

Besides the topics covered in this review, you should be familiar with using the TI-Nspire calculator for basic calculations and graphs.

Complete the following problems without the use of a calculator.

Place the numbers in order from least to greatest.

1) $2, -\frac{3}{7}, 0.75, -\frac{3}{2}$

2) $3, \sqrt{10}, \frac{3}{4}, -1.5$

3) $-\frac{3}{2}, 1.25, -2.4, \sqrt{3}, -2$

Evaluate each expression.

4) $-4 + 9$

5) $-3 - 5$

6) -2^4

7) $(-7)(-6)$

8) $3 - (4 - 2) \cdot 5$

9) $\frac{40}{-8}$

10) $\frac{-1}{4} + \frac{1}{12}$

11) $\frac{1}{3} - (\frac{-1}{12})$

12) $\frac{3}{4} \cdot \frac{2}{3}$

13) $(4 + 7)^2$

14) $1 + (5^2 - 10) \div 5$

15) $(6 - 5)^3 + 14 \div (2 + 5)$

16) $7 + 5 - (8 + 2) - (-6)$

17) $\frac{-12+2(6)}{4-(-3)}$

18) $\frac{7}{8} + \frac{4}{9}$

19) $\frac{3}{5} - \frac{1}{3}$

20) $\frac{1}{2} \cdot \frac{4}{7}$

21) $\frac{2}{3} \div \frac{7}{11}$

Let $a = -2$, $b = 3$, and $c = -1$. Evaluate each algebraic expression.

22) $(c - b)(c + b)$

23) $a^3 - b^3$

24) $\frac{b+c}{a+b}$

Let $f(x) = 2x - 5$. Find the indicated values.

25) $f(-3)$

26) $f(0)$

27) $f(1)$

Let $h(x) = -3x^2 + 1$. Find the indicated values.

28) $h(2)$

29) $h(-2)$

30) $h(3)$

Simplify each expression.

31) $3a + 7 + 4a - 5$

32) $5(x - 4) - 3(2x - 6)$

33) $\frac{1}{2}(6x + 4) - \frac{1}{4}(8x - 16)$

34) $-4(m - 2) + 3(m + 1)$

35) $8d + 2d^2 - 3(d + d^2)$

36) $\frac{5}{6}(18x^2 + 12x + 6)$

Solve each equation. Clear all fractions from the equations before solving. Check your answers.

37) $4x + 5 = 3$

38) $6x - 5 = 2x - 21$

39) $x + 5x - 5 = 1$

40) $3y - 2(6 + 5y) = -5$

41) $-(5 - x) = x + 3$

42) $7x + 5(x + 4) = 2x - 20$

43) $\frac{2}{3}x - 7 = 5$

44) $\frac{1}{2}x + \frac{3}{4}x = \frac{7}{8}$

45) $\frac{2}{3}(6x - 9) = x + 5$

46) $\frac{1}{5}(10x - 15) = 3 - 2x$

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

48) $\frac{4}{5}(x + 8) = 12$

Solve each inequality. Graph your solution on a number line and write the solution in interval notation.

49) $x + 3 > 6$

50) $3x + 5 \geq 26$

51) $-3 + 5x \geq x + 1$

52) $28 + 2x \geq -4(8x - 7)$

53) $-4 + 3x < 6 + 5x$

54) $5 - 2x \leq 19$

55) $-5 \leq x - 1 < 7$

56) $3x + 2 < 8$ or $-x + 3 < -2$

57) $-7 < 8 - 3x \leq 26$

Factor each expression completely.

58) $x^2 + 7x + 6$

59) $x^2 + 9x - 36$

60) $4x^2 - 16$

Solve each equation by factoring.

61) $3n^2 - 16n + 5 = 0$

62) $5x^2 + 3x = 8$

63) $5x^3 + 10x^2 - 40x = 0$

64) $3x^3 - 4x^2 - 4x = 0$

65) $-28x + 48 = -4x^2$

66) $2x^2 + 10x + 8 = 0$

Solve each system of equations using any method.

67)
$$\begin{aligned} x - y &= 7 \\ -3x + y &= 11 \end{aligned}$$

68)
$$\begin{aligned} 4x + 3y &= 2 \\ 5x - 6y &= -17 \end{aligned}$$

69)
$$\begin{aligned} y &= 5x - 3 \\ 9x - 3y &= -3 \end{aligned}$$

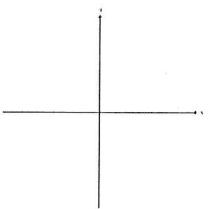
70)
$$\begin{aligned} 5x - 2y &= 4 \\ 3x + 4y &= 18 \end{aligned}$$

71)
$$\begin{aligned} 3x - 4y &= -1 \\ 2x - 7y &= 8 \end{aligned}$$

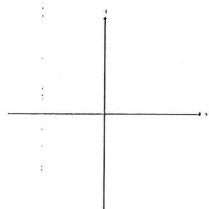
72)
$$\begin{aligned} 2a + 3b &= 12 \\ 3a + 2b &= 13 \end{aligned}$$

Draw a line with a(n)...

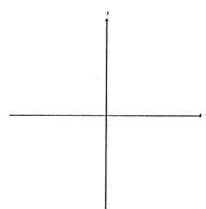
73) positive slope



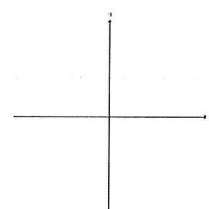
74) negative slope



75) slope of zero



76) undefined slope



Find the slope of the line that passes through the given points.

77) $(-1, 2)$ $(5, -8)$

78) $(5, 2)$ $(3, -4)$

79) $f(2) = 3$ $f(4) = 2$

Write as ordered pairs first

Find the x-intercept & y-intercept for each line. (Don't forget to write intercepts as ORDERED PAIRS!)

80) $2x - 5y = 10$

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

82) $x - 3y = 6$

Determine if the given pair of lines are parallel, perpendicular, or neither.

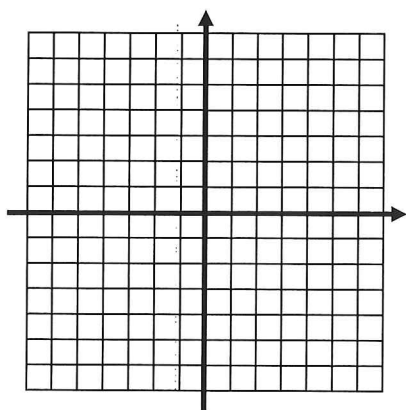
83) $y = 2x - 5$
 $y = 2x + 5$

84) $-2x + 3y = 21$
 $3x - 2y = 8$

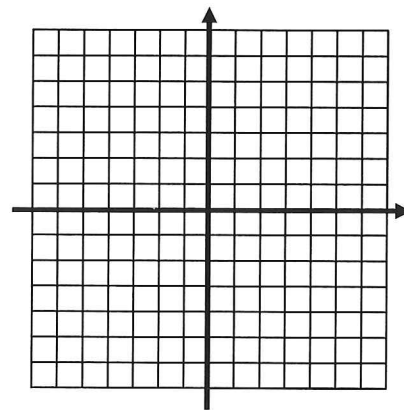
85) $y = \frac{1}{3}x + 9$
 $3x + y = 4$

Use a T-Chart to graph each equation.

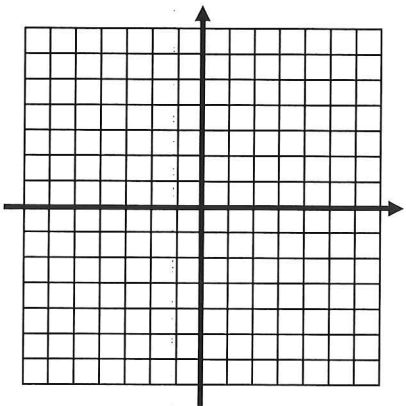
86) $y = 2x + 1$



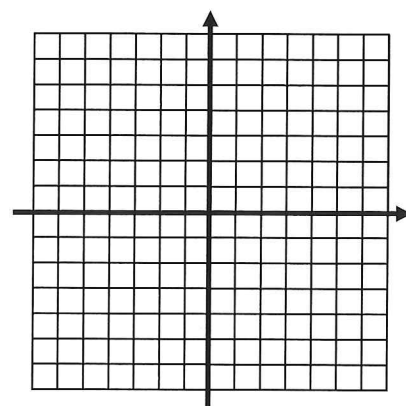
87) $y = -\frac{1}{2}x + 5$



88) $4y - 12x = 16$

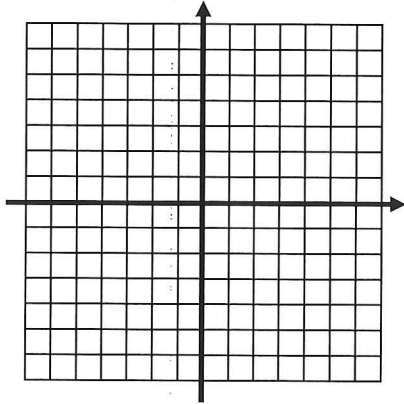


89) $3x - 2y = 6$

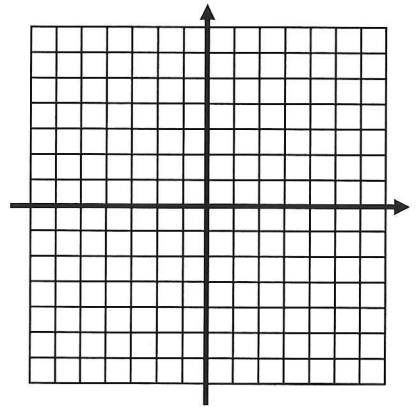


Use the slope and y-intercept to graph each line.

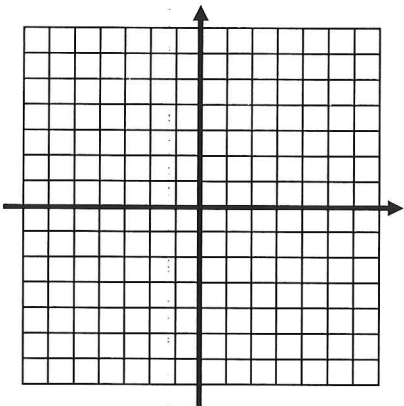
90) $y = \frac{5}{2}x - 6$



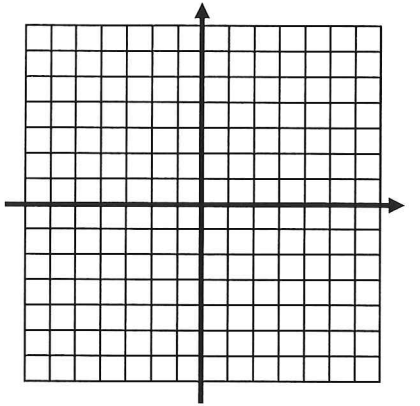
91) $3x + 4y = 4$



92) $y = -4x$



93) $x = 5$



Write the equation of the line in Slope-Intercept Form that is PARALLEL to the given line and passes through the given POINT.

94) $y = -3x + 5$ (7, -11)

95) $y = \frac{1}{5}x + 12$ (-5, -5)

Write the equation of the line in Slope-Intercept Form that is PERPENDICULAR to the given line and passes through the given POINT.

96) $y = \frac{7}{2}x + 12$ (-21, 4)

97) $y = -3x - 7$ (-9, -6)

Answer Key

1) $-3/2, -3/7, 0.75, 2$		2) $-1.5, \frac{3}{4}, 3, \sqrt{10}$		3) $-2.4, -2, -3/2, 1.25, \sqrt{3}$	
4) 5	5) -8	6) -16	7) 42	8) -7	9) -5
10) $-1/6$	11) $5/12$	12) $\frac{1}{2}$	13) 121	14) 4	15) 3
16) 8	17) 0	18) $95/72$	19) $4/15$	20) $2/7$	21) $22/21$
22) -8	23) -35	24) 2	25) -11	26) -5	27) -3
28) -11	29) -11	30) -26	31) $7a + 2$	32) $-x - 2$	33) $x + 6$
34) $-m + 11$	35) $-d^2 + 5d$	36) $15x^2 + 10x + 5$	37) $-1/2$	38) -4	39) 1
40) -1	41) No Solutions	42) -4	43) 18	44) $7/10$	45) $11/3$
46) $3/2$	47) -6	48) 7	49) $(3, \infty)$	50) $[7, \infty)$	51) $[1, \infty)$
52) $[0, \infty)$	53) $(-5, \infty)$	54) $[-7, \infty)$	55) $[-4, 8)$	56) $(-\infty, 2) \cup (5, \infty)$	57) $[-6, 5)$
58) $(x + 6)(x + 1)$	59) $(x + 12)(x - 3)$	60) $4(x + 2)(x - 2)$	61) $1/3, 5$	62) $-8/5, 1$	63) $0, -4, 2$
64) $0, -2/3, 2$	65) 4, 3	66) -4, -1	67) $(-9, -16)$	68) $(-1, 2)$	69) $(2, 7)$
70) $(2, 3)$	71) $(-3, -2)$	72) $(3, 2)$	73)	74)	75)
76)	77) $-5/3$	78) 3	79) $-1/2$	80) $(0, -2) (5, 0)$	81) $(0, -3) (6, 0)$
82) $(0, -2) (6, 0)$	83) parallel	84) neither	85) perpendicular	86)	87)
88)	89)	90)	91)	92)	93)
94) $y = -3x + 10$	95) $y = 1/5x - 4$	96) $y = -2/7x - 2$	97) $y = 1/3x - 3$		

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Complete the following problems without the use of a calculator.

Place the numbers in order from least to greatest.

1) $2, -\frac{3}{7}, 0.75, -\frac{3}{2}$

$-\frac{3}{2}, -\frac{3}{7}, 0.75, 2$

2) $3, \sqrt{10}, \frac{3}{4}, -1.5$

$-1.5, \frac{3}{4}, 3, \sqrt{10}$

3) $-\frac{3}{2}, 1.25, -2.4, \sqrt{3}, -2$

$-2.4, -2, -\frac{3}{2}, 1.25, \sqrt{3}$

Evaluate each expression.

4) $-4 + 9$

5

5) $-3 - 5$

-8

6) -2^4

-16

7) $(-7)(-6)$

42

8) $3 - (4 - 2) \cdot 5$

-7

9) $\frac{40}{-8}$

-5

10) $\frac{-1}{4} + \frac{1}{12}$

$-\frac{3}{12} = -\frac{2}{12} = -\frac{1}{6}$

11) $\frac{1}{3} - (\frac{-1}{12})$

$\frac{4}{12} + \frac{1}{12} = \frac{5}{12}$

12) $\frac{3}{4} \cdot \frac{2}{3}$

$\frac{6}{12} = \frac{1}{2}$

13) $(4 + 7)^2$

121

14) $1 + (5^2 - 10) \div 5$

4

15) $(6 - 5)^3 + 14 \div (2 + 5)$

3

16) $7 + 5 - (8 + 2) - (-6)$

8

17) $\frac{-12 + 2(6)}{4 - (-3)}$

0

18) $\frac{7}{8} + \frac{4}{9}$

$\frac{63}{72} + \frac{32}{72} = \frac{95}{72}$

19) $\frac{3}{5} - \frac{1}{3}$

$\frac{9}{15} - \frac{5}{15} = \frac{4}{15}$

20) $\frac{1}{2} \cdot \frac{4}{7}$

$\frac{4}{14} = \frac{2}{7}$

21) $\frac{2}{3} \div \frac{7}{11}$

$\frac{2}{3} \cdot \frac{11}{7} = \frac{22}{21}$

Let $a = -2$, $b = 3$, and $c = -1$. Evaluate each algebraic expression.

22) $(c - b)(c + b)$

$$\begin{aligned} &(-1 - 3)(-1 + 3) \\ &-4 \cdot 2 = -8 \end{aligned}$$

23) $a^3 - b^3$

$$\begin{aligned} &(-2)^3 - (3)^3 \\ &-8 - 27 = -35 \end{aligned}$$

24) $\frac{b+c}{a+b}$

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

Let $f(x) = 2x - 5$. Find the indicated values.

25) $f(-3)$

$$-6 - 5 = -11$$

26) $f(0)$

$$-5$$

27) $f(1)$

$$2 - 5 = -3$$

Let $h(x) = -3x^2 + 1$. Find the indicated values.

28) $h(2)$

$$\begin{aligned} &-3 \cdot 4 + 1 \\ &= -11 \end{aligned}$$

29) $h(-2)$

$$\begin{aligned} &-3(4) + 1 \\ &= -11 \end{aligned}$$

30) $h(3)$

$$\begin{aligned} &-3 \cdot 9 + 1 \\ &= -26 \end{aligned}$$

Simplify each expression.

31) $3a + 7 + 4a - 5$

$$7a + 2$$

32) $5(x - 4) - 3(2x - 6)$

$$\begin{aligned} &5x - 20 - 6x + 18 \\ &-x - 2 \end{aligned}$$

33) $\frac{1}{2}(6x + 4) - \frac{1}{4}(8x - 16)$

$$\begin{aligned} &3x + 2 - 2x + 4 \\ &x + 6 \end{aligned}$$

34) $-4(m - 2) + 3(m + 1)$

$$\begin{aligned} &-4m + 8 + 3m + 3 \\ &-m + 11 \end{aligned}$$

35) $8d + 2d^2 - 3(d + d^2)$

$$\begin{aligned} &-3d - 3d^2 \\ &-d^2 + 5d \end{aligned}$$

36) $\frac{5}{6}(18x^2 + 12x + 6)$

$$15x^2 + 10x + 5$$

Solve each equation. Clear all fractions from the equations before solving. Check your answers.

37) $4x + 5 = 3$

$$4x = -2$$

$$x = -\frac{1}{2}$$

38) $6x - 5 = 2x - 21$

$$4x = -16$$

$$x = -4$$

39) $x + 5x - 5 = 1$

$$6x = 6$$

$$x = 1$$

40) $3y - 2(6 + 5y) = -5$

$$3y - 12 - 10y = -5$$

$$-7y = 7$$

$$y = -1$$

41) $-5 - x = x + 3$

$$-5 + x = x + 3$$

$$-5 \neq 3$$

No Solutions

42) $7x + 5(x + 4) = 2x - 20$

$$7x + 5x + 20 = 2x - 20$$

$$10x = -40$$

$$x = -4$$

$$43) \frac{2}{3}x - 7 = 5$$

$$\frac{3}{2} \left(\frac{2}{3}x \right) = (12) \frac{3}{2}$$

$$x = 18$$

$$46) \frac{1}{5}(10x - 15) = 3 - 2x$$

$$2x - 3 = 3 - 2x$$

$$4x = 6$$

$$x = \frac{3}{2}$$

$$44) \left(\frac{1}{2}x + \frac{3}{4}x = \frac{7}{8} \right)$$

$$4x + 6x = 7$$

$$10x = 7$$

$$x = \frac{7}{10}$$

$$47) \left(\frac{2}{3}x = -1 + \frac{x}{2} \right)$$

$$4x = -6 + 3x$$

$$x = -6$$

$$45) \frac{2}{3}(6x - 9) = x + 5$$

$$4x - 6 = x + 5$$

$$3x = 11$$

$$x = \frac{11}{3}$$

$$\frac{5}{4} 48) \left(\frac{4}{5}(x + 8) = 12 \right)$$

$$x + 8 = 15$$

$$x = 7$$

Solve each inequality. Graph your solution on a number line and write the solution in interval notation.

$$49) x + 3 > 6$$

$$x > +3$$

$$(3, \infty)$$

$$50) 3x + 5 \geq 26$$

$$3x \geq 21$$

$$x \geq 7$$

$$[7, \infty)$$

$$51) -3 + 5x \geq x + 1$$

$$4x \geq 4$$

$$x \geq 1$$

$$[1, \infty)$$

$$52) 28 + 2x \geq -4(8x - 7)$$

$$34x \geq 0 \quad -32x + 28$$

$$x \geq 0$$

$$[0, \infty)$$

$$53) -4 + 3x < 6 + 5x$$

$$-2x < 10$$

$$x > -5$$

$$(-5, \infty)$$

$$54) 5 - 2x \leq 19$$

$$-2x \leq 14$$

$$x \geq -7$$

$$[-7, \infty)$$

$$55) -5 \leq x - 1 < 7$$

$$-4 \leq x < 8$$

$$[-4, 8)$$

$$56) 3x + 2 < 8 \text{ or } -x + 3 < -2$$

$$3x < 6 \quad -x < -5$$

$$x < 2 \text{ or } x > 5$$

$$(-\infty, 2) \cup (5, \infty)$$

$$57) -7 < 8 - 3x \leq 26$$

$$-15 < -3x \leq 18$$

$$5 > x \geq -6$$

$$-6 \leq x < 5$$

$$[-6, 5)$$

Factor each expression completely.

$$58) x^2 + 7x + 6$$

$$(x+6)(x+1)$$

$$59) x^2 + 9x - 36$$

$$(x+12)(x-3)$$

$$60) 4x^2 - 16$$

$$4(x^2 - 4)$$

$$4(x+2)(x-2)$$

Solve each equation by factoring.

61) $3n^2 - 16n + 5 = 0$

$$(3n-1)(n-5) = 0$$

$$n = \frac{1}{3}, 5$$

62) $5x^2 + 3x - 8 = 0$

$$5x^2 + 3x - 8 = 0$$

$$(5x+8)(x-1) = 0$$

$$x = -\frac{8}{5}, 1$$

63) $5x^3 + 10x^2 - 40x = 0$

$$5x(x^2 + 2x - 8) = 0$$

$$5x(x+4)(x-2) = 0$$

$$x = 0, -4, 2$$

64) $3x^3 - 4x^2 - 4x = 0$

$$x(3x^2 - 4x - 4) = 0$$

$$x(3x+2)(x-2) = 0$$

$$x = 0, -\frac{2}{3}, 2$$

65) $-28x + 48 = -4x^2$

$$4x^2 - 28x + 48 = 0$$

$$4(x^2 - 7x + 12) = 0$$

$$4(x-4)(x-3) = 0$$

$$x = 4, 3$$

66) $2x^2 + 10x + 8 = 0$

$$2(x^2 + 5x + 4) = 0$$

$$2(x+4)(x+1) = 0$$

$$x = -4, -1$$

Solve each system of equations using any method.

67) $x - y = 7$
 $-3x + y = 11$

$$-2x = 18$$

$$x = -9$$

$$-9 - y = 7 \quad (-9, -16)$$

$$y = -16$$

70) $5x - 2y = 4$
 $3x + 4y = 18$

$$10x - 4y = 8$$

$$13x = 26$$

$$x = 2$$

$$6 + 4y = 18$$

$$y = 3$$

$$(2, 3)$$

68) $4x + 3y = 2$
 $5x - 6y = -17$

$$8x + 6y = 4$$

$$13x = -13$$

$$x = -1$$

$$-4 + 3y = 2 \quad (-1, 2)$$

$$y = 2$$

71) $3x - 4y = -1$

$$3(2x - 7y) = 8$$

$$-6x + 8y = 2$$

$$6x - 21y = 24$$

$$-13y = 26$$

$$y = -2$$

$$(-3, -2)$$

$$3x + 8 = -1 \quad x = -3$$

$$3x = -9$$

69) $y = 5x - 3$
 $9x - 3y = -3$

$$9x - 3(5x - 3) = -3$$

$$9x - 15x + 9 = -3$$

$$-6x = -12$$

$$x = 2$$

$$y = 10 - 3 \quad (2, 7)$$

$$y = 7$$

72) $2a + 3b = 12$

$$2(3a + 2b) = 13$$

$$-6a - 9b = -36$$

$$6a + 4b = 26$$

$$-5b = -10$$

$$b = 2$$

$$(3, 2)$$

$$2a + 6 = 12$$

$$a = 3$$

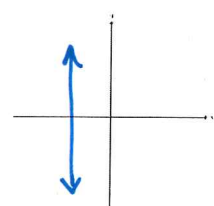
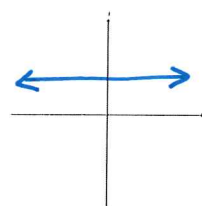
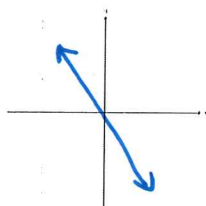
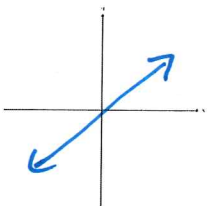
Draw a line with a(n)...

73) positive slope

74) negative slope

75) slope of zero

76) undefined slope



Find the slope of the line that passes through the given points.

77) (-1, 2) (5, -8)

$$\frac{-8-2}{5-(-1)} = \frac{-10}{6} = -\frac{5}{3}$$

78) (5, 2) (3, -4)

$$\frac{-4-2}{3-5} = \frac{-6}{-2} = 3$$

79) $f(2) = 3$ $f(4) = 2$

Write as ordered pairs first

(2, 3) (4, 2)

$$\frac{2-3}{4-2} = -\frac{1}{2}$$

Find the x-intercept & y-intercept for each line. (Don't forget to write intercepts as ORDERED PAIRS!)

80) $2x - 5y = 10$

(0, -2)
(5, 0)

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

(0, -3)
(6, 0)

82) $x - 3y = 6$

(0, -2)
(6, 0)

Determine if the given pair of lines are parallel, perpendicular, or neither.

83) $y = 2x - 5$
 $y = 2x + 5$

parallel

84) $-2x + 3y = 21$
 $3x - 2y = 8$

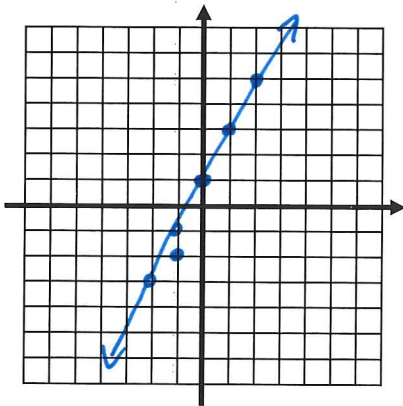
$y = \frac{2}{3}x + 7$
 $y = \frac{3}{2}x - 4$ Neither

85) $y = \frac{1}{3}x + 9$
 $3x + y = 4$

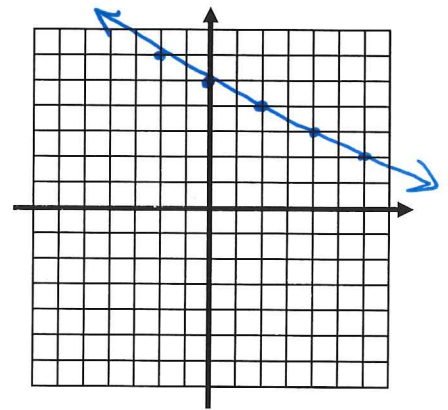
$y = -3x + 4$
perpendicular

Use a T-Chart to graph each equation.

86) $y = 2x + 1$

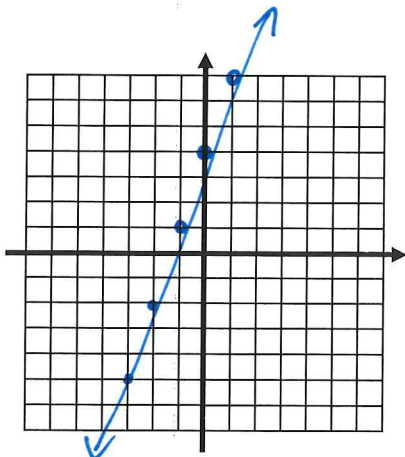


87) $y = -\frac{1}{2}x + 5$



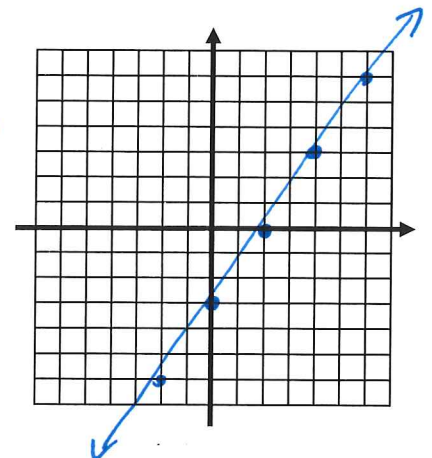
88) $4y - 12x = 16$

$4y = 12x + 16$
 $y = 3x + 4$



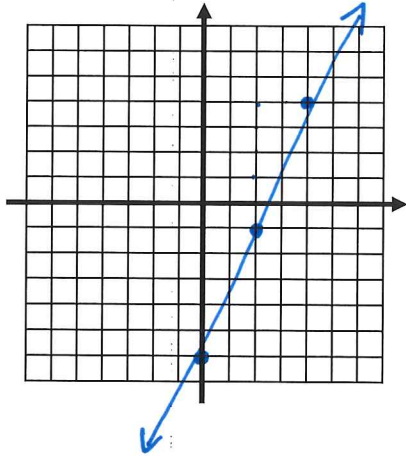
89) $3x - 2y = 6$

$-2y = -3x + 6$
 $y = \frac{3}{2}x - 3$



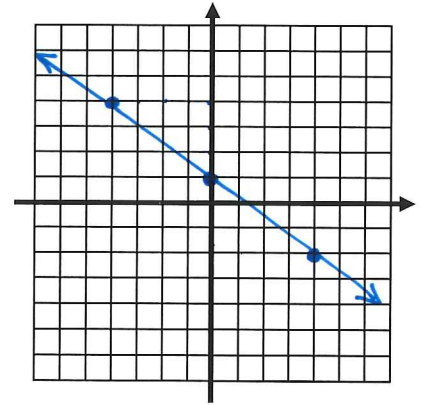
Use the slope and y-intercept to graph each line.

90) $y = \frac{5}{2}x - 6$

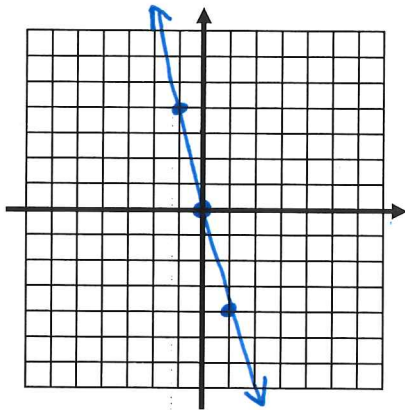


91) $3x + 4y = 4$

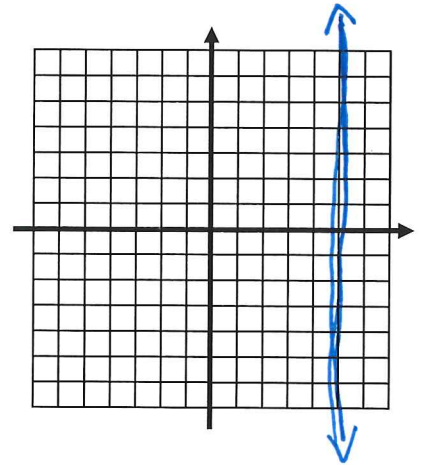
$y = -\frac{3}{4}x + 1$



92) $y = -4x$



93) $x = 5$



Write the equation of the line in Slope-Intercept Form that is PARALLEL to the given line and passes through the given POINT.

94) $y = -3x + 5$ (7, -11)

$m = -3$

$y + 11 = -3(x - 7)$
 $y = -3x + 10$

95) $y = -2x + 12$ (-5, -5)

$m = -2$

$y + 5 = -2(x + 5)$
 $y = -2x - 15$

Write the equation of the line in Slope-Intercept Form that is PERPENDICULAR to the given line and passes through the given POINT.

96) $y = \frac{7}{2}x + 12$ (-21, 4)

$m = -\frac{2}{7}$

$y - 4 = -\frac{2}{7}(x + 21)$
 $y = -\frac{2}{7}x - 2$

97) $y = \frac{3}{2}x - 7$ (-9, -6)

$m = -\frac{2}{3}$

$y + 6 = -\frac{2}{3}(x + 9)$
 $y = -\frac{2}{3}x - 12$