Name: _____

Algebra 2 Honors Summer Assignment 2024

Your summer assignment is a review of topics from Algebra I. The following 12 pages are problems that were taken from an Algebra 1 Final Exam that I feel would be an excellent way for you to review some of the concepts that you learned (hopefully learned 😉 in Algebra 1 or even 8th grade for that matter). I will be inviting you to join my Google Classroom at some point, which is where you will be able to upload your work and solutions to this assignment if you do not wish or are unable to bring it into the school. However, I would prefer you bring it to school. The main office will put them in my mailbox.

This assignment is due **on or before Wednesday September 4, 2024**. Since there will be teachers in the building on Tuesday September 3 and Wednesday September 4, you could drop your summer assignment off then. Something else to keep in mind is that the school is not open on Fridays during the summer.

The summer assignment will be your first summative assessment (aka test grade) of MP 1. All problems will be graded for accuracy BUT I will stop counting after 45. Basically, this means you can get 7 problems incorrect without penalty. When we return to school, I will review the solutions to these problems and answer any questions that you may have. You will then be given a quiz on these problems that will be worth a total of 25 points.

The total point value for this assignment is 70 points.

If for any reason your assignment is turned in late, then 10 points will be deducted for each day after September 4, 2024. If you do not turn

in the assignment until the first day of school, Thursday September 5, 2024, then the highest grade that you will be able to earn on that part of the assignment is 35 points. Keep in mind that summative assessments are worth 60% of your marking period grade.

You may contact me via e-mail with questions: nduffy@hopatcongschools.org; however, I do not expect there to be any major questions. If you do not hear back from me within a week, e-mail me again!

DO NOT wait until the last minute to start/complete this assignment.

NO WORK = NO CREDIT!

Good Luck and Enjoy Your Summer!!!

A SPECIAL NOTE FROM THE GUIDANCE DEPARTMENT:

As schedules are not finalized, we recommend that students not begin the summer assignment until they have confirmed their schedules with their school counselor.

Algebra 1 Review Problems

Algebra 2 Honors

Name _____ Period _____

SHOW ALL YOUR WORK!

1. What is the value of $\frac{13-4}{18-4^2+1}$?

_____

2. Solve: $-2x+9-4=-4x-31$

_____

3. **Multiple Choice.** Solve: $20=-\frac{1}{4}x$

_____

A. -5 B. 5 C. -80

D. 80 E. -19.75 F. None of the above.

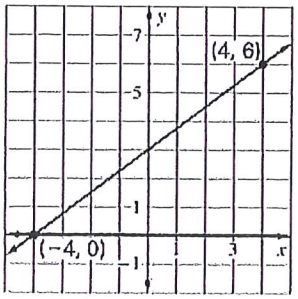
4. Solve: $-6+5x=8x-9$

_____

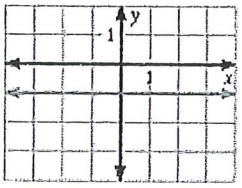
5. Solve: $-\frac{3}{2}(-x-4)=4x+2$

_____

6. Write the equation of the line shown below in slope-intercept form.



7. **Multiple Choice.** What is the equation of the line shown below?



A. $x = -1$ B. $y = -1$ C. $x = 1$

D. $y = 1$ E. $y = x$ F. None of the above.

8. Find the slope of the line passing through the points $(-4, 2)$ and $(-3, -5)$.

9. Write an equation in slope-intercept form of a line having a slope of -3 and y-intercept of $(0, 5)$.

10. **Multiple Choice.** What is the slope of the line $5x + 3y = 15$?

A. 3 B. 5 C. $-\frac{3}{5}$

D. $\frac{3}{5}$ E. $-\frac{5}{3}$ F. None of the above.

11. A bike rental shop charges \$25 to rent a bike and \$3 for every hour that you have rented it.
    A. Write a linear equation to model the total cost C based on the number of hours h that you have rented the bike.
    B. If you are charged \$52 when you return the bike, how many hours did you rent the bike?

A. _____

B. _____

12. What is an equation of the line in slope-intercept form that passes through the point $(-1, 7)$ and has a slope of 4?

_____

13. **Multiple Choice.** Write an equation in slope-intercept form of the line that passes through the points $(-2, -1)$ and $(4, -4)$.

_____

A. $y = -\frac{1}{2}x - 2$ B. $y = -\frac{1}{2}x + 2$ C. $y = -2x - 2$

D. $y = -2x + 2$ E. $y = \frac{1}{2}x + 2$ F. None of the above.

14. **Multiple Choice.** Find the slope of a line that is perpendicular to $y = 3x - 4$

_____

A. -3 B. $\frac{1}{3}$ C. 4

D. $\frac{3}{4}$ E. $-\frac{1}{3}$ F. None of the above.

15. What is the slope of the line that is parallel to $y = \frac{2}{3}x + 4$

_____

16. Solve and graph the inequality: $x + 5 \geq -4$

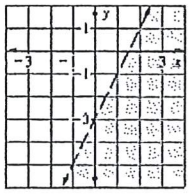
17. Solve the inequality: $-3x - 7 < 2$

18. Solve the inequality: $-4 \leq -3x - 13 \leq 26$

19. Find the solutions to the absolute value equation:
$|2x + 3| = 9$

20. Solve: $|10 - 4x| < 2$

21. **Multiple Choice.** Which inequality is represented by the graph shown?



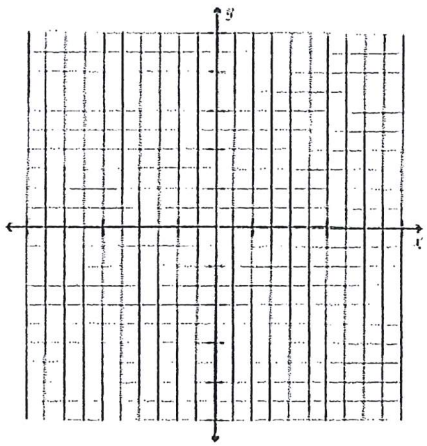
A. $y \geq 2x - 3$ B. $y \geq \frac{1}{2}x - 3$ C. $y \leq 2x - 3$

D. $y \leq \frac{1}{2}x - 3$ E. $y \leq 2x + 3$ F. None of the above.

22. Solve the linear system by graphing.

$x + y = 10$

$x - y = -2$



23. Solve the linear system using the substitution method.

$2x + 3y = 3$

$x - 6y = -6$

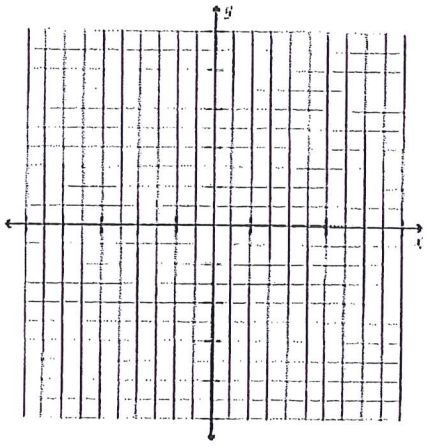
24. Solve the linear system using the addition method. This method is also called linear combination/elimination.
$-4x-15=5y$
$2y=11-5x$

25. **Multiple Choice.** How many solutions does the linear system have?
$3x+3y=3$
$x+y=6$

A. 0 B. 1 C. 2

D. Infinitely many. E. 3 F. None of the above.

26. Graph the system of inequalities.
$y>x-4$
$y\leq -x-1$
$x\geq -3$



27. **Multiple Choice.** Simplify: $4^3 \cdot 4^5$

A. 16^8 B. 4^8 C. 4^{15}

D. 4^2 E. 16^{15} F. None of the above.

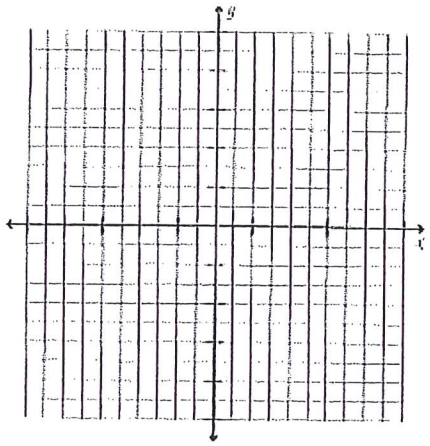
28. Simplify: $\left(3^4\right)^6$

29. Simplify: $(-3x^3y^2)^2$

30. Simplify: $(4x^2y)^2 \cdot (-2y^2)^3$

31. Complete the table and sketch a graph of the exponential function: $y = \left(\frac{1}{3}\right)^x$

x	-2	-1	0	1	2	3
y						



32. **Multiple Choice.** Evaluate: $\left(\frac{3}{4}\right)^{-2}$

A. $-\frac{9}{16}$ B. $\frac{9}{16}$ C. $\frac{16}{9}$

D. $-\frac{3}{4}$ E. $-\frac{16}{9}$ F. None of the above.

33. Evaluate: $\frac{3^4}{3^2}$

34. Simplify: $\frac{18x^2y}{4xy^3} \cdot \frac{(3xy)^{-2}}{5x^2y^3}$

35. You deposit \$750 in an account that pays 5% annual interest compounded yearly. Use the exponential growth formula $y = A(1+r)^t$ to find your account balance after 8 years. Round to the nearest penny. **CALC OK**

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36. Solve: $4x^2 - 49 = 0$

_____

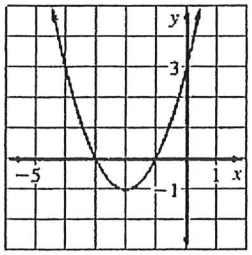
37. Simplify each radical expression. Leave your answer in simplest radical form.

A. $\sqrt{108}$ A. _____

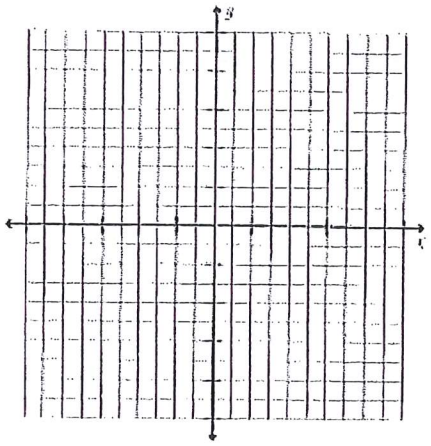
B. $\frac{\sqrt{64}}{4}$ B. _____

38. Use the graph to determine the solutions (roots/zeros) of the equation.

_____



39. Graph the quadratic function: $y = x^2 - 2x + 3$



40. Use the quadratic formula to solve the equation:
$10 - 2x^2 = -x$

41. Add the polynomials and write in standard form:
$(8x^2 - 3x + 7) + (6x^2 - 4x + 1)$

42. Subtract the polynomials and write in standard form:
$(3x + 2x^4 - 5) - (x^3 + 2x^4 + 5x)$

43. Distribute: $-3x(x^2+5x-5)$

44. Find the product: $(6x-9)(x-7)$

45. Find the product: $(3x-11)(3x+11)$

46. Find the product: $(x+6)^2$

47. Factor the trinomial: $3x^2+14x-5$

48. Factor the trinomial: $x^2-15x+54$

49. Factor the perfect square trinomial: $9x^2+24x+16$

50. Factor to polynomial completely: $x^4 + 4x^3 - 45x^2$

_____

51. Solve the factored polynomial equations.

A. $(x+12)^2 = 0$ A. _____

B. $(x+3)(2x-1)(3x+2) = 0$ B. _____

52. Solve the equation: $x^2 + 28 = -11x$

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