

①

$$\frac{193+7}{3^2-4} =$$

$$\frac{193+7}{(3)(3)-4} =$$

$$\frac{200}{9-4} =$$

$$\frac{200}{5} =$$

$$40 =$$

$$\begin{array}{r} 40 \\ 5 \overline{) 200} \\ \underline{-(20)} \\ 00 \\ \underline{00} \\ 0 \end{array}$$

TS1182
~~05-12-17~~
05-12-17

①

②

Evaluate if $x=8$ and $y=6$

$$4x+5y =$$

$$4(8)+5(6) =$$

$$32+30 =$$

$$62 =$$

③

Evaluate if $x=4$

$$8x^2+5x =$$

$$8(4)^2+5(4) =$$

$$8(4)(4)+5(4) =$$

$$8(16)+5(4) =$$

$$128+20 =$$

$$148 =$$

$$\begin{array}{r} 4 \\ 1.6 \\ \times 8 \\ \hline 128 \end{array}$$

(4) Evaluate if $x=7$, $y=5$

$$\frac{20x-25}{y} =$$

$$\frac{20(7)-25}{(5)} =$$

$$\frac{140-25}{5} =$$

$$\frac{115}{5} =$$

$$23 =$$

$$\begin{array}{r} 23 \\ 5 \overline{) 115} \\ \underline{-(10)} \\ 15 \\ \underline{-(15)} \\ 0 \end{array}$$

(2)

(5)

Solve

$$F+1=-2$$

$$F+\cancel{x}-\cancel{x}=-2-1$$

$$F=-3$$

(6)

Solve

$$-2x=-12$$

$$\frac{-2x}{-2} = \frac{-12}{-2}$$

$$x=6$$

(7)

Solve

$$5x+4=49$$

$$5x+\cancel{4}-\cancel{4}=49-4$$

$$5x=45$$

$$\frac{5x}{5} = \frac{45}{5}$$

$$x=9$$

8.

Solve

$$9n - 4 = 59$$

$$9n - 4 + 4 = 59 + 4$$

$$9n = 63$$

$$\frac{9n}{9} = \frac{63}{9}$$

$$n = 7$$

3

9.

Solve

$$2(5x - 2) = 8x$$

$$10x - 4 = 8x$$

$$10x - 4 + 4 = 8x + 4$$

$$10x = 8x + 4$$

$$10x - 8x = 8x + 4 - 8x$$

$$2x = 4$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

10.

Solve

$$5(y - 4) = 7y - 20$$

$$5y - 20 = 7y - 20$$

$$5y - 20 + 20 = 7y - 20 + 20$$

$$5y = 7y$$

$$5y - 7y = 7y - 7y$$

$$-2y = 0$$

$$\frac{-2y}{-2} = \frac{0}{-2}$$

$$y = 0$$

(11)

Solve

$$-3(x+2)-18 = -8-4$$

$$-3x-6-18 = -12$$

$$-3x-24 = -12$$

$$-3x-\cancel{2x}+\cancel{24} = -12+24$$

$$-3x = 12$$

$$\frac{-3x}{-3} = \frac{12}{-3}$$

$$x = -4$$

(4)

(12)

Solve

$$5x-6 = 2x-30$$

$$5x-\cancel{6}+6 = 2x-30+6$$

$$5x = 2x-24$$

$$5x-2x = \cancel{2x}-24-\cancel{2x}$$

$$3x = -24$$

$$\frac{3x}{3} = \frac{-24}{3}$$

$$x = -8$$

(13)

$$\frac{4}{15} - \frac{1}{10} =$$

$$LCD = 30$$

$$\frac{4}{15} \left(\frac{2}{2} \right) - \frac{1}{10} \left(\frac{3}{3} \right) =$$

$$\frac{8}{30} - \frac{3}{30} =$$

$$\frac{5}{30} =$$

$$\frac{\cancel{5}(1)}{\cancel{5}(6)} =$$

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

14.

Solve

$$\frac{x}{5} = \frac{x}{6} + \frac{2}{5}$$

LCD = 30

$$\frac{x}{5}(30) = \frac{x}{6}(30) + \frac{2}{5}(30)$$

$$x(6) = x(5) + 2(6)$$

$$6x = 5x + 12$$

$$6x - 5x = 5x + 12 - 5x$$

$$1x = 12$$

$$x = 12$$

15.

Solve

$$1.1x + 4.3 = 0.7x + 1.14$$

$$1.1x + 4.3 - 4.3 = 0.7x + 1.14 - 4.3$$

$$1.1x = 0.7x - 3.16$$

$$1.1x - 0.7x = 0.7x - 3.16 - 0.7x$$

$$.4x = -3.16$$

$$\frac{.4x}{.4} = \frac{-3.16}{.4}$$

$$x = -7.9$$

16.

Find the mean 17, 1, 16, 16, 7, 19, 3, 17

$$\frac{17+1+16+16+7+19+3+17}{8} =$$

$$\frac{96}{8} =$$

$$12$$

17 Find the Median

$$4, 6, 25, 23, 43, 47 =$$

6

$$4, 6, 23, 25, 43, 47 = \text{rewrite order}$$

$$\frac{23+25}{2} =$$

$$\frac{48}{2} =$$

$$24 = \text{Median}$$

18

Solve

$$\frac{4}{13} = \frac{x}{39}$$

$$4(39) = 13(x) \quad \text{Cross Multiply} \Rightarrow$$

$$156 = 13x$$

$$\frac{156}{13} = \frac{13x}{13}$$

$$12 = x$$

19

Solve

$$\frac{x+8}{x} = \frac{4}{3}$$

$$3(x+8) = 4(x) \quad \text{Cross Multiply}$$

$$3x + 24 = 4x$$

$$3x + 24 - 24 = 4x - 24$$

$$3x = 4x - 24$$

$$3x - 4x = 4x - 24 - 4x$$

$$-1x = -24$$

$$\frac{-1x}{-1} = \frac{-24}{-1}$$

$$x = 24$$

20) 19 is 4% of what number?

$$\frac{4}{100} = \frac{19}{x}$$

$$4(x) = 100(19)$$

$$4x = 1900$$

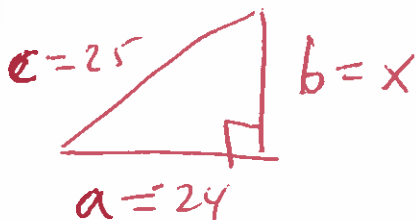
$$\frac{4x}{4} = \frac{1900}{4}$$

$$x = 475$$

$$\begin{array}{r} 475 \\ 4 \overline{) 1900} \\ \underline{-(16)} \\ 30 \\ \underline{-(28)} \\ 20 \end{array}$$

21.

Solve



$$a^2 + b^2 = c^2$$

$$(24)^2 + b^2 = (25)^2$$

$$(24)(24) + b^2 = (25)(25)$$

$$576 + b^2 = 625$$

$$576 + b^2 - 576 = 625 - 576$$

$$b^2 = 49$$

$$\sqrt{b^2} = \sqrt{49}$$

$$b = 7$$

Pythagorean theorem,

$$\begin{array}{r} 24 \\ \times 24 \\ \hline 196 \\ 48 \\ \hline 576 \end{array}$$

$$\begin{array}{r} 25 \\ \times 25 \\ \hline 125 \\ 50 \\ \hline 625 \end{array}$$

$$\begin{array}{r} 625 \\ - 576 \\ \hline 49 \end{array}$$

22. If a single die is tossed once, find the probability of the following events.

A 2.

Possibly

1, 2, 3, 4, 5, 6

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

23. A bag contains 7 red marbles, 7 blue marbles, 6 yellow marbles, and 6 green marbles. What is the probability of choosing a red marble when one marble is drawn?

$$\frac{\text{Want}}{\text{all}} =$$

7 red

$$\frac{7}{7+7+6+6} =$$

$$\frac{7}{26} =$$

24. A bag contains 2 red marbles, 7 blue marbles, and 3 green marbles. What is the probability of choosing a blue marble when one marble is drawn?

$$\frac{\text{Want}}{\text{all}} =$$

$$\frac{7}{2+7+3} =$$

$$\frac{7}{12} =$$

25. A bag contains 8 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

$$\frac{\text{Want}}{\text{all}} = \frac{8+1}{8+2+1} = \frac{9}{11} =$$

26. A bag contains 7 red marbles, 2 blue marbles, and 1 green marble. What is the probability of choosing a marble that is not blue when one marble is drawn from the bag?

$$\frac{\text{Want}}{\text{all}} = \frac{7+1}{7+2+1} = \frac{8}{10} =$$

$$\frac{4(\cancel{2})}{5(\cancel{2})} = \frac{4}{5}$$

27. A bag contains 7 red marbles, 8 blue marbles, 6 yellow marbles, and 4 green marbles. What is the probability of choosing a yellow OR green marble when one marble is drawn?

$$\frac{6+4}{7+8+6+4} = \frac{10}{25}$$

$$\frac{5(2)}{5(5)} =$$

$$\frac{2}{5} =$$

28. A bag contains 17 balls numbered 1 through 17. What is the probability of selecting a ball that has an even number when one ball is drawn from the bag?

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17

$$\frac{8}{17} =$$

29. A new drug is being tested that is supposed to lower cholesterol. This drug⁽¹¹⁾ was given to 200 people and the results are below.

Lower
Cholesterol

134

Higher
Cholesterol

8

Cholesterol
Not Changed

58

want
all

$$\frac{134}{200} \quad \begin{array}{l} \text{Lower} \\ \text{Cholesterol} \\ \hline \end{array}$$

$$\frac{2(67)}{2(100)} =$$

$$\frac{67}{100} =$$

30. The length of a rectangle is 148 in. and the width is 36 in. Find its perimeter (12)

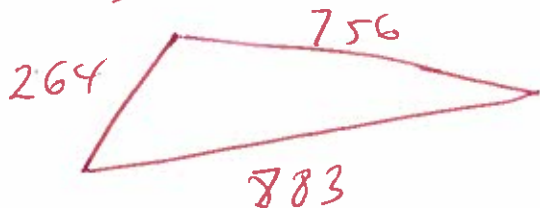
$$P = 2L + 2W$$

$$P = 2(148) + 2(36)$$

$$P = 296 + 72$$

$$P = 368$$

31. The sides of a triangle are 756 ft, 264 ft, and 883 ft. Find its perimeter.



Example

$$P = s_1 + s_2 + s_3$$

$$P = 264 + 883 + 756$$

$$P = 1903$$

32. Find the exact circumference.



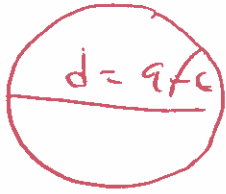
$$d = 30$$

$$C = \pi d$$

$$C = \pi(30)$$

$$C = 30\pi$$

33 Find the area



13.

$$r = \frac{1}{2}d = \frac{1}{2}(9) = \frac{9}{2} = 4.5$$

$$r = 4.5$$

$$\pi = 3.14$$

$$\begin{array}{r} 2 \\ 4.5 \\ \times 4.5 \\ \hline 225 \\ 180 \\ \hline 20.25 \end{array}$$

$$\begin{array}{r} 4.5 \\ 2 \overline{) 9.0} \\ \underline{-(8)} \\ 10 \\ \underline{-(10)} \\ 0 \end{array}$$

$$A = \pi r^2$$

$$A = 3.14(4.5)^2$$

$$A = 3.14(4.5)(4.5)$$

$$A = 3.14(20.25)$$

$$A = 63.585$$

34

Solve

$$6x - (3x - 1) = 2$$

$$6x - 3x + 1 = 2$$

$$3x + 1 = 2$$

$$3x + 1 - 1 = 2 - 1$$

$$3x = 1$$

$$\frac{3x}{3} = \frac{1}{3}$$

$$x = \frac{1}{3}$$

(35)

Solve

$$(y-9) - (y+4) = 6y$$

$$y-9-y-4=6y$$

$$-13=6y$$

$$\frac{-13}{6} = \frac{6y}{6}$$

$$\frac{-13}{6} = y$$

(14)

(36)

Solve

$$3(2z-3) = 5(z+4)$$

$$6z-9=5z+20$$

$$6z-9+9=5z+20+9$$

$$6z=5z+29$$

$$6z-5z=5z+29-5z$$

$$1z=29$$

$$z=29$$

(37)

Solve

$$\frac{5x}{6} + \frac{4}{3} = \frac{2x}{3} \quad \text{LCD}=6$$

$$\frac{5x}{6}(6) + \frac{4}{3}(6) = \frac{2x}{3}(6)$$

$$5x(1) + 4(2) = 2x(2)$$

$$5x+8=4x$$

$$5x+8-8=4x-8$$

$$5x=4x-8$$

$$5x-4x=4x-8-4x$$

$$1x=-8$$

$$x=-8$$

38

Solve

$$9x + 5 - 9x - 5 = 6x - 6x - 3$$
$$0 \neq -3$$

No Solution

39

Solve

$$2(x+5) = (2x+10)$$

$$2x + 10 = 2x + 10$$

$$2x + 10 - 10 = 2x + 10 - 10$$

$$2x = 2x$$

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

$$0 = 0$$

all real numbers

40.

If $L=12$ and $P=46$ then find w

$$P = 2L + 2w$$

$$46 = 2(12) + 2w$$

$$46 = 24 + 2w$$

$$46 - 24 = 24 + 2w - 24$$

$$22 = 2w$$

$$\frac{22}{2} = \frac{2w}{2}$$

$$11 = w$$

41 If $d = 312$ and $t = 12$ then find r

$$d = rt$$

$$312 = r(12)$$

$$312 = 12r$$

$$\frac{312}{12} = \frac{12r}{12}$$

$$26 = r$$

$$\begin{array}{r} 26 \\ 12 \overline{) 312} \\ \underline{-(24)} \\ 72 \\ \underline{-(72)} \\ 0 \end{array}$$

16

42 Find C if $F = 212$

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(212 - 32)$$

$$C = \frac{5}{9}(180)$$

$$C = .5(20)$$

$$C = 100$$

$$\begin{array}{r} 212 \\ - 32 \\ \hline 180 \end{array}$$

43 If $t = 4$, $d = 16$ find r

$$d = rt$$

$$16 = r(4)$$

$$16 = 4r$$

$$\frac{16}{4} = \frac{4r}{4}$$

$$4 = r$$

(44) If $P=28$, $W=6$ Find L

$$P = 2L + 2W$$

$$28 = 2L + 2(6)$$

$$28 = 2L + 12$$

$$28 - 12 = 2L + \cancel{12} - \cancel{12}$$

$$16 = 2L$$

$$\frac{16}{2} = \frac{2L}{2}$$

$$8 = L$$

(17)

(45) If $I=25.2$, $P=140$, $r=0.06$ Find t .

$$I = Prt$$

$$25.2 = 140(0.06)t$$

$$25.2 = 8.4t$$

$$\frac{25.2}{8.4} = \frac{8.4t}{8.4}$$

$$3 = t$$

(46) $d = rt$ Find r

$$\frac{d}{t} = \frac{rt}{t}$$

$$\frac{d}{t} = r$$

47) $P = 2L + 2W$ Find L

$$P - 2W = 2L + 2W - 2W$$

$$P - 2W = 2L$$

$$\frac{P - 2W}{2} = \frac{2L}{2}$$

$$\frac{P - 2W}{2} = L$$

48) $A = P + PRT$ Solve for R

$$A = P + PRT$$

$$A - P = P + PRT - P$$

$$A - P = PRT$$

$$\frac{A - P}{PT} = \frac{PRT}{PT}$$

$$\frac{A - P}{PT} = R$$

49) $A = P + PRT$ solve for T

$$A = P + PRT$$

$$A - P = P + PRT - P$$

$$A - P = PRT$$

$$\frac{A - P}{PR} = \frac{PRT}{PR}$$

$$\frac{A - P}{PR} = T$$

(50)

Solve

$$x - 3 < -4$$

$$x - 3 + 3 < -4 + 3$$

$$x < -1$$



$$(-\infty, -1)$$

(19)

(51)

Solve

$$-7x - 1 > -8x + 5$$

$$-7x - 1 + 1 > -8x + 5 + 1$$

$$-7x > -8x + 6$$

$$-7x + 8x > -8x + 6 + 8x$$

$$1x > 6$$

$$x > 6$$



$$(6, +\infty)$$

(52)

Solve

$$6x \leq 66$$

$$\frac{6x}{6} \leq \frac{66}{6}$$

$$x \leq 11$$



$$(-\infty, 11]$$

53

Solve

$$21x + 9 > 3(6x + 4)$$

$$21x + 9 > 18x + 12$$

$$21x + \cancel{9} - \cancel{9} > 18x + 12 - 9$$

$$21x > 18x + 3$$

$$21x - 18x > 18x + 3 - 18x$$

$$3x > 3$$

$$\frac{3x}{3} > \frac{3}{3}$$

$$x > 1$$



$$(1, +\infty)$$

54

Solve

$$-16x - 32 \leq -4(3x + 3)$$

$$-16x - 32 \leq -12x - 12$$

$$-16x - \cancel{32} + \cancel{32} \leq -12x - 12 + 32$$

$$-16x \leq -12x + 20$$

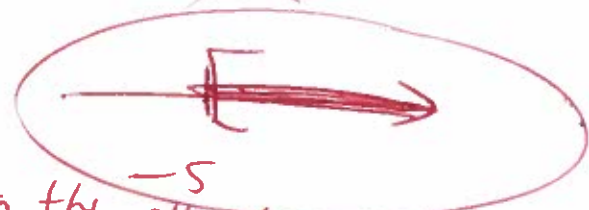
$$-16x + 12x \leq -12x + 20 + 12x$$

$$-4x \leq 20$$

$$\frac{-4x}{-4} \geq \frac{20}{-4}$$

Turn the
around

$$x \geq -5$$



$$[-5, +\infty)$$

55. Is $(5, 0)$ a solution
 x y

$$-2y + 3x = -15 \quad ?$$

$$-2(0) + 3(5) = -15 \quad ?$$

$$0 + 15 = -15 \quad ?$$

$$15 \neq -15$$

NO

56. graph
 $y = 2x + 4$

$$y = 2(0) + 4$$

$$y = 0 + 4$$

$$y = 4$$

$$y = 2(1) + 4$$

$$y = 2 + 4$$

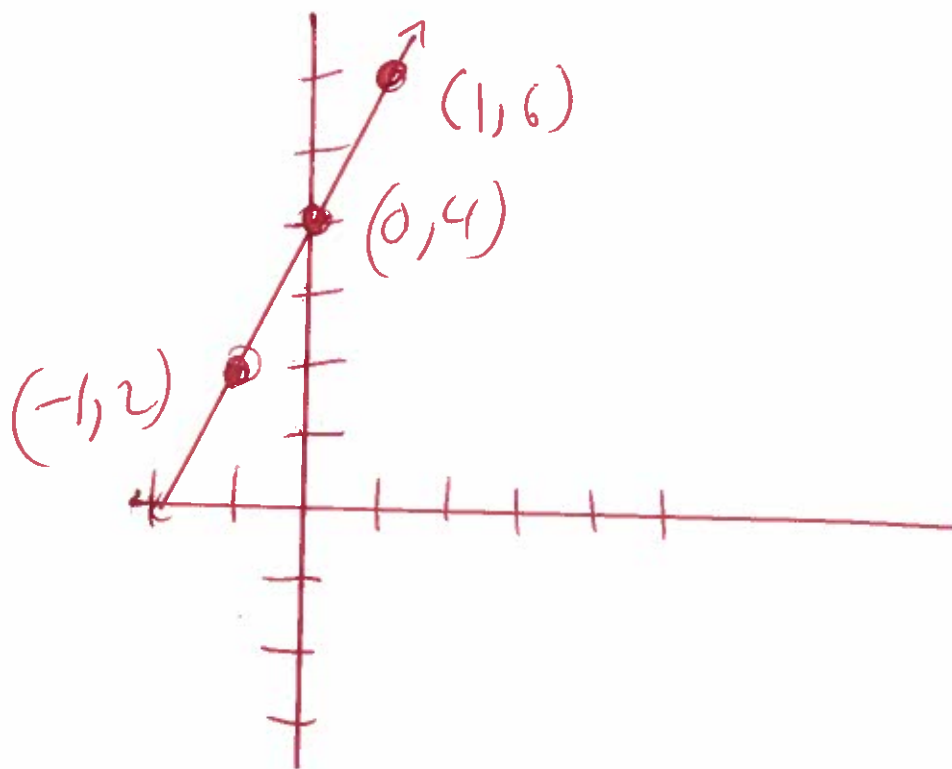
$$y = 6$$

$$y = 2(-1) + 4$$

$$y = -2 + 4$$

$$y = 2$$

x	y
0	4
1	6
-1	2



57 graph $y = -2x - 4$

$$y = -2(0) - 4$$

$$y = 0 - 4$$

$$y = -4$$

$$y = -2(1) - 4$$

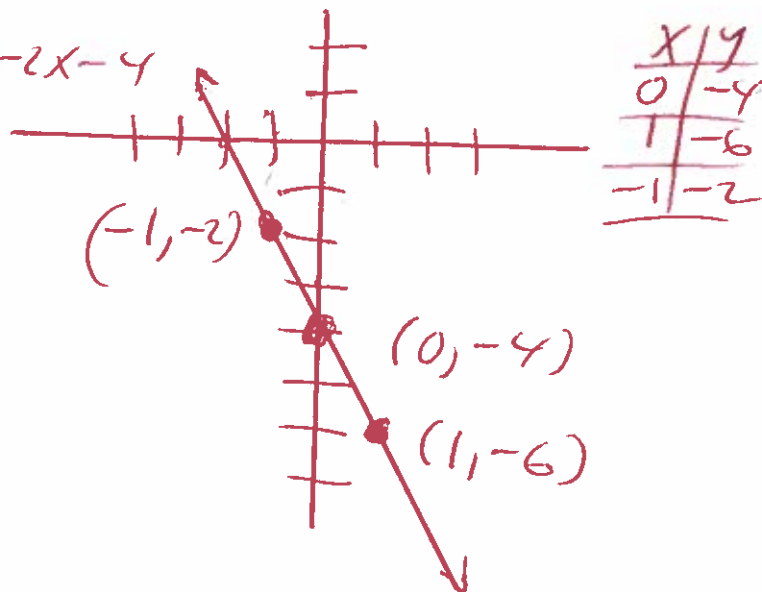
$$y = -2 - 4$$

$$y = -6$$

$$y = -2(-1) - 4$$

$$y = 2 - 4$$

$$y = -2$$



(24)

58 graph $5y - 25x = 10$

$$5y - 25x + 25x = 10 + 25x$$

$$5y = 10 + 25x$$

$$\frac{5y}{5} = \frac{10}{5} + \frac{25x}{5}$$

$$y = 2 + 5x$$

$$y = 5x + 2$$

$$y = 5(0) + 2$$

$$y = 0 + 2$$

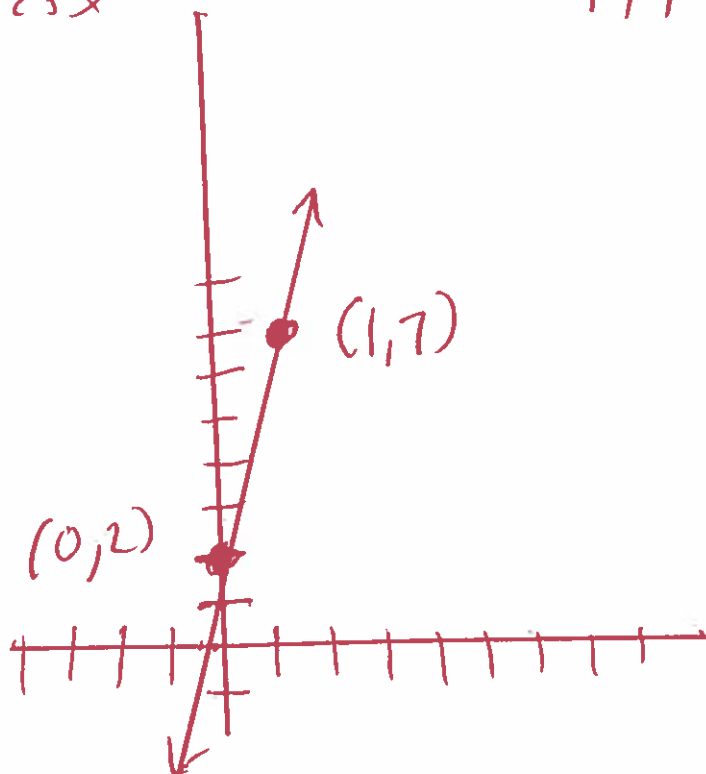
$$y = 2$$

$$y = 5(1) + 2$$

$$y = 5 + 2$$

$$y = 7$$

x	y
0	2
1	7



59. Graph $y = \frac{1}{8}x + 4$

$$y = \frac{1}{8}(0) + 4$$

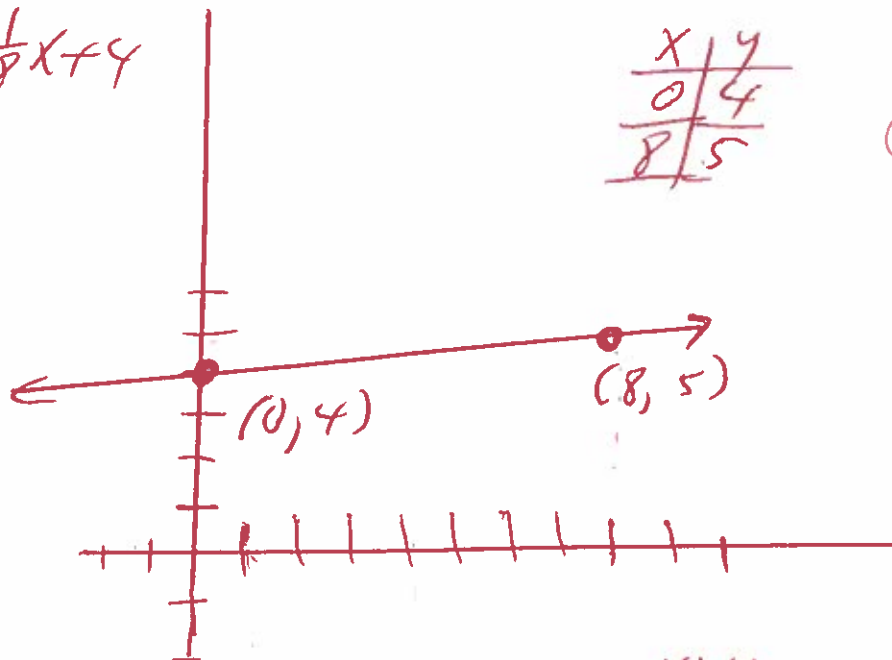
$$y = 0 + 4$$

$$y = 4$$

$$y = \frac{1}{8}(8) + 4$$

$$y = 1 + 4$$

$$y = 5$$



x	y
0	4
8	5

(23)

60. Graph $y = 5x + 3$

$$y = 5(0) + 3$$

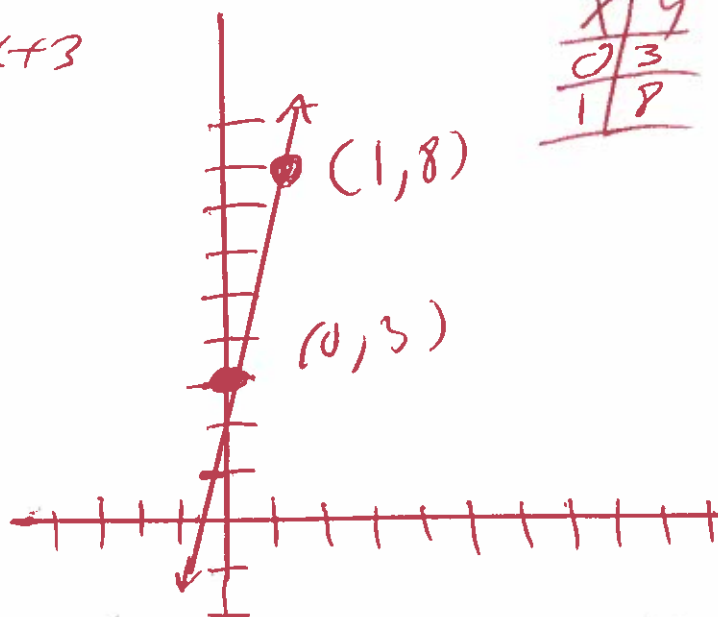
$$y = 0 + 3$$

$$y = 3$$

$$y = 5(1) + 3$$

$$y = 5 + 3$$

$$y = 8$$



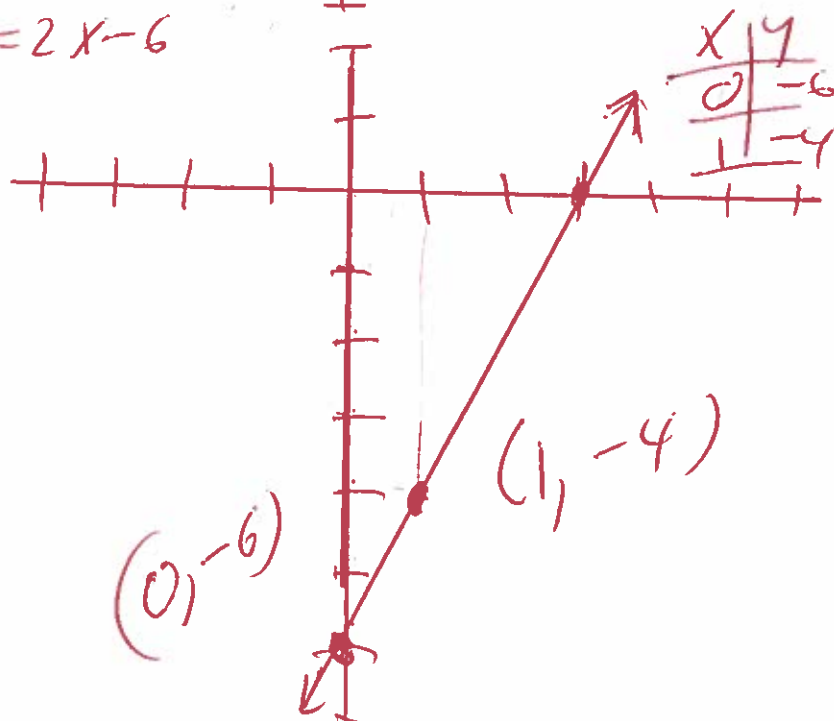
x	y
0	3
1	8

61. Graph $y = 2x - 6$

$$y = 2(0) - 6$$

$$y = 0 - 6$$

$$y = -6$$



x	y
0	-6
1	-4

$$y = 2(1) - 6$$

$$y = 2 - 6$$

$$y = -4$$

62 Find the slope of the line that passes through the points $(8, 5)$ and $(6, 9)$.

$$m = \frac{y_1 - y_2}{x_1 - x_2}$$

$$m = \frac{(5) - (9)}{(8) - (6)}$$

$$m = \frac{5-9}{8-6}$$

$$m = \frac{-4}{2}$$

$$m = -2$$

63 Find the equation of the line with slope $m = 2$ and point $(5, 2)$

$$y - y_1 = m(x - x_1)$$

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

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

$$y - 2 = 2x - 10$$

$$y - 2 + 2 = 2x - 10 + 2$$

$$y = 2x - 8$$

64. $f(x) = x^2 + 4x - 3$ find $f(4)$

$$f(4) = (4)^2 + 4(4) - 3$$

$$f(4) = (4)(4) + 4(4) - 3$$

$$f(4) = 16 + 16 - 3$$

$$f(4) = 32 - 3$$

$$f(4) = 29$$

65. $f(x) = x^2 + 4x + 4$ find $f(0)$

$$f(0) = (0)^2 + 4(0) + 4$$

$$f(0) = (0)(0) + 4(0) + 4$$

$$f(0) = 0 + 0 + 4$$

$$f(0) = 0 + 4$$

$$f(0) = 4$$

66. $f(x) = 3x^2 + 3x - 6$ find $f(-3)$

$$f(-3) = 3(-3)^2 + 3(-3) - 6$$

$$f(-3) = 3(-3)(-3) + 3(-3) - 6$$

$$f(-3) = 3(9) + 3(-3) - 6$$

$$f(-3) = 27 - 9 - 6$$

$$f(-3) = 18 - 6$$

$$f(-3) = 12$$

67. $f(x) = |x-1|$ find $f(19)$

$$f(19) = |(19)-1|$$

$$f(19) = |19-1|$$

$$f(19) = |18|$$

$$f(19) = 18$$

(26)

68. Solve

$$x+y=56$$

$$y=-9x$$

Subst

$$x+(-9x)=56$$

$$1x-9x=56$$

$$-8x=56$$

$$\frac{-8x}{-8} = \frac{56}{-8}$$

$$x = -7$$

$$y = -9x$$

$$y = -9(-7)$$

$$y = 63$$

Solution

$$(x, y) = (-7, 63)$$

69.

Solve

$$5x+y=-58$$

$$5x-y=8$$

$$10x + 0 = -50$$

$$10x = -50$$

$$\frac{10x}{10} = \frac{-50}{10}$$

$$x = -5$$

Subst $5x+y=-58$

$$5(-5)+y=-58$$

$$-25+y=-58$$

$$-25+y+25=-58+25$$

$$y = -33$$

$$(x, y) = (-5, -33)$$

70. Solve

$$\begin{array}{r} -2x + 3y = 2 \\ -3x + 5y = 2 \end{array}$$

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

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

$$10x - 15y = -10$$

$$-9x + 15y = 6$$

$$x = -4$$

$$-2x + 3y = 2$$

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

$$8 + 3y = 2$$

$$8 + 3y - 8 = 2 - 8$$

$$3y = -6$$

$$\frac{3y}{3} = \frac{-6}{3}$$

$$y = -2$$

Subst

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

71.
$$\begin{array}{r} x + y = 7 \\ x + y = 4 \end{array}$$

$$(x + y)(-1) = 7(-1) \quad \text{mult}$$

$$(x + y)(1) = 4(1) \quad \text{mult}$$

$$-x - y = -7$$

$$x + y = 4$$

$$0 + 0 = -3$$

$$0 \neq -3$$

No solution

72.
$$\begin{array}{r} -2x + 2y = -5 \\ 6x - 6y = 15 \end{array}$$

$$(-2x + 2y)(3) = -5(3) \quad \text{mult}$$

$$(6x - 6y)(2) = 15(2) \quad \text{mult}$$

$$-12x + 12y = -30$$

$$12x - 12y = 30$$

$$0 = 0$$

infinite number of solutions

73. Find the area

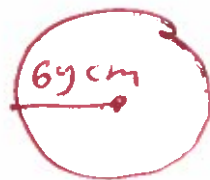
$$A = \pi r^2$$

$$A = \pi (6y)^2$$

$$A = \pi (6y)(6y)$$

$$A = \pi (36y^2)$$

$$A = 36y^2\pi \text{ cm}^2$$



(28)

74. $(2a^4b)^2 =$

$$(2^1 a^4 b^1)^2 =$$

$$2^{1(2)} a^{4(2)} b^{1(2)} =$$

$$2^2 a^8 b^2 =$$

$$2 \cdot 2 a^8 b^2 =$$

$$4a^8b^2 =$$

75. $(4x^3y^3)^2 =$

$$(4^1 x^3 y^3)^2 =$$

$$4^{1(2)} x^{3(2)} y^{3(2)} =$$

$$4^2 x^6 y^6 =$$

$$4 \cdot 4 \cdot x^6 y^6 =$$

$$16x^6y^6 =$$

76. $\left(\frac{xy}{4}\right)^2 =$

$$\left(\frac{xy}{4}\right)\left(\frac{xy}{4}\right) =$$

$$\frac{x^2 y^2}{16} =$$

77. $\left(\frac{pm^7}{q^6}\right)^3 =$

$$\left(\frac{p^1 m^7}{q^6}\right)^3 =$$

$$\frac{p^{1(3)} m^{7(3)}}{q^{6(3)}} =$$

$$\frac{p^3 m^{21}}{q^{18}} =$$

78. $\left(\frac{2x^3 y^3}{z^3}\right)^4 =$

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

$$\frac{2^4 x^{12} y^{12}}{z^{12}} =$$

$$\frac{2 \cdot 2 \cdot 2 \cdot 2 x^{12} y^{12}}{z^{12}} =$$

$$\frac{16 x^{12} y^{12}}{z^{12}} =$$

(29)

79. $\frac{d^7}{d^1} =$

$d^{7-1} =$

$d^6 =$

80. $\frac{s^7 t^9}{s^2 t^1} =$

$s^{7-2} t^{9-1} =$

$s^5 t^8 =$

81. $\frac{45m^3n^7}{9m^2n^5} =$

$\frac{5(\cancel{9})m^{3-2}n^{7-5}}{(\cancel{9})} =$

$5m^1n^2 =$

82. $(-4z^2)(5z^3) =$

$-20z^{2+3} =$

$-20z^5 =$

83) $\frac{2x^7}{x^3} =$

$$2x^{7-3} =$$

$$2x^4 =$$

(31)

84) $\frac{2a^8b^5c^{13}}{a^1b^1c^1} =$

$$2a^{8-1}b^{5-1}c^{13-1} =$$

$$2a^7b^4c^{12} =$$

85) $P(x) = -5x + 1$ find $P(-3)$

$$P(-3) = -5(-3) + 1$$

$$P(-3) = 15 + 1$$

$$P(-3) = 16$$

86) $Q(x) = -3x^2 + 4x + 2$ find $Q(-1)$

$$Q(-1) = -3(-1)^2 + 4(-1) + 2$$

$$Q(-1) = -3(-1)(-1) + 4(-1) + 2$$

$$Q(-1) = -3(1) + 4(-1) + 2$$

$$Q(-1) = -3 - 4 + 2$$

$$Q(-1) = -7 + 2$$

$$Q(-1) = -5$$

87. $P(x) = 3x^2 - 6x$ find $P(-5)$

$$P(-5) = 3(-5)^2 - 6(-5)$$

$$P(-5) = 3(-5)(-5) - 6(-5)$$

$$P(-5) = 3(25) - 6(-5)$$

$$P(-5) = 75 + 30$$

$$P(-5) = 105$$

32

88. $Q(x) = 3x^2 + x - 5$ find $Q(0)$

$$Q(0) = 3(0)^2 + (0) - 5$$

$$Q(0) = 3(0)(0) + (0) - 5$$

$$Q(0) = 3(0) + 0 - 5$$

$$Q(0) = 0 + 0 - 5$$

$$Q(0) = 0 - 5$$

$$Q(0) = -5$$

89. $(14x + 5) - (-13x^2 - 7x + 5) =$

$$14x + 5 + 13x^2 + 7x - 5 =$$

$$13x^2 + 21x =$$

$$\begin{aligned} 90 \quad & 9x(-8x+11)= \\ & -72x^2+99x= \end{aligned}$$

$$\begin{aligned} 91 \quad & -5x(-8x^2+2x-3)= \\ & 40x^3-10x^2+15x= \end{aligned}$$

$$\begin{aligned} 92 \quad & 6x^2(-2x^2+2x+6)= \\ & -12x^4+12x^3+36x^2= \end{aligned}$$

$$\begin{aligned} 93 \quad & 2x(8x^2-5xy+4y^2)= \\ & 16x^3-10x^2y+8xy^2= \end{aligned}$$

$$\begin{aligned} 94 \quad & (a+8)(a+1)= \\ & a^2+1a+8a+8= \\ & a^2+9a+8= \end{aligned}$$

$$\begin{aligned} 95 \quad & (x-4)(x-6)= \\ & x^2-6x-4x+24= \\ & x^2-10x+24= \end{aligned}$$

$$\textcircled{96} \quad (9z+11)^2 =$$

$$(9z+11)(9z+11) =$$

(34)

$$81z^2 + 99z + 99z + 121 =$$

$$81z^2 + 198z + 121 =$$

$$\textcircled{97} \quad (2x-11)(x+11) =$$

$$2x^2 + 22x - 11x - 121 =$$

$$2x^2 + 11x - 121 =$$

$$\textcircled{98} \quad (b-5)(b^2+5b+3) =$$

$$b^3 + \cancel{5b^2} + 3b - \cancel{5b^2} - 25b - 15 =$$

$$b^3 - 22b - 15 =$$

$$\textcircled{99} \quad (11x-12)(11x+12) =$$

$$121x^2 + \cancel{132x} - \cancel{132x} - 144 =$$

$$121x^2 - 144 =$$

$$100 \quad V = LWH \quad L = 9-3x, \quad W = 7-3x, \quad H = x$$

$$V = (9-3x)(7-3x)(x)$$

(35)

$$V = (63 - 27x - 21x + 9x^2)(x)$$

$$V = (63 - 48x + 9x^2)(x)$$

$$V = 63x - 48x^2 + 9x^3$$

$$V = 9x^3 - 48x^2 + 63x$$

$$101 \quad (6x-1)(x^2-4x+1) =$$

$$6x^3 - 24x^2 + 6x - 1x^2 + 4x - 1 =$$

$$6x^3 - 25x^2 + 10x - 1 =$$

$$102 \quad (3a-7)^2 =$$

$$(3a-7)(3a-7) =$$

$$9a^2 - 21a - 21a + 49 =$$

$$9a^2 - 42a + 49 =$$

$$103 \quad (x+11)(x-11) =$$

$$x^2 - 11x + 11x - 121 =$$

$$x^2 - 121 =$$

104 $5^{-4} =$

$$\frac{1}{5^4} =$$

$$\frac{1}{5 \cdot 5 \cdot 5 \cdot 5} =$$

$$\frac{1}{625} =$$

105 $\frac{2^{-7} x^{-5} y^3}{2^{-4} x^{-8} y^6} =$

$$\frac{2^4 x^8 y^3}{2^7 x^5 y^6} =$$

$$\frac{x^{8-5}}{2^{7-4} y^{6-3}} =$$

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

$$\frac{x^3}{2 \cdot 2 \cdot 2 y^3} =$$

$$\frac{x^3}{8 y^3} =$$

106. $\frac{6r^8 - 10r^3}{2r} =$

$$\frac{6r^8}{2r} - \frac{10r^3}{2r} =$$

$$3r^{8-1} - 5r^{3-1} =$$

$$3r^7 - 5r^2 =$$

(32)

107. $\frac{21x^2 + 9x - 11}{3x} =$

$$\frac{21x^2}{3x} + \frac{9x}{3x} - \frac{11}{3x} =$$

$$7x^{2-1} + 3 - \frac{11}{3x} =$$

$$7x + 3 - \frac{11}{3x} =$$

108. $\frac{x^2 + 9x + 6}{x+2}$

$$x+7 + \frac{-8}{x+2}$$

$$\begin{array}{r} x+2 \overline{) x^2 + 9x + 6} \\ - (x^2 + 2x) \\ \hline \end{array}$$

$$\begin{array}{r} 7x + 6 \\ - (7x + 14) \\ \hline -8 \end{array}$$

Synthetic division:

$$\frac{1x^2 + 9x + 6}{x+2}$$

$$\begin{array}{r|rrr} -2 & 1 & 9 & 6 \\ & & -2 & -14 \\ \hline \end{array}$$

$$\begin{array}{r} 1 & 7 & -8 \\ \hline \end{array}$$

Rem

$$x+7 + \frac{-8}{x+2}$$

109 Factor GCF

$$30x + 10 =$$

$$10(3x + 1) =$$

110 Factor GCF

$$20x^4y^1 + 36x^1y^3 =$$

$$4x^1y^1(5x^3 + 9y^2) =$$

OR

$$4xy(5x^3 + 9y^2) =$$

111 Factor (Group)

$$3xy - 9x + 7y - 21 =$$

$$(3xy - 9x) + (7y - 21) =$$

$$3x(\underline{y - 3}) + 7(\underline{y - 3}) =$$

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

112 Factor

$$x^2 - x - 56 =$$

$$(x + 7)(x - 8) =$$

56.1

28.2

14.4

7.8

possible

113 Factor

$$x^2 - x - 42 =$$

$$(x+6)(x-7) =$$

42.1
21.2
14.3
7.6

Possible

39

114 Factor

$$x^2 + x - 30 =$$

$$(x-5)(x+6) =$$

30.1
15.2
5.6

Possible

115 Factor

$$x^2 + 4x - 45 =$$

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

45.1
15.3
9.5

Possible

116 Factor

$$x^2 - 3x - 88 =$$

$$(x+8)(x-11) =$$

88.1
44.2
22.4
11.8

Possible

117 Factor

$$x^2 + 2x - 35 =$$

$$(x-5)(x+7) =$$

35.1
5.7

Possible

118.

Factor

$$x^2 + 12xy + 32y^2 =$$

$$(x + 4y)(x + 8y) =$$

32.1

16.2

4.8

Possible

42

119.

Factor

$$u^2 - 24v - 8v^2 =$$

$$(u + 2v)(u - 4v) =$$

8.1

2.4

Possible

120.

Factor

$$u^2 - 34v - 28v^2 =$$

$$(u + 4v)(u - 7v) =$$

28.1

14.2

7.4

Possible

121.

Factor

$$x^2 + 4xy - 12y^2 =$$

$$(x - 2y)(x + 6y) =$$

12.1

6.2

3.4

Possible

122.

Factor

$$x^2 + 3xy - 18y^2 =$$

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

18.1

9.2

6.3

Possible

123 Factor

$$9x^2 - 9x - 54 =$$

$$9(x^2 - x - 6) =$$

$$9(x+2)(x-3) =$$

6.1
2.3 possible

(4)

124 Factor

$$8x^2 - 24xy - 32y^2 =$$

$$8(x^2 - 3xy - 4y^2) =$$

$$8(x+1y)(x-4y) =$$

4.1
2.2 possible

OR

$$8(x+y)(x-4y)$$

125 Factor

$$3x^2 - 18x + 24 =$$

$$3(x^2 - 6x + 8) =$$

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

8.1
2.4

126 Factor
 $z^2 - 121 =$
 $(z)^2 - (11)^2 =$

$$(z+11)(z-11) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

42

127 Factor
 $81x^2 - 49 =$

$$(9x)^2 - (7)^2 =$$

$$(9x+7)(9x-7) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

128 Factor

$$121 - w^2 =$$

$$(11)^2 - (w)^2 =$$

$$(11+w)(11-w) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

129 Factor

$$64 - 81x^2 =$$

$$(8)^2 - (9x)^2 =$$

$$(8+9x)(8-9x) =$$

$$a^2 - b^2 = (a+b)(a-b)$$

130

Factor

$$wr^2 - 1 =$$

$$(wr)^2 - (1)^2 =$$

$$(wr + 1)(wr - 1) =$$

$$a^2 - b^2 = (a + b)(a - b)$$

43

131

Factor

$$25x^2 - 36y^2 =$$

$$(5x)^2 - (6y)^2 =$$

$$(5x + 6y)(5x - 6y) =$$

$$a^2 - b^2 = (a + b)(a - b)$$

132

Factor

$$x^2 - \frac{25}{64} =$$

$$(x)^2 - \left(\frac{5}{8}\right)^2 =$$

$$\left(x + \frac{5}{8}\right)\left(x - \frac{5}{8}\right) =$$

$$a^2 - b^2 = (a + b)(a - b)$$

133.

Solve

$$(x-6)(x+4)=0$$

Set $x-6=0$ OR $x+4=0$

$$x-6+6=0+6 \text{ OR } x+4-4=0-4$$

$$x=6$$

$$\text{OR } x=-4$$

134

Solve

$$x(x+17)=0$$

Set $x=0$ OR $x+17=0$

$$x+17-17=0-17$$

$$x=-17$$

135.

Solve

$$x^2+2x-80=0$$

$$(x-8)(x+10)=0$$

Set $x-8=0$ OR $x+10=0$

$$x-8+8=0+8$$

$$x=8$$

$$\text{OR } x+10-10=0-10$$

$$x=-10$$

80.1

90.2

20.4

10.8

5.16

possible

136. Solve

$$x^2 - 7x - 18 = 0$$

$$(x+2)(x-9) = 0$$

Let $x+2=0$ or $x-9=0$

$$x+2-2=0-2 \quad \text{OR} \quad x-9+9=0+9$$

$$x = -2 \quad \text{OR} \quad x = 9$$

18.1
9.2
6.3

possible

(45)

137. Solve

$$x^2 - x = 72$$

$$x^2 - x - 72 = 0$$

$$(x+8)(x-9) = 0$$

Let $x+8=0$ or $x-9=0$

$$x+8-8=0-8 \quad \text{OR} \quad x-9+9=0+9$$

$$x = -8 \quad \text{OR} \quad x = 9$$

72.1
36.2
18.4
9.8

possible

138. Solve

$$x^2 + 3x = 28$$

$$x^2 + 3x - 28 = 0$$

$$(x-4)(x+7) = 0$$

Let $x-4=0$ or $x+7=0$

$$x-4+4=0+4 \quad \text{OR} \quad x+7-7=0-7$$

$$x = 4 \quad \text{OR} \quad x = -7$$

28.1
14.2
4.7

possible

Solve
 (139) $x^2 - 2x = 48$

$$x^2 - 2x - 48 = 0$$

$$(x + 6)(x - 8) = 0$$

Let $x + 6 = 0$ OR $x - 8 = 0$

$$x + 6 - 6 = 0 - 6 \quad \text{OR} \quad x - 8 + 8 = 0 + 8$$

$$x = -6$$

$$\text{OR} \quad x = 8$$

$$\begin{matrix} 48 \cdot 1 \\ 24 \cdot 2 \\ 12 \cdot 4 \\ 6 \cdot 3 \\ 6 \cdot 8 \end{matrix}$$

Possible

(46)

Solve
 (140) $9x^2 - 16 = 0$

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

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

Let $3x + 4 = 0$ OR $3x - 4 = 0$

$$3x + 4 - 4 = 0 - 4 \quad \text{OR} \quad 3x - 4 + 4 = 0 + 4$$

$$3x = -4 \quad \text{OR} \quad 3x = 4$$

$$\frac{3x}{3} = \frac{-4}{3} \quad \text{OR} \quad \frac{3x}{3} = \frac{4}{3}$$

$$x = -\frac{4}{3}$$

$$\text{OR} \quad x = \frac{4}{3}$$

$$a^2 - b^2 = (a + b)(a - b)$$

141.

Solve

$$10x^3 + 70x^2 + 120x = 0$$

$$10x(x^2 + 7x + 12) = 0$$

$$10x(x+3)(x+4) = 0$$

$$\text{Let } 10x = 0 \quad \text{OR} \quad x+3 = 0 \quad \text{OR} \quad x+4 = 0$$

$$\frac{10x}{10} = \frac{0}{10} \quad \text{OR} \quad x+3-3 = 0-3 \quad \text{OR} \quad x+4-4 = 0-4$$

$$x = 0$$

$$\text{OR} \quad x = -3$$

$$\text{OR} \quad x = -4$$

12.1

6.2

3.4

Possible 41

142

Solve

$$y^3 + 6y^2 + 9y = 0$$

$$y(y^2 + 6y + 9) = 0$$

$$y(y+3)(y+3) = 0$$

$$\text{Let } y = 0 \quad \text{OR} \quad y+3 = 0 \quad \text{OR} \quad y+3 = 0$$

$$y+3-3 = 0-3$$

$$\text{OR} \quad y+3-3 = 0-3$$

$$y = -3$$

$$\text{OR} \quad y = -3$$

Possible

9.3

3.1

143

Solve

$$9x^3 - 16x = 0$$

$$x(9x^2 - 16) = 0$$

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

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

$$\text{Let } x = 0 \quad \text{OR} \quad 3x+4 = 0 \quad \text{OR} \quad 3x-4 = 0$$

$$3x+4-4 = 0-4$$

$$3x = -4$$

$$\text{OR} \quad 3x-4+4 = 0+4$$

$$3x = 4$$

$$a^2 - b^2 = (a+b)(a-b)$$

$$x = 0$$

$$\text{OR} \quad \frac{3x}{3} = \frac{-4}{3}$$

$$\text{OR} \quad \frac{3x}{3} = \frac{4}{3}$$

$$x = \frac{-4}{3}$$

$$\text{OR} \quad x = \frac{4}{3}$$

144 The area of a square is 49 square miles. Find the length of a side of the square. (41)



$$A = L \cdot W$$

$$A = (x)(x) = 49$$

$$x^2 = 49$$

$$\sqrt{x^2} = \sqrt{49}$$

$$x = 7$$

145 Find the domain:

$$f(x) = \frac{5x}{4-x}$$

$$\text{Let } 4-x=0$$

$$4-x-4=0-4$$

$$-x = -4$$

$$\frac{-x}{-1} = \frac{-4}{-1}$$

$$x \neq 4$$

Domain

$$\{x \mid x \neq 4\}$$

149

146

$$\frac{15x^3}{5x^1} =$$

$$\frac{3(\cancel{5})x^{3-1}}{\cancel{5}} =$$

$$3x^2 =$$

147

$$\frac{24x^2 + 18x}{24x} = \text{Simplify}$$

$$\frac{\cancel{6}x(4x+3)}{\cancel{6}x(4)} = \text{factor}$$

$$\frac{4x+3}{4} =$$

148

$$\frac{-6x-6y}{x+y} = \text{Simplify}$$

$$\frac{-6(\cancel{x+y})}{(\cancel{x+y})} =$$

$$-6 =$$

149 $\frac{y^2 + 10y + 24}{y^2 + 13y + 42} = \text{Simplify}$

$$\frac{(y+4)(y+6)}{(y+6)(y+7)} =$$

$$\frac{y+4}{y+7} =$$

150 $f(x) = \frac{x-8}{6x+7}$ find $f(-2)$

$$f(-2) = \frac{(-2) - 8}{6(-2) + 7}$$

$$f(-2) = \frac{-2-8}{-12+7}$$

$$f(-2) = \frac{-10}{-5}$$

$$f(-2) = 2$$

(151) $f(x) = \frac{x^3 + 4}{x^2 - 4}$ find $f(-4)$

(51)

$$f(-4) = \frac{(-4)^3 + 4}{(-4)^2 - 4}$$

$$f(-4) = \frac{(-4)(-4)(-4) + 4}{(-4)(-4) - 4}$$

$$f(-4) = \frac{-64 + 4}{16 - 4}$$

$$f(-4) = \frac{-60}{12}$$

$$f(-4) = -5$$

(152) $f(x) = \frac{x^2 - 2}{x^3 + 3x}$ find $f(2)$

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

$$f(2) = \frac{(2)(2) - 2}{(2)(2)(2) + 6}$$

$$f(2) = \frac{4 - 2}{8 + 6}$$

$$f(2) = \frac{2}{14}$$

$$f(2) = \frac{2(1)}{2(7)}$$

$$f(2) = \frac{1}{7}$$

153

$$\frac{2x^2}{4} \cdot \frac{24}{x^3} =$$

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

$$\frac{12}{x} =$$

Primes 2, 3, 5, 7, ...

$$\begin{array}{r} 2 \overline{) 4} \\ 2 \underline{) 2} \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 24} \\ 2 \underline{) 12} \\ 2 \underline{) 6} \\ 3 \underline{) 3} \\ 1 \end{array}$$

$$4 = 2 \cdot 2$$

$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

154

$$\frac{2z^2}{y^3} \div \frac{6z^2y^3}{7} =$$

$$\frac{2z^2}{y^3} \cdot \frac{7}{6z^2y^3} =$$

$$\frac{14 \cancel{z}^2}{6 \cancel{z}^2 y^6} =$$

$$\frac{\cancel{2}(7)}{\cancel{2}(3) y^6} =$$

$$\frac{7}{3y^6} =$$

155

Solve

$$\frac{x+3}{4} = \frac{x+4}{5}$$

53

$$5(x+3) = 4(x+4) \text{ Cross Multiply}$$

$$5x + 15 = 4x + 16$$

$$5x + 15 - 15 = 4x + 16 - 15$$

$$5x = 4x + 1$$

$$5x - 4x = 4x + 1 - 4x$$

$$1x = 1$$

$$x = 1$$

156

$$\frac{5-a}{a} + \frac{3}{4} = \frac{7}{a}$$

$$LCD = 4a$$

$$4a\left(\frac{5-a}{a}\right) + 4a\left(\frac{3}{4}\right) = 4a\left(\frac{7}{a}\right)$$

$$4(5-a) + a(3) = 4(7)$$

$$20 - 4a + 3a = 28$$

$$20 - 1a = 28$$

$$20 - 1a - 20 = 28 - 20$$

$$-1a = 8$$

$$\frac{-1a}{-1} = \frac{8}{-1}$$

$$a = -8$$

157 graph

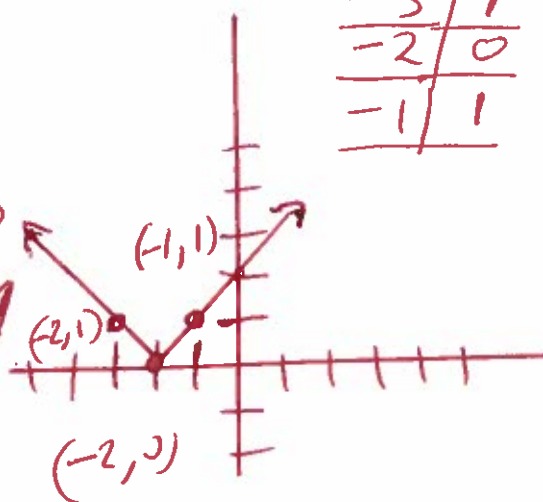
$$f(x) = |x+2|$$

$$f(-3) = |-3+2| = |-1| = 1$$

$$f(-2) = |-2+2| = |0| = 0$$

$$f(-1) = |-1+2| = |1| = 1$$

x	$f(x)$
-3	1
-2	0
-1	1



158 graph

$$h(x) = -8x + 8$$

$$h(0) = -8(0) + 8$$

$$h(0) = 0 + 8$$

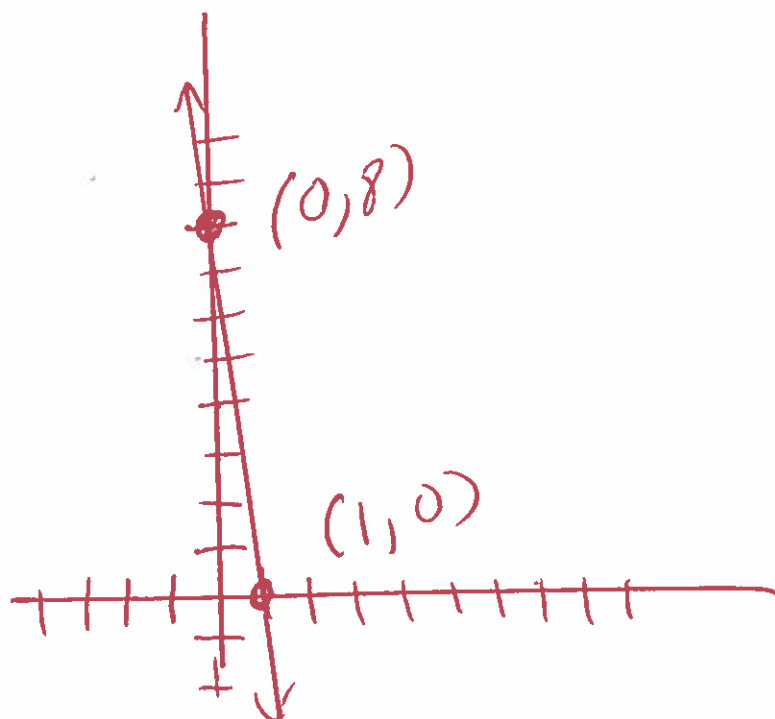
$$h(0) = 8$$

x	$h(x)$
0	8
1	0

$$h(1) = -8(1) + 8$$

$$h(1) = -8 + 8$$

$$h(1) = 0$$



159 graph

$$g(x) = \sqrt{x-4}$$

$$g(4) = \sqrt{4-4} = \sqrt{0} = 0$$

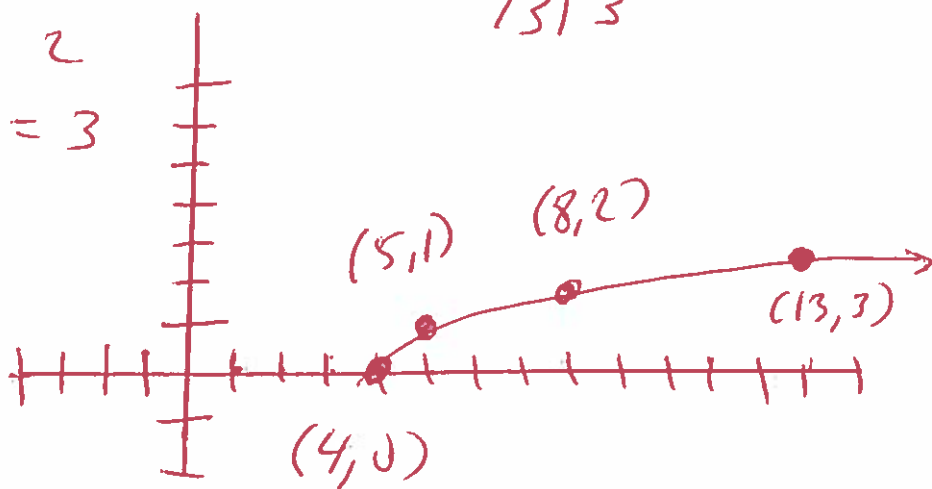
$$g(5) = \sqrt{5-4} = \sqrt{1} = 1$$

$$g(8) = \sqrt{8-4} = \sqrt{4} = 2$$

$$g(13) = \sqrt{13-4} = \sqrt{9} = 3$$

x	$g(x)$
4	0
5	1
8	2
13	3

(5)



160

Solve

$$13 \leq 4t + 5 \leq 29$$

$$13 - 5 \leq 4t + 5 - 5 \leq 29 - 5$$

$$8 \leq 4t \leq 24$$

$$\frac{8}{4} \leq \frac{4t}{4} \leq \frac{24}{4}$$

$$2 \leq t \leq 6$$



$$[2, 6]$$

161

Solve

$$-25 \leq -3c - 4 < -10$$

$$-25 + 4 \leq -3c - 4 + 4 < -10 + 4$$

$$-21 \leq -3c < -6$$

$$\frac{-21}{-3} \geq \frac{-3c}{-3} > \frac{-6}{-3}$$

Turn the alligator
around

$$7 \geq c > 2$$

$$2 < c \leq 7 \quad \text{Rewrite}$$



$$(2, 7]$$

162

Solve

$$|x+3| = 6$$

formula

$$|x| = a$$
$$x = -a \text{ OR } x = a$$

$$x+3 = -6 \text{ OR } x+3 = 6$$

$$x+\cancel{3}-\cancel{3} = -6-3 \text{ OR } x+\cancel{3}-\cancel{3} = 6-3$$

$$x = -9 \text{ OR } x = 3$$

163

Solve

$$|x+18| < 9$$

$$-9 < x+18 < 9$$

$$-9-18 < x+18-18 < 9-18$$

$$-27 < x < -9$$



$$(-27, -9)$$

formula

$$|x| < a$$

$$-a < x < a$$

(52)

164

Solve

$$|x+3| > 4$$

$$x+3 < -4 \text{ OR } x+3 > 4$$

$$x+3-3 < -4-3 \text{ OR } x+3-3 > 4-3$$

$$x < -7$$

$$\text{OR } x > 1$$



$$(-\infty, -7) \cup (1, +\infty)$$

formula

$$|x| > a$$

$$x < -a \text{ OR } x > a$$

165) $f(x) = \sqrt{2x+6}$ find $f(15)$

$$f(15) = \sqrt{2(15)+6}$$

$$f(15) = \sqrt{30+6}$$

$$f(15) = \sqrt{36}$$

$$f(15) = 6$$

58

166. Solve

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

$$(\sqrt{x+4})^2 = (8)^2$$

$$x+4 = 64$$

$$x + \cancel{4} - 4 = 64 - 4$$

$$x = 60$$

167. Solve

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

$$(\sqrt{x-1})^2 = (2)^2$$

$$x-1 = 4$$

$$x-1+1 = 4+1$$

$$x = 5$$

168

Solve

$$\sqrt{x+5} - 7 = 0$$

$$\sqrt{x+5} - 7 + 7 = 0 + 7$$

$$\sqrt{x+5} = 7$$

$$(\sqrt{x+5})^2 = (7)^2$$

$$x+5 = 49$$

$$x + \cancel{5} - \cancel{5} = 49 - 5$$

$$x = 44$$

52

169

Solve

$$x^2 = 225$$

$$\sqrt{x^2} = \pm \sqrt{225}$$

$$x = \pm 15$$

$$x = -15$$

OR

$$x = 15$$

170

Solve

$$x^2 = 11$$

$$\sqrt{x^2} = \pm \sqrt{11}$$

$$x = \pm \sqrt{11}$$

$$x = -\sqrt{11}$$

OR

$$x = \sqrt{11}$$

(171) Solve

$$(x-5)^2 = 36$$

$$\sqrt{(x-5)^2} = \pm\sqrt{36}$$

$$x-5 = \pm 6$$

$$x-5 = -6 \quad \text{OR} \quad x-5 = 6$$

$$x-5+5 = -6+5 \quad \text{OR} \quad x-5+5 = 6+5$$

$$x = -1$$

$$\text{OR} \quad x = 11$$

(172) Solve

$$(x+2)^2 = 15$$

$$\sqrt{(x+2)^2} = \pm\sqrt{15}$$

$$x+2 = \pm\sqrt{15}$$

$$x+2 = -\sqrt{15}$$

OR

$$x+2 = \sqrt{15}$$

$$x+2-2 = -\sqrt{15}-2$$

OR

$$x+2-2 = \sqrt{15}-2$$

$$x = -\sqrt{15}-2$$

OR

$$x = \sqrt{15}-2$$

$$x = -2-\sqrt{15}$$

OR

$$x = -2+\sqrt{15}$$

173

Solve by factoring

$$x^2 - 2x - 48 = 0$$

$$(x+6)(x-8) = 0$$

$$\text{set } x+6=0 \text{ OR } x-8=0$$

$$x+6-6=0-6 \text{ OR } x-8+8=0+8$$

$$x = -6 \text{ OR } x = 8$$

(6)

Solve by the Quadratic formula

$$x^2 - 2x - 48 = 0$$

$$a=1, b=-2, c=-48$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-48)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{4 + 192}}{2}$$

$$x = \frac{2 \pm \sqrt{196}}{2}$$

$$x = \frac{2 \pm 14}{2}$$

$$x = 1 \pm 7$$

$$x = 1-7 \text{ OR } x = 1+7$$

$$x = -6$$

$$x = 8$$

174

Solve by factoring

$$x^2 + 24x + 144 = 0$$

$$(x + 12)(x + 12) = 0$$

Let $x + 12 = 0$ or $x + 12 = 0$

$$x + 12 - 12 = 0 - 12 \text{ OR } x + 12 - 12 = 0 - 12$$

$$x = -12$$

OR

$$x = -12$$

$$144 : 1$$

$$72 : 2$$

$$36 : 4$$

$$18 : 8$$

$$12 : 12$$

(62)

Solve by the Quadratic formula

$$1x^2 + 24x + 144 = 0$$

$$a = 1, b = 24, c = 144$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(24) \pm \sqrt{(24)^2 - 4(1)(144)}}{2(1)}$$

$$x = \frac{-24 \pm \sqrt{576 - 576}}{2}$$

$$x = \frac{-24 \pm \sqrt{0}}{2}$$

$$x = \frac{-24 \pm 0}{2}$$

$$x = \frac{-24 - 0}{2} \text{ OR } x = \frac{-24 + 0}{2}$$

$$x = \frac{-24}{2} \text{ OR } x = \frac{-24}{2}$$

$$x = -12$$

$$\text{OR } x = -12$$

(175) Solve by the Quadratic formula

$$1x^2 + 18x + 70 = 0$$

$$a=1, b=18, c=70$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(18) \pm \sqrt{(18)^2 - 4(1)(70)}}{2(1)}$$

$$x = \frac{-18 \pm \sqrt{324 - 280}}{2}$$

$$x = \frac{-18 \pm \sqrt{44}}{2}$$

$$x = \frac{-18 \pm \sqrt{4 \cdot 11}}{2}$$

$$x = \frac{-18 \pm \sqrt{4} \sqrt{11}}{2}$$

$$x = \frac{-18 \pm 2\sqrt{11}}{2}$$

$$x = -9 \pm 1\sqrt{11}$$

$$x = -9 \pm \sqrt{11}$$

$$x = -9 - \sqrt{11}$$

OR

$$x = -9 + \sqrt{11}$$

(63)

(176) Solve by the Quadratic Formula

$$x^2 - 8x + 20 = 0$$

$$a=1, \quad b=-8 \quad c=20$$

(64)

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(20)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{64 - 80}}{2}$$

$$x = \frac{8 \pm \sqrt{-16}}{2}$$

$$x = \frac{8 \pm 4i}{2}$$

$$x = 4 \pm 2i$$

$$x = 4 - 2i$$

OR $x = 4 + 2i$

formula
 $\sqrt{-1} = i$

(177) Solve by factoring

$$2x^2 - 7x - 9 = 0$$

$$(2x - 9)(x + 1) = 0$$

Let $2x - 9 = 0$ OR $x + 1 = 0$

$$2x - 9 + 9 = 0 + 9 \quad \text{OR} \quad x + 1 - 1 = 0 - 1$$

$$2x = 9$$

OR $x = -1$

$$\frac{2x}{2} = \frac{9}{2}$$

$$x = \frac{9}{2}$$

Solve by the Quadratic formula

$$2x^2 - 7x - 9 = 0$$

$$a = 2, b = -7, c = -9$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-9)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{49 + 72}}{4}$$

$$x = \frac{7 \pm \sqrt{121}}{4}$$

$$x = \frac{7 \pm 11}{4}$$

$$x = \frac{7+11}{4} \quad \text{OR} \quad x = \frac{7-11}{4}$$

$$x = \frac{18}{4} \quad \text{OR} \quad x = -\frac{4}{4}$$

$$x = \frac{2(9)}{2(2)} \quad \text{OR} \quad x = -1$$

(2.1)

9.1
3.3

(65)

$$x = \frac{9}{2} \quad \text{OR} \quad x = -1$$

178

Solve by factoring

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

$$(3x - 8)(x + 1) = 0$$

So $3x - 8 = 0$ or $x + 1 = 0$

$$3x - 8 + 8 = 0 + 8 \text{ OR } x + 1 - 1 = 0 - 1$$

$$3x = 8$$

OR

$$x = -1$$

$$\frac{3x}{3} = \frac{8}{3}$$

$$x = \frac{8}{3}$$

Solve by the Quadratic formula

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

$$a = 3, b = -5, c = -8$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-8)}}{2(3)}$$

$$x = \frac{5 \pm \sqrt{25 + 96}}{6}$$

$$x = \frac{5 \pm \sqrt{121}}{6}$$

$$x = \frac{5 \pm 11}{6}$$

$$x = \frac{5 + 11}{6} \text{ OR } x = \frac{5 - 11}{6}$$

$$x = \frac{16}{6} \text{ OR } x = \frac{-6}{6}$$

$$x = \frac{2(8)}{2(3)} \text{ OR } x = -1$$

3.1

8.1
2.4

Possibly

66

$$x = \frac{8}{3} \text{ OR } x = -1$$

179 The product of a number and 2 less than the number is 15. Find the number.

$x = \text{number}$

$x - 2 = \text{number less 2}$

$$x(x-2) = 15$$

$$x^2 - 2x = 15$$

$$x^2 - 2x - 15 = 0$$

$$(x+3)(x-5) = 0$$

$$\text{or } x+3=0 \quad \text{OR} \quad x-5=0$$

$$x+3-3=0-3 \quad \text{OR} \quad x-5+5=0+5$$

$$x = -3$$

OR

$$x = 5$$

15.1
3.5 possible

61

(180) graph

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

$$f(-1) = (-1)^2 - 4$$

$$f(-1) = (-1)(-1) - 4$$

$$f(-1) = 1 - 4$$

$$f(-1) = -3$$

$$f(0) = (0)^2 - 4$$

$$f(0) = (0)(0) - 4$$

$$f(0) = 0 - 4$$

$$f(0) = -4$$

$$f(1) = (1)^2 - 4$$

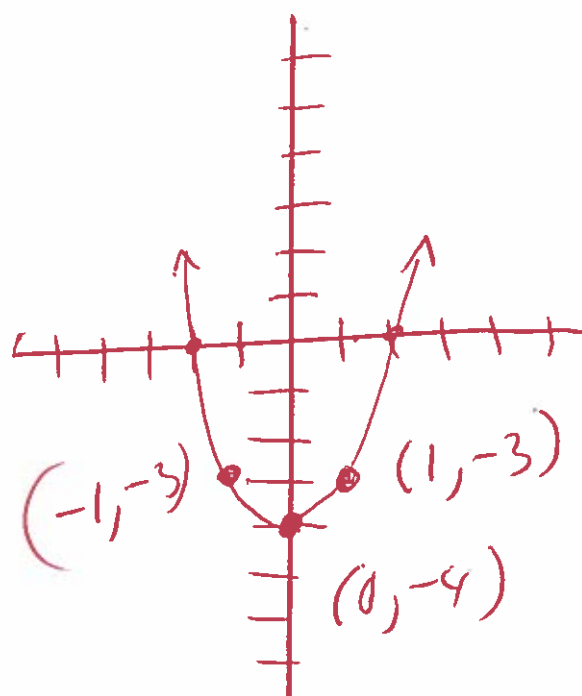
$$f(1) = (1)(1) - 4$$

$$f(1) = 1 - 4$$

$$f(1) = -3$$

X	f(x)
-1	-3
0	-4
1	-3

(68)



181. Graph

$$f(x) = -x^2 + 1$$

$$f(-1) = -(-1)^2 + 1$$

$$f(-1) = -(-1)(-1) + 1$$

$$f(-1) = -(1) + 1$$

$$f(-1) = -1 + 1$$

$$f(-1) = 0$$

$$f(0) = -(0)^2 + 1$$

$$f(0) = -(0)(0) + 1$$

$$f(0) = -(0) + 1$$

$$f(0) = 0 + 1$$

$$f(0) = 1$$

$$f(1) = -(1)^2 + 1$$

$$f(1) = -(1)(1) + 1$$

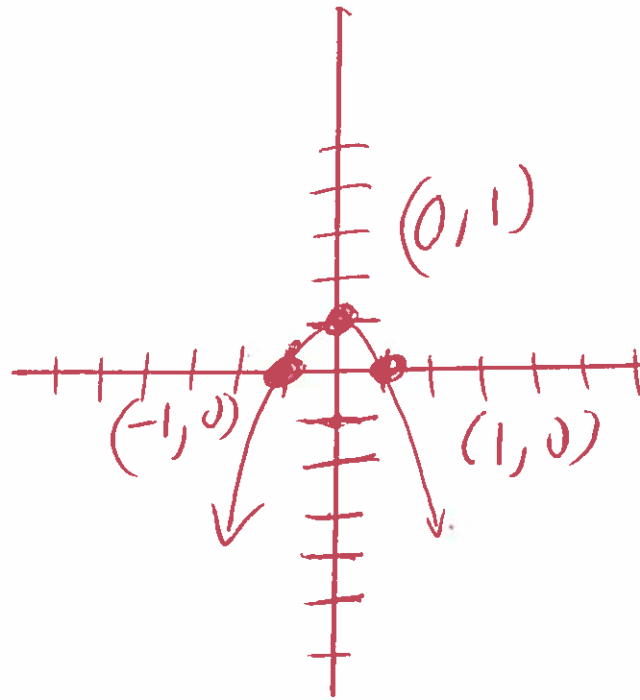
$$f(1) = -(1) + 1$$

$$f(1) = -1 + 1$$

$$f(1) = 0$$

x	f(x)
-1	0
0	1
1	0

(69)



182. $N(t) = 4(3)^t$ find $N(5)$

$$N(5) = 4(3)^5$$

$$N(5) = 4(3)(3)(3)(3)(3)$$

$$N(5) = 4(243)$$

$$N(5) = 972$$

10.