

## Algebra 2 Summer Math Assignment 2022

Students,

This assignment should serve as a review of the algebra skills necessary for success in Algebra 2 CP/H. Our hope is that this review will keep your mind mathematically active during the summer, identify weaknesses in algebra, if they exist, and prepare you for the fun and challenging year ahead. We expect that you come to class knowing this material and ready to continue learning algebra. Answer all questions on separate paper. **SHOW ALL WORK.** This assignment will be *collected* on the **first day of school**. Enjoy your summer. See you in August ready to learn!!!!

Your Algebra 2 Teachers

**A) Refer to your pre-calculus notebook, the internet, or the sheets/links provided for assistance.**

**B) Do not wait until the last minute to complete this assignment.**

**C) Write neatly and in pencil on your own paper. Number all work as it is numbered.**

**D) Show your work (step-by-step solutions). Circle your final answers.**

**E) Round decimal answers to the nearest thousandth.**

**F) Do your own work. Complete all problems.**

**G) Place a question mark next to problems you have difficulty with computing. Watch a You Tube video for review.**

**H) Answers will be posted. Bring your summer math assignment with you the first day of school. A test on this material will be given during the first week of school. This test will be the first grade of the course in the first nine weeks for 2022-2023 school year.**

**You may find some of the websites useful. For certain information, you may want to print and keep a copy in your notebook for future reference.**

<http://justmathtutoring.com/>

<http://www.khanacademy.org>

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

<http://jamesrahn.com/>

<https://www.youtube.com/c/patrickjmt>

**I. Solve the systems of equations by the indicated method. (elimination = linear combination)**

1.) elimination

$$5x + 4y = 6$$

$$-2x - 3y = -1$$

2.) substitution

$$-2x + y = 8$$

$$y = -3x - 2$$

3. graphing

$$3x - 2y = 5$$

$$-6x + 4y = 7$$

4. any method

$$-x + 2y = 11$$

$$3x - 2y = -13$$

(on graph paper)

**II. Solve the linear equations**

1.)  $-4(3 - x) = 2(x + 6)$

2.)  $3x + 2(x + 1) = 0$

3.)  $8x - 1.5 = 3x$

4.)  $\frac{x}{5} - 3 = 2$

5.)  $\frac{1}{2}x - 4 = 2 - (3 - x)$

6.)  $2(3x + 6) + 8 = 6x$

7.)  $\frac{1}{2}(2+a) = \frac{3a+4}{9}$

8.)  $10(x+3) - (-9x-4) = x-5+3$

9.)  $\frac{5}{r-9} = \frac{8}{r+5}$

**III. Factor completely**

1.)  $x^2 - x - 72$

2.)  $7x^3 - 12x^2 - 4x$

3.)  $2a^2 - 11a + 15$

4.)  $10m^3n^2 - 15m^2n - 25m$

5.)  $2x^2y - 4xy - 30y$

6.)  $9x^2 - 64$

7.)  $x^2 + x - 6$

8.)  $x^2 - 14x + 36$

9.)  $2n^2 + 5n + 2$

10.)  $5x^2 - 18x + 9$

11.)  $3n^2 - 8n + 4$

**IV. Solve the quadratic equations**

1.)  $r^2 + 10r - 9 = 0$

2.)  $x^2 + 6x = 0$

3.)  $x^2 - 3x = 10$

4.)  $5x^2 = 7x$

5.)  $(2x + 1)(x + 3) = 0$

6.)  $x^2 = 4x + 32$

7.)  $2x^2 - 3x - 2 = 0$

8.)  $x^2 = 16$

9.)  $x^2 + 5x - 1 = 0$

**V. Write equations for the lines satisfying the given conditions in slope-intercept form.**

1.) through  $(0, -1)$  with slope =  $-1$

2.) through  $(-2, 3)$  with slope =  $\frac{4}{3}$

3.) through  $(3, -1)$  with zero slope

4.) vertical, through  $(5, 4)$

5.) through  $(2, 3)$  and  $(7, -2)$

6.) through  $(3, 4)$  and  $(-2, 4)$

**VI. Simplify completely. Do not leave negative exponents in answers.**

1.)  $(-3x^2 + 4x - 7) + (2x^2 - 7x + 8)$

2.)  $(x + 6)^2$

3.)  $(39a^4 - 4a^3 + 2a^2 - a - 7) - (10a^4 + 3a^3 - 2a^2 - a + 8)$

4.)  $2x^2z(3x - 2z)$

5.)  $-3xy^3(x - 2y)$

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

7.)  $\frac{10a^3b^2c^7}{5a^5bc^7}$

8.)  $(8a^3b^2)(2a^4b^{-5})$

9.)  $(-3x^2y^3z)^3$

10.)  $(15a^4b^2c)^0$

11.)  $\frac{3x^3y^2}{6x^{-2}y^5}$

12.)  $(3x + 7)(2x - 5)$

**VII. Simplify completely. No decimals.**

1.)  $\sqrt{32}$

2.)  $\sqrt{\frac{3}{5}}$

3.)  $\sqrt{21} \cdot \sqrt{14}$

4.)  $\sqrt{8} + \sqrt{18} - \sqrt{32}$

**VIII. Write the formula. Set up and simplify or solve each application problem below.**1.) Find a simplified expression for the area of a rectangle with length =  $2x + 3$  and width =  $x - 2$ 2.) Find a simplified expression for the area of a square with side =  $2x + 5$ 3.) The area of a square with side  $2x - 1$  is 49. Find the value of  $x$ .

4.) A baseball diamond is a square 90 feet on each side. How far is it from 1st to 3rd base?

5.) Find the length of a diagonal of a rectangle having length = 40 cm and width = 55 cm.

6.) An isosceles right triangle has leg = 4 in. What is the length of the hypotenuse?

**IX. Accurately graph ON GRAPH PAPER. (Check your answers on your graphing calculator)**

1.)  $y = -\frac{3}{4}x + 4$

2.)  $y = 3x - 2$

3.)  $y = (x - 2)^2 + 1$

4.)  $y = x^2 + x - 6$

5.)  $2x + 3y = 12$

6.)  $y = |x|$

7.)  $y = |x + 2|$

8.)  $y = |x| + 3$

9.)  $y \geq 2x + 1$

10.)  $y < -3x + 4$

11.)  $y = 4$

12.)  $x = -2$

13.)  $y < 5$

14.)  $x \geq -2$