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# Math for College Algebra CP Summer Math Packet

Course 1353

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This summer math packet is a review of some of the concepts learned in Algebra 2 that will be needed for College Algebra. It will assure that all students begin the school year on the same page and with equal opportunity to succeed in College Algebra.

**Instructions for completing the packet:**

- Please print the packet or use loose leaf paper to complete the packet by hand showing all work. Work must be neat and legible.
- Please use your Algebra 2 notes or the websites provided to help you if you need reminders on how to complete some practice problems.
- Take notes as you complete your work. You will be given a quiz on this material the first week of school.
- Work on the packet with your friends. Help each other. Every student is responsible for knowing the material in this packet when you return in August. We will review as a team and everyone will be expected to participate.
- Bring your packet to our first class together. It will be collected for a grade. Only packets done with paper and pencil will be accepted.

**Helpful Websites:**

<http://www.mathtv.com/>

<http://www.purplemath.com/modules/index.htm>

<https://www.khanacademy.org>

**Helpful for graphing functions:**

<https://www.education.ti.com/en/resources/family-of-functions>

College Algebra Summer Math Packet

Name \_\_\_\_\_

Evaluate the algebraic expression for the given value or values of the variable(s).

1)  $(x + 3y)^2$ ;  $x = 3$  and  $y = 2$

1) \_\_\_\_\_

2)  $5 + 6(x - 7)^3$ ;  $x = 9$

2) \_\_\_\_\_

3)  $x^2 - 5(x - y)$ ;  $x = 8$  and  $y = 2$

3) \_\_\_\_\_

4)  $\frac{9(x - 1)}{2x + 4}$ ;  $x = 7$

4) \_\_\_\_\_

5)  $\frac{y - 2x}{4x + xy}$ ;  $x = -4$  and  $y = 5$

5) \_\_\_\_\_

Find the slope of the line that goes through the given points.

6)  $(-5, -8), (-8, 6)$

6) \_\_\_\_\_

7)  $(7, 0), (0, 2)$

7) \_\_\_\_\_

8)  $(6, -3), (-3, 2)$

8) \_\_\_\_\_

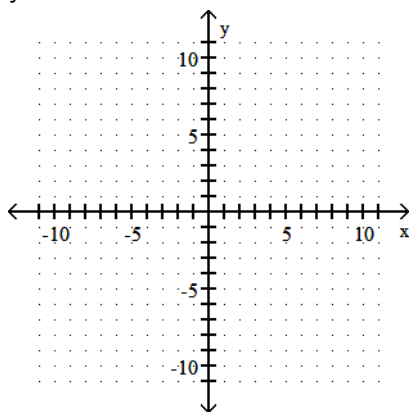
9)  $(5, 1), (6, 6)$

9) \_\_\_\_\_

Graph the equation.

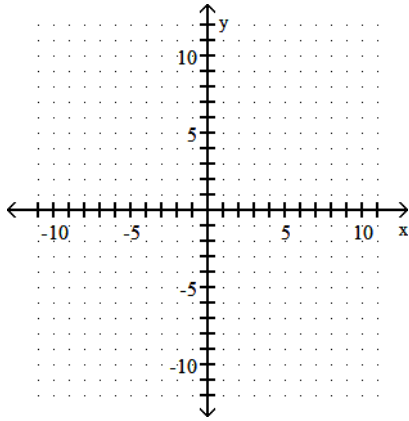
10)  $y = 3x$

10) \_\_\_\_\_



11)  $y = -\frac{2}{9}x - 9$

11) \_\_\_\_\_



Find the indicated value.

12) Find  $f(-4)$  when  $f(x) = 8x + 11$ .

12) \_\_\_\_\_

13) Find  $f(2)$  when  $f(x) = 4x^2 + 4x + 4$ .

13) \_\_\_\_\_

14) Find  $f(0)$  when  $f(x) = \frac{1}{7}x$ .

14) \_\_\_\_\_

Solve.

15) The formula  $C = \frac{5}{9}(F - 32)$  expresses the relationship between Fahrenheit temperature,  $F$ , and Celsius temperature,  $C$ . Use the formula to convert  $41^\circ\text{F}$  to its equivalent temperature on the Celsius scale.

15) \_\_\_\_\_

16) A stone is dropped from a tower that is 740 feet high. The formula  $h = 740 - 16t^2$  describes the stone's height above the ground,  $h$ , in feet,  $t$  seconds after it was dropped. What is the stone's height 1 seconds after it is released?

16) \_\_\_\_\_

List all numbers from the given set  $B$  that are members of the given Real Number subset.

17)  $B = \{18, \sqrt{6}, -15, 0, 0.\bar{6}, \sqrt{25}\}$  Integers

17) \_\_\_\_\_

18)  $B = \{6, \sqrt{5}, -22, 0, 0.\bar{4}, \sqrt{25}\}$  Natural numbers

18) \_\_\_\_\_

19)  $B = \{4, \sqrt{6}, -21, 0, 0.\bar{4}, \sqrt{9}\}$  Whole numbers

19) \_\_\_\_\_

Evaluate the expression for the given values of  $x$  and  $y$ .

20)  $\frac{|x|}{x} + \frac{|y|}{y}$ ;  $x = 4$  and  $y = -1$

20) \_\_\_\_\_

State the name of the property illustrated.

21)  $5 + (-3) = (-3) + 5$

21) \_\_\_\_\_

22)  $14 \cdot (7 + 1) = 14 \cdot 7 + 14 \cdot 1$

22) \_\_\_\_\_

23)  $2 + (21 + 22) = (2 + 21) + 22$

23) \_\_\_\_\_

Simplify the algebraic expression.

24)  $-7(2r + 6) + 4(6r + 5)$

24) \_\_\_\_\_

25)  $(8z + 10) - (3z - 8)$

25) \_\_\_\_\_

26)  $-5(2x - 7) - 4x + 5$

26) \_\_\_\_\_

Write the algebraic expression without parentheses.

27)  $\frac{1}{4}(4x) + [(3x) + (-3x)]$

27) \_\_\_\_\_

28)  $-(7z - 8w + 8y)$

28) \_\_\_\_\_

Simplify the exponential expression.

29)  $x^3 \cdot x^9$

29) \_\_\_\_\_

30)  $(-6x^7)(-4x^9)$

30) \_\_\_\_\_

31)  $(-10x^4y)(-4x^5y^2)$

31) \_\_\_\_\_

32)  $\frac{x^6}{x^2}$

32) \_\_\_\_\_

33)  $\frac{x^4}{x^7}$

33) \_\_\_\_\_

34)  $\frac{5x^5}{x^3}$

34) \_\_\_\_\_

35)  $\frac{27x^{13}}{3x^3}$

35) \_\_\_\_\_

36)  $\frac{x^{13}y^{13}}{x^7y^4}$

36) \_\_\_\_\_

37)  $\frac{72x^5y^{11}}{9x^2y^5}$

37) \_\_\_\_\_

38)  $\frac{-14x^2}{2x^7}$

38) \_\_\_\_\_

39)  $\frac{30x^{11}y^{10}z^6}{5x^3y^4z^5}$

39) \_\_\_\_\_

40)  $(-8)^0$

40) \_\_\_\_\_

41)  $-7^0$

41) \_\_\_\_\_

42)  $2^{-3}$

42) \_\_\_\_\_

43)  $(-3)^{-2}$

43) \_\_\_\_\_

44)  $x^6 \cdot x^{-2}$

44) \_\_\_\_\_

45)  $\frac{x^{-9}}{x^2}$

45) \_\_\_\_\_

46)  $\frac{63x^{20}y^5}{7x^{19}y^{-3}}$

46) \_\_\_\_\_

47)  $(x^5)^9$

47) \_\_\_\_\_

48)  $(11x^7)^2$

48) \_\_\_\_\_

49)  $(-6x^3y^6)^2$

49) \_\_\_\_\_

50)  $(5x^3)^{-2}$

50) \_\_\_\_\_

51)  $\left(\frac{-3x}{y}\right)^3$

51) \_\_\_\_\_

Simplify the exponential expression. Assume that variables represent nonzero real numbers.

52)  $\frac{(2x^2)^3}{x^{15}}$

52) \_\_\_\_\_

53)  $\left(\frac{xy^6}{x^6y}\right)^{-2}$

53) \_\_\_\_\_

Evaluate the expression or indicate that the root is not a real number.

54)  $\sqrt{-121}$

54) \_\_\_\_\_

55)  $-\sqrt{9}$

55) \_\_\_\_\_

56)  $\sqrt{144 + 25}$

56) \_\_\_\_\_

57)  $\sqrt{16} + \sqrt{9}$

57) \_\_\_\_\_

Use the product rule to simplify the expression.

58)  $\sqrt{275}$

58) \_\_\_\_\_

59)  $\sqrt{147}$

59) \_\_\_\_\_

Use the quotient rule to simplify the expression.

60)  $\sqrt{\frac{1}{9}}$

60) \_\_\_\_\_

61)  $\frac{\sqrt{100x^4}}{\sqrt{5x}}$

61) \_\_\_\_\_

Add or subtract terms whenever possible.

62)  $4\sqrt{6} + 8\sqrt{6}$

62) \_\_\_\_\_

63)  $9\sqrt{3} + 6\sqrt{75}$

63) \_\_\_\_\_

Evaluate the radical expressions or indicate that the root is not a real number.

64)  $\sqrt[4]{16}$

64) \_\_\_\_\_

Perform the indicated operations. Write the resulting polynomial in standard form.

65)  $(7x^5 + 2x^2 - 8x) + (4x^5 + 3x^2 + 5x)$

65) \_\_\_\_\_

66)  $(9x^7 + 2x^6 + 6x^5 + 4) + (9x^7 + 7x^6 - 8x^5 - 6)$

66) \_\_\_\_\_

67)  $(5x^7 + 14x^4 + 17) - (2x^7 - 14x^4 + 20)$

67) \_\_\_\_\_

68)  $(6x^4 + 8x^3 - 5x^2 + 5) - (2x^4 + 3x^3 - 7x^2 - 6)$

68) \_\_\_\_\_

Find the product.

69)  $(x + 9)(x^2 + 4x - 7)$

69) \_\_\_\_\_

70)  $(9x + 11)(5x + 4)$

70) \_\_\_\_\_

71)  $(3x + 1)(x + 10)$

71) \_\_\_\_\_

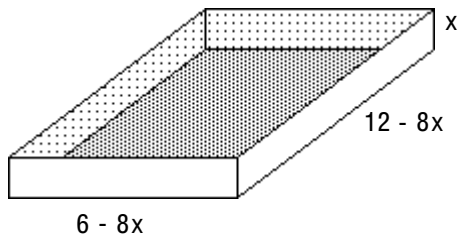
72)  $(x + 11)(x + 7)$

72) \_\_\_\_\_

Solve the problem.

73) Write a polynomial in standard form that represents the volume of the open box.

73) \_\_\_\_\_



Find the product.

74)  $(3x + 8)(3x - 8)$

74) \_\_\_\_\_

75)  $(4x^2 + 7x)(4x^2 - 7x)$

75) \_\_\_\_\_

76)  $(x + 4y)(2x - 3y)$

76) \_\_\_\_\_

77)  $(m - n)(m^2 + mn + n^2)$

77) \_\_\_\_\_

Factor out the greatest common factor.

78)  $5x - 20$

78) \_\_\_\_\_

79)  $5x^2 + 30x$

79) \_\_\_\_\_

80)  $14x^4 - 6x^3 + 10x^2$

80) \_\_\_\_\_

Factor by grouping. Assume any variable exponents represent whole numbers.

81)  $x^3 - 4x^2 + 2x - 8$

81) \_\_\_\_\_

82)  $x^3 + 7x - 5x^2 - 35$

82) \_\_\_\_\_

Factor the trinomial, or state that the trinomial is prime.

83)  $x^2 - 12x + 27$

83) \_\_\_\_\_

84)  $x^2 + 14x + 48$

84) \_\_\_\_\_

85)  $x^2 - 16x + 63$

85) \_\_\_\_\_

86)  $x^2 + 5x - 36$

86) \_\_\_\_\_

87)  $x^2 - x - 6$

87) \_\_\_\_\_

88)  $x^2 - x - 54$

88) \_\_\_\_\_

89)  $2x^2 - 7x - 15$

89) \_\_\_\_\_

90)  $7x^2 - 5x + 2$

90) \_\_\_\_\_

91)  $x^2 - 15xy + 54y^2$

91) \_\_\_\_\_

Factor the difference of two squares.

92)  $x^2 - 144$

92) \_\_\_\_\_

93)  $4x^2 - 49$

93) \_\_\_\_\_

94)  $81x^2 - 121y^2$

94) \_\_\_\_\_

Factor the perfect square trinomial.

95)  $x^2 + 4x + 4$

95) \_\_\_\_\_

96)  $x^2 - 15x + 225$

96) \_\_\_\_\_

97)  $49x^2 + 14x + 1$

97) \_\_\_\_\_

Find all numbers that must be excluded from the domain of the rational expression.

98)  $\frac{4}{x - 9}$

98) \_\_\_\_\_

99)  $\frac{x + 5}{x^2 - 36}$

99) \_\_\_\_\_

100)  $\frac{x + 3}{x^2 - 8x + 15}$

100) \_\_\_\_\_

Simplify the rational expression. Find all numbers that must be excluded from the domain of the simplified rational expression.

101)  $\frac{x^2 + 10x + 25}{x^2 + 14x + 45}$

101) \_\_\_\_\_

Multiply or divide as indicated.

$$102) \frac{6x}{12x+6} \cdot \frac{10x+5}{3}$$

102) \_\_\_\_\_

$$103) \frac{6x-6}{x} \cdot \frac{9x^2}{8x-8}$$

103) \_\_\_\_\_

$$104) \frac{x^2-5x+6}{x^2+x-6} \cdot \frac{x^2-4}{x^2-x-6}$$

104) \_\_\_\_\_

$$105) \frac{4x+12}{10} \div \frac{2x+6}{6}$$

105) \_\_\_\_\_