

1. $0 > -5$

2. $|-14| =$

$(14) =$

$14 =$

math 0410145 Aleks Step

05-28-18

05-30-18

06-06-18 done

done

3. $2x - y$ eval $x=6, y=-2$

$2(6) - (-2) =$

$12 + 2 =$

$14 =$

4. $-8^2 =$

$-(8)(8) =$

$-(64) =$

$-64 =$

5. $\frac{-15}{0} =$

undefined.

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

$$(-1)(-1) =$$

$$(1) =$$

$$1 =$$

$$7) (-4)^5 =$$

$$(-4)(-4)(-4)(-4)(-4) =$$

$$-1024 =$$

$$8) -9 + 8 \div 4 =$$

$$-9 + 2 =$$

$$-7 =$$

$$9) 5 + 6 \cdot 7 - 10 =$$

$$5 + 42 - 10 =$$

$$47 - 10 =$$

$$37 =$$

$$\begin{aligned} (10) \quad & 8(-6) - (-14) = \\ & -48 + 14 = \\ & -34 = \end{aligned}$$

$$\begin{aligned} (11) \quad & |19 - 27| \div 2 = \\ & |-8| \div 2 = \\ & (8) \div 2 = \\ & (4) = \end{aligned}$$

$$\begin{aligned} (12) \quad & (-14 - 54) \div 17 - 21 = \\ & (-68) \div 17 - 21 = \\ & -4 - 21 = \\ & -25 = \end{aligned}$$

Use
PEMDAS

$$\begin{aligned} (13) \quad & 8(-12) \div [2(-8) - 5(-3)] = \\ & 8(-12) \div [-16 + 15] = \\ & 8(-12) \div [-1] = \\ & -96 \div [-1] = \\ & 96 = \end{aligned}$$

$$14) \quad 3x - 5y - 6z, \quad x = -2, \quad y = 3, \quad z = -1$$

$$3(-2) - 5(3) - 6(-1) =$$

$$-6 - 15 + 6 =$$

$$-21 + 6 =$$

$$-15 =$$

$$15) \quad x^2 - y, \quad x = -4, \quad y = 6$$

$$(-4)^2 - (6) =$$

$$(-4)(-4) - (6) =$$

$$(16) - (6) =$$

$$16 - 6 =$$

$$10 =$$

$$16) \quad d - 8 = -1$$

$$d - \cancel{8} + \cancel{8} = -1 + 8$$

$$d = 7$$

$$(17.) \quad -6z = 42$$

$$\frac{-6z}{-6} = \frac{42}{-6}$$

$$z = -7$$

$$(18.) \quad \frac{n}{4} = -6$$

$$\frac{1n}{4} = \frac{-6}{1}$$

$$\cancel{4} \left(\frac{1n}{\cancel{4}} \right) = \cancel{4} \left(\frac{-6}{1} \right)$$

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

$$n = -24$$

$$(19.) \quad -10x = 0$$

$$\frac{-10x}{-10} = \frac{0}{-10}$$

$$x = 0$$

$$(20.) \quad \frac{x}{-2} = -7$$

$$\frac{1x}{-2} = \frac{-7}{1}$$

$$\cancel{-2} \left(\frac{1x}{\cancel{-2}} \right) = \cancel{-2} \left(\frac{-7}{1} \right)$$

$$x = \frac{14}{1}$$

$$x = 14$$

21.

$$2(a-4) =$$

$$2a - 8 =$$

22.

$$-6(8n+4) =$$

$$-48n - 24 =$$

23.

$$-5(7n-5) + 4n =$$

$$-35n + 25 + 4n =$$

$$-31n + 25 =$$

use
PEMDAS

24.

$$17y - 23y =$$

$$-6y =$$

25.

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

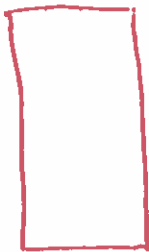
$$4y - 2y + 6 + 4 =$$

$$2y + 10 =$$

use
PEMDAS

26

9 inches



39 inches

find area

$$A = L \cdot W$$

$$A = (39)(9)$$

$$A = 279 \text{ Square inches}$$

27

find area

$L = 44 \text{ feet}, W = 32 \text{ feet}$

$$A = L \cdot W$$

$$A = (44)(32)$$

$$A = 1408 \text{ Square feet}$$

28

find perimeter

$L = 21 \text{ feet}, W = 14 \text{ feet}$

$$P = 2L + 2W$$

$$P = 2(21) + 2(14)$$

$$P = 42 + 28$$

$$P = 70 \text{ feet}$$

29

$$11W - 15W = 20$$

$$-4W = 20$$

$$\frac{-4W}{-4} = \frac{20}{-4}$$

$$W = -5$$

30.

$$72 = t + 8t$$

$$72 = 1t + 8t$$

$$72 = 9t$$

$$\frac{72}{9} = \frac{9t}{9}$$

$$8 = t$$

31.

$$-2x - 2x = 17 - 5$$

$$-4x = 12$$

$$\frac{-4x}{-4} = \frac{12}{-4}$$

$$x = -3$$

32.

$$4(2x - 2) = 9x$$

$$8x - 8 = 9x$$

$$8x - 8 + 8 = 9x + 8$$

$$8x = 9x + 8$$

$$8x - 9x = 9x + 8 - 9x$$

$$-1x = 8$$

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

$$x = -8$$

Use
PEMDAS

$$33. \quad 33y = 8(4y - 7)$$

$$33y = 32y - 56$$

$$33y - 32y = 32y - 56 - 32y$$

$$1y = -56$$

$$y = -56$$

use
PEMDAS

$$34. \quad 3(y - 4) = y - 12$$

$$3y - 12 = y - 12$$

$$3y - \cancel{12} + \cancel{12} = y - \cancel{12} + \cancel{12}$$

$$3y = y$$

$$3y = 1y$$

$$3y - 1y = 1y - 1y$$

$$2y = 0$$

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

$$y = 0$$

use
PEMDAS

$$35 \quad 7(6x-2) = 43x$$

$$42x - 14 = 43x$$

$$42x - 14 + 14 = 43x + 14$$

$$42x = 43x + 14$$

$$42x - 43x = 43x + 14 - 43x$$

$$-1x = 14$$

$$\frac{-1x}{-1} = \frac{14}{-1}$$

$$x = -14$$

Usp

PEMDAS

36

$$-\frac{2}{7} \cdot \frac{5}{6} =$$

$$\frac{-1(2)}{(7)} \cdot \frac{(5)}{(2)(3)} =$$

$$\frac{-1(2)}{(7)} \cdot \frac{(5)}{(2)(3)} =$$

$$\frac{-5}{21} =$$

37

$$\frac{5}{6} \div \frac{11}{12} =$$

$$\frac{5}{6} \cdot \frac{12}{11} =$$

$$\frac{(5)}{(2)(3)} \cdot \frac{(2)(2)(3)}{(11)} =$$

$$\frac{5}{\cancel{(2)}\cancel{(3)}} \cdot \frac{\cancel{(2)}\cancel{(2)}\cancel{(3)}}{(11)} =$$

$$\frac{10}{11} =$$

38

$$\frac{5}{28} + \frac{11}{28} =$$

$$\frac{(5) + (11)}{28} =$$

$$\frac{5+11}{28} =$$

$$\frac{16}{28} =$$

$$\frac{(2)(2)(2)(2)}{\cancel{(2)}\cancel{(2)}(7)} =$$

$$\frac{\cancel{(2)}\cancel{(2)}(2)(2)}{\cancel{(2)}\cancel{(2)}(7)} =$$

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

$$\begin{array}{r} 2 \overline{)16} \\ \underline{2} \\ 2 \\ \underline{2} \\ 2 \\ \underline{2} \\ 1 \end{array}$$

$$\begin{array}{r} 2 \overline{)28} \\ \underline{2} \\ 2 \\ \underline{2} \\ 7 \\ \underline{7} \\ 1 \end{array}$$

$$\frac{4}{7}$$

39

$$\frac{1}{3} + \frac{1}{9} =$$

LCD = 9

$$\frac{1}{3} \left(\frac{3}{3} \right) + \frac{1}{9} =$$

$$\frac{3}{9} + \frac{1}{9} =$$

$$\frac{(3) + (1)}{9} =$$

$$\frac{3 + 1}{9} =$$

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

40

$$\frac{1}{8} - \frac{5}{12} =$$

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

$$\frac{1}{8} \left(\frac{3}{3} \right) - \frac{5}{12} \left(\frac{2}{2} \right) =$$

$$\begin{array}{r} 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ 1 \end{array}$$

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

$$\frac{3}{24} - \frac{10}{24} =$$

$$\frac{(3) - (10)}{24} =$$

$$\begin{array}{r} 8 = 2 \cdot 2 \cdot 2 \\ 12 = 2 \cdot 2 \cdot 3 \\ \hline \text{LCD} = 2 \cdot 2 \cdot 2 \cdot 3 \\ = 24 \end{array}$$

$$\frac{3 - 10}{24} =$$

$$\frac{-7}{24} =$$

$$\textcircled{41} \quad \frac{\frac{5}{7}}{\frac{5}{6}} =$$

$$\frac{5}{7} \cdot \frac{6}{5} =$$

$$\frac{\cancel{5}}{7} \cdot \frac{(2)(3)}{\cancel{5}} =$$

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

$$\textcircled{42} \quad -12 = \frac{2}{13}x$$

$$\frac{-12}{1} = \frac{2}{13}x$$

$$\frac{13}{2} \left(\frac{-12}{1} \right) = \frac{13}{\cancel{2}} \left(\frac{\cancel{2}x}{13} \right)$$

$$\frac{13}{\cancel{2}} \left(\frac{(-1)(\cancel{2})(2)(3)}{1} \right) = x$$

$$\frac{-78}{1} = x$$

$$-78 = x$$

43. $\frac{x}{6} = \frac{x}{7} - 1$ $LCD = 42$

$$\frac{x}{6} = \frac{x}{7} - \frac{1}{1}$$

$$\frac{x}{6}(42) = \frac{x}{7}(42) - \frac{1}{1}(42) \quad \text{Maha}$$

$$x(7) = x(6) - 1(42)$$

$$7x = 6x - 42$$

$$7x - 6x = 6x - 42 - 6x$$

$$1x = -42$$

$$x = -42$$

44.

$$-7.656 \times 1000 =$$

$$-7656. =$$

Move decimal
right 3 times

45.

$$\frac{75.296}{100} =$$

Move decimal
left 2 times

$$0.75296 =$$

$$(46) \quad 3.8x - 63 = 2.2x + 9$$

$$3.8x - \cancel{63} + \cancel{63} = 2.2x + 9 + 63$$

$$3.8x = 2.2x + 72$$

$$3.8x - 2.2x = \cancel{2.2x} + 72 - \cancel{2.2x}$$

$$1.6x = 72$$

$$\frac{\cancel{1.6x}}{\cancel{1.6}} = \frac{72}{\cancel{1.6}}$$

$$x = 45$$

$$(47) \quad \frac{7}{9} = \frac{x}{18}$$

$$7(18) = 9(x) \quad \text{cross mult}$$

$$126 = 9x$$

$$\frac{126}{9} = \frac{\cancel{9x}}{\cancel{9}}$$

$$14 = x$$

48

$$\frac{16}{56} = \frac{30}{x}$$

$$16(x) = 56(30)$$

$$16x = 1680$$

$$\frac{16x}{16} = \frac{1680}{16}$$

$$x = 105$$

49

Write the percent as a decimal

$$75.9\% =$$

$$0.759 =$$

50

Write the decimal as a percent

$$0.22 =$$

$$22\% =$$

51. Write the fraction as a percent

$$\frac{9}{10} = \frac{x}{100}$$

9(100) = 10(x) Cross Mult

$$900 = 10x$$

$$\frac{900}{10} = \frac{10x}{10}$$

$$90 = x$$

OR

$$90\% = x$$

52. 44% written as a decimal is

$$0.44$$



44% written as a fraction (simplified)

$$\frac{44}{100} =$$

$$\frac{(2)(2)(11)}{(2)(2)(5)(5)} =$$

$$\frac{(2)(2)(11)}{(2)(2)(5)(5)} =$$

$$\frac{11}{25} =$$

Primes 2, 3, 5, 7, 11, 13, ...

$$\begin{array}{r} 2 \overline{)44} \\ \underline{22} \\ 11 \end{array}$$

1

$$\begin{array}{r} 2 \overline{)100} \\ \underline{20} \\ 80 \\ \underline{60} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

1

53) $A = P - PD$, $P = \$590$, $D = 45\% = 0.45$ discount

$$A = \$590 - (\$590)(0.45)$$

$$A = \$590 - 265.50 \leftarrow \text{discount}$$

$$A = \$324.50 \leftarrow \text{Sale price}$$

54) $A = P + PRT$, $P = \$100,000$

$$R = 15.5\% = 0.155$$

$$T = 4 \text{ years}$$

$$A = \$100,000 + \$100,000(0.155)(4)$$

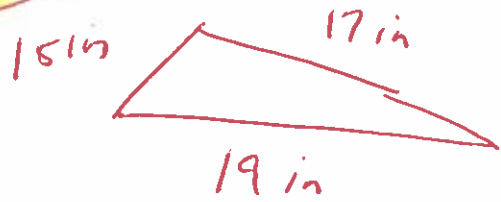
$$A = \$100,000 + \$62,000$$

$$A = \$100,000 + \$62,000 \leftarrow \text{interest paid on loan}$$

$$A = \$162,000 \leftarrow \text{total amount paid}$$

for example School Loan

55. Find Perimeter



$$P = s_1 + s_2 + s_3$$

$$P = (15) + (17) + (19)$$

$$P = 15 + 17 + 19$$

$$P = 32 + 19$$

$$P = 51 \text{ inches}$$

56. Find the perimeter of the regular polygon all sides same



$$P = s_1 + s_2 + s_3 + s_4 + s_5 + s_6$$

$$P = (30) + (30) + (30) + (30) + (30) + (30)$$

$$P = 30 + 30 + 30 + 30 + 30 + 30$$

$$P = 180 \text{ yds}$$

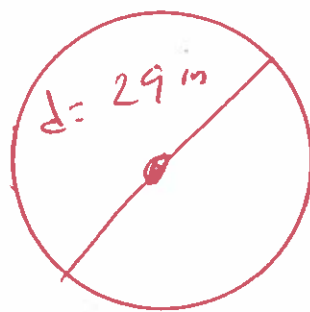
57. Find the area

$$A = \pi r^2$$

$$A = \pi (14.5)^2$$

$$A = \pi (14.5)(14.5)$$

$$A = \pi (210.25)$$



$$r = \frac{1}{2}d = \frac{1}{2}(29) = \frac{29}{2} = 14.5$$

$$r = 14.5$$

$$A = 210.25\pi \text{ Square inches}$$

Exact
area

$$A = \pi r^2$$

$$\text{let } \pi = 3.14$$

$$A = 3.14 r^2$$

$$A = 3.14 (14.5)^2$$

$$A = 3.14 (14.5)(14.5)$$

$$A = 3.14 (210.25)$$

$$A = 660.175 \text{ Square inches}$$

Approx
area

58

$$-5(x+8)+2 = -38$$

$$-5x - 40 + 2 = -38$$

$$-5x - 38 = -38$$

$$-5x - \cancel{38} + \cancel{38} = -38 + 38$$

$$-5x = 0$$

$$\frac{-5x}{-5} = \frac{0}{-5}$$

$$x = 0$$

USE
PEMDAS

59.

$$6(7x+8) = 42x+48$$

$$42x + 48 = 42x + 48$$

$$42x + \cancel{48} - \cancel{48} = 42x + \cancel{48} - \cancel{48}$$

$$42x = 42x$$

$$42x - 42x = 42x - 42x$$

$$0 = 0$$

USE
PEMDAS

The solution is all real numbers

60

$$\frac{x}{8} + 2 = \frac{x}{8}$$

$$\frac{x}{8} + \frac{2}{1} = \frac{x}{8}$$

$$\text{LCD} = 8$$

$$\frac{x}{8}(8) + \frac{2}{1}(8) = \frac{x}{8}(8)$$

$$x(1) + 2(8) = x(1)$$

Divide

$$1x + 16 = 1x$$

$$1x + 16 - 1x = 1x - 16$$

$$1x = 1x - 16$$

$$1x - 1x = 1x - 16 - 1x$$

$$0 \neq -16$$

There is NO Solution

61

$$8x + y = 5$$

$$y = \text{find}$$

$$8x + y - 8x = 5 - 8x$$

$$y = 5 - 8x$$

OR

$$y = -8x + 5$$

write

$$62. \quad W = X + Xyz \quad z = \text{fuel}$$

$$W - X = X + Xyz - X$$

$$W - X = Xyz$$

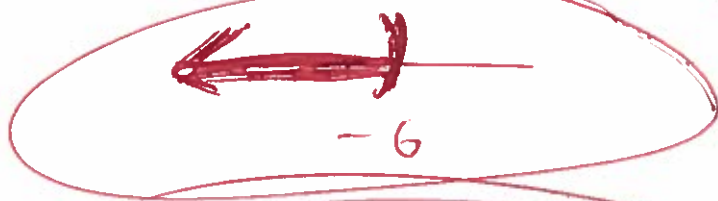
$$\frac{W - X}{xy} = \frac{Xyz}{xy}$$

$$\frac{W - X}{xy} = z$$

$$63. \quad 4x < -24$$

$$\frac{4x}{4} < \frac{-24}{4}$$

$$x < -6$$



$$(-\infty, -6)$$

Divide by a positive
Do not turn the
alligator around

64.

$$-8x \leq 16$$

$$\frac{-8x}{-8} \geq \frac{16}{-8}$$

$$x \geq -2$$

Divide by a Negative
and turn the alligator
around



$$[-2, \infty)$$

65.

$$-10x + 6 \geq 2(7 - 3x)$$

$$-10x + 6 \geq 14 - 6x$$

$$-10x + \cancel{6} - 6 \geq 14 - 6x - 6$$

$$-10x \geq -6x + 8$$

$$-10x + 6x \geq -6x + 8 + 6x$$

$$-4x \geq 8$$

$$\frac{-4x}{-4} \leq \frac{8}{-4}$$

$$x \leq -2$$

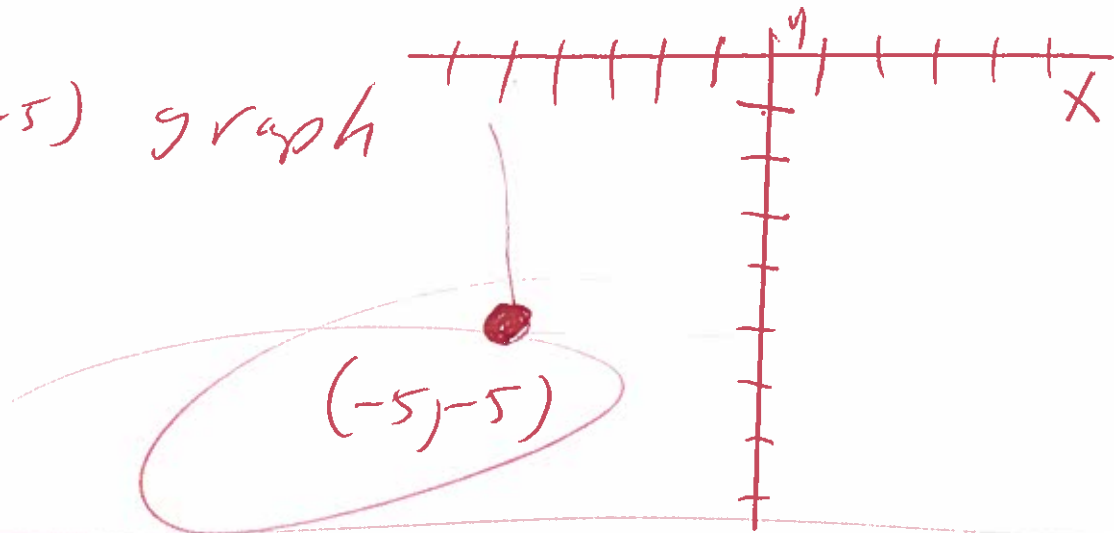
USE
PEMDAS

Divide by a Negative
turn the alligator
around



$$(-\infty, -2]$$

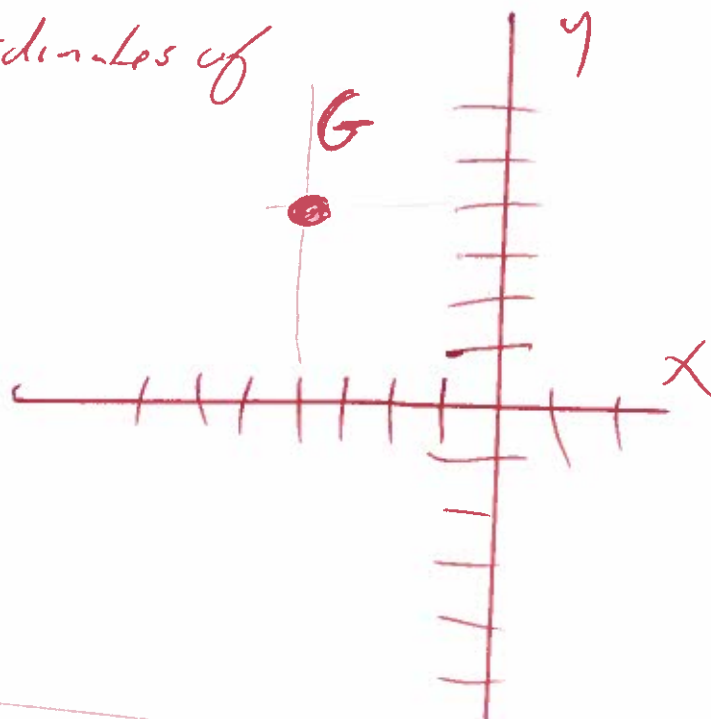
66. $(-5, -5)$ graph



67. Find the x and y coordinates of point G

$(-4, 4)$

Quadrant 2



68. $y = \frac{1}{7}x + 2$

$$y = \frac{1}{7}(0) + 2$$

$$y = 0 + 2$$

$$y = 2$$

$$y = \frac{1}{7}(21) + 2$$

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

$$y = 3 + 2$$

$$y = 5$$

$$0 = \frac{1}{7}x + 2$$

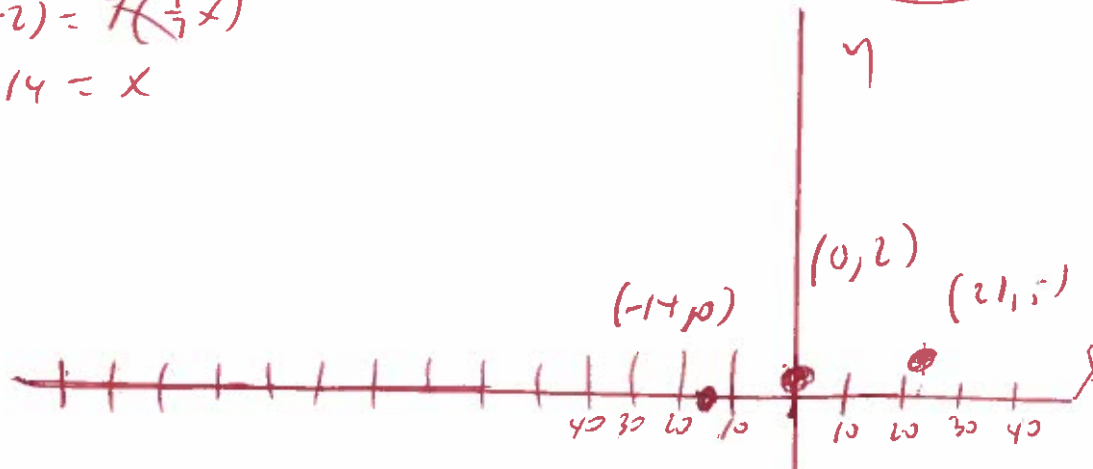
$$0 - 2 = \frac{1}{7}x + \cancel{x} - \cancel{x}$$

$$-2 = \frac{1}{7}x$$

$$7(-2) = 7\left(\frac{1}{7}x\right)$$

$$-14 = x$$

x	y
0	2
21	5
-14	0



69) $y = -2x + 5$ graph

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

$$y = 0 + 5$$

$$y = 5$$

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

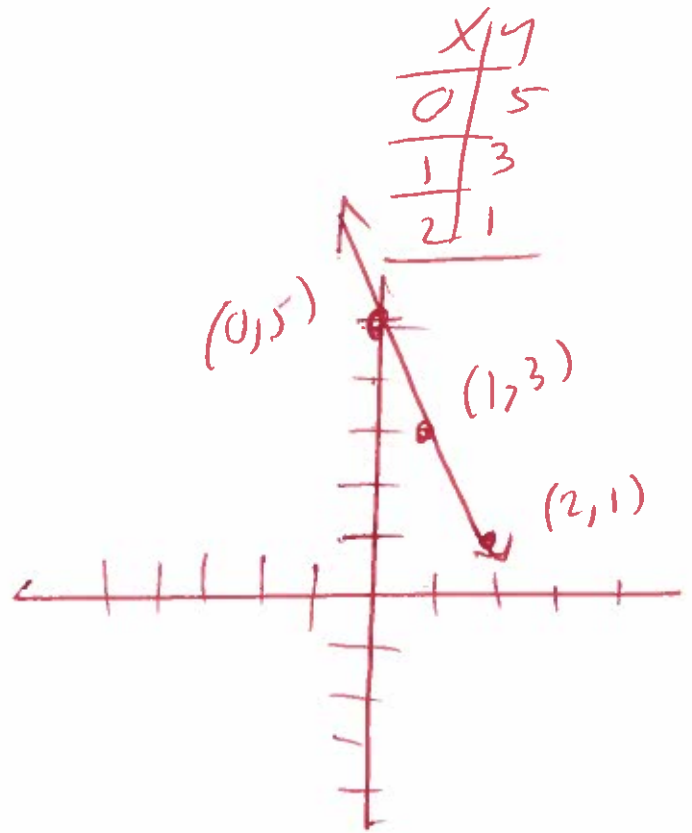
$$y = -2 + 5$$

$$y = 3$$

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

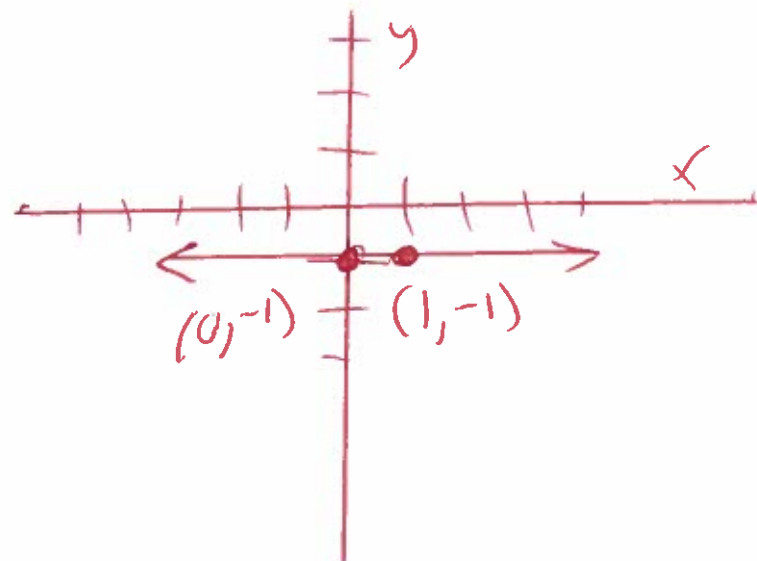
$$y = -4 + 5$$

$$y = 1$$



70) $y = -1$ graph

x	y
0	-1
1	-1



71. $y = \frac{1}{2}x - 1$ graph

$$y = \frac{1}{2}(0) - 1$$

$$y = 0 - 1$$

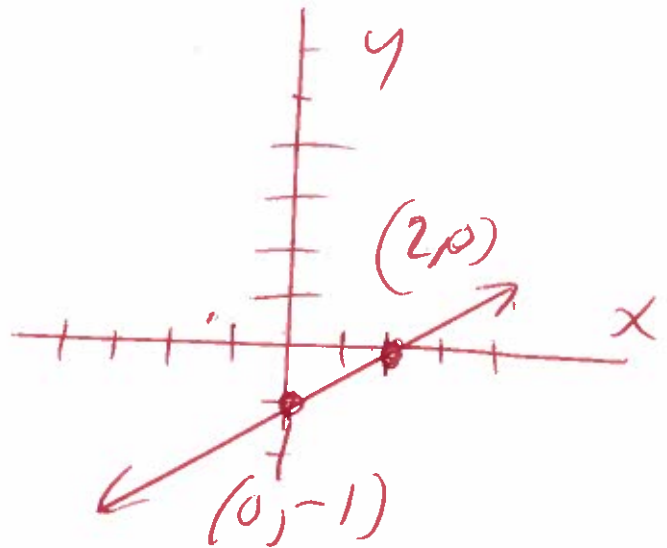
$$y = -1$$

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

$$y = 1 - 1$$

$$y = 0$$

x	y
0	-1
2	0



72. $5x - 4y = 20$ graph Plot intercepts

find x-intercept let $y = 0$

$$5x - 4(0) = 20$$

$$5x - 0 = 20$$

$$5x = 20$$

$$\frac{5x}{5} = \frac{20}{5}$$

$$x = 4$$

x-intercept
(4, 0)

find y-intercept let $x = 0$

$$5x - 4y = 20$$

$$5(0) - 4y = 20$$

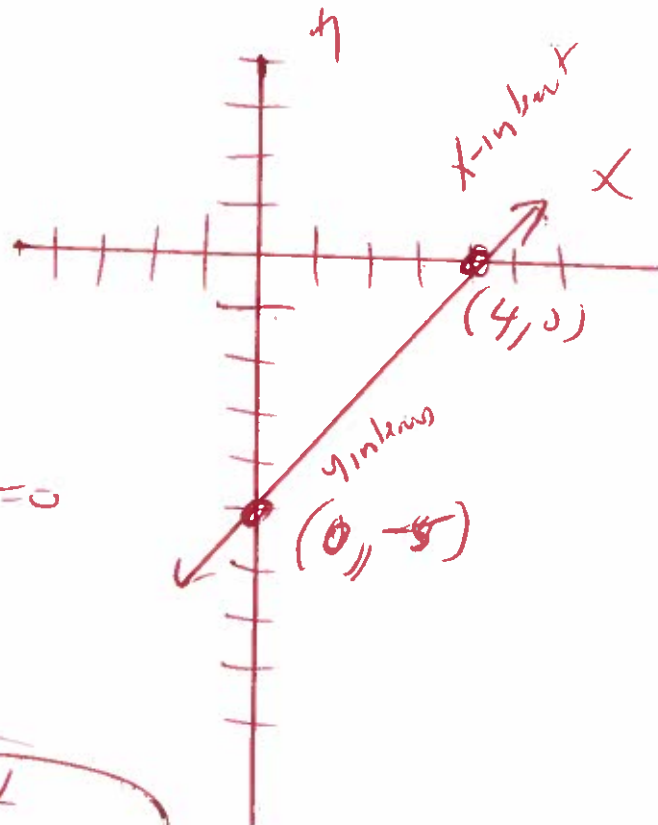
$$0 - 4y = 20$$

$$-4y = 20$$

$$\frac{-4y}{-4} = \frac{20}{-4}$$

$$y = -5$$

y-intercept
(0, -5)



73) $(-2, -8)$ and $(-5, -5)$ find slope
 $x_1 \quad y_1 \quad x_2 \quad y_2$

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

Slope formula

$$m = \frac{(-8) - (-5)}{(-2) - (-5)}$$

$$m = \frac{-8 + 5}{-2 + 5}$$

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

$$m = -1$$

74) $(2, -2)$ and $(-2, 9)$ find slope
 $x_1 \quad y_1 \quad x_2 \quad y_2$

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

Slope formula

$$m = \frac{(-2) - (9)}{(2) - (-2)}$$

$$m = \frac{-2 - 9}{2 + 2}$$

$$m = \frac{-11}{4}$$

75) $y = 2x - 5$ find slope

Slope = $m = 2$

y intercept = -5

formula
 $y = mx + b$
Slope = m y-intercept = b

76) $9x + y = 8$ find slope

$9x + y - 9x = 8 - 9x$

$y = 8 - 9x$

$y = -9x + 8$

Slope = $m = -9$

y intercept = 8

formula
 $y = mx + b$
Slope = m y-intercept = b

77) $9x - 2y = 18$ find slope

$9x - 2y - 9x = 18 - 9x$

$-2y = 18 - 9x$

$\frac{-2y}{-2} = \frac{18}{-2} - \frac{9x}{-2}$

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

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

Slope = $m = \frac{9}{2}$

y intercept = $b = -9$

formula
 $y = mx + b$
Slope = m y-intercept = b

78. find equation of the line

Slope = $m = 2$ at point $(-7, 9)$
 x_1, y_1

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

Point Slope formula

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

$$y - 9 = 2(x + 7)$$

$$y - 9 = 2x + 14$$

$$y - 9 + 9 = 2x + 14 + 9$$

$$y = 2x + 23$$

79. $x^2 - 7x + 4$ eval if $x = -1$

$$(-1)^2 - 7(-1) + 4 =$$

$$(-1)(-1) - 7(-1) + 4 =$$

$$(1) - 7(-1) + 4$$

$$1 + 7 + 4 =$$

$$8 + 4 =$$

$$12 =$$

80 Determine if each ordered pair is a solution.

$$3x - y = 13$$

$$x + 6y = 17$$

$(5, 2)$
 $x = 5$

$$3(5) - (2) = 13$$

$$15 - 2 = 13$$

$$13 = 13$$

Good

YES

$(5, 2)$ is a

solution

$$(5) + 6(2) = 17$$

$$5 + 12 = 17$$

$$17 = 17$$

Good

$$3x - y = 13$$

$$x + 6y = 17$$

$(6, 5)$
 $x = 6$

$$3(6) - (5) = 13$$

$$18 - 5 = 13$$

$$13 = 13$$

Good

NO

$(6, 5)$ is Not
a solution

$$(6) + 6(5) = 17$$

$$6 + 30 = 17$$

$$36 \neq 17$$

NO

81.

$$x + y = 10$$

$$x = 4y$$

$$(4y) + y = 10 \text{ subst}$$

$$4y + y = 10$$

$$4y + 1y = 10$$

$$5y = 10$$

$$\frac{5y}{5} = \frac{10}{5}$$

$$y = 2$$

subst

$$x = 4y$$

$$x = 4(2)$$

$$x = 8$$

$$(x, y) = (8, 2)$$

82

$$y = 3x + 1$$

$$3y - 4x = 13$$

$$3(3x + 1) - 4x = 13 \quad \text{Subst}$$

$$9x + 3 - 4x = 13$$

$$5x + 3 = 13$$

$$5x + \cancel{3} - \cancel{3} = 13 - \cancel{3}$$

$$5x = 10$$

$$\frac{5x}{5} = \frac{10}{5}$$

$$x = 2$$

Subst

$$y = 3x + 1$$

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

$$y = 6 + 1$$

$$y = 7$$

$$(x, y) = (2, 7)$$

83

$$5x - y = 22$$

$$3x + y = 18$$

$$8x + 0 = 40$$

$$8x = 40$$

$$\frac{8x}{8} = \frac{40}{8}$$

$$x = 5$$

Subst

$$5x - y = 22$$

$$5(5) - y = 22$$

$$25 - y = 22$$

$$25 - y - 25 = 22 - 25$$

$$-y = -3$$

$$\frac{-y}{-1} = \frac{-3}{-1}$$

$$y = 3$$

$$(x, y) = (5, 3)$$

$$\begin{aligned} 84. \quad & (-3m^6n^3)(8mn^3) = \\ & (-3m^6n^3)(8m^1n^3) = \\ & -24m^{6+1}n^{3+3} = \\ & -24m^7n^6 = \end{aligned}$$

$$\begin{aligned} 85. \quad & (6z^{11})(-3z^8)(z^2) = \\ & (6z^{11})(-3z^8)(1z^2) = \\ & \quad \quad \quad 11+8+2 \\ & -18z^{21} = \\ & -18z^{21} = \end{aligned}$$

$$\begin{aligned} 86. \quad & (z^8)^4 = \\ & z^{(8)(4)} \text{ mult powers} \\ & z^{32} = \end{aligned}$$

87

$$(5c^6)^2 =$$

$$(5^1 c^6)^2 =$$

$$5^{1(2)} c^{6(2)} = \text{Mult Powers}$$

$$5^2 c^{12} =$$

$$(\cancel{5})(\cancel{5}) c^{12} =$$

$$25 c^{12} =$$

88

$$(-5a^2b^6c)^2 =$$

$$(-5)^1 a^2 b^6 c^1 =$$

$$(-5)^{1(2)} a^{2(2)} b^{6(2)} c^{1(2)} =$$

$$(-5)^2 a^4 b^{12} c^2 =$$

$$(-5)(-5) a^4 b^{12} c^2 =$$

$$25 a^4 b^{12} c^2 =$$

90 $a^4 a^3 a^7$ add powers
 a^{4+3+7}

a^{14}

91 $\frac{4x^5 y^2 z}{x^3 y z} =$

$\frac{4x^5 y^2 z^1}{x^3 y^1 z^1} =$ rewrite

$4x^{5-3} y^{2-1} z^{\cancel{1}} =$

$4x^2 y^1 =$

$4x^2 y =$

92 $P(x) = x^2 + x + 4$ find $P(6)$

$P(6) = (6)^2 + (6) + 4$

$P(6) = (6)(6) + (6) + 4$

$P(6) = 36 + 6 + 4$

$P(6) = 42 + 4$

$P(6) = 46$

93 $Q(x) = 4x^2 - 1$ find $Q(-10)$

$$Q(-10) = 4(-10)^2 - 1$$

$$Q(-10) = 4(-10)(-10) - 1$$

$$Q(-10) = 4(100) - 1$$

$$Q(-10) = 400 - 1$$

$$Q(-10) = 399$$

94

$$-8a^2 - 4ab + 3b^2 - 2a^2 - 5ab + 9b^2$$

$$-10a^2 - 9ab + 12b^2 =$$

95.

$$(7y^2 + 4y - 3) - (-9y + 4) =$$

$$7y^2 + 4y - 3 + 9y - 4 =$$

$$7y^2 + 13y - 7 =$$

$$\textcircled{96} \quad (-7y^2 - 7y) + (9y^2 + 2y - 8) =$$
$$-7y^2 - 7y + 9y^2 + 2y - 8 =$$

$$2y^2 - 5y - 8 =$$

$$\textcircled{97} \quad 3x(4x^2 - 4x + 5) =$$

$$12x^3 - 12x^2 + 15x =$$

$$\textcircled{98} \quad (x+3)(x^3 - 6x + 7) =$$

$$x^4 - 6x^2 + 7x + 3x^3 - 18x + 21 =$$

$$x^4 + 3x^3 - 6x^2 + 11x + 21 =$$

$$x^4 + 3x^3 - 6x^2 + 11x + 21 =$$

$$\textcircled{99} \quad -2x(x^2 + 6x - 5) =$$

$$-2x^3 - 12x^2 + 10x =$$

$$(100) \quad (a+2)(a^2-4a+4)$$

$$a^3 - 4a^2 + 4a + 2a^2 - 8a + 8 =$$

$$a^3 - 2a^2 - 4a + 8 =$$

$$(101) \quad (3x+5)(2x^2-8x-9)$$

$$6x^3 - 24x^2 - 27x + 10x^2 - 40x - 45 =$$

$$6x^3 - 14x^2 - 67x - 45 =$$

(102) find area

$$A = \frac{1}{2}BH$$

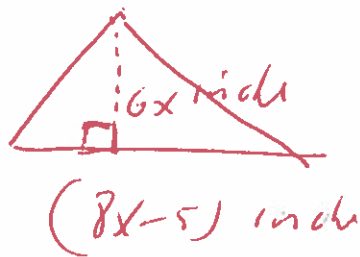
$$A = \frac{1}{2}(8x-5)(6x)$$

$$A = \frac{1}{2}(48x^2 - 30x)$$

$$A = \frac{1}{2}(48x^2) - \frac{1}{2}(30x)$$

$$A = 24x^2 - 15x$$

50 square inches



$$103) 6(y-8)(y-1) =$$

$$6(9y^2 - 1y - 72y + 8) =$$

$$6(9y^2 - 73y + 8) =$$

$$54y^2 - 438y + 48 =$$

$$104) (a-9)(a+9) =$$

$$a^2 + 9a - 9a - 81 =$$

$$a^2 - 81 =$$

$$105) (3d-4b)^2 =$$

$$(3d-4b)(3d-4b) =$$

$$9d^2 - 12db - 12db + 16b^2 =$$

$$9d^2 - 24db + 16b^2 =$$

$$106) 2^4 =$$

$$\frac{1}{2^4} = \text{rework}$$

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

$$\frac{1}{16}$$

$$107. \left(\frac{1}{3}\right)^{-2} =$$

$$\left(\frac{1^1}{3^1}\right)^{-2} =$$

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

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

$$\frac{3^2}{1^2} = \text{rewrite}$$

$$\frac{(3)(3)}{(1)(1)} =$$

$$\frac{9}{1} =$$

$$9 =$$

08

$$\frac{p^{-5}}{q^{-9}} =$$

$$\frac{q^9}{p^5} = \text{rewrite}$$

09

$$\frac{m^{-1}}{n^{-6}} =$$

$$\frac{m^6}{n^1} = \text{rewrite}$$

$$m^{6-1} =$$

$$m^5 =$$

110 Write the number in Scientific Notation
33,000 =

$$3.3 \times 10^4 =$$

111. Write the number in Scientific Notation

$$0.00000131 =$$

$$1.31 \times 10^{-6} =$$

112 8, 20 find GFC

$$\text{GCF} = 2 \cdot 2 \\ = 4$$

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

$$\begin{array}{r} 2 \overline{) 8} \\ \underline{2} 4 \\ 2 \overline{) 4} \\ \underline{2} 2 \\ 2 \overline{) 2} \\ \underline{2} 0 \\ 1 \end{array} \quad \begin{array}{r} 2 \overline{) 20} \\ \underline{2} 0 \\ 2 \overline{) 10} \\ \underline{2} 0 \\ 5 \overline{) 5} \\ \underline{5} 0 \\ 1 \end{array}$$

$$\begin{array}{l} 8 = 2 \cdot 2 \cdot 2 \\ 20 = 2 \cdot 2 \cdot 5 \end{array}$$

113. $4x + 28 =$ factor GCF

$$4(x + 7) =$$

114.

$$-63x^2y^4 - 36x^3y^2 =$$

$$9x^2y^2(-7y^2 - 4x) =$$

Factor
GCF

115.

Factor
 $x^2 - 5x + 6 =$

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

6.1 Possible
2.3

116.

Factor
 $x^2 - 2x - 48 =$

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

48.1
24.2 Possible
12.4
6.8
16.3

117.

Factor
 $169x^2 - 121y^2 =$

$$(13x)^2 - (11y)^2 = \text{write}$$

$$(13x+11y)(13x-11y)$$

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

118

SOLVE

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

$$\text{Let } x-5=0 \text{ OR } x+2=0$$

$$x-5+5=0+5 \text{ OR } x+2-2=0-2$$

$$x=5$$

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

SOLVE

119.

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

$$\text{Let } x=0 \text{ OR } x+6=0$$

$$x+6-6=0-6$$

$$x=-6$$

120.

SOLVE

$$7x(x-3)=0$$

$$\text{Let } 7x=0 \text{ OR } x-3=0$$

$$\frac{7x}{7} = \frac{0}{7}$$

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

$$x=0$$

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

121

SOLVE

$$(3x+7)(2x-3)=0$$

but $3x+7=0$ OR $2x-3=0$

$$3x+\cancel{x}-\cancel{x}=0-7 \quad \text{OR} \quad 2x-\cancel{x}+\cancel{x}=0+3$$

$$3x=-7 \quad \text{OR} \quad 2x=3$$

$$\frac{3x}{3} = \frac{-7}{3} \quad \text{OR} \quad \frac{2x}{2} = \frac{3}{2}$$

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

OR

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

122

SOLVE

$$x^2 - 10x + 21 = 0$$

$$(x-3)(x-7) = 0$$

21.1
3.7
possible

but $x-3=0$ OR $x-7=0$

$$x-\cancel{3}+\cancel{3}=0+3 \quad \text{OR} \quad x-\cancel{7}+\cancel{7}=0+7$$

$$x = 3$$

OR

$$x = 7$$

123.

SOLVE

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

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

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

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

$$x = 4$$

OR $x = -7$

28.1

14.2 Possibility

4, 7

124.

SOLVE

$$x^2 - 10x = 0$$

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

or $x = 0$ OR $x - 10 = 0$

$$x - 10 + 10 = 0 + 10$$

$$x = 10$$

125

$$x^2 - 2x = 24$$

$$x^2 - 2x - 24 = 24 - 24$$

$$x^2 - 2x - 24 = 0$$

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

Possible
24.1
12.2
6.4
3.8

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

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

$x = -4$

OR $x = 6$

126

$$\frac{y^2 + 9y + 14}{y^2 + 5y - 36} \cdot \frac{y^2 + 6y - 40}{y^2 + 14y + 49} =$$

$$\frac{(y + 2)(y + 7)}{(y - 4)(y + 9)} \cdot \frac{(y - 4)(y + 10)}{(y + 7)(y + 7)} =$$

$$\frac{(y + 2)(y + 7)}{(y - 4)(y + 9)} \cdot \frac{(y - 4)(y + 10)}{(y + 7)(y + 7)} =$$

$$\frac{(y + 2)(y + 10)}{(y + 9)(y + 7)} =$$

127

$$\frac{5x^4}{3x^5} \div \frac{25x^2}{9x^4} =$$

$$\frac{5x^4}{3x^5} \cdot \frac{9x^4}{25x^2} =$$

$$\frac{(5)(9)x^4 \cdot x^4}{(3)(25)x^5 x^2} =$$

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

$$\frac{3x^8}{5x^7} =$$

$$\frac{3x^{8-7}}{5} =$$

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

OR

$$\frac{3x}{5}$$

128

$$\frac{4m}{3n} + \frac{2m}{3n} =$$

$$\frac{(4m) + (2m)}{3n} =$$

$$\frac{4m + 2m}{3n} =$$

$$\frac{6m}{3n} =$$

$$\frac{(2)(3)m}{(3)n} =$$

$$\frac{2m}{n} =$$

129

$$\frac{V-5}{2} = \frac{V}{7}$$

$$7(V-5) = 2(V) \text{ cross mult}$$

$$7V - 35 = 2V$$

$$7V - \cancel{35} + \cancel{35} = 2V + 35$$

$$7V = 2V + 35$$

$$7V - 2V = 2V + 35 - 2V$$

$$5V = 35$$

$$\frac{5V}{5} = \frac{35}{5}$$

$$V = 7$$

130

$$|2x-1|=3$$

formula
 $|x|=a$
 $x=-a$ OR $x=a$

$$2x-1=-3 \quad \text{OR} \quad 2x-1=3$$

$$2x-1+1=-3+1 \quad \text{OR} \quad 2x-1+1=3+1$$

$$2x=-2 \quad \text{OR} \quad 2x=4$$

$$\frac{2x}{2} = \frac{-2}{2} \quad \text{OR} \quad \frac{2x}{2} = \frac{4}{2}$$

$$x=-1$$

OR

$$x=2$$

131

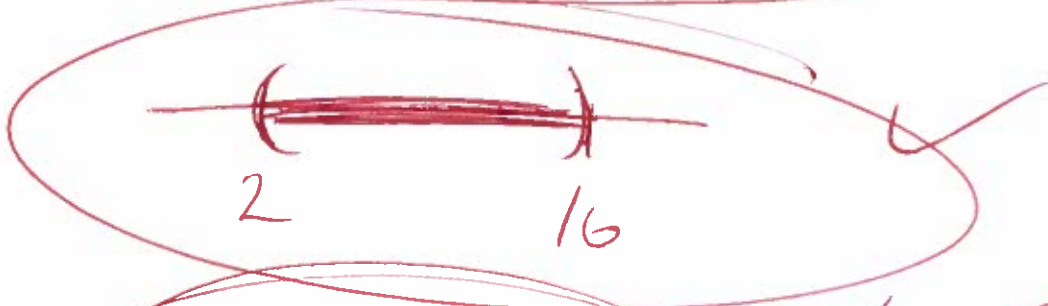
$$|x-9| < 7$$

formula
 $|x| < a$
 $-a < x < a$

$$-7 < x-9 < 7$$

$$-7+9 < x-9+9 < 7+9$$

$$2 < x < 16$$



$$(2, 16)$$

$$\textcircled{132} \quad \sqrt{\frac{1}{81}}$$

$$\frac{\sqrt{1}}{\sqrt{81}} =$$

$$\frac{1}{9} =$$

$$\textcircled{133} \quad \sqrt{100x^6}$$

$$\sqrt[2]{100x^6} =$$

$$10x^{6/2} = \text{divid power}$$

$$10x^3 =$$

$$\textcircled{134} \quad \sqrt[3]{216} =$$

$$\sqrt[3]{6^3} =$$

$$6^{3/3} = \text{divid powers}$$

$$6^1 =$$

$$6 =$$

$$\textcircled{135} \quad \sqrt{\frac{81}{16}} =$$

$$\frac{\sqrt{81}}{\sqrt{16}} =$$

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

$$\textcircled{136} \quad \left(\frac{1}{81}\right)^{\frac{1}{4}} =$$

$$\left(\frac{1}{3^4}\right)^{\frac{1}{4}} = \text{Kewrik}$$

$$(3^{-4})^{\frac{1}{4}} =$$

$$3^{-4 \left(\frac{1}{4}\right)} =$$

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

$$3^{-1} =$$

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

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

137.

$$625^{3/4} =$$

$$(5^4)^{3/4} = \text{rewrite}$$

$$5^{4 \cdot (3/4)} =$$

$$5^{12/4} =$$

$$5^3 =$$

$$(5)(5)(5) =$$

$$125 =$$

138.

$$\sqrt{150} \quad \text{Prim. } 2, 3, 5, 7, \dots$$

$$\sqrt{25 \cdot 6} =$$

$$\sqrt{25} \sqrt{6} =$$

$$5 \sqrt{6} =$$

$$\begin{array}{r}
 2 \overline{) 150} \\
 \underline{40} \\
 3 \overline{) 75} \\
 \underline{60} \\
 5 \overline{) 15} \\
 \underline{15} \\
 1
 \end{array}$$

139

$$\sqrt{x-15} = 4$$

$$(\sqrt{x-15})^2 = (4)^2$$

$$x-15 = 16$$

$$x - \cancel{15} + \cancel{15} = 16 + 15$$

$$x = 31$$

Check

$$\sqrt{x-15} = 4$$

$$\sqrt{31-15} = 4$$

$$\sqrt{16} = 4$$

$$4 = 4 \checkmark$$

Good

140

$$6\sqrt{-63}$$

Prime 2, 3, 5, 7, ...

$$6\sqrt{-9 \cdot 7} =$$

$$6\sqrt{-9} \sqrt{7} =$$

$$6(3i) \sqrt{7} =$$

$$18i \sqrt{7}$$

$$\begin{array}{r} 3 \overline{) 63} \\ 3 \overline{) 21} \\ 7 \overline{) 7} \\ 1 \end{array}$$

Formal

$$\sqrt{-1} = i$$

$$\sqrt{-4} = 2i$$

$$\sqrt{-9} = 3i$$

$$\sqrt{-16} = 4i$$

$$\sqrt{-25} = 5i$$

⋮

141. $(x+2)^2 = 16$

$$\sqrt{(x+2)^2} = \pm\sqrt{16}$$

$$x+2 = \pm 4$$

$$x+2 = -4 \quad \text{or} \quad x+2 = 4$$

$$x+\cancel{2}-\cancel{2} = -4-2 \quad \text{or} \quad x+\cancel{2}-\cancel{2} = 4-2$$

$x = -6$ ✓

$x = 2$ ✓

Check

Good

$$(x+2)^2 = 16$$

$$(-6+2)^2 = 16$$

$$(-4)^2 = 16$$

$$(-4)(-4) = 16$$

$$16 = 16$$

Good

$$(x+2)^2 = 16$$

$$(2+2)^2 = 16$$

$$(4)^2 = 16$$

$$(4)(4) = 16$$

$$16 = 16$$

Good

142

SOLVE

$$m^2 - 3m + 2 = 0$$

2.1 Possibility

$$(m-1)(m-2) = 0$$

$$m-1=0 \text{ OR } m-2=0$$

$$m-1+1=0+1 \text{ OR } m-2+2=0+2$$

$$m=1 \text{ OR } m=2$$

~~OR~~ Use Quadratic formula
 $m^2 - 3m + 2 = 0$
 $a=1, b=-3, c=2$

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

$$m = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(2)}}{2(1)}$$

$$m = \frac{3 \pm \sqrt{9-8}}{2}$$

$$m = \frac{3 \pm \sqrt{1}}{2}$$

$$m = \frac{3 \pm 1}{2}$$

$$m = \frac{3-1}{2} \text{ OR } m = \frac{3+1}{2}$$

$$m = \frac{2}{2} \text{ OR } m = \frac{4}{2}$$

$$m=1 \text{ OR } m=2$$



$$(143) \quad 3y = 2y^2 - 5$$

$$0 = 2y^2 - 5 - 3y$$

$$0 = 2y^2 - 3y - 5$$

$$0 = (2y - 5)(y + 1)$$

$$\text{or } 2y - 5 = 0 \quad \text{or} \quad y + 1 = 0$$

$$2y - 5 + 5 = 0 + 5 \quad \text{or} \quad y + 1 - 1 = 0 - 1$$

$$2y = 5$$

$$\frac{2y}{2} = \frac{5}{2} \quad \text{or}$$

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

$$y = -1$$

(2.1) (5.1)

~~Use Quadratic formula~~

$$2y^2 - 3y - 5 = 0$$

$$a = 2, \quad b = -3, \quad c = -5$$

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

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

$$y = \frac{3 \pm \sqrt{9 + 40}}{4}$$

$$y = \frac{3 \pm \sqrt{49}}{4}$$

$$y = \frac{3 \pm 7}{4}$$

$$y = \frac{3+7}{4} \quad \text{or} \quad y = \frac{3-7}{4}$$

$$y = \frac{10}{4}$$

$$y = \frac{1(5)}{2(2)} \quad \text{or} \quad y = \frac{-4}{4}$$

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

$$y = -1$$

144

$$x^2 + 12x + 36 = 0$$

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

or $x+6=0$ or $x+6=0$

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

$x=-6$ or $x=-6$

36.1
12.3
18.2
4.9
66

Use Quadratic formula

$$1x^2 + 12x + 36 = 0$$

$$a=1, b=12, c=36$$

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

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(1)(36)}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{144 - 144}}{2}$$

$$x = \frac{-12 \pm \sqrt{0}}{2}$$

$$x = \frac{-12 \pm 0}{2}$$

$$x = \frac{-12+0}{2} \quad \text{or} \quad x = \frac{-12-0}{2}$$

$$x = -\frac{12}{2} \quad \text{or} \quad x = -\frac{12}{2}$$

$x=-6$ or $x=-6$

145

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

$$1x^2 + 8x + 20 = 0$$

$$a=1, b=8, c=20$$

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

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

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

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

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

$$x = -4 \pm 2i$$

$$x = -4 + 2i \text{ or}$$

$$x = -4 - 2i$$

also
Quadratic
formula