

Name _____

Date _____

My Algebra 1 and/or Geometry teacher(s) at RBR was: _____

DIAGNOSTIC TEST – ALGEBRA 2

This test is designed to help you get acquainted with some of the concepts you need to know for this course. Show all of your work in this packet. If you need additional help with some of the problems, please see me or use your text book as a resource.

Ultimately, this test will assess whether or not you will be able to keep up with the pace of this course. This will be due no later than the second day of school!!!

Simplify each expression:

1. $2 - 4 \cdot 6 + 9(7 - 9)$

1. _____

2. $2^3 - 2^4 - 2^0$

2. _____

3. $6 - (7 - 10)^3 + 8$

3. _____

4. Compare the values of: -5^2 and $(-5)^2$. Explain your reasoning.

4. _____

5. Compare the values of: $\left(\frac{1}{4}\right)^2$ and 4^{-2} . Explain your reasoning.

5. _____

Evaluate the expression for the given value of x .

6. $(8x+1)(-3)$, when $x = \frac{1}{2}$

6. _____

7. $-x+12-5$, when $x = 9$

7. _____

8. $-(-3)^2(x)$, when $x = 7$

8. _____

9. $6x(x+2)$, when $x = 2$

9. _____

10. $(-5)\left(-\frac{3}{4}x\right)$, when $x = 6$

10. _____

Solve the equation:

11. $2x-5 = -21$

11. _____

12. $-x+3 = 4x-3(x-2)$

12. _____

13. $x-(5x-6)+12 = 0$

13. _____

$$14. \frac{2x-1}{8} = \frac{3x+4}{-4}$$

14. _____

$$15. 2x-5 = x-3+x-2$$

15. _____

$$16. \frac{2}{3}x - \frac{2}{5} = 2x - \frac{7}{15}$$

16. _____

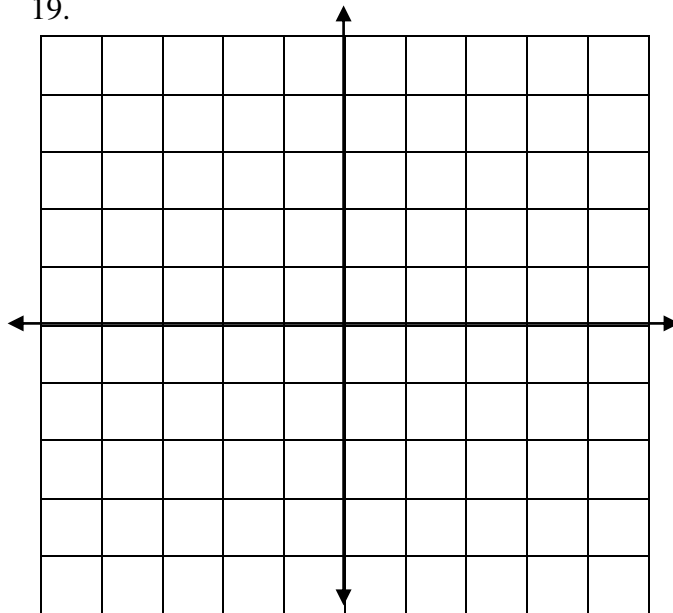
Decide whether the relation is a function. If it is a function, give the domain and range.

17.

Input	Output
-1	-1
1	-1
3	1
5	3
7	5

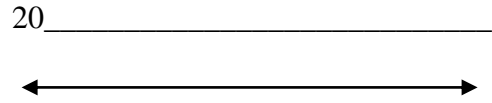
18. $\{(-2,3), (-1,2), (-1,-2), (0,1), (0,-1), (1,0)\}$

19.

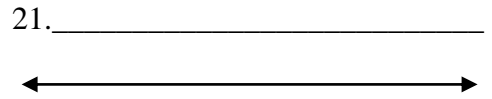


Solve the inequality and graph the solution on a number line.

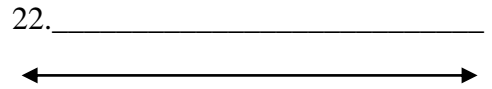
20. $-3 < -4x + 9 \leq 14$



21. $|3x + 16| + 2 < 10$



22. $3x - 4 > 5$ or $5x + 1 < 11$

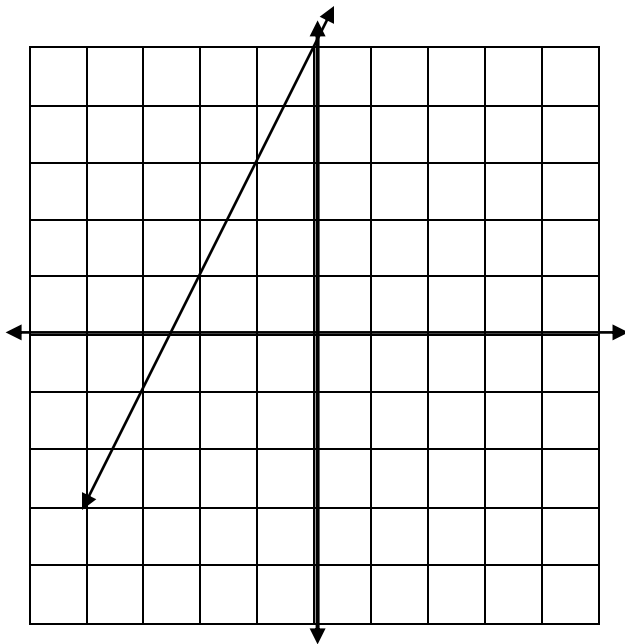


23. Write an equation of a line that is parallel to the line shown below.

23. _____

24. Write an equation of a line that is perpendicular to the line shown below. Graph the equation in the same coordinate plane to check your answer.

24. _____



31. Find the slope of the line for the following equations or points:

a.) $y = 2x - 5$

a.) _____

b.) $2x - 3y = 6$

b.) _____

c.) $(2,7)$ and $(3,4)$

c.) _____

d.) $(-1,2)$ and $(-4,-5)$

d.) _____

e.) $(2,7)$ and $(2,4)$

e.) _____

f.) $(2,1)$ and $(8,1)$

f.) _____

32. Graph the linear equation on a coordinate plane.

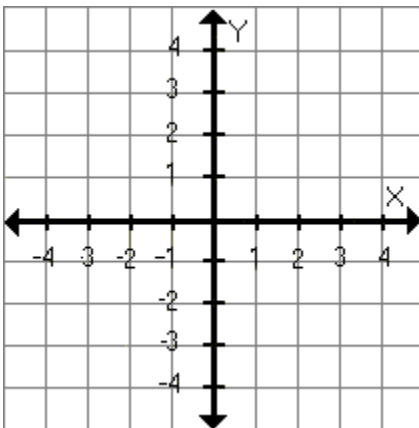
a.) $y = \frac{2}{3}x + 2$

b.) $y = x$

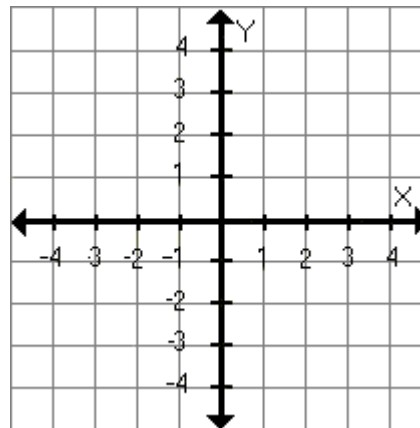
c.) $2x + 4y = -8$

d.) $y = 4$

graph and label a.) and b.) here



graph and label c.) and d.) here



33. Write an equation of the line in slope-intercept form given the following:

a.) $m = -2, b = 3$

a.) _____

b.) $m = 3$ and goes through $(2, 7)$

b.) _____

c.) Goes through $(3, 8)$ and $(5, 10)$

c.) _____

d.) Goes through $(1, -5)$ and $(1, 2)$

d.) _____

Solve the system of linear equations using substitution or linear combination:

34. $4y = -8x + 16$
 $2y = 11x - 7$

34. _____

35. $-2x + 3y = 15$
 $10x - 11y = 9$

35. _____

36. $y = 5x - 2$
 $3x + 7y = 5$

36. _____

Simplify each expression:

37. $3x - 6x^2 + 3 - 2(x^2 - 3x)$

37. _____

38. $(2x - 5)(x + 3)$

38. _____

39. $(x - 6)(x + 6)$

39. _____

40. $(2x)(-4x^5)$

40. _____

41. $(x^3y)(7x^4y)$

41. _____

42. $(2x^3)^4$

42. _____

43. $(-4x^5)^2$

43. _____

44. $\frac{24x^5y}{-10x^2y^7}$

44. _____

45. $4x^{-3}$

45. _____

46. $(-2x^3)^{-4}$

46. _____

Evaluate each expression. Let $x = -3$, $y = 2$ and $z = -1$

47. $x^2 - y$

47. _____

48. $-x^3 - y + z^{11}$

48. _____

49. $(4y^9)(-2y^{-10})$

49. _____

50. $\frac{9x^2 - 16y^2}{3x + 4y}$

50. _____

You have finished the test...congratulations!!! Welcome to Algebra 2



ALGEBRA II:

Students are responsible for all prerequisites for Algebra I and Geometry including:

- Simplifying Radicals
Simplify the radical.

1. $\sqrt{180}$

2. $\sqrt{42}$

3. $\frac{\sqrt{72}}{3}$

- Factoring
Factor Completely.

1. $4x^2 - 25$

2. $2x^2 - 5x - 3$

3. $x^2 + 7x + 6$

4. $4x^4 - 16x^2$

- Solving Multi-step Equations
Solve for the given variable.

1. $4x + 9 = 2x - 6$

2. $-x - 2 = 3x + 5$

3. $2y - 5(y + 1) = 3y + 1$

- Graphing Linear Equations

A. Finding slope

1. Find the slope of the line passing through the points (-5,4) and (-1,-3)

2. What is the slope of the line $y = 3x + 5$?

B. $y = mx + b$

1. Write the equation of the line passing through the points (2,3) and (0,-1)

2. What is the equation of a line with a slope of -3 and a y-intercept of 1?

○ Solving Systems of Equations

Solve the system.

1. $y = 2x - 4$
 $-2y = x - 2$

2. $-2x + 3y = 10$
 $5x + 6y = -16$

○ Graphing/Solving Linear Inequalities

Solve the inequality. Then graph your solution.

1. $3x + 7 > 28$

2. $6x + 4 < 22$ or $5x - 8 \geq 32$

3. $4 \leq x + 2 \leq 12$