -9x + 10y = -3$$

$$8x - 5y = 26$$

$$60) -x - 9y = 14$$

$$2x + 18y = -10$$

$$61) 2x - 2y + 4z = -28$$

$$2x + 5y + 3z = -8$$

$$x + 3y - 4z = 30$$

$$62) -5x + 3y - z = -22$$

$$-3x + 6y - 2z = -9$$

$$-4x + y - 3z = -3$$

$$63) 2x + 3y + 6z = 14$$

$$3x + 3y - 5z = 4$$

$$5x - y + 3z = 6$$

$$64) 4x - 6y - 3z = 8$$

$$-x - 2y - 4z = -15$$

$$3x - y - 2z = 10$$

Find the inverse of each function.

$$65) g(x) = -\frac{3}{x-2} + 2$$

$$66) g(x) = 1 + (x - 1)^5$$

$$67) g(n) = -\frac{3}{n+2} + 1$$

$$68) f(x) = \sqrt[3]{\frac{-x+1}{2}}$$

69) $g(x) = -3 + x^3$

70) $f(n) = \frac{n-4}{9}$

Simplify.

71) $2xy^3 \cdot 4x^3y^4$

72) $2x^3y^3 \cdot x^4y^3$

73) $3m^3n^4 \cdot 2m^3n^4$

74) $2xy^2 \cdot 3yx^3$

75) $3x^3y^2 \cdot 4y^3 \cdot 4yx^3$

76) $2uv^3 \cdot uv^2$

77) $(u^4v^4)^2 \cdot u^3v^3$

78) $(2a^4b^2)^3 \cdot 2a^4b^2$

79) $2u^2v^3 \cdot (u^3v^4)^2$

80) $(u^4v^3 \cdot vu^3)^2 \cdot 2u^3v^4$

81) $a^3b^4 \cdot (a^2b^2)^2$

82) $(2mn^4)^4 \cdot (m^4n^4)^2$

Simplify. Your answer should contain only positive exponents.

83) $\left(\frac{2m^4n^4 \cdot m^2n^2}{2m^2n^2 \cdot (2mn)^4}\right)^3$

84) $\frac{(2x^2y^4)^4}{2x^2 \cdot 2x}$

85) $\frac{2yx^3}{2y^4 \cdot (2x)^4}$

86) $\frac{x^4y^4 \cdot x^2 \cdot 2xy^3}{(2y^2)^2}$

87) $\frac{x^4x^2}{(2x^2y^4)^4}$

88) $\frac{(b^4)^4 \cdot 2a^2b^3}{b^3}$

89) $\left(\frac{2a^{-3}b^2 \cdot 2a^3}{2a^0b^{-4}}\right)^2$

90) $\left(\frac{x^0 \cdot x^{-3}y^{-2}}{2x^0y^{-3}}\right)^2$

91) $\frac{(2x^{-1}y^2)^2}{2x^{-4}y^4 \cdot y \cdot xy^0}$

92) $\frac{(2n^4)^0}{2m^{-2}n^2 \cdot 2m^{-1}n^2}$

93) $\frac{(2u^2v^{-4})^{-1} \cdot (v^2)^{-3}}{2vu^3}$

94) $\left(\frac{2b^{-2} \cdot a^{-4}}{(a^0)^2}\right)^3$

Evaluate each function.

95) $k(t) = 4^t + 3$; Find $k(-1)$

96) $p(x) = 2x^2 - 2$; Find $p(-6)$

97) $k(t) = 3 \cdot 3^{2t} - 1$; Find $k(1)$

98) $g(t) = 5^{t+1} - 3$; Find $g(-1)$

99) $f(n) = 3|n+2| - 1$; Find $f(10)$

100) $g(x) = -3 \cdot 3^x - 3$; Find $g(2)$