

① $(-13-43) \div 14 - 28 =$

$(-56) \div 14 - 28 =$

$-4 - 28 =$

$-32 =$

② $7W - 10W = 27$

$-3W = 27$

$\frac{-3W}{-3} = \frac{27}{-3}$

$W = -9$

③ $3X - 2 = 4X + 3$

$3X - \cancel{2} + \cancel{2} = 4X + 3 + 2$

$3X = 4X + 5$

$3X - 4X = \cancel{4X} + 5 - \cancel{4X}$

$-1X = 5$

$\frac{-1X}{-1} = \frac{5}{-1}$

$X = -5$

④ $7x + 18 = 3x - 26$

$$7x + \cancel{18} - \cancel{18} = 3x - 26 - 18$$

$$7x = 3x - 44$$

$$7x - 3x = \cancel{3x} - 44 - \cancel{3x}$$

$$4x = -44$$

$$\frac{4x}{4} = \frac{-44}{4}$$

$$x = -11$$

②

⑤ $23 - 14 = 3(x - 1)$

$$9 = 3x - 3$$

$$9 + 3 = 3x - \cancel{3} + \cancel{3}$$

$$12 = 3x$$

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

$$4 = x$$

⑥

$$3(y-4) = y-12$$

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

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

$$3y = y$$

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

$$2y = 0$$

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

$$y = 0$$

③

⑦

$$5(6x-1) = 31x$$

$$30x - 5 = 31x$$

$$30x - \cancel{5} + \cancel{5} = 31x + 5$$

$$30x = 31x + 5$$

$$30x - 31x = \cancel{31x} + 5 - \cancel{31x}$$

$$-1x = 5$$

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

$$x = -5$$

8.

$$\frac{1}{8} - \frac{3}{10} =$$

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

4.

$$\frac{1}{8} \left(\frac{5}{5} \right) - \frac{3}{10} \left(\frac{4}{4} \right) = \text{mult}$$

$$\frac{5}{40} - \frac{12}{40} =$$

$$\frac{5-12}{40} =$$

$$\frac{-7}{40} =$$

$$2 \overline{) 8}$$

$$2 \overline{) 4}$$

$$2 \overline{) 2}$$

$$1$$

$$2 \overline{) 10}$$

$$5 \overline{) 5}$$

$$1$$

$$8 = 2 \cdot 2 \cdot 2$$

$$10 = 2 \cdot 5$$

$$\text{LCD} = 2 \cdot 2 \cdot 2 \cdot 5$$

$$= 40$$

9.

$$\frac{2}{9} + y = -\frac{7}{18}$$

Mult by LCD = 18

$$\frac{2}{9}(18) + \frac{y}{1}(18) = -\frac{7}{18}(18)$$

$$2(2) + y(18) = -7(1)$$

$$4 + 18y = -7$$

$$4 + 18y - 4 = -7 - 4$$

$$18y = -11$$

$$\frac{18y}{18} = \frac{-11}{18}$$

$$y = \frac{-11}{18}$$

10. $\frac{1}{3} - \frac{5}{4} = \frac{z}{12}$ Mult by LCD = 12 51

$$\frac{1}{3}(12) - \frac{5}{4}(12) = \frac{z}{12}(12)$$

$$1(4) - 5(3) = z(1)$$

$$4 - 15 = z$$

$$\boxed{-11 = z}$$

11. $\frac{x}{7} = \frac{x}{5} + 6$ Mult by LCD = 35

$$\frac{x}{7}(35) = \frac{x}{5}(35) + \frac{6}{1}(35)$$

$$x(5) = x(7) + 6(35)$$

$$5x = 7x + 210$$

$$5x - 7x = \cancel{7x} + 210 - \cancel{7x}$$

$$-2x = 210$$

$$\frac{-2x}{-2} = \frac{210}{-2}$$

$$\boxed{x = -105}$$

(12)

$$\frac{x}{3} = \frac{x}{6} + \frac{1}{2}$$

Mult by LCD = 6

(6)

$$\frac{x}{3}(6) = \frac{x}{6}(6) + \frac{1}{2}(6)$$

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

$$2x = 1x + 3$$

$$2x - 1x = \cancel{1x} + 3 - \cancel{1x}$$

$$1x = 3$$

$$x = 3$$

(13)

$$4.1x - 71 = 2.9x + 7$$

$$4.1x - \cancel{71} + \cancel{71} = 2.9x + 7 + 71$$

$$4.1x = 2.9x + 78$$

$$4.1x - 2.9x = \cancel{2.9x} + 78 - \cancel{2.9x}$$

$$1.2x = 78$$

$$\frac{1.2x}{1.2} = \frac{78}{1.2}$$

$$x = 65$$

$$\textcircled{14} \quad -0.3x + 6.52 = -0.5x + 2.92 \quad \textcircled{7}$$

$$-0.3x + \cancel{6.52} - \cancel{6.52} = -0.5x + 2.92 - 6.52$$

$$-0.3x = -0.5x - 3.6$$

$$-0.3x + 0.5x = \cancel{-0.5x} - 3.6 + \cancel{0.5x}$$

$$.2x = -3.6$$

$$\frac{.2x}{.2} = \frac{-3.6}{.2}$$

$$\textcircled{x = -18}$$

$\textcircled{15}$ The purchase price of a camcorder is \$708. What is the total price if the sales tax rate is 7.5%?

$$A = P + PT$$

$$A = \$708 + 708(.075)$$

$$A = 708 + 53.10$$

$$\textcircled{= 761.10}$$

16. Find the amount of discount and the sale price. $P = 25,500$ $D = 5\%$

2.

$$A = P - PD$$

$$A = 25500 - 25500(.05)$$

$$A = 25500 - 1275$$

$$\text{discount} = 1275$$

$$A = 24225.00$$

↖ Sale price

17. A stereo normally priced at \$430 is on sale for 25% off. Find the discount and the sale price.

$$A = P - PD$$

$$A = 430 - 430(.25)$$

$$A = 430 - 107.5$$

$$\text{discount} \rightarrow 107.50$$

$$A = 322.50$$

↖ Sale price

18. A company borrows \$75,000 for 6 years at a simple interest rate of 9.5%. Find the interest paid on the loan and the total amount paid. 9.

$$A = P + PRT$$

$$A = 75000 + 75000(0.095)(6)$$

$$A = 75000 + 75000(0.57)$$

$$A = 75000 + 42750$$

$$A = \$117,750$$

Interest paid
\$42,750

Total amount paid

19. $7(x+5) - 8 = 27$

$$7x + 35 - 8 = 27$$

$$7x + 27 = 27$$

$$7x + \cancel{27} - \cancel{27} = 27 - 27$$

$$7x = 0$$

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

$$x = 0$$

20.

$$7(7x+8) = 49x+56$$

$$49x+56 = 49x+56$$

$$49x+56-56 = 49x+56-56$$

$$49x = 49x$$

$$49x-49x = 49x-49x$$

$$0 = 0$$

The solution is all real numbers.

21.

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

Mult by LCD = 4

$$\frac{x}{4}(4) + \frac{4}{1}(4) = \frac{x}{4}(4)$$

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

$$1x + 16 = 1x$$

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

$$1x = 1x - 16$$

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

$$0 \neq -16$$

There is no solution

22. $6x - 4 = 6(x - 9)$

$$6x - 4 = 6x - 54$$

$$6x - \cancel{4} + \cancel{4} = 6x - 54 + 4$$

$$6x = 6x - 50$$

$$6x - 6x = \cancel{6x} - 50 - \cancel{6x}$$

$$0 \neq -50$$

There is no solution

23. $-6(6x - 8) + 8 = -36x + 56$

$$-36x + 48 + 8 = -36x + 56$$

$$-36x + 56 = -36x + 56$$

$$-36x + \cancel{56} - \cancel{56} = -36x + \cancel{56} - \cancel{56}$$

$$-36x = -36x$$

$$-36x + 36x = -36x + 36x$$

$$0 = 0$$

The solution is all real numbers

24. Solve for y .

$$9x + y = 7$$

$$\cancel{9x} + y - \cancel{9x} = 7 - 9x$$

$$y = 7 - 9x$$

OR

$$y = -9x + 7$$

25. Solve for y

$$W = X + XYZ$$

$$W - X = \cancel{X} + XYZ - \cancel{X}$$

$$W - X = XYZ$$

$$\frac{W - X}{XZ} = \frac{\cancel{XYZ}}{\cancel{XZ}}$$

$$\frac{W - X}{XZ} = Y$$

12

26. Solve for L

$$P = 2L + 2W$$

$$P - 2W = 2L + \cancel{2W} - \cancel{2W}$$

$$P - 2W = 2L$$

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

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

OR

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

OR

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

27. $8x - 4 > 7x - 3$

$$8x - \cancel{4} + \cancel{4} > 7x - 3 + 4$$

$$8x > 7x + 1$$

$$8x - 7x > \cancel{7x} + 1 - \cancel{7x}$$

$$1x > 1$$

$$x > 1$$



$(1, \infty)$

28. $2x - 1 \leq 8x - 7x$

$2x - 1 \leq 1x$

$2x - \cancel{x} + \cancel{x} \leq 1x + 1$

$2x \leq 1x + 1$

$2x - 1x \leq 1x + 1 - 1x$

$1x \leq 1$

$x \leq 1$

13-



$(-\infty, 1]$

29.

$3x < -6$

$\frac{3x}{3} < \frac{-6}{3}$

$x < -2$



$(-\infty, -2)$

30.

$-9x \leq 18$

$\frac{-9x}{-9} \geq \frac{18}{-9}$

divide by a negative
and turn the allisector
around.

$x \geq -2$



$[-2, \infty)$

31. $2x - 6 < 5x + 9$

$$2x - \cancel{6} + \cancel{6} < 5x + 9 + 6$$

$$2x < 5x + 15$$

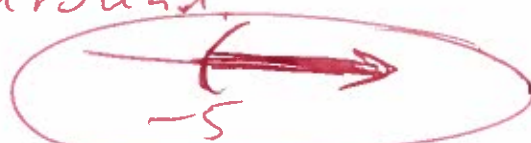
$$2x - 5x < \cancel{5x} + 15 - \cancel{5x}$$

$$-3x < 15$$

$$\frac{-3x}{-3} > \frac{15}{-3}$$

divide by a negative
and turn the alligator
around.

$$x > -5$$



$$(-5, \infty)$$

32.

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

$$-10x + 6 \geq 18 - 6x$$

$$-10x + \cancel{6} - \cancel{6} \geq 18 - 6x - 6$$

$$-10x \geq -6x + 12$$

$$-10x + 6x \geq \cancel{-6x} + 12 + \cancel{6x}$$

$$-4x \geq 12$$

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

$$x \leq -3$$

divide by a negative
and turn the alligator
around



$$(-\infty, -3]$$

33.

$$8(x-7) < 3(3x-3)$$

$$8x - 56 < 9x - 9$$

$$8x - 56 + 56 < 9x - 9 + 56$$

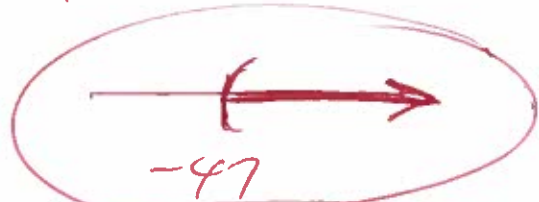
$$8x < 9x + 47$$

$$8x - 9x < 9x + 47 - 9x$$

$$-1x < 47$$

$$\frac{-1x}{-1} > \frac{47}{-1}$$

$$x > -47$$



$$(-47, \infty)$$

151

34.

graph $y = -4x + 3$

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

$$y = 0 + 3$$

$$y = 3$$

$$y = -4(1) + 3$$

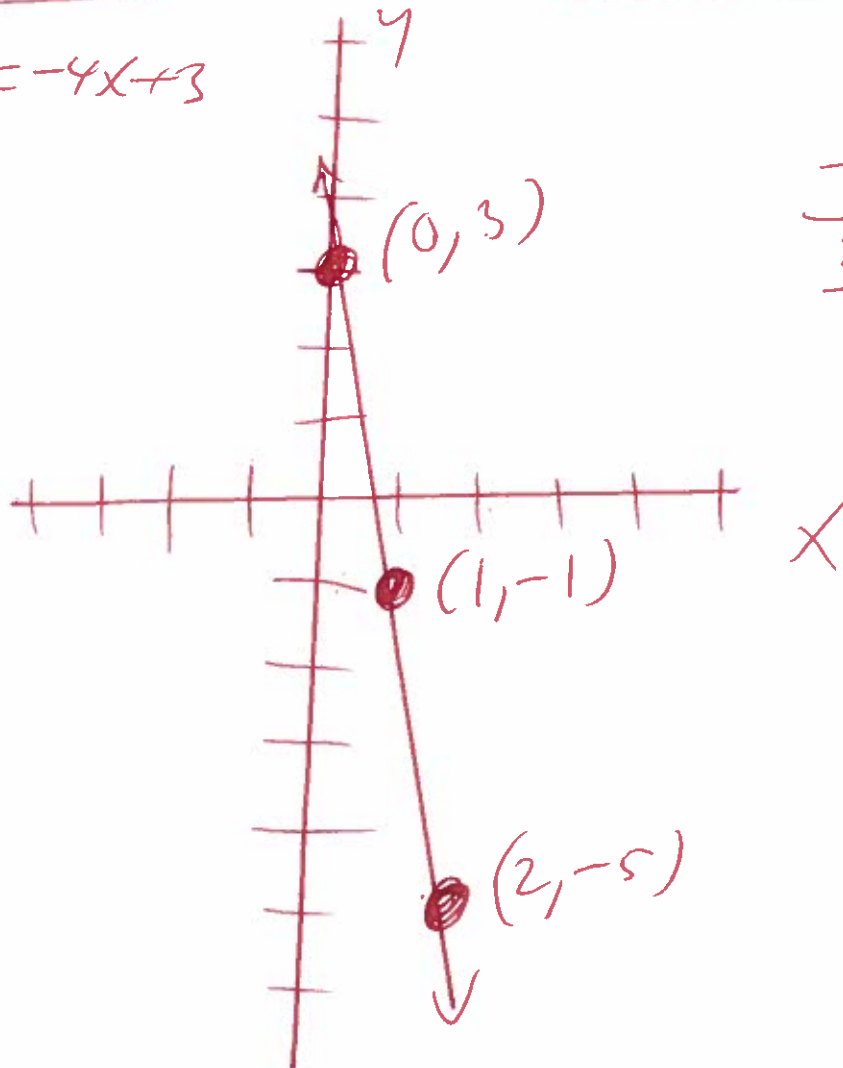
$$y = -4 + 3$$

$$y = -1$$

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

$$y = -8 + 3$$

$$y = -5$$



x	y
0	3
1	-1
2	-5

35 graph
 $y = 4x + 2$

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

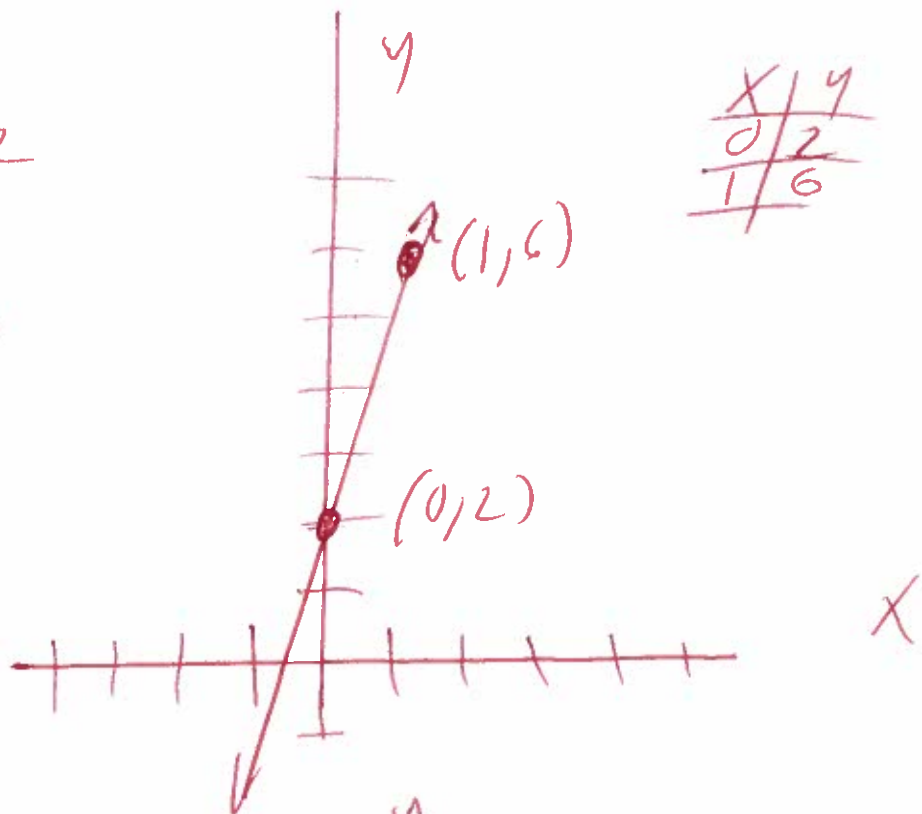
$$y = 0 + 2$$

$$y = 2$$

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

$$y = 4 + 2$$

$$y = 6$$



X	y
0	2
1	6

(16)

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

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

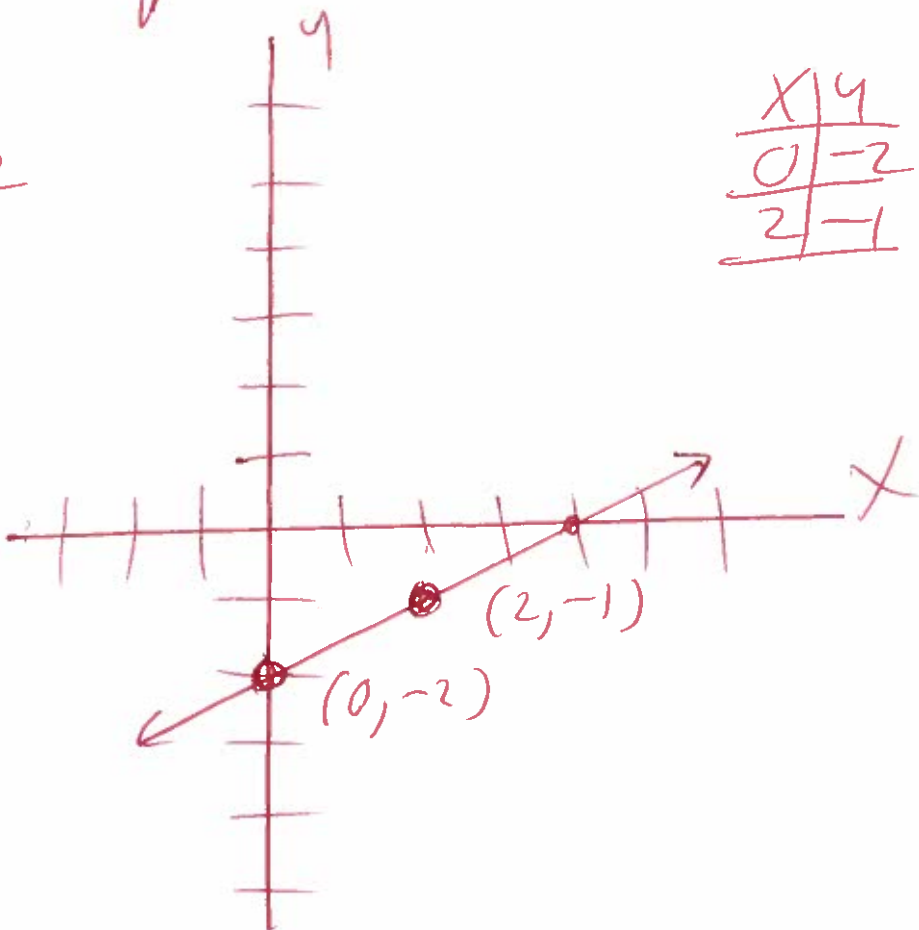
$$y = 0 - 2$$

$$y = -2$$

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

$$y = 1 - 2$$

$$y = -1$$



X	y
0	-2
2	-1

37.

graph

$$4x - 2y = 8$$

$$4x - 2y - 4x = 8 - 4x$$

$$-2y = 8 - 4x$$

$$\frac{-2y}{-2} = \frac{8}{-2} - \frac{4x}{-2}$$

$$y = -4 + 2x$$

$$y = 2x - 4$$

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

$$y = 0 - 4$$

$$y = -4$$

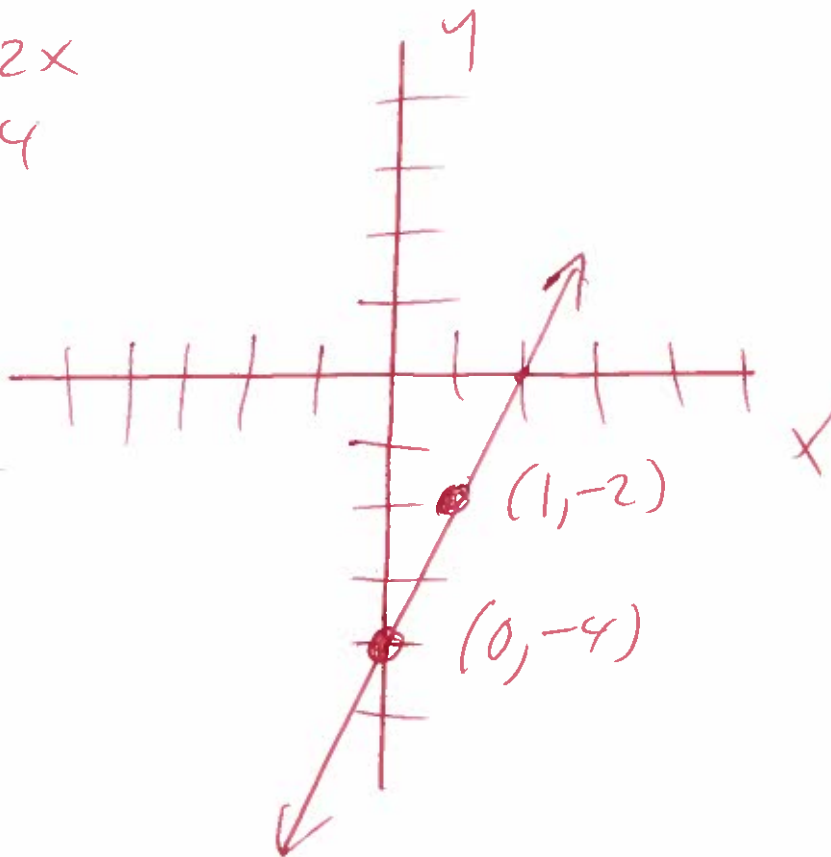
$$y = 2(1) - 4$$

$$y = 2 - 4$$

$$y = -2$$

X	y
0	-4
1	-2

(17)



38.

graph

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

$$\cancel{5x} - 4y - \cancel{5x} = -20 - 5x$$

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

$$\frac{-4y}{-4} = \frac{-20}{-4} - \frac{5x}{-4}$$

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

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

$$y = \frac{5}{4}(0) + 5$$

$$y = 0 + 5$$

$$y = 5$$

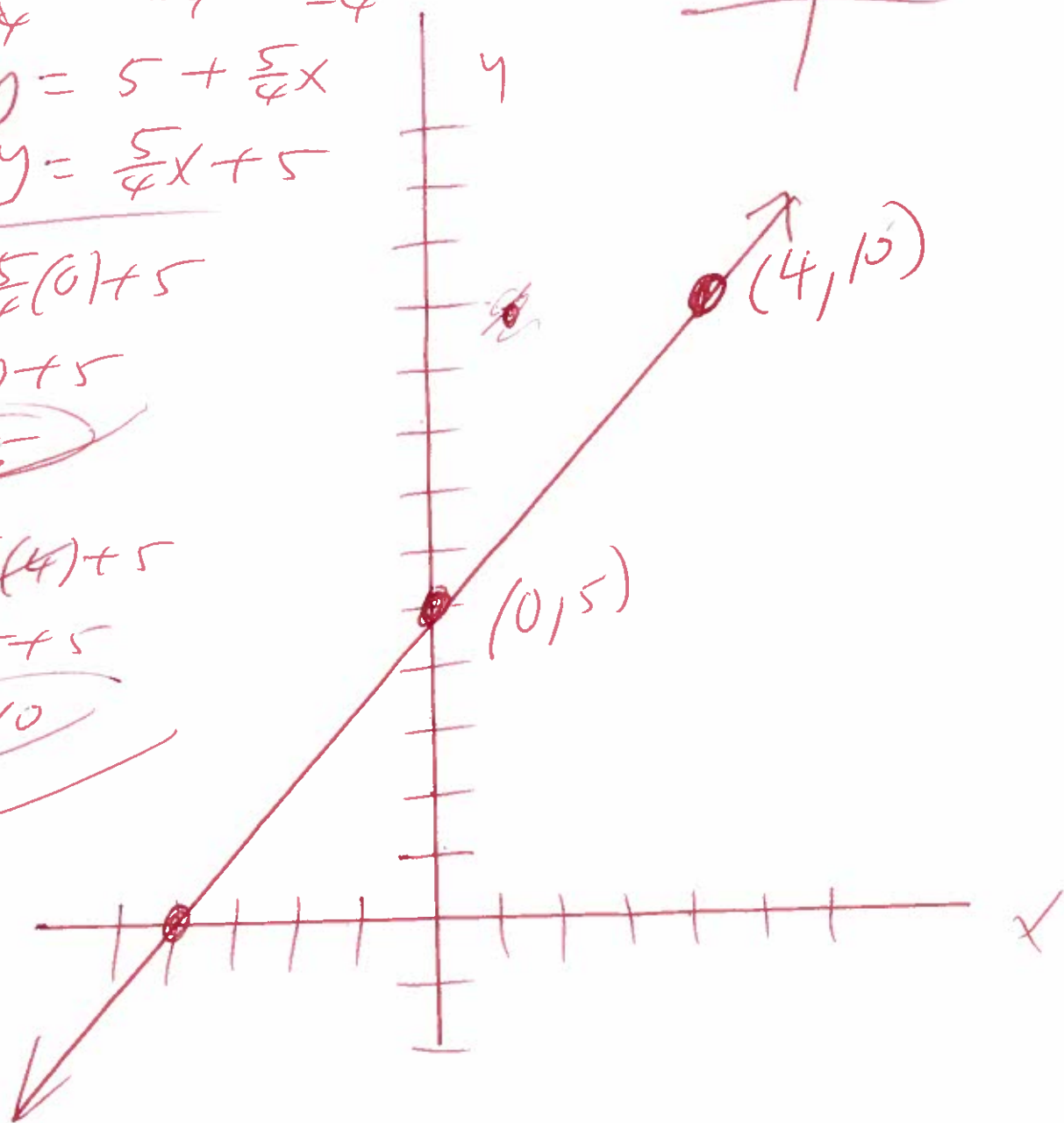
$$y = \frac{5}{4}(4) + 5$$

$$y = 5 + 5$$

$$y = 10$$

18.

x	y
0	5
4	10



39,

graph

$$y = 7x + 7$$

$$y = 7(0) + 7$$

$$y = 0 + 7$$

$$y = 7$$

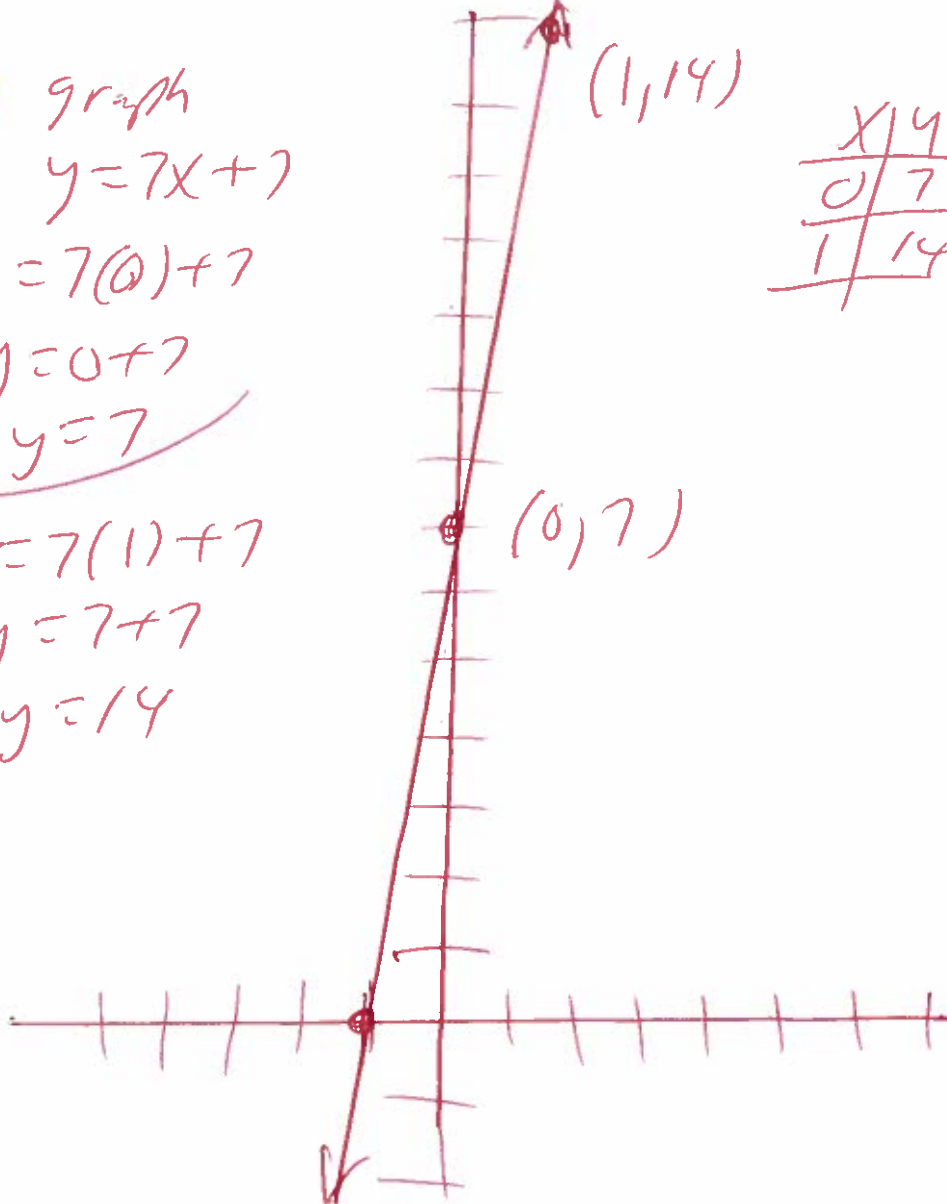
$$y = 7(1) + 7$$

$$y = 7 + 7$$

$$y = 14$$

x	y
0	7
1	14

19,



40. graph
 $y = 4x + 3$

$$y = 4(1) + 3$$

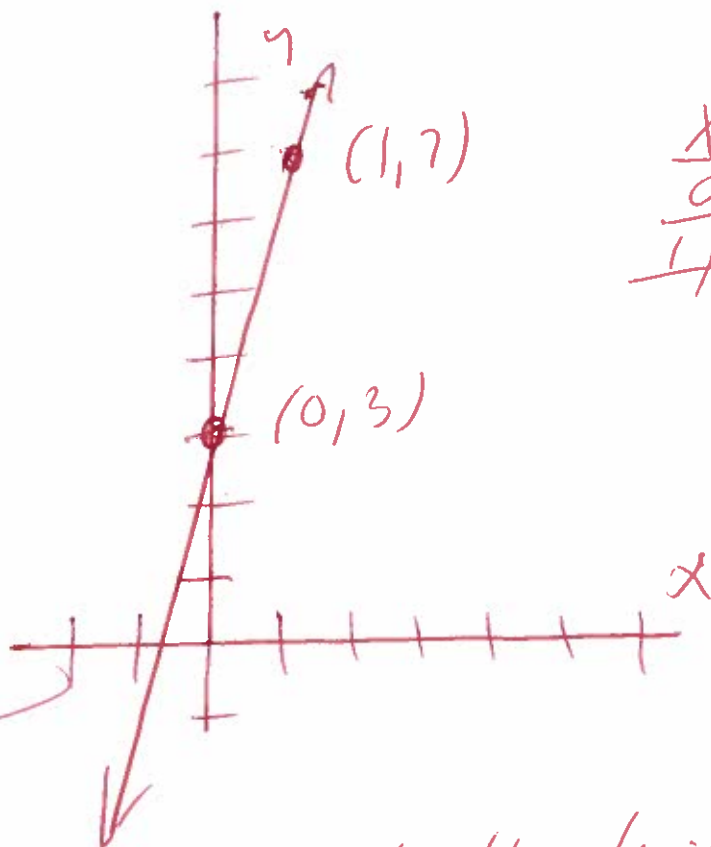
$$y = 0 + 3$$

$$y = 3$$

$$y = 4(1) + 3$$

$$y = 4 + 3$$

$$y = 7$$



X	Y
0	3
1	7

10.

41. find the slope of the line through
the points $(1, -7)$ and $(0, -10)$
 $x_1 \quad y_1 \quad x_2 \quad y_2$

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

$$m = \frac{(-7) - (-10)}{(1) - (0)}$$

$$m = \frac{-7 + 10}{1 - 0}$$

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

$$m = 3$$

42. Find the slope of the line through
the points $(-6, -4)$ and $(-6, 5)$

21.

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

$$m = \frac{(-4) - (5)}{(-6) - (-6)}$$

$$m = \frac{-4 - 5}{-6 + 6}$$

Slope

$$m = \frac{-9}{0} \text{ undefined}$$

43. Find the slope of the line through
the points $(-2, 2)$ and $(-5, -3)$.

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

$$m = \frac{(2) - (-3)}{(-2) - (-5)}$$

$$m = \frac{2 + 3}{-2 + 5}$$

$$m = \frac{5}{3}$$

(44) Find the slope of the line through the points $(4, 4)$ and $(-2, 4)$

(22)

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

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

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

$$m = \frac{0}{6}$$

$$m = 0$$

(45) Find the slope of the line $y = 4x - 8$

$$y = mx + b$$

Slope

y-intercept

The slope is $m = 4$

(46.) Find the Slope of the line

$$2x + y = 6$$

$$\cancel{2x} + y - \cancel{2x} = 6 - 2x$$

$$y = 6 - 2x$$

$$y = -2x + 6$$

$$y = mx + b$$

Slope

y-intercept

23.

The Slope is $m = -2$.

(47.) Find the Slope of the line

$$2x - 9y = 18$$

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

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

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

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

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

$$y = mx + b$$

Slope

y-intercept

The Slope is $m = \frac{2}{9}$.

48. determine whether the pair of lines are parallel, perpendicular, or neither.

(24.)

$$y = \frac{8}{7}x + 7$$

$$y = -\frac{8}{7}x$$

$$m_1 = \frac{8}{7}$$

$$m_2 = -\frac{8}{7}$$

Slopes

Since $m_1 \neq m_2$ $\frac{8}{7} \neq -\frac{8}{7}$ Not parallel

Since $m_1 \cdot m_2 \neq -1$ $\frac{8}{7}(-\frac{8}{7}) = -\frac{64}{49}$ Not perpendicular

Neither

49. determine whether the pair of lines are parallel, perpendicular, or neither.

$$x - 5y = -7$$

$$y = 6x - 9$$

solve

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

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

$$\frac{-5y}{-5} = \frac{-7}{-5} - \frac{x}{-5}$$

$$y = \frac{7}{5} + \frac{1}{5}x$$

$$y = \frac{1}{5}x + \frac{7}{5}$$

$$y = 6x - 9$$

Slopes

$$m_1 = \frac{1}{5}$$

$$m_2 = 6$$

$$m_1 \neq m_2$$

$$\frac{1}{5} \neq 6$$

Not parallel

$$m_1 m_2 \neq -1$$

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

Not perpendicular

Neither

50. Determine whether the pair of lines are parallel, perpendicular or neither.

(25)

$$5x = 3y + 4$$

$$-25x + 15y = 4$$

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

$$5x - 4 = 3y$$

$$\frac{5x - 4}{3} = \frac{3y}{3}$$

$$\frac{5}{3}x - \frac{4}{3} = y$$

$$y = \frac{5}{3}x - \frac{4}{3}$$

$$m_1 = \frac{5}{3}$$

Slope

$$-25x + 15y + 25x = 4 + 25x$$

$$15y = 4 + 25x$$

$$\frac{15y}{15} = \frac{4}{15} + \frac{25x}{15}$$

$$y = \frac{4}{15} + \frac{5(5)x}{5(3)}$$

$$y = \frac{4}{15} + \frac{5}{3}x$$

$$y = \frac{5}{3}x + \frac{4}{15}$$

$$m_2 = \frac{5}{3}$$

Slope

$$m_1 = m_2 \quad \frac{5}{3} = \frac{5}{3} \text{ lines are parallel}$$

51. Determine whether the pair of lines is parallel, perpendicular, or neither.

26

$$8 + 9x = 6y$$

$$6x + 9y = 2$$

$$\frac{8}{6} + \frac{9x}{6} = \frac{6y}{6}$$

$$\frac{8}{6} + \frac{9x}{6} = y$$

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

$$\frac{4}{3} + \frac{3}{2}x = y$$

$$y = \frac{3}{2}x + \frac{4}{3}$$

$$m_1 = \frac{3}{2}$$

Slope

$$6x + 9y = 2$$

$$\cancel{6x} + 9y - \cancel{6x} = 2 - 6x$$

$$9y = 2 - 6x$$

$$\frac{9y}{9} = \frac{2}{9} - \frac{6x}{9}$$

$$y = \frac{2}{9} - \frac{6x}{9}$$

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

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

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

$$m_2 = -\frac{2}{3}$$

Slope

$$m_1 \cdot m_2 = \left(\frac{3}{2}\right)\left(-\frac{2}{3}\right) = \frac{-6}{6} = -1$$

lines are perpendicular

52 graph

$$y = 9x - 5$$

$$y = 9(0) - 5$$

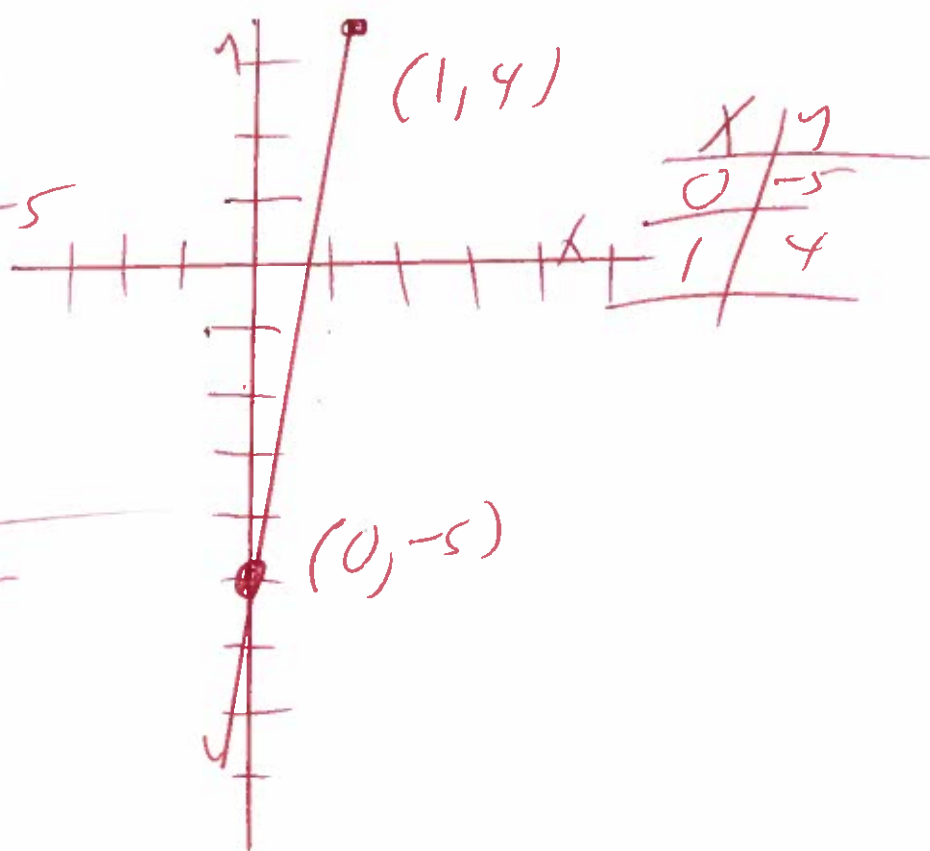
$$y = 0 - 5$$

$$y = -5$$

$$y = 9(1) - 5$$

$$y = 9 - 5$$

$$y = 4$$



(21)

53 graph

$$4x + 5y = 20$$

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

$$5y = 20 - 4x$$

$$\frac{5y}{5} = \frac{20}{5} - \frac{4x}{5}$$

$$y = 4 - \frac{4}{5}x$$

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

$$y = -\frac{4}{5}(0) + 4$$

$$y = 0 + 4$$

$$y = 4$$

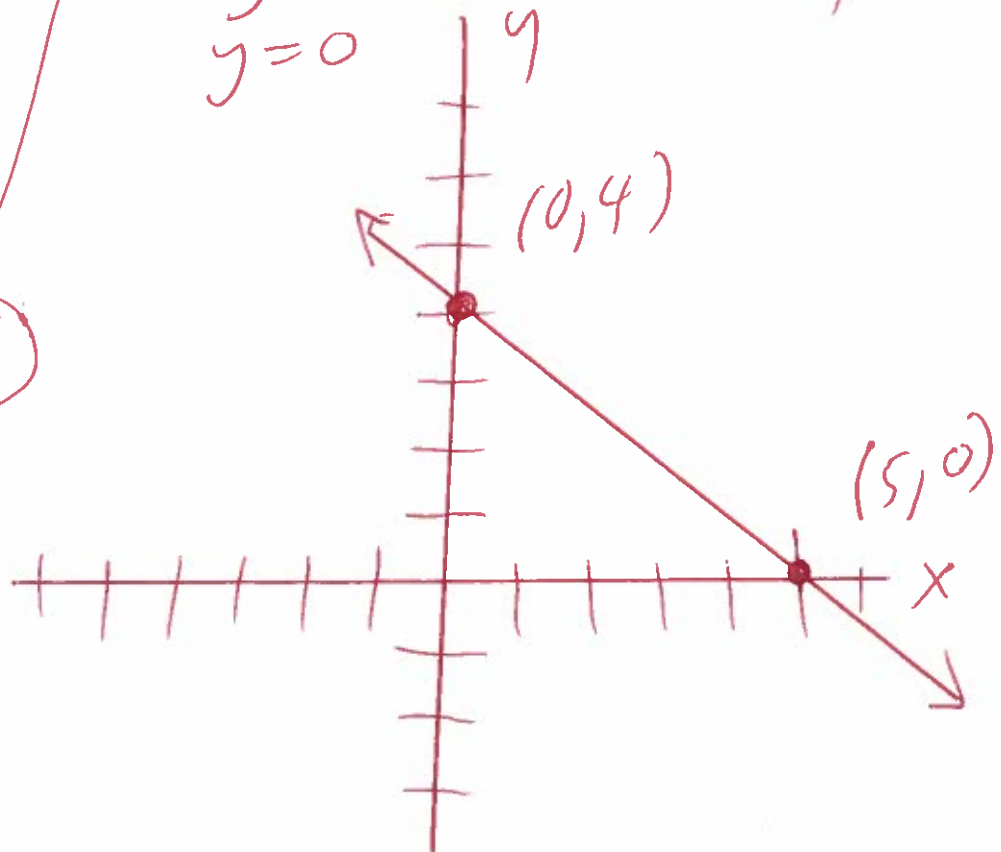
$$y = -\frac{4}{5}x + 4$$

$$y = -\frac{4}{5}(5) + 4$$

$$y = -4 + 4$$

$$y = 0$$

x	y
0	4
5	0



54. Write an equation of the line with the given slope, m , and y -intercept $(0, b)$.

$$m=6, b=1$$

28

$$y = mx + b$$

$$y = 6x + 1$$

55. Find the slope-intercept form of the line whose slope is 4 and passes through the point,

$$(-5, 7) \quad \checkmark \quad m=4 \quad \checkmark$$

x_1, y_1

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

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

$$y - 7 = 4(x + 5)$$

$$y - 7 = 4x + 20$$

$$y - 7 + 7 = 4x + 20 + 7$$

$$y = 4x + 27$$

(56) find the slope-intercept equation of the line that has the given characteristics

slope = $m = -6$ at y -intercept $(0, 3)$
 $x_1 \quad y_1$

(29)

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

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

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

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

$$y - 3 = -6x$$

$$y - \cancel{3} + \cancel{3} = -6x + 3$$

$$y = -6x + 3$$

(57) given $x^2 - 4x + 2$ Eval if $x = -3$.

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

$$(-3)(-3) - 4(-3) + \cancel{2} =$$

$$9 + 12 + \cancel{2} =$$

$$21 + \cancel{2} =$$

$$\cancel{23} =$$

58. Determine whether each ordered pair is a solution of the system of linear equations

$$3x - y = 14$$

$$x + 3y = 8$$

Is $(6, 4)$ a solution
x y

30.

$$3(6) - (4) = 14$$

$$18 - 4 = 14$$

$$14 = 14$$

YES

$$(6) + 3(4) = 8$$

$$6 + 12 = 8$$

$$18 \neq 8$$

NO X

NO

$$3x - y = 14$$

$$x + 3y = 8$$

Is $(5, 1)$ a solution
x y

$$3(5) - (1) = 14$$

$$15 - 1 = 14$$

$$14 = 14$$

YES

$$(5) + 3(1) = 8$$

$$5 + 3 = 8$$

$$8 = 8$$

yes

YES

59.

$$5x - y = 18$$

$$6x + y = 26$$

$$\hline$$

$$11x + 0 = 44$$

$$\frac{11x}{11} = \frac{44}{11}$$

$$x = 4$$

Subst

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

$$\rightarrow 5x - y = 18$$

$$5(4) - y = 18$$

$$20 - y = 18$$

$$20 - y - 20 = 18 - 20$$

$$-y = -2$$

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

$$y = 2$$

31.

60.

$$x - 2y = 1$$

$$-x + 4y = 1$$

$$\hline$$

$$0 + 2y = 2$$

$$2y = 2$$

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

$$y = 1$$

Subst

$$(x, y) = (3, 1)$$

$\rightarrow$

$$x - 2y = 1$$

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

$$x - 2 = 1$$

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

$$x = 3$$

61.

$$\begin{aligned} 5x + y &= -3 \\ 7x - 2y &= -79 \end{aligned}$$

32.

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

$(7x - 2y = -79) \quad (1)$

$$10x + 2y = -6$$

$$7x - 2y = -79$$

$$17x + 0 = -85$$

$$17x = -85$$

$$\frac{17x}{17} = \frac{-85}{17}$$

$$x = -5$$

$$5x + y = -3$$

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

$$-25 + y = -3$$

$$-25 + y + 25 = -3 + 25$$

$$y = 22$$

Solns →

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

62.

$$x + 3y = 0$$

$$4x + 5y = -7$$

$$(x + 3y = 0) (-5) \text{ Mult}$$

$$(4x + 5y = -7) (3)$$

$$-5x - 15y = 0$$

$$12x + 15y = -21$$

$$7x + 0 = -21$$

$$7x = -21$$

$$\frac{7x}{7} = \frac{-21}{7}$$

$$x = -3$$

Subst

$$(x, y) = (-3, 1)$$

$$x + 3y = 0$$

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

$$-3 + 3y = 0$$

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

$$3y = 3$$

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

$$y = 1$$

63.

$$4x + 2y = 2$$

$$8x + 4y = 0$$

$$(4x + 2y = 2) (-4) \text{ Mult}$$

$$(8x + 4y = 0) (2)$$

$$-16x - 8y = -8$$

$$16x + 8y = 0$$

$$0 + 0 = -8$$

$$0 \neq -8$$

There is no solution

$\emptyset, \{ \}$

empty set

64. $-4x + y = 0$
 $16x - 4y = 0$

$(-4x + y = 0) \quad (4)$

$(16x - 4y = 0) \quad (1)$

$-16x + 4y = 0$

$16x - 4y = 0$

$0 + 0 = 0$

$0 = 0$

there are infinitely many solutions

$\{(x, y) \mid -4x + y = 0\}$ OR

$\{(x, y) \mid 16x - 4y = 0\}$

65. Given

$P(x) = x^2 + x + 1$ find $P(8)$

$P(8) = (8)^2 + (8) + 1$

$P(8) = (8)(8) + 8 + 1$

$P(8) = 64 + 8 + 1$

$P(8) = 72 + 1$

$P(8) = 73$

66. $(6y^2 + 8y - 7) - (-6y + 8) =$

$$6y^2 + 8y - 7 + 6y - 8 =$$

$$6y^2 + 14y - 15 =$$

351

67. $(a+5)(a-6) =$

$$a^2 - 6a + 5a - 30 =$$

$$a^2 - 1a - 30 =$$

$$a^2 - a - 30 =$$

68. $(2y+1)^2 =$

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

$$4y^2 + 2y + 2y + 1 =$$

$$4y^2 + 4y + 1 =$$

69. $(5x-6)(4x+2) =$

$$20x^2 + 10x - 24x - 12 =$$

$$20x^2 - 14x - 12 =$$

70 $(x-4)(x^2-7x+5) =$

$$x^3 - 7x^2 + 5x - 4x^2 + 28x - 20 =$$

$$x^3 - 11x^2 + 33x - 20 =$$

36

71 $(8a+1)(7a^2-2a+5) =$

$$56a^3 - 16a^2 + 40a + 7a^2 - 2a + 5 =$$

$$56a^3 - 9a^2 + 38a + 5 =$$

72 $(4x-11)(6x+1) =$

$$24x^2 + 4x - 66x - 11 =$$

$$24x^2 - 62x - 11 =$$

73 $(2x+2)(4x+4) =$

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

$$8x^2 + 16x + 8 =$$

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

$$x^2 + 8x - 6x - 48 =$$

$$x^2 + 2x - 48 =$$

37

75. $5(y-2)(7y-1) =$

$$5(7y^2 - 1y - 14y + 2) =$$

$$5(7y^2 - 15y + 2) =$$

$$35y^2 - 75y + 10 =$$

76. $(6x-5)^2 =$

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

$$36x^2 - 30x - 30x + 25 =$$

$$36x^2 - 60x + 25 =$$

77. $(a-10)(a+10) =$

$$a^2 + \cancel{10a} - \cancel{10a} - 100 =$$

$$a^2 - 100 =$$

38

78. $(9x-9)(9x+9) =$

$$81x^2 + \cancel{81x} - \cancel{81x} - 81 =$$

$$81x^2 - 81 =$$

79. $(7x+y)(7x-y) =$

$$49x^2 - \cancel{7xy} + \cancel{7xy} - y^2 =$$

$$49x^2 - y^2 =$$

80. $(5x-3)(5x+8) =$

$$25x^2 + \cancel{40x} - \cancel{15x} - 24 =$$

$$25x^2 + 25x - 24 =$$

81. $(x+7)(x-7) =$

$$x^2 - 7x + 7x - 49 =$$

$$x^2 - 49 =$$

39.

82. $(x-3)(x^2-6x+7) =$

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

$$x^3 - 9x^2 + 25x - 21 =$$

83. $(8x-2)(8x+2) =$

$$64x^2 + 16x - 16x - 4 =$$

$$64x^2 - 4 =$$

84. $5^{-2} =$

$$\frac{1}{5^2} = \text{rewrite}$$

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

$$\frac{1}{25} =$$

85. $(a^{-6} b^5)^{-5} =$

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

$$a^{30} b^{-25} =$$

$$\frac{a^{30}}{b^{25}} = \text{Rt write}$$

86. $\left(\frac{x^{-4} y^2}{x^2 y^{10}} \right)^3 =$

$$\frac{x^{-4(3)} y^{2(3)}}{x^{2(3)} y^{10(3)}} =$$

$$\frac{x^{-12} y^6}{x^6 y^{30}} =$$

$$\frac{y^6}{x^{12} x^6 y^{30}} = \text{Rt write}$$

$$\frac{1}{x^{12+6} y^{30-6}} =$$

$$\frac{1}{x^{18} y^{24}} =$$

(40.)

87. $\frac{5^7 z^{-1}}{5^8 z^{-4}}$

(41)

$$\frac{5^7 z^4}{5^8 z^1} = \text{Rewrite}$$

$$\frac{z^{4-1}}{5^{8-7}} =$$

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

$$\frac{z^3}{5} =$$

88. $\frac{(-4xy^{-3})^{-5}}{(xy^{-3})^{-3}} =$

$$\frac{(-4)^1 x^1 y^{-3})^{-5}}{(x^1 y^{-3})^{-3}} =$$

$$\frac{(-4)^{1(-5)} x^{1(-5)} y^{-3(-5)}}{x^{1(-3)} y^{-3(-3)}} =$$

$$\begin{aligned} & \frac{(-4)^{-5} x^{-5} y^{15}}{x^{-3} y^9} = \\ & \frac{y^{15} x^3}{(-4)^5 x^5 y^9} = \\ & \frac{y^{15-9}}{(-4)^5 x^{5-3}} = \end{aligned}$$

$$(-4)(-4)(-4)(-4)(-4) x^{5-3} =$$

$$\frac{y^6}{-1024 x^2} =$$

$$\textcircled{89.} \frac{(a^2 b^{-2})^{-5}}{(3a^2 b^{-1})^{-2}} =$$

42.

$$\frac{(a^2 b^{-2})^{-5}}{(3^1 a^2 b^{-1})^{-2}} =$$

$$\frac{a^{2(-5)} b^{-2(-5)}}{3^{1(-2)} a^{2(-2)} b^{-1(-2)}} =$$

$$\frac{a^{-10} b^{10}}{3^{-2} a^{-4} b^2} =$$

$$\frac{3^2 a^4 b^{10}}{a^{10} b^2} =$$

$$\frac{(3)(3) b^{10-2}}{a^{10-4}} =$$

$$\frac{9 b^8}{a^6} =$$

90 use synthetic division

$$(x^2 - 8x - 33) \div (x + 3) =$$

$$\underline{x^2 - 8x - 33} =$$

✓ app $x + 3$

$$\begin{array}{r|rrr} -3 & 1 & -8 & -33 \\ & & -3 & 33 \\ \hline & 1 & -11 & 0 \end{array}$$

$$x - 11 =$$

use long division

$$\underline{x^2 - 8x - 33}$$

$$x + 3$$

$$x - 11$$

$$x + 3 \overline{) x^2 - 8x - 33}$$

$$- (x^2 + 3x)$$

$$\begin{array}{r} -11x - 33 \\ - (+11x + -33) \\ \hline 0 \end{array}$$

0 rem

43.

91) use synthetic division

$$(8x^2 + 11x + 10) \div (x + 1) =$$

$$\frac{8x^2 + 11x + 10}{x + 1} =$$

$$\begin{array}{r|rrr} -1 & 8 & 11 & 10 \\ & & -8 & -3 \\ \hline & 8 & 3 & 7 \text{ rem} \end{array}$$
$$8x + 3 + \frac{7}{x+1}$$

use long division

$$\frac{8x^2 + 11x + 10}{x + 1}$$

$$\begin{array}{r} x+1 \overline{) 8x^2 + 11x + 10} \\ \underline{8x + 8} \\ 3x + 10 \\ \underline{3x + 3} \\ 7 \text{ rem} \end{array}$$

44

92. factor

$$-64x^5y^7 - 40x^7y^6 =$$

$$8x^5y^6(-8y - 5x^2) =$$

45.

93. factor

$$x^2 + 12x + 27 =$$

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

possibly
27.1
9.3

94. factor

$$x^2 - 10x + 24 =$$

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

possibly
24.1
12.2
6.4
3.8

95. factor

$$x^2 - x - 20 =$$

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

possibly
20.1
10.2
4.5

96. factor

formula

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

46

$$121x^2 - 49y^2 =$$

$$(11x)^2 - (7y)^2 =$$

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

97. Solve

$$(x-7)(x-1) = 0$$

$$\text{let } x-7=0 \quad \text{OR} \quad x-1=0$$

$$x - \cancel{x} + \cancel{x} = 0 + 7 \quad \text{OR} \quad x - 1 + 1 = 0 + 1$$

$$x = 7$$

$$\text{OR} \quad x = 1$$

98. Solve

$$(x-3)(x+9) = 0$$

$$\text{let } x-3=0 \quad \text{OR} \quad x+9=0$$

$$x - \cancel{3} + \cancel{3} = 0 + 3 \quad \text{OR} \quad x + \cancel{9} - \cancel{9} = 0 - 9$$

$$x = 3$$

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

Solve
 $x(x+1)=0$

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

$x=-1$

(47.)

Solve
 $(8x+9)(4x-5)=0$

Let $8x+9=0$ OR $4x-5=0$
 $8x+9-9=0-9$ OR $4x-5+5=0+5$

$8x=-9$ OR $4x=5$

$\frac{8x}{8} = \frac{-9}{8}$ OR $\frac{4x}{4} = \frac{5}{4}$

$x = -\frac{9}{8}$ OR $x = \frac{5}{4}$

Solve
 $x^2 - 12x + 32 = 0$

$(x-4)(x-8)=0$

Let $x-4=0$ OR $x-8=0$

$x-4+4=0+4$ OR $x-8+8=0+8$

$x=4$ OR $x=8$

$32-1$
 $16-2$
 $4-8$