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## Contents

<b>Chapter 1 : Review of The Linear Functions .....</b>	<b>11</b>
Finding Slope.....	12
Graphing Linear Equations.....	13
Graphing Linear Inequalities .....	14
Writing Linear Equations .....	15
Graphing Horizontal and Vertical Lines .....	17
Rate of change .....	18
xandy intercepts.....	18
Slope–intercept Form.....	19
Point–slope Form .....	20
Equation of Parallel or Perpendicular Lines .....	21
Graphing Absolute Value Equations .....	22
Answers of Worksheets .....	23
<b>Chapter 2 : System of Equations .....</b>	<b>28</b>
Solving Systems of Equations by Substitution .....	29
Solving Systems of Equations by Elimination .....	30
Systems of Equations Word Problems .....	31
Three Variables System of Equations.....	32
Answers of Worksheets .....	33
<b>Chapter 3 : Radicals Expressions.....</b>	<b>34</b>
Simplifying Radical Expressions .....	35
Adding and Subtracting Radical Expressions.....	36
Multiplying Radical Expressions .....	37
Simplifying Radical Expressions Involving Fractions.....	38
Answers of Worksheets .....	39
<b>Chapter 4 : Functions Operations and Quadratic.....</b>	<b>41</b>
Relations and Functions .....	42
Evaluating Function .....	43
Adding and Subtracting Functions .....	44
Multiplying and Dividing Functions .....	45
Composition of Functions .....	46

## Algebra 2

Quadratic Equation .....	47
Solving Quadratic Equations .....	48
Quadratic Formula and the Discriminant .....	49
Graphing Quadratic Functions .....	50
Quadratic Inequalities .....	51
Domain and Range of Radical Functions .....	52
Solving Radical Equations .....	53
Answers of Worksheets .....	54
<b>Chapter 5 : Monomials and Polynomials.....</b>	<b>59</b>
GCF of Monomials .....	60
Factoring Quadratics .....	61
Factoring by Grouping.....	62
GCF and Powers of Monomials .....	63
Writing Polynomials in Standard Form .....	64
Simplifying Polynomials.....	65
Adding and Subtracting Polynomials .....	66
Multiplying Monomials .....	67
Multiplying and Dividing Monomials.....	68
Multiplying a Polynomial and a Monomial .....	69
Multiplying Binomials.....	70
Factoring Trinomials.....	71
Operations with Polynomials .....	72
Answers of Worksheets .....	73
<b>Chapter 6 : Complex Numbers .....</b>	<b>79</b>
Adding and Subtracting Complex Numbers .....	80
Multiplying and Dividing Complex Numbers .....	81
Graphing Complex Numbers.....	82
Rationalizing Imaginary Denominators .....	83
Answers of Worksheets .....	84
<b>Chapter 7 : Sequences and Series.....</b>	<b>85</b>
Arithmetic Sequences .....	86
Geometric Sequences.....	87
Comparing Arithmetic and Geometric Sequences .....	88
Finite Geometric Series.....	89
Infinite Geometric Series.....	90
Answers of Worksheets .....	91

## Algebra 2

<b>Chapter 8 : Rational Expressions.....</b>	<b>94</b>
Simplifying and Graphing Rational Expressions .....	95
Adding and Subtracting Rational Expressions .....	96
Multiplying and Dividing Rational Expressions .....	97
Solving Rational Equations and Complex Fractions .....	98
Answers of Worksheets .....	99
<b>Chapter 9 : Matrices.....</b>	<b>101</b>
Adding and Subtracting Matrices.....	102
Matrix Multiplication .....	103
Finding Determinants of a Matrix .....	104
Finding Inverse of a Matrix .....	105
Matrix Equations .....	106
Answers of Worksheets .....	107
<b>Chapter 10 : Logarithms.....</b>	<b>109</b>
Rewriting Logarithms.....	110
Evaluating Logarithms.....	111
Properties of Logarithms .....	112
Natural Logarithms.....	113
Exponential Equations and Logarithms .....	114
Solving Logarithmic Equations .....	115
Answers of Worksheets .....	116
<b>Chapter 11 : Conic Sections .....</b>	<b>119</b>
Equation of a Parabola .....	120
Focus, Vertex, and Directrix of a Parabola .....	121
Standard Form of a Circle.....	122
Equation of Each Ellipse.....	123
Hyperbola in Standard Form .....	124
Conic Sections in Standard Form .....	125
Answers of Worksheets .....	126
<b>Chapter 12 : Trigonometric Functions .....</b>	<b>129</b>
Trig ratios of General Angles.....	130
Sketch Each Angle in Standard Position .....	131
Finding Co-terminal Angles and Reference Angles .....	132
Angles and Angle Measure .....	133
Evaluating Trigonometric Functions .....	134
Missing Sides and Angles of a Right Triangle .....	135

## Algebra 2

Arc Length and Sector Area .....	136
Answers of Worksheets .....	137
<b>Chapter 13 : Statistics and Probability .....</b>	<b>139</b>
Probability Problems .....	140
Factorials .....	141
Combinations and Permutations .....	142
Answers of Worksheets .....	143
<b>Chapter 14 : Algebra 2 Practice Tests .....</b>	<b>145</b>
Algebra 2 Practice Test 1 .....	149
Algebra 2 Practice Test 2 .....	157
<b>Chapter 15 : Answers and Explanations.....</b>	<b>165</b>
Answer Key.....	165
Practice Tests 1 .....	167
Practice Tests 2 .....	173

# Chapter 1 :

## Review of The Linear Functions

**Topics that you'll practice in this chapter:**

- ✓ Finding Slope,
- ✓ Graphing Linear Equations,
- ✓ Graphing Linear Inequalities,
- ✓ Writing Linear Equations,
- ✓ Graphing Horizontal and Vertical lines
- ✓ Finding Rate of Change,
- ✓ Find the  $x$ -intercept and  $y$ -intercept,
- ✓ Slope-Intercept Form Equations,
- ✓ Point-Slope Form Equations,
- ✓ Equation of parallel or perpendicular lines,
- ✓ Graphing Lines of Equations,
- ✓ Graphing Absolute Value Equations

***“Life is a math equation. In order to gain the most, you have to know how to convert negatives into positives.” – Anonymous***

**Finding Slope**

 Find the slope of each line.

1)  $y = x + 8$

9)  $y = -7x + 4$

2)  $y = -3x + 5$

10)  $y = 3x - 8$

3)  $y = 2x + 12$

11)  $y = \frac{1}{3}x + 8$

4)  $y = -4x + 19$

12)  $y = -\frac{4}{5}x + 9$

5)  $y = 11 + 6x$

13)  $-3x + 6y = 30$

6)  $y = 7 - 5x$

14)  $4x + 4y = 16$

7)  $y = 8x + 19$

15)  $3y - x = 10$

8)  $y = -9x + 20$

16)  $8y - x = 5$

 Find the slope of the line through each pair of points.

17)  $(2, 3), (7, 10)$

23)  $(25, 11), (29, 19)$

18)  $(-3, 5), (2, 15)$

24)  $(26, -19), (14, 17)$

19)  $(5, -3), (1, 9)$

25)  $(22, -13), (20, -11)$

20)  $(-5, -5), (10, 25)$

26)  $(19, 7), (15, -3)$

21)  $(22, 3), (7, 18)$

27)  $(5, 7), (11, 19)$

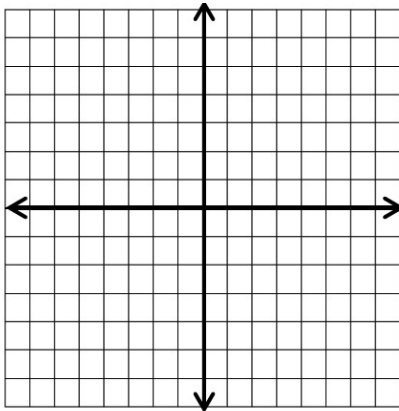
22)  $(-16, 8), (-7, 26)$

28)  $(52, -62), (40, 70)$

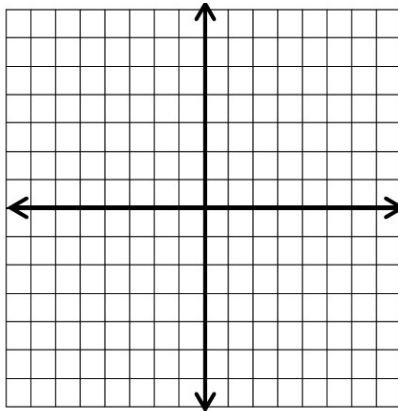
## Graphing Linear Equations

 Sketch the graph of each line.

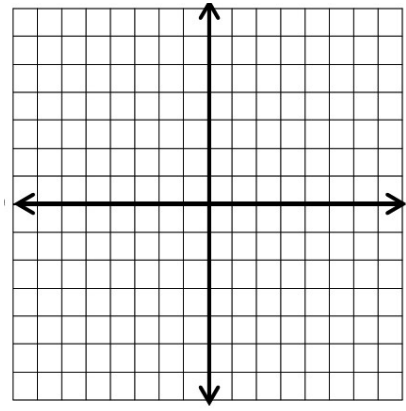
1)  $y = x - 2$



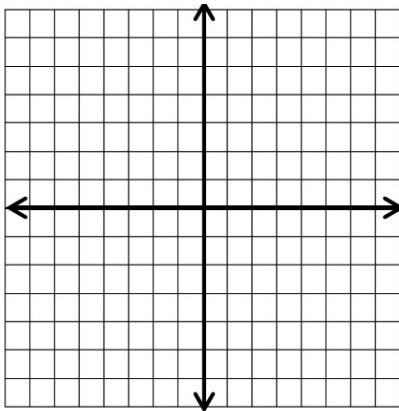
2)  $y = -3x + 2$



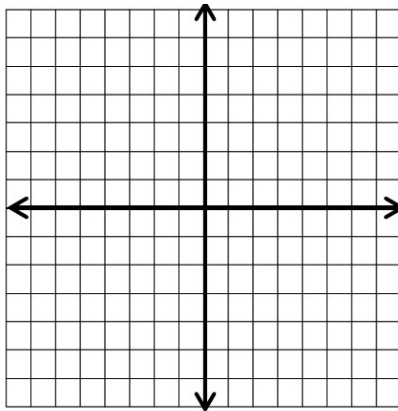
3)  $x + y = 0$



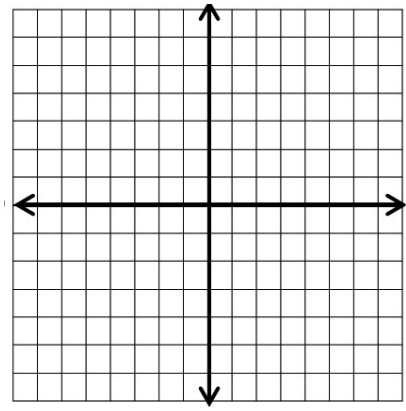
4)  $x + y = -3$



5)  $2x + 3y = -4$




6)  $y - 3x + 6 = 0$

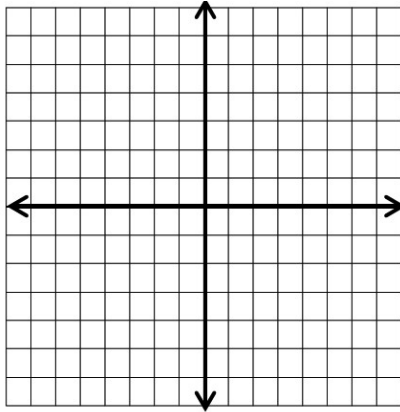




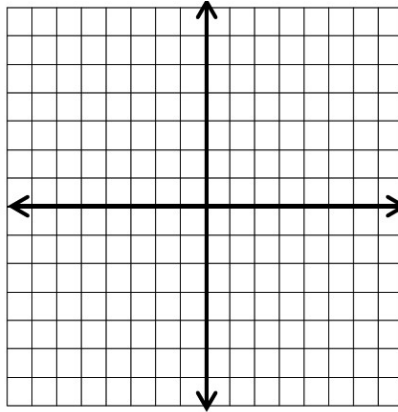
## Graphing Linear Inequalities

 Sketch the graph of each linear inequality.

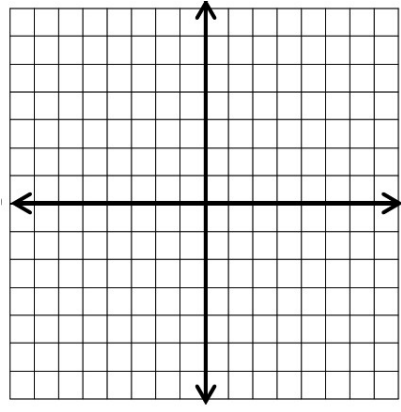
1)  $y > 4x - 5$



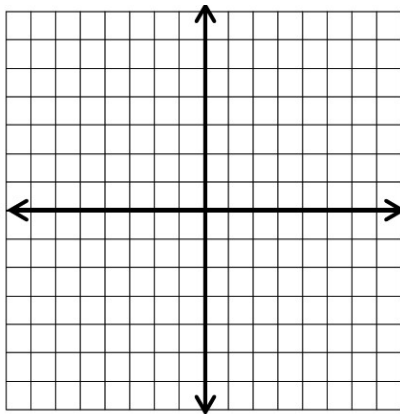
2)  $y < 2x + 4$



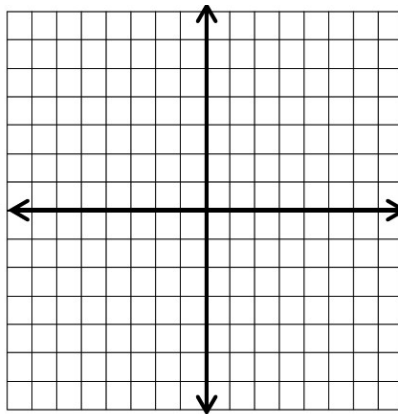
3)  $y \leq -5x - 2$



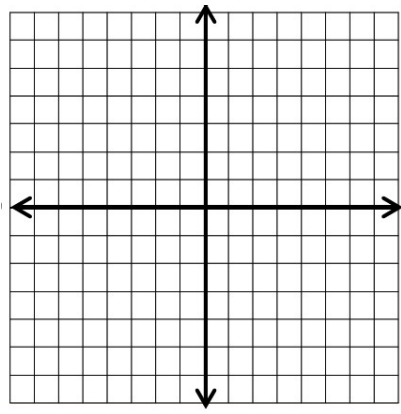
4)  $4y \geq 12 + 4x$



5)  $-12y < 3x - 24$



6)  $5y \geq -15x + 10$



**Writing Linear Equations**

 **Write the equation of the line through the given points.**

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 1) Through: $(2, -5), (3, 9)$    | 9) Through: $(-6, 17), (4, -3)$   |
| 2) Through: $(-6, 3), (3, 12)$   | 10) Through: $(-8, 22), (5, -4)$  |
| 3) Through: $(10, 7), (5, 27)$   | 11) Through: $(9, 27), (3, -3)$   |
| 4) Through: $(15, 11), (3, -1)$  | 12) Through: $(11, 32), (9, 4)$   |
| 5) Through: $(24, 17), (12, -7)$ | 13) Through: $(-3, 13), (-4, 0)$  |
| 6) Through: $(8, 29), (4, -7)$   | 14) Through: $(-5, 5), (5, 15)$   |
| 7) Through: $(20, -16), (12, 0)$ | 15) Through: $(18, -32), (11, 3)$ |
| 8) Through: $(-3, 10), (2, -5)$  | 16) Through: $(-4, 25), (4, -15)$ |

 **Find the answer for each problem.**

- 17) What is the equation of a line with slope 6 and intercept 12?  
\_\_\_\_\_
- 18) What is the equation of a line with slope  $-11$  and intercept  $-4$ ?  
\_\_\_\_\_
- 19) What is the equation of a line with slope  $-3$  and passes through point  $(5, 2)$ ? \_\_\_\_\_
- 20) What is the equation of a line with slope  $-5$  and passes through point  $(-2, -1)$ ? \_\_\_\_\_
- 21) The slope of a line is  $-10$  and it passes through point  $(-3, 0)$ . What is the equation of the line? \_\_\_\_\_
- 22) The slope of a line is 8 and it passes through point  $(0, 7)$ . What is the equation of the line? \_\_\_\_\_

## Algebra 2

 Find the value of  $b$ : The line that passes through each pair of points

has the given slope.

1)  $(5, -4), (2, b), m = 1$

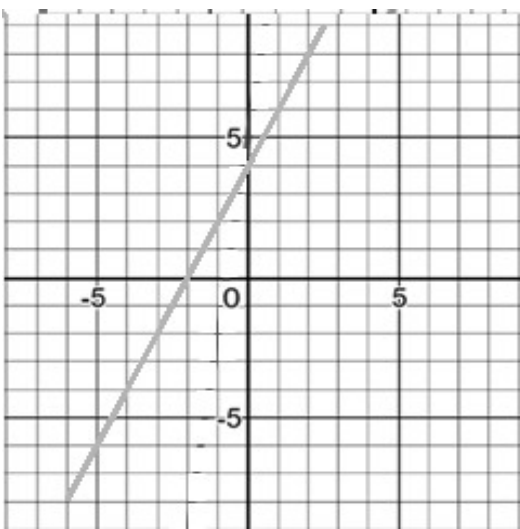
3)  $(-4, b), (4, 8), m = \frac{1}{2}$

2)  $(b, -4), (-4, 1), m = -\frac{1}{3}$

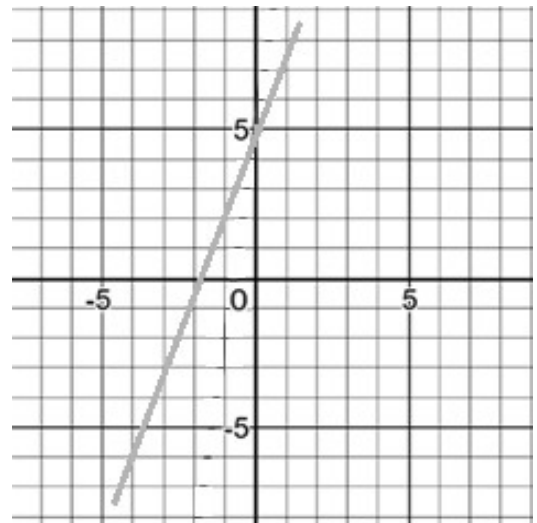
4)  $(0, 3), (b, 8), m = 1\frac{2}{3}$

 Write the slope intercept form of the equation of each line.

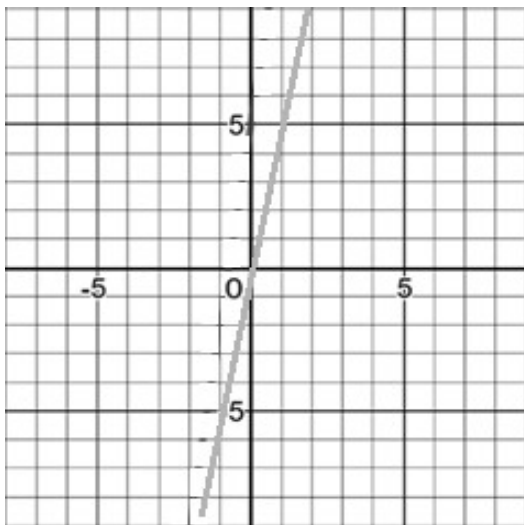
1)



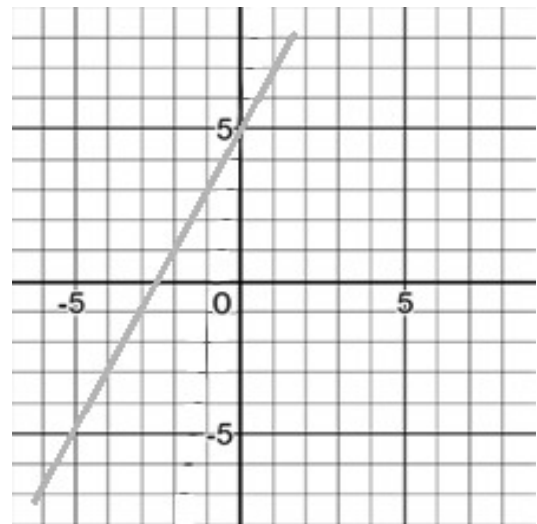
2)



3)



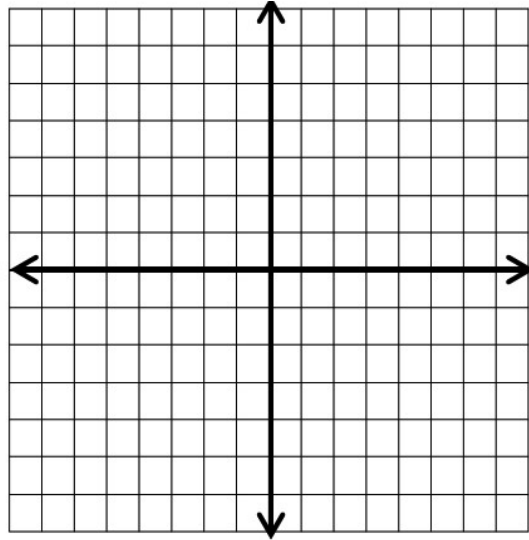
4)



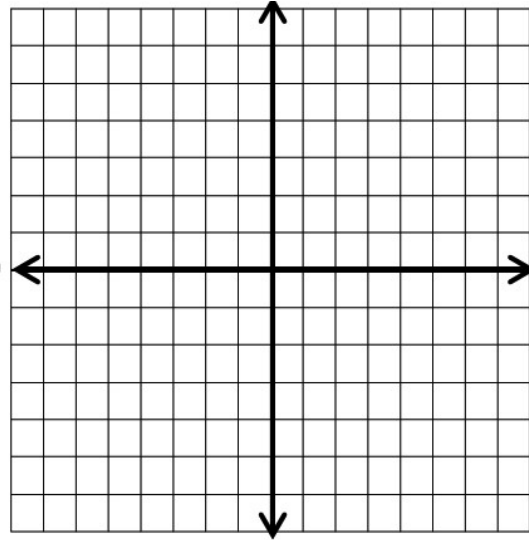
## Graphing Horizontal and Vertical Lines

 Sketch the graph of each line.

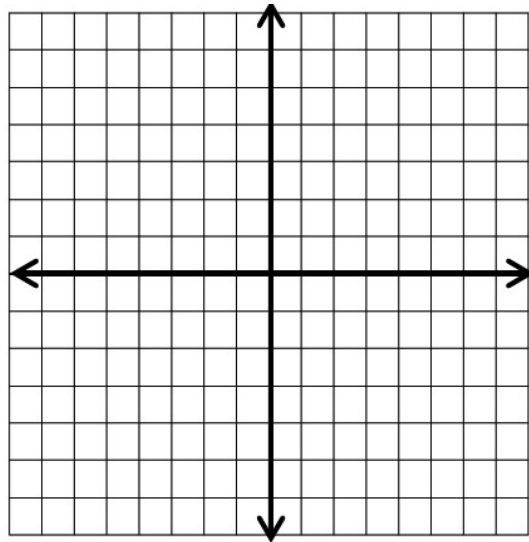
1)  $y = 3$



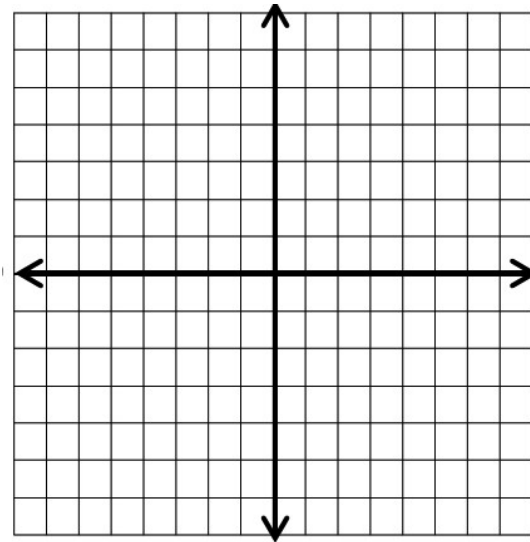
2)  $y = -1$



3)  $x = 0$



4)  $x = 3$



**Rate of change**

 **What is the average rate of change of the function?**

1)  $f(x) = 3x^2 + 5$ , from  $x = 3$  to  $x = 6$ ?

2)  $f(x) = -2x^2 - 4$ , from  $x = 2$  to  $x = 4$ ?

3)  $f(x) = x^3 + 3$ , from  $x = 1$  to  $x = 2$ ?

**xandy intercepts**

 **Find the  $x$  and  $y$  intercepts for the following equations.**

1)  $5x + 3y = 15$

2)  $y = x + 8$

3)  $4x = y + 16$

4)  $x + y = -2$

5)  $4x - 3y = 7$

6)  $7y - 5x + 10 = 0$

7)  $\frac{3}{7}x + \frac{1}{4}y + \frac{2}{3} = 0$

8)  $3x - 21 = 0$

9)  $24 - 4y = 0$

10)  $-2x - 6y + 42 = 12$

**Slope–intercept Form**

 Write the slope–intercept form of the equation of each line.

1)  $-14x + y = 6$

9)  $-\frac{1}{3}y = -2x + 3$

2)  $-2(7x + y) = 24$

10)  $5 - y - 4x = 0$

3)  $-8x - 16y = -48$

11)  $-y = -6x - 9$

4)  $5x + 14 = -3y$

12)  $10x + 5y = -15$

5)  $x - 3y = 12$

13)  $3(x + y + 2) = 0$

6)  $18x - 12y = -6$

14)  $y - 4 = x + 3$

7)  $28x - 14y = -56$

15)  $3(y + 3) = 2(x - 3)$

8)  $7x - 4y + 25 = 0$

16)  $\frac{3}{4}y + \frac{1}{4}x + \frac{5}{4} = 0$

**Point-slope Form**

 Find the slope of the following lines. Name a point on each line.

1)  $y = 2(x + 3)$

6)  $y - 8 = -3x$

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

7)  $y - 12 = -3(x - 8)$

3)  $y + 3 = -1.5x$

8)  $y + 14 = 0$

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

9)  $y + 18 = 2(x + 5)$

5)  $y + 2 = 0.4(x + 3)$

10)  $y - 17 = -8(x - 3)$

 Write an equation in point-slope form for the line that passes through the given point with the slope provided.

11)  $(2, -3), m = 4$

16)  $(3, 0), m = -5$

12)  $(-7, 4), m = \frac{1}{5}$

17)  $(-4, 11), m = \frac{1}{3}$

13)  $(0, -6), m = -2$

18)  $(0, 11), m = 0$


14)  $(-a, b), m = m$

19)  $(-\frac{1}{3}, 3), m = \frac{1}{5}$

15)  $(-9, 1), m = 3$

20)  $(0, 0), m = -3$

**Equation of Parallel or Perpendicular Lines**

 Write an equation of the line that passes through the given point and is parallel to the given line.

1)  $(-1, -2), x + 3y = -11$

6)  $(0, 7), -5x - y = -4$

2)  $(-4, 1), y = x - 5$

7)  $(-2, -1), y = \frac{4}{5}x + 3$

3)  $(-2, 0), 2y = 5x - 3$


8)  $(-2, 5), -8x + 5y = -18$

4)  $(0, 0), -3y + 4x - 14 = 0$

9)  $(3, -2), y = -\frac{2}{5}x - 3$

5)  $(1, 10), y + 15 = 0$

10)  $(-5, -5), 6x + 15y = -30$

 Write an equation of the line that passes through the given point and is perpendicular to the given line.

11)  $(-2, -6), 3x + 4y = -8$

16)  $(\frac{3}{5}, \frac{2}{5}), y = -6x - 24$

12)  $(-\frac{1}{3}, \frac{3}{5}), 4x - 8y = -32$

17)  $(-10, 0), y = \frac{5}{3}x - 15$

13)  $(2, -5), y = -5$

18)  $(3, -5), y = x + 12$

14)  $(7, -2), x = 7$

19)  $(-3, -1), y = \frac{7}{3}x - 4$

15)  $(0, -3), y = \frac{1}{2}x + 6$

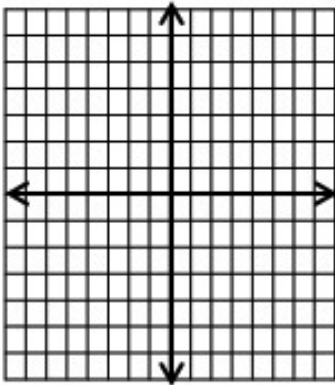
20)  $(0, 0), y - 8x + 6 = 0$



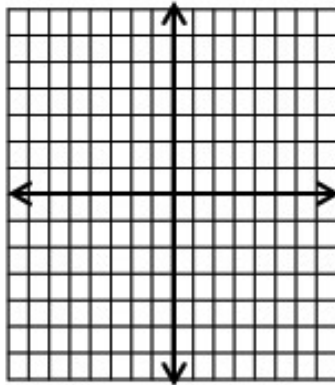
## Graphing Absolute Value Equations

 Graph each equation.

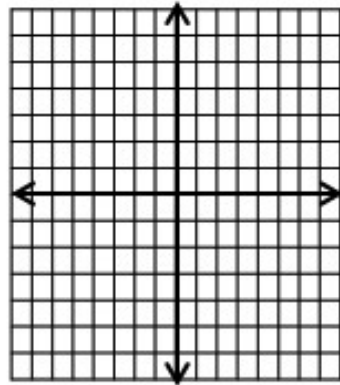
1)  $y = |x + 4|$



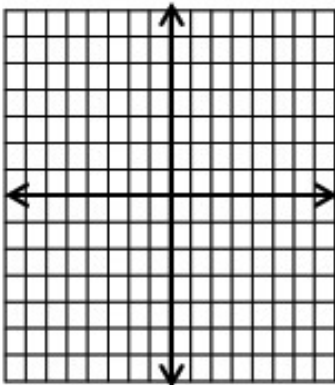
2)  $y = |x + 1|$



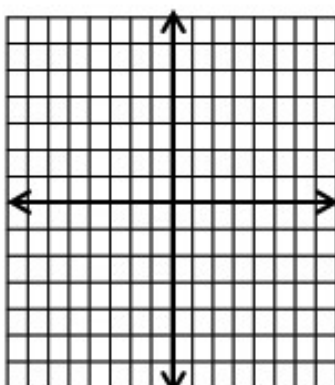
3)  $y = -|x| - 1$



4)  $y = |x - 2|$



5)  $y = -|x - 2|$



6)  $y = -2|2x + 2| + 4$

