

Algebra 1 – Final Exam Review 2011/2012 - Semester 1Simplify/Evaluate

1.) $|-4(5) - 13| - |-5|$

28

2.) $(5 - 4x) - (6x - 7)$

 $-10x + 12$

3.) $11 - 5(-3) + (-14) \div 2$

$$\begin{array}{r} 11 + 15 - 7 \\ 26 - 7 \end{array} = 19$$

4.) Evaluate: $d^2 - 2cd + 9$, if $c = 5$ and $d = -4$

65

5.) $(5x - 9) - (6x^2 - 14x + 20x^2)$

$14x^2 + 19x - 9$

6.) Find $f(-3)$ if $f(x) = -2x - x^2$

-3

7.) $3 \cdot \frac{2}{5} - \frac{7 \cdot 5}{3} = \frac{6}{15} - \frac{35}{15} = \frac{-29}{15}$

8.) $\frac{12}{5} \div \frac{4}{15}$

9

Solve for the variable given.

9.) $17 = 5 - \frac{m}{3}$

 $-5 -5$

$$\frac{3}{-1} \cdot \frac{12}{1} = \frac{m}{3} \cdot \frac{3}{1}$$

-36

10.) $\frac{-2}{3}x + 4 = 16 - \frac{4}{3}x$

 $x = 18$

11.) $13 - (2m - 8) = -7 + 6m$

$13 - 2m + 8 = -7 + 6m$

$21 - 2m = -7 + 6m$

$-8m = -28$

$m = 7/2$

12.) $-3(4y - 8) + 2y = 24 - 7y - 3y$

 \mathbb{R}

many soln's

any real #

13.) $7 - 3(5 - 4y) = 10y$

$7 - 15 + 12y = 10y$

$-8 = -2y$

$y = 4$

14.) $-9k - 5 = -8 - 6k + 3$

 $k = 0$

$$\frac{-3k}{-3} = \frac{0}{-3}$$

Solve

15.) $|x| + 3 = -7$

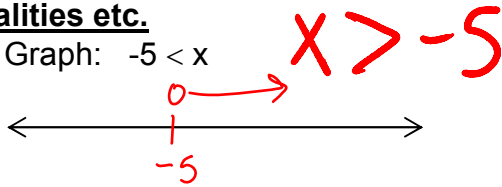
$|x| = -10$ No solution
 \emptyset

16.) $4|x| + 2 = 18$

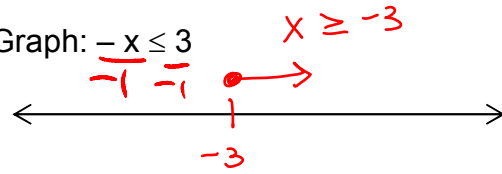
$x = \pm 4$

Inequalities etc.

17.) Graph: $-5 < x$



18.) Graph: $-x \leq 3$

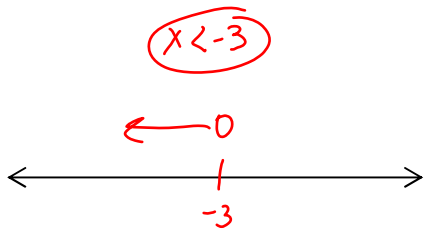


List a possible solution to the above two inequalities.

17.) 0 18.) 7

19.) Solve and graph.

$4 - 7x > 25$



20.) Solve and graph

$8w - 2(3w + 7) \leq 18 - 4w$

$2w - 14 \leq 18 - 4w$
 $6w \leq 32$



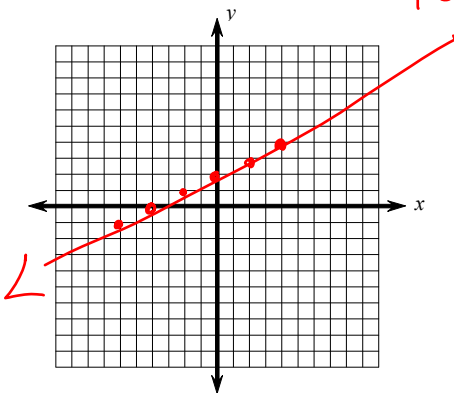
Functions and Graphs

For the following functions identify the shape (U,V, straight line), make a table (if given), and then graph.

21.) $y = \frac{1}{2}x + 2$

Shape: straight line

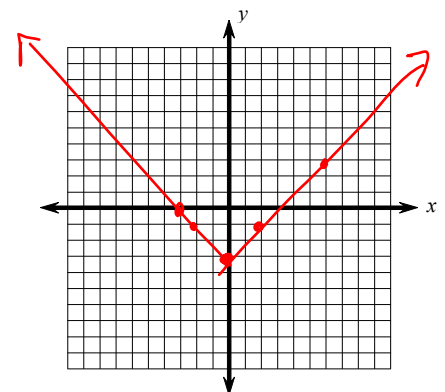
What form is the line in? Slope-int.



22.) $y = |x| - 3$

Shape: V

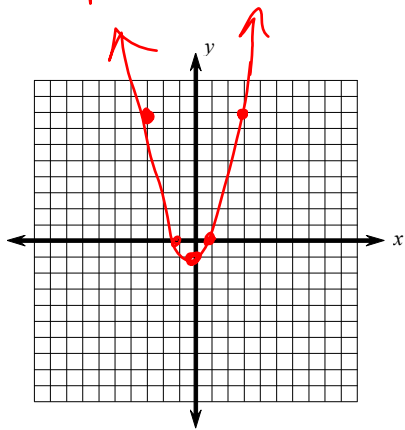
x	$ x - 3$	y
-2	$ -2 - 3$	-1
-3	$ -3 - 3$	0
0	$ 0 - 3$	-3
2	$ 2 - 3$	-1



23.) $y = x^2 - 1$

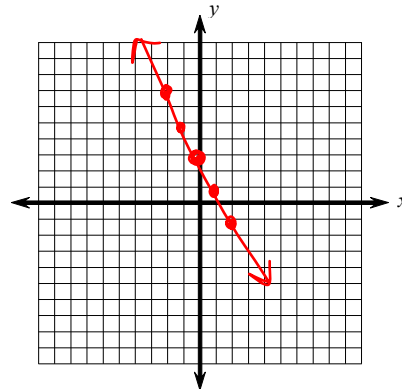
Shape: "U" parabola

x	$x^2 - 1$	y
3	$(3)^2 - 1$	8
-3	$(-3)^2 - 1$	8
-1	$(-1)^2 - 1$	0
0	$(0)^2 - 1$	-1
1	$(1)^2 - 1$	0



24.) $y = 3 - 2x$

Shape: straight line



Percents & Proportions

25.) 60 is what percent of 150?

$\frac{60}{150} = \frac{x}{100}$ $60 = x(150)$ $x = .4$ **40%**

26.) 75% of what number is 42?

$.75x = 42$ **$x = 56$**

27.) Solve: $\frac{3}{4} = \frac{-6}{x}$

$x = -8$

28.) Solve: $\frac{x-5}{4} = \frac{3x}{7}$

$x = -7$ **$7x - 35 = 12x$**

Classifying numbers & Properties

29.) Write in the words in the top row. Put an X in the column if the given number belongs to that set of numbers.

#	Whole	Integer	Rational	Irrational	Real
$1 \frac{1}{4}$			X		X
$\sqrt{11}$				X	X
$-\pi$				X	X
-32		X	X		X

30.) Use the list of properties below to answer the following questions. Use the appropriate letter to name the property illustrated.

- A. Commutative Property of Addition
- B. Commutative Property of Multiplication
- C. Associative Property of Addition
- D. Associative Property of Multiplication

- E. Inverse Property of Addition
- F. Inverse Property of Multiplication
- G. Distributive Property
- H. Identity Property of Addition
- I. Identity Property of Multiplication

C a.) $2 + (3x + 4) = (2 + 3x) + 4$ **A** b.) $x + 2 = 2 + x$ **B** c.) $5(x + y) = (x + y)5$

H d.) $-3x + 0 = -3x$ **G** e.) $5(7 - x) = 5 \cdot 7 - 5 \cdot x$ **F** f.) $2(\frac{1}{2}) = 1$

Miscellaneous

31.) A fitness club charges as follows: **members:** \$45 yearly membership fee and \$5 per visit
non-members: \$10 per visit

Use an equation to find the number of visits each year that will make a member's cost the same as a non-member's cost.

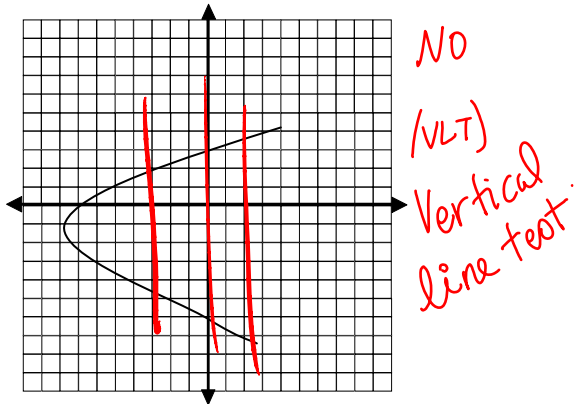
$v = \# \text{ visits}$

$$10v = 45 + 5v$$

$$\begin{array}{r} -5v \\ \hline 5v = 45 \\ v = 9 \end{array}$$

at 9 visits the cost is the same

32.) Function or not? WHY?



33.) Function or not? WHY?

a.) $(-2, 3), (-1, 8), (0, 4), (1, 0), (2, 3)$

yes - every input has 1 unique output

b.)

x	y
1	3
2	3
3	3

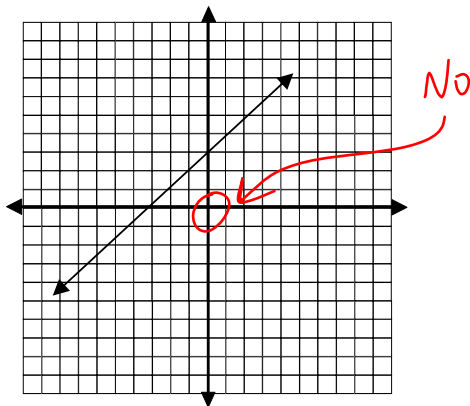
YES

c.)

x	y
1	2
-1	4
1	6

NO. $1 < 2$
 $-1 - 4$

34.) Direct variation or not? If it is write the equation!



35.) Direct variation or not? If it is write the equation!

$3x - 2y = 0$

yes $y = 3/2x$
is an equation in the form $y = kx$

36.) Direct variation or not? If it is write the equation!

X	2	7	9	11	20
Y	4	14	18	22	40

$\frac{y}{x} = \frac{4}{2} = \frac{14}{7} = \frac{18}{9} = \frac{22}{11} = \frac{40}{20} = 2$
yes $y = 2x$

37.) Calculate the mean, median and mode for:

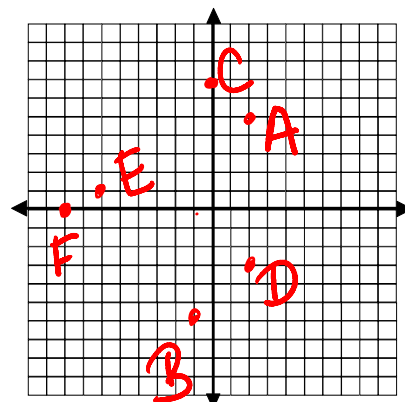
14, 20, 28, 25, 23, 20, 23, 17, 36, 23, 18, 16

mean = $\frac{268}{12} = 21.9$

median = 21.5

mode = 23

38.) Plot these points & identify the quadrant



- A (2, 5) I
- B (-1, -6) III
- C (0, 7) y-axis
- D (2, -3) IV
- E (-6, 1) II
- F (-8, 0) x-axis

Write the expression/equation for:

39.) Four times the sum of a number & two

$$4(x+2)$$

40.) The quotient of a number and four is eighteen.

$$\frac{x}{4} = 18$$

41.) Solve for y:
 $3x - 5y = 18$

$$y = \frac{18 - 3x}{-5}$$

OR $y = -\frac{18}{5} + \frac{3}{5}x$

42.) Solve for h:
 $A = h(x + y)$

$$\frac{A}{x+y} = h$$

43.) Identify the domain and range of
 $\{(3, 4), (-6, 7), (2, 4), (-1, 8)\}$

$$D: \{-6, 2, -1\} \quad R: \{4, 7, 8\}$$

44.) Find the range of $y = x^2 - 7x + 12$
 if the domain is $\{0, -1, 3\}$

$$R: \{12, 20, 0\}$$

More Graphing!

45. Find the slope of the line connecting:

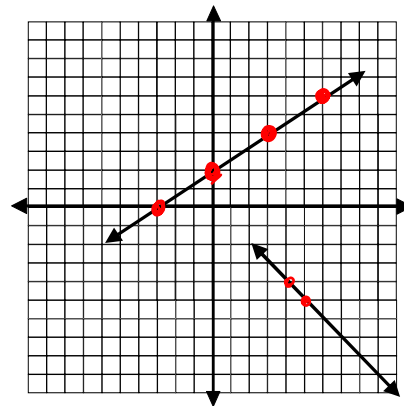
a) $(-9, 4)$ and $(3, -2)$

$$m = \frac{-2 - 4}{3 - (-9)} = \frac{-6}{12} = -\frac{1}{2}$$

b) $(1, -7)$ and $(-4, -7)$

$$m = \frac{-7 - (-7)}{-4 - 1} = \frac{0}{-5} = 0$$

46. Find the slope of the lines:

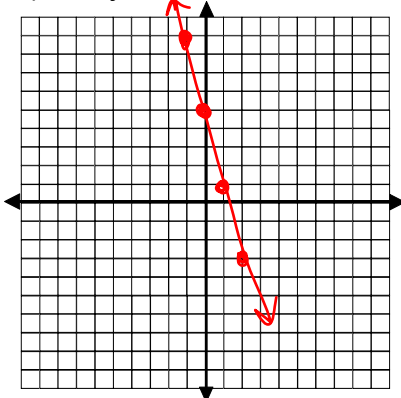


a) $\frac{2}{3}$

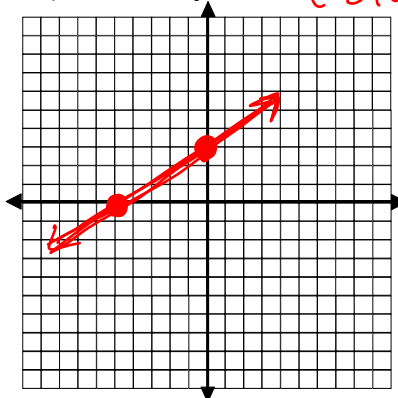
b) -1

47. Graph the following lines

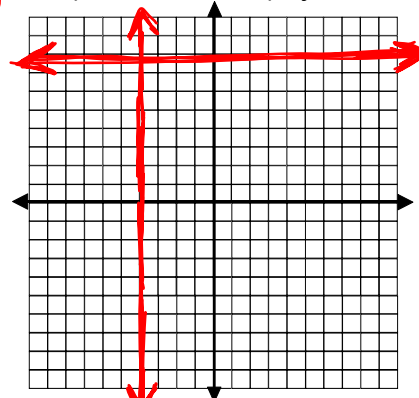
a.) $y = 5 - 4x$



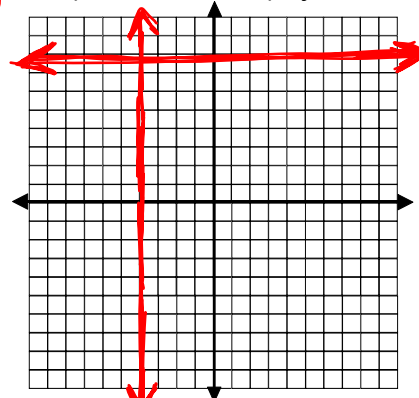
b.) $3x - 5y = -15$



c.) $x = -4$



d.) $y = 8$



48. Find the slope and y-intercept for:

$$5x - 7 = y$$

slope = 5

y-int = -7

49. Find the x and y-intercepts for:

$$-4x + 5y = 20$$

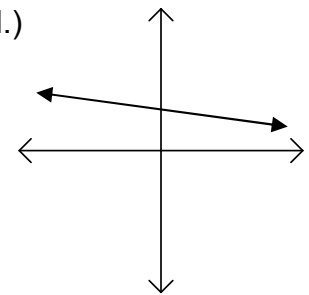
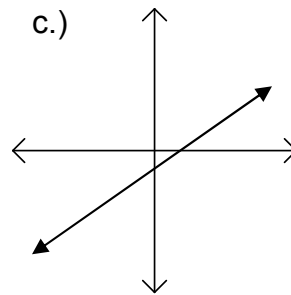
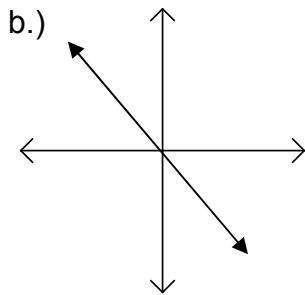
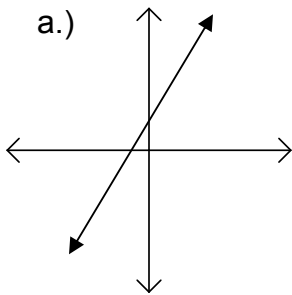
x-int = (-5, 0)

y-int = (0, 4)

50.) Which of the graphs has the smallest slope? D

The largest slope? A

Negative slope? B, D



51.) The slope of $x = 4$ is und. and it is a vertical line

Radical Expressions

52.) Determine between which two consecutive integers $-\sqrt{40}$ is between. -7 & -6

Simplify each.

53.) $\sqrt{\frac{32}{24}} = \frac{\sqrt{4}}{\sqrt{3}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$\frac{2\sqrt{3}}{3}$

54.) $6\sqrt{18} - 3\sqrt{50}$
 $18\sqrt{2} - 15\sqrt{2}$

$3\sqrt{2}$

55.) $\sqrt{\frac{4}{7}}$ $\frac{2}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{2\sqrt{7}}{\sqrt{49}}$

$\frac{2\sqrt{7}}{7}$

56.) $\sqrt{8} \cdot \sqrt{2}$

4

57.) $3\sqrt{12} + 5\sqrt{3}$

$6\sqrt{3} + 5\sqrt{3}$

$11\sqrt{3}$

58.) $(3\sqrt{21})(6\sqrt{15})$

$3 \cdot 6 \cdot 3 \sqrt{7 \cdot 5} = 54\sqrt{35}$

Solve the equation.

59.) $\sqrt{4x} = 6^2$

$4x = 36$

$x = 9$

60.) $\sqrt{2x+8} + 5 = 9$

$\sqrt{2x+8} = 4$

$2x+8 = 16$

$x = 4$

61.) $\sqrt{x} + 5 = 2$ $\sqrt{x} = -3$

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Checklist of things to know!

Use your book chapter reviews to prepare for the final exam:

Chapter 1 (1.1 through 1.9)

- Writing expressions
- Order of operations
- Evaluating expressions
- Properties (Commutative, Associative, Distributive, etc.)
- Classifying numbers
- Distributing & Combining Like Terms
- Plot points & label quadrants and axes

Chapter 2 (2.2 through 2.6, 3.6, and 4.1)

- Solving equations (one/none/many solutions, absolute value, proportions, literal, with fractions)
- Calculate mean, median, mode

Chapter 3 (3.1 through 3.4)

- Solving and graphing inequalities
- Translating inequalities

Chapter 11 (10.3, 11.1, 11.4 and 11.5)

- Simplify radicals
- Multiply & Divide radicals (multiply by radical in denominator)
- Add or subtract radicals
- Distribute radicals
- Solve radical equations

Chapter 5 (5.1 through 5.5)

- Identifying functions
- Graphing functions & identify shape
- Identifying domain & range
- Identifying direct variations

Chapter 6 (6.1 through 6.4)

- Find slope given ordered pairs, graphs, equations, horizontal/vertical lines
- Compare steepness of slopes
- Graphing lines in slope-intercept form, standard form, horizontal/vertical
- Matching the equation of a line to its graph
- Identifying x and y intercepts given equation and graphs