Name: Geometry Teacher:

The Beginner's Guide To Honors Algebra II/Trig

A Note To Our Students: WELCOME! This packet is designed to help you make the transition into this challenging course as smooth as possible! The entire content of this suggested practice set will be covered in the first two weeks of school.

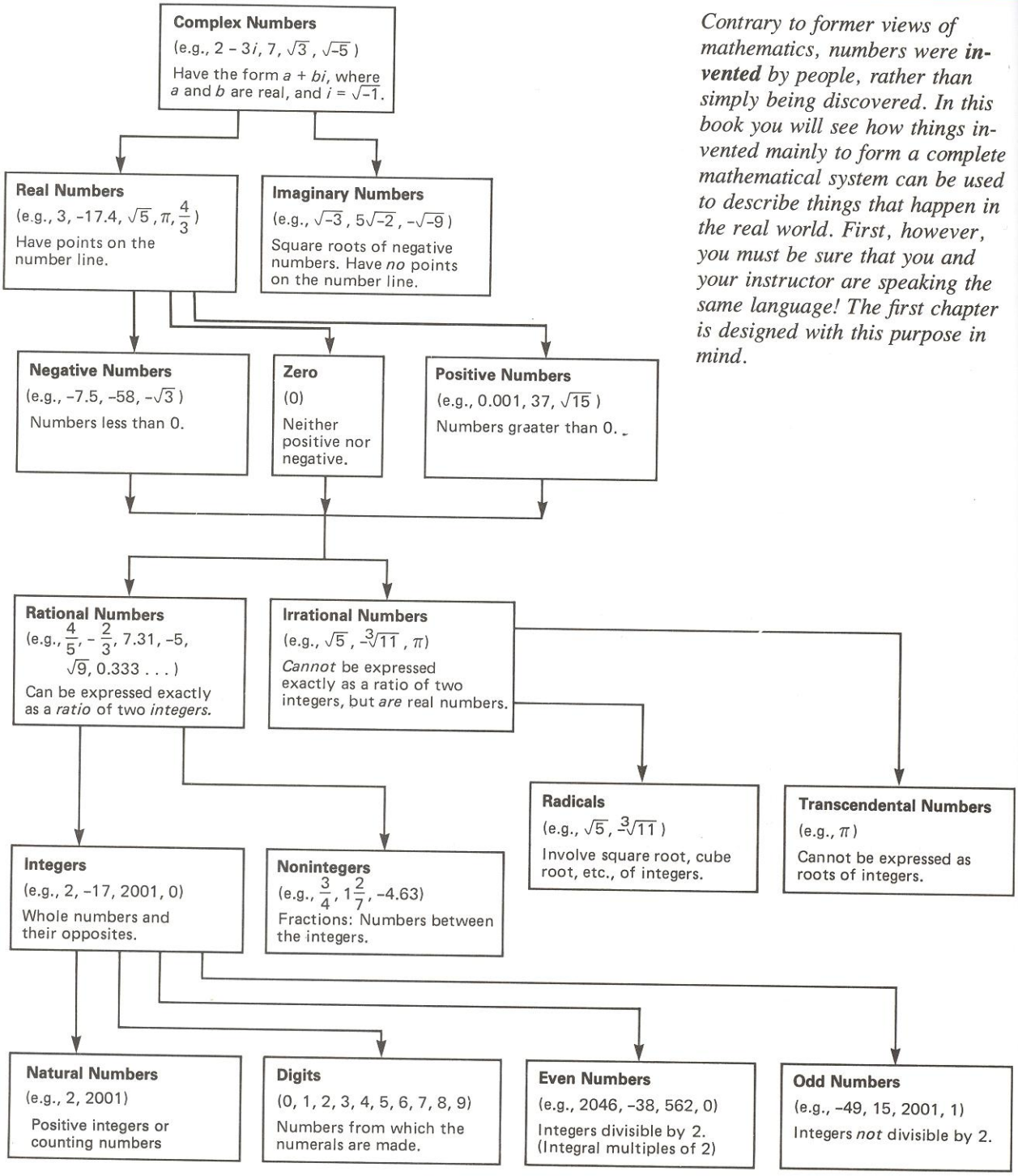
Our suggestion: First look through the whole packet and read *all* the directions. Begin with the problems that you recognize and are confident with—you will notice that many problems are Algebra 1 material—or easier!

For the concepts you are unfamiliar with: Tap into your resourcefulness and see what you can find! Perhaps try an Algebra book, a math website, a classmate, relative, or anyone you know!

One thing is for sure: The more you do now, the easier it will be when school starts, and the more comfortable you will feel with the pace of the class.

Instructions: Feel free to use a calculator to check a solution or two, but ALL problems are designed to be done without one. NEATLY show *all* of your work for each problem. You **MUST** try every problem!
Keep everything together with this cover sheet on top and BRING TO THE FIRST DAY OF CLASS!
Give us your best work! ....while giving yourself the opportunity to get off to a great start! WE LOOK FORWARD TO MEETING YOU IN AUGUST!!
~The Honors Alg2/Trig Teachers~

1 Preliminary Information



*Contrary to former views of mathematics, numbers were **invented** by people, rather than simply being discovered. In this book you will see how things invented mainly to form a complete mathematical system can be used to describe things that happen in the real world. First, however, you must be sure that you and your instructor are speaking the same language! The first chapter is designed with this purpose in mind.*

Honors Algebra II/Trig Beginner's Guide

1. Give an example of:

   a) An irrational number greater than one but less than two. a. _____

   b) A non-integer b. _____

   c) An imaginary number c. _____

   d) A negative odd number d. _____

   e) A transcendental number e. _____

   f) A digit that is not a counting number f. _____

   g) A natural number that is negative g. _____

   h) A real number that is also irrational h. _____

2. Name all sets of numbers to which each of the following belongs:

   a) -12 a. _____

   b) $\sqrt{21}$ b. _____

   c) 4 c. _____

   d) $\sqrt{-5}$ d. _____

3. Identify each polynomial by degree and term. If it is not a polynomial, explain why it is not one.

   a) $3x^2 - 4x$ a. _____

   b) $4 - |3x|$ b. _____

   c) $x^2y + 2xy - 3y^2$ c. _____

   d) $23abc$ d. _____

4. Carry out the indicated operations:

a) $15+3-21$ a. _____

b) $52\div 4\bullet 11$ b. _____

c) $35-15\div 5+21$ c. _____

d) $(3-2x)(4+x)$ d. _____

5. Evaluate the following for $x=-3$ and $x=5$

a) $|3-2x|$ a. _____

b) $5x+7$ b. _____

c) $2x^2-3x-9$ c. _____

6. Solve in the indicated set:

a) $6-3x=-31$; {reals} a. _____

b) $4x-21=18$; {integers} b. _____

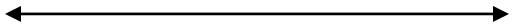
c) $(3x+5)(2x-8)=0$; {rational reals} c. _____

d) $|3-2x|=13$; {negative reals} d. _____

7. Solve, write the solution set, and graph on the number line in the given domain:

a) $5x-7\geq 13$; {reals}

a. _____

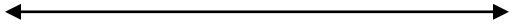


b) $4-3x<22$; {integers}

b. _____

c) $3\leq 2x-5<8$; {reals}

c. _____

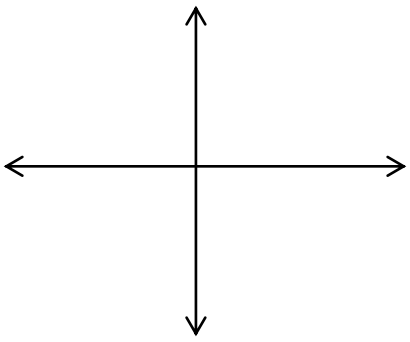


d) $|x+7|\geq 3$; {reals}

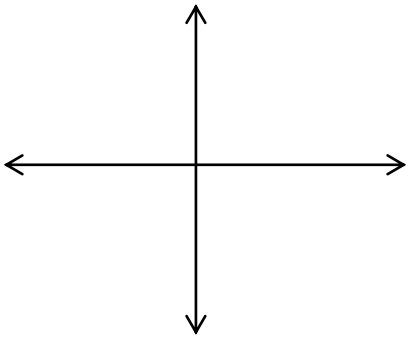
d. _____

For questions 8-17, plot the graph of the function in the indicated domain. Identify the range.

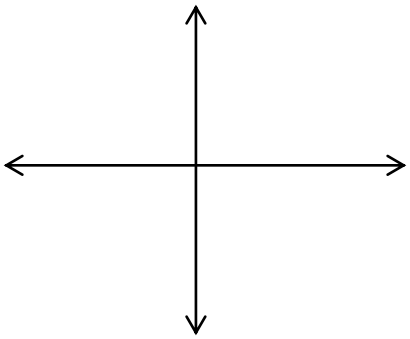
8. $y=3x-5$; {reals}



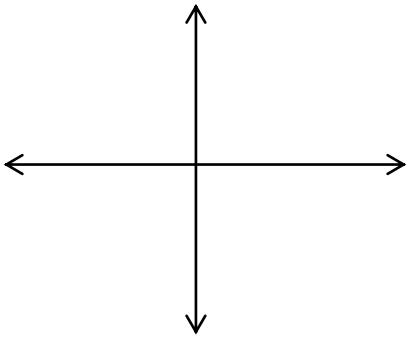
9. $y=\frac{1}{2}x+4$; {reals}



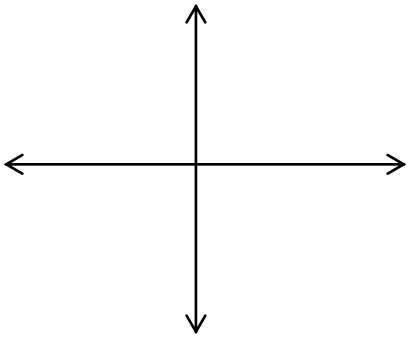
10. $y = 2x^2$; {non-positive reals}



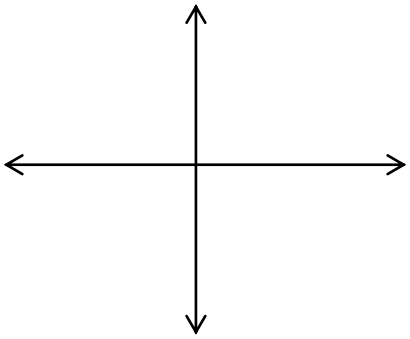
11. $y = -0.2x^2$; {reals}



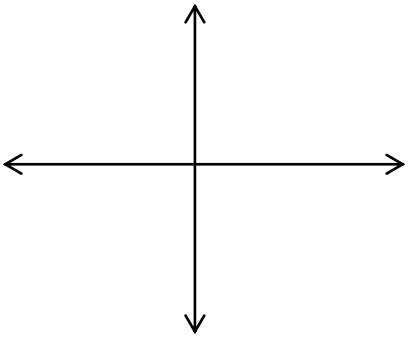
12. $y = \frac{-2}{x}$; {positive reals}



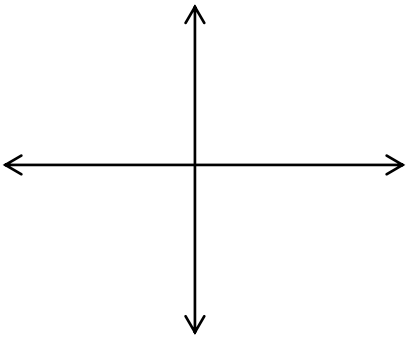
13. $y = \frac{3}{x}$; $\{.5 \le x \le 4\}$



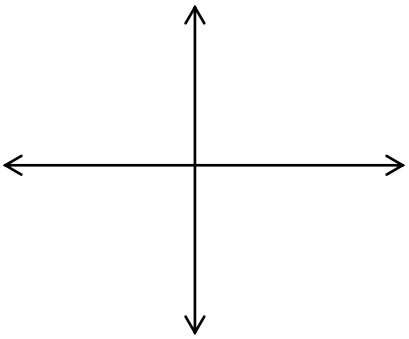
14. $y = |x+3|$; $\{-5 \le x \le 2\}$



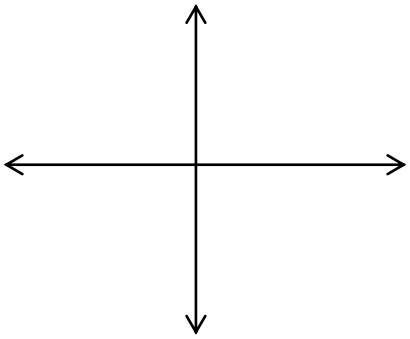
15. $y = |x| - 5$; {integers}



16. $y = x^2 + 2x - 3$; $\{x \ge -3\}$

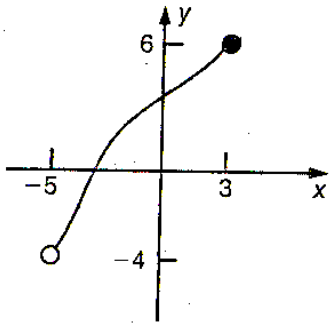


17. $y = x^2 + 2$; $\{0,1,2,3,4\}$



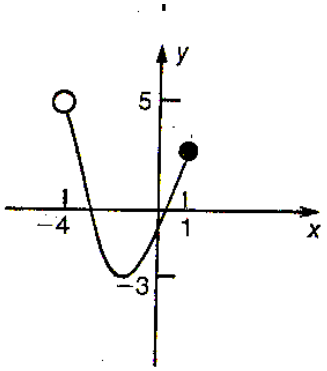
Analyze the graph to identify the domain and range.

18.



Domain: _____ Range: _____

19.



Domain: _____ Range: _____

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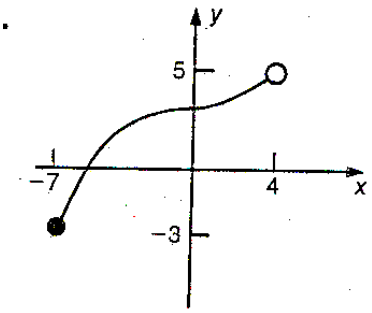
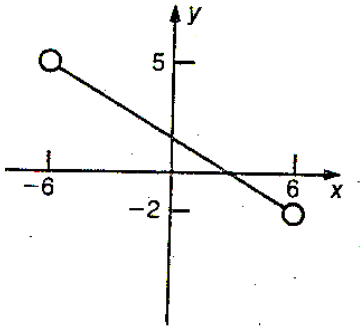


Domain: _____ Range: _____

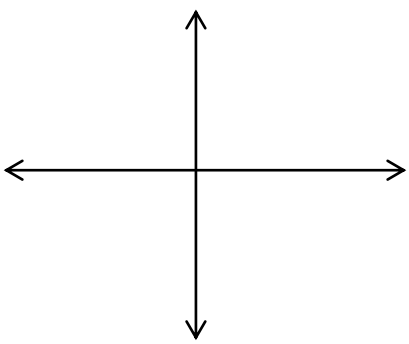
21.



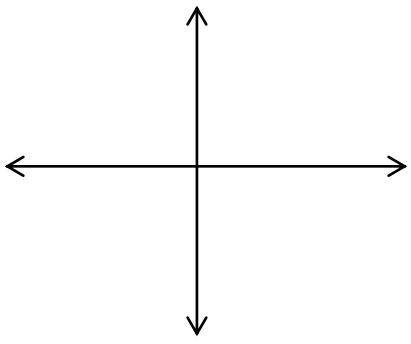
Domain: _____ Range: _____

Using the domain and range given, sketch a graph that supports the data.

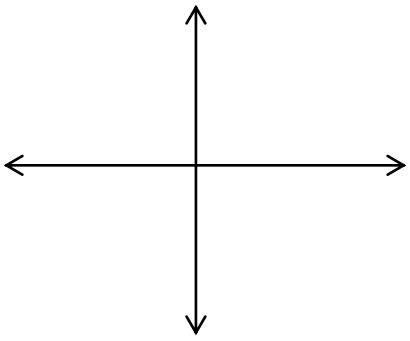
22. Domain: $\{-2 \le x \le 5\}$; Range: $\{1 \le y \le 7\}$



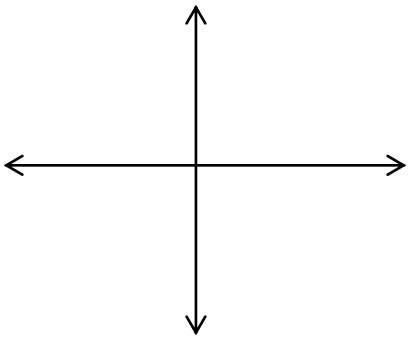
23. Domain: $\{4 \le x \le 8\}$; Range: $\{-1 \le y \le 6\}$



24. Domain: $\{1 < x < 3\}$; Range: $\{2 < y < 4\}$



25. Domain: $\{-2 < x \leq 6\}$; Range: $\{-3 \leq y < 8\}$

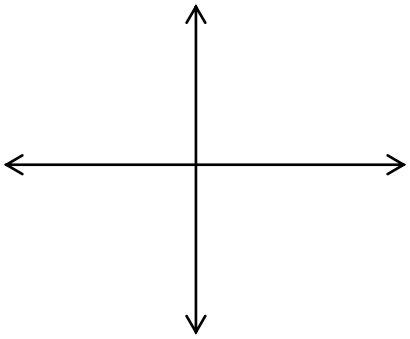


Plot the graph of the given equation in the indicated domain. Identify the functions and define their range.

26. $2x - 3y = -12$; $\{-3 \leq x \leq 6\}$

Function: _____

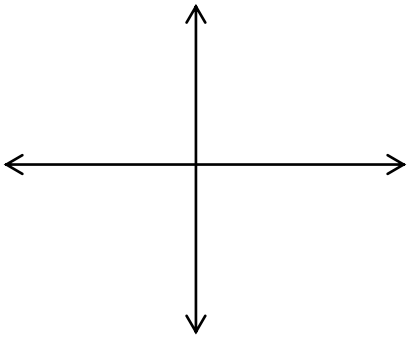
Range: _____



27. $x^2 + y = 3$; {reals}

Function: _____

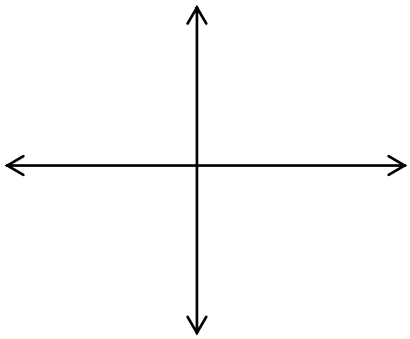
Range: _____



28. $x + y^2 = 3$; {values of x for which there are real values of y}

Function: _____

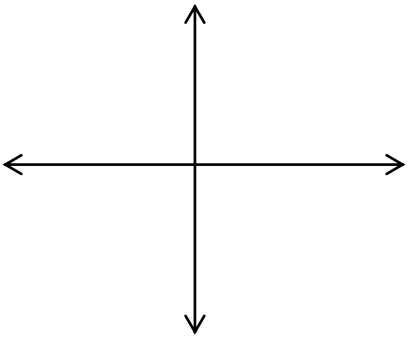
Range: _____



29. $y = |x| - 2$; $\{-3 < x \leq 5\}$

Function: _____

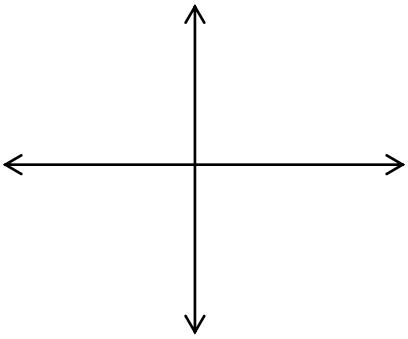
Range: _____



30. $|y| = 4 - 2x$; {values of x for which there are real values of y}

Function: _____

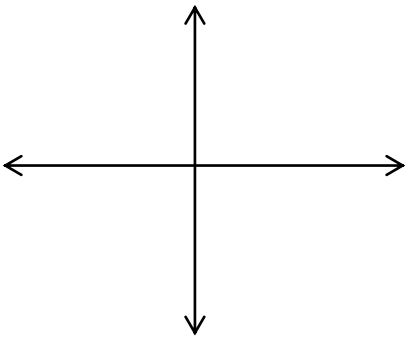
Range: _____



31. $y = -\frac{4}{x}$; {negative numbers}

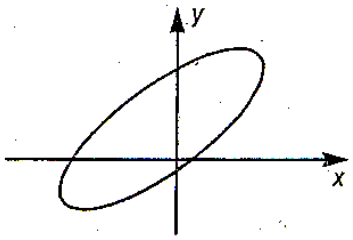
Function: _____

Range: _____



Tell whether or not the relation graphed is a function.

32.



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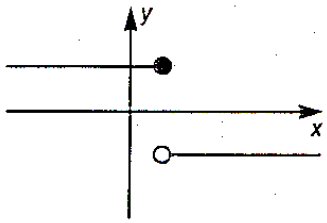

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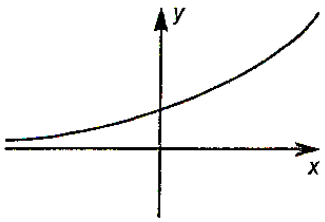

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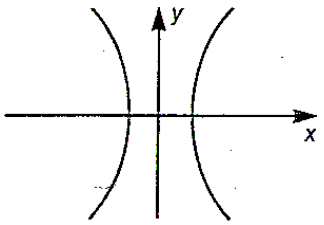

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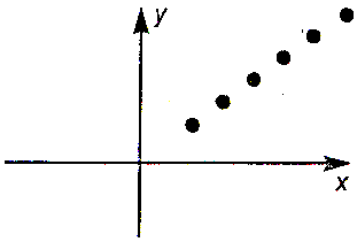

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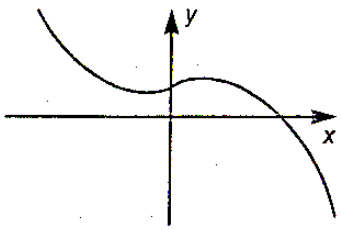


Sketch a reasonable graph showing how the dependent variable is related to the independent variable.

38. Your vertical position on a carousel horse depends on the time since the carousel began.

39. The amount of fuel in your boat's outboard motor is related to the amount of time you have been pulling skiers.

40. The temperature of your home in the summer is related to the amount of money spent on air conditioning.

41. The speed of a ceiling fan blade and the amount of air moved by it are related.

For questions 42-44, given $y = -2x + 5$:

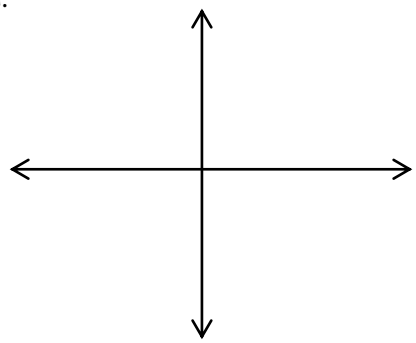
42. Evaluate when:

a) $x = -3$

b) $x = 1$

c) $x = 5$

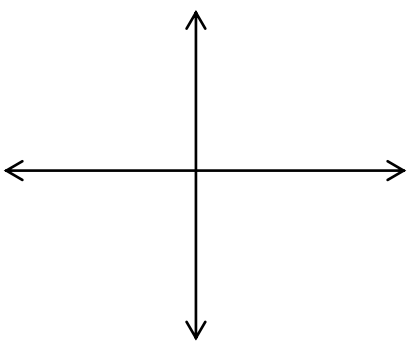
43. Plot these points on a graph grid.



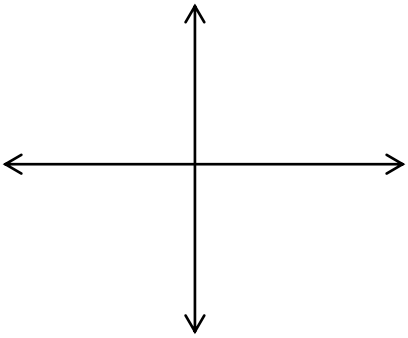
44. Using the slope formula, show that these points lie on a straight line.

For questions 45-54, quickly plot the following equations on a graph grid.

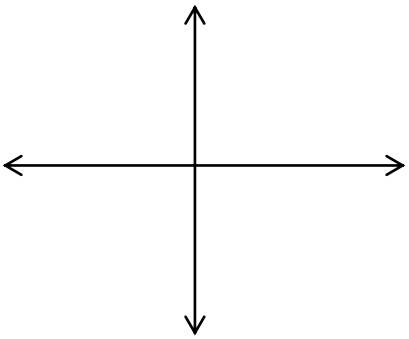
45. $y = \frac{3}{4}x - 2$



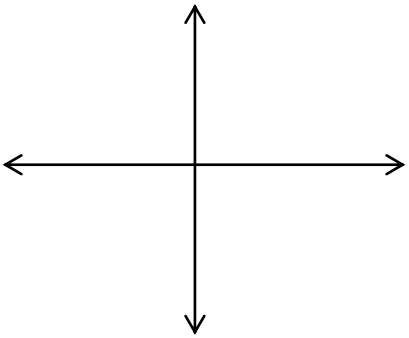
46. $y = -\frac{2}{3}x + 5$



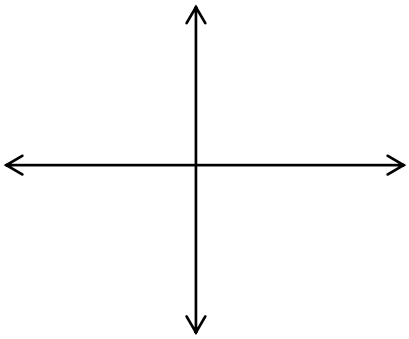
47. $2x - 3y = -6$



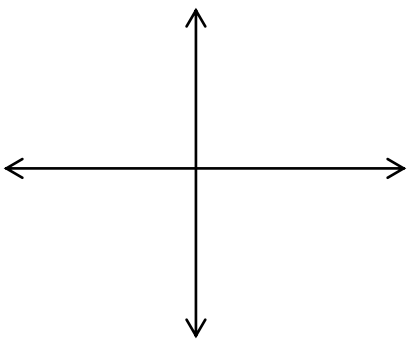
48. $3x - 4y = 32$



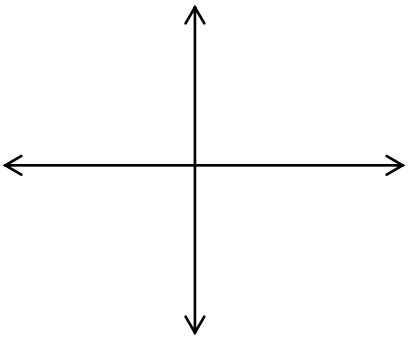
49. $x = 8$



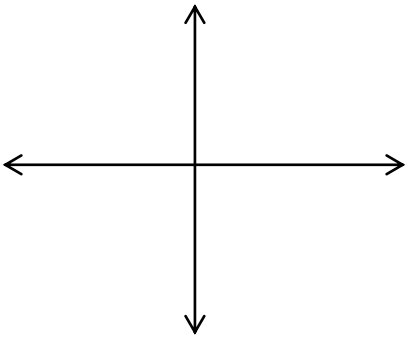
50. $y = -4$



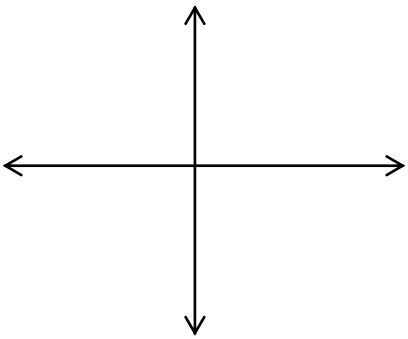
51. $y = 5$



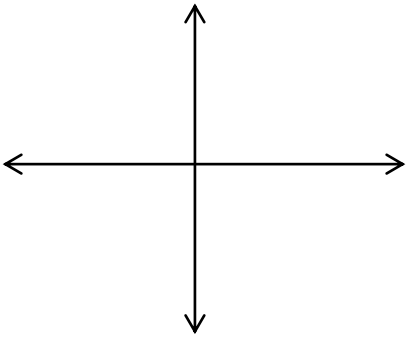
52. $x = -6$



53. $y = x$



54. $y = -x + 4$



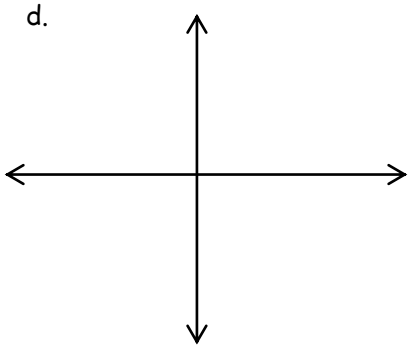
55. For the equation $y+2=-\frac{3}{2}(x-6)$

a) Name the form of the equation. a. _____

b) Identify the point found in the equation. b. _____

c) Identify the slope. c. _____

d) Plot the graph from this information. d.



e) Transform to slope-intercept form. e. _____

f) Transform to $Ax+By=C$ form. f. _____

Find the equation of the line described in slope-intercept form.

56. Through $(3,-6)$ and $(6,2)$ 56. _____

57. Through $(-6,3)$ and parallel to $3x-9y=14$ 57. _____

58. Through $(-3,8)$ and perpendicular to $y=\frac{1}{4}x+5$ 58. _____

59. Has an x-intercept of 3 and y-intercept of -5. 59. _____

60. Vertical through $(-2,3)$ 60. _____

61. Horizontal through $(-11,4)$ 61. _____

62. Through $(2,-1)$ with an x-intercept of 5 62. _____

63. ***Ice Cream Problem*** C. Hicks owns a local ice cream parlor and yogurt stand. His single scoop cone sells for 89 cents and the "giant earthquake" of eight scoops sells for $6.07. The cost of the ice cream cone varies linearly with the number of scoops.

a) Define the variables, write the ordered pairs, find the slope, and write the particular equation expressing cost in terms of the number of scoops.

b) What is the price of a cone with 4 scoops, and 12 scoops?

c) A two gallon container sells for $22.35. How many scoops does it contain?

d) What is the cost intercept? What is its real-world meaning?

e) What is the cost per scoop? What part of the equation tells you this?