

①  $-16(3) =$

$$-48 =$$

②  $-8(-8) =$

64 =

③  $-\frac{18}{3}z$

-62

④  $\frac{-14}{-2} =$

7 =

5.  $\frac{18+2+29+18}{4} =$

$$\frac{67}{4} =$$

16.75 =

17 = round

6.  $17 + 10 + 6 + 11 + 6 + 4 + 4$   
7

8. 285714286 =

$\delta = \text{round}$

Math 0310 NOW  
(08-25-14)

(08-25-14)

elementary algebra

180 Questions

### Step-by-Step Solution,

1.

$$\textcircled{1} \quad \frac{1450 + 4460 + 6940 + 7240 + 1880 + 6250}{6} =$$

$$\frac{28220}{6} =$$

$$4703.333333 =$$

$$\textcircled{4703 = \text{round}}$$

2.

$$\textcircled{8} \quad 2, 10, 18, 24, 43, 44, 49$$

$$\textcircled{\text{Median} = 24}$$

$\textcircled{9}$  Determine if ordered pair satisfies the equation

$$5x + 2y = 26$$

$$(4, 3)$$

$$x, y$$

$$5(4) + 2(3) = 26$$

$$20 + 6 = 26$$

$$26 = 26$$

Yes

$\textcircled{10}$  Determine if  $x = 3$  satisfies the equation

$$8x - 10 = 15$$

$$, x = 3$$

$$8(3) - 10 = 15$$

$$24 - 10 = 15$$

$$14 \neq 15$$

No

$$\textcircled{11.} \quad -2x = -12$$
$$\frac{-2x}{-2} = \frac{-12}{-2}$$

$$\textcircled{x = 6}$$

$$\textcircled{12.} \quad 3r + 6 = 30$$
$$3r + \cancel{6} - \cancel{6} = 30 - 6$$

$$3r = 24$$

$$\frac{3r}{3} = \frac{24}{3}$$

$$\textcircled{r = 8}$$

$$\textcircled{13.} \quad 43 = -6x - 5$$
$$43 + 5 = -6x - \cancel{5} + \cancel{5}$$

$$48 = -6x$$

$$\frac{48}{-6} = \frac{-6x}{-6}$$

$$\textcircled{-8 = x}$$

$$\textcircled{14.} \quad -7x - 11 + 8x = -4$$

$$x - 11 = -4$$

$$\cancel{x} - \cancel{11} + 11 = -4 + 11$$

$$\textcircled{x = 7}$$



$$(15.) \quad 5x - (2x - 1) = 2$$

$$5x - 2x + 1 = 2$$

$$3x + 1 = 2$$

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

$$3x = 1$$

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

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

$$(16.) \quad -7x - 7 = 1 + 9x$$

$$-7x - \cancel{7} + \cancel{7} = 1 + 9x + 7$$

$$-7x = 9x + 8$$

$$-7x - 9x = \cancel{9x} + 8 - \cancel{9x}$$

$$-16x = 8$$

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

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

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

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

4.

$$(17) \quad 3x - 8 = 4(x + 1)$$

$$3x - 8 = 4x + 4$$

$$3x - \cancel{8} + 8 = 4x + 4 + 8$$

$$3x = 4x + 12$$

$$3x - 4x = 4x + 12 - \cancel{4x}$$

$$-1x = 12$$

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

$$x = -12$$

$$(18) \quad \frac{5x}{2} + 3 = \frac{1}{7} \quad \text{LCD} = 14$$

$$\frac{5x}{2} + \frac{3}{1} = \frac{1}{7}$$

$$\frac{5x}{2}(14) + \frac{3}{1}(14) = \frac{1}{7}(14)$$

$$5x(7) + 3(14) = 1(2)$$

$$35x + 42 = 2$$

$$35x + \cancel{42} - \cancel{42} = 2 - 42$$

$$35x = -40$$

$$\frac{35x}{35} = \frac{-40}{35}$$

$$x = \frac{-8(5)}{7(5)}$$

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



$$(19) \quad \frac{13x}{10} + \frac{6}{5} = \frac{6x}{5} \quad \text{LCD} = 10$$

$$\frac{13x}{10}(10) + \frac{6}{5}(10) = \frac{6x}{5}(10)$$

$$13x(1) + 6(2) = 6x(2)$$

$$13x + 12 = 12x$$

$$13x + 12 - 12 = 12x - 12$$

$$13x = 12x - 12$$

$$13x - 12x = 12x - 12 - 12x$$

$$x = -12$$

$$(20) \quad \frac{r+6}{5} = \frac{r+8}{7} \quad \text{cross multiply}$$

$$7(r+6) = 5(r+8)$$

$$7r + 42 = 5r + 40$$

$$7r + 42 - 42 = 5r + 40 - 42$$

$$7r = 5r - 2$$

$$7r - 5r = 5r - 2 - 5r$$

$$2r = -2$$

$$\frac{2r}{2} = \frac{-2}{2}$$

$$r = -1$$

6.

$$(21) -46.8 = -5.2x$$

$$\frac{-46.8}{-5.2} = \frac{-5.2x}{-5.2}$$

$$9 = x$$



$$(22) x + 7.1x = 234.9$$

$$1.00x + 7.1x = 234.9$$

$$8.1x = 234.9$$

$$\frac{8.1x}{8.1} = \frac{234.9}{8.1}$$

$$x = 29$$

$$(23) -0.03(30) + 0.50x = 0.30(30 + x)$$

$$-0.9 + 0.50x = 9 + 0.30x$$

$$-0.9 + 0.50x + 0.9 = 9 + 0.30x + 0.9$$

$$0.50x = 0.30x + 9.9$$

$$0.50x - 0.30x = 0.30x + 9.9 - 0.30x$$

$$0.20x = 9.9$$

$$\frac{0.20x}{0.20} = \frac{9.9}{0.20}$$

$$x = 49.5$$

or

$$x = 50$$

found

$$\begin{aligned} (24) \quad -7x + 5 + 5x &= -2x + 10 \\ -2x + 5 &= -2x + 10 \\ -2x + 5 - 5 &= -2x + 10 - 5 \end{aligned}$$

$$-2x = -2x + 5$$

$$-2x + 2x = -2x + 5 + 2x$$

$$0 \neq 5$$

$\emptyset$

OR

$\{ \}$

$$(25) \quad 2(x+3) = (2x+6)$$

$$2x + 6 = 2x + 6$$

$$2x + 6 - 6 = 2x + 6 - 6$$

$$2x = 2x$$

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

$$0 = 0$$

all real numbers  
identity  
 $\{x \mid x \in \mathbb{R}\}$

(26)

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

$$LCD = 12$$

$$\frac{x}{2}(12) + \frac{1}{6}(12) = \left(\frac{6x+2}{12}\right)(12)$$

$$x(6) + 1(2) = (6x+2)(1)$$

$$6x + 2 = 6x + 2$$

$$6x + 2 - 2 = 6x + 2 - 2$$

$$6x = 6x$$

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

$$0 = 0$$

all real numbers, identity  
 $\{x \mid x \in \mathbb{R}\}$

$$(27) \quad P = 2L + 2W, \quad P = 28, \quad W = 9$$

$$28 = 2L + 2(9)$$

$$28 = 2L + 18$$

$$28 - 18 = 2L + 18 - 18$$

$$10 = 2L$$

$$\frac{10}{2} = \frac{2L}{2}$$

$$5 = L$$



$$(28) \quad V = \frac{1}{3}Bh, \quad V = 48, \quad h = 8$$

$$48 = \frac{1}{3}B(8)$$

$$48 = \frac{8}{3}B$$

$$\frac{3}{8}(48) = \frac{3}{8}\left(\frac{8}{3}B\right)$$

$$3(6) = B$$

$$18 = B$$

$$(29) \quad I = prt, \quad I = 44.8, \quad p = 160, \quad r = 0.04$$

$$44.8 = 160(0.04)t$$

$$44.8 = 6.4t$$

$$\frac{44.8}{6.4} = \frac{6.4t}{6.4}$$

$$7 = t$$

30.

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

$$F = 167$$

$$C = \frac{5}{9}(167 - 32)$$

$$C = \frac{5}{9}(135)$$

$$C = 5(15)$$

$$C = 75$$

31.

$$V = \pi r^2 h, \quad r = 6, \quad h = 7, \quad \pi = 3.14$$

$$V = 3.14(6)^2(7)$$

$$V = 3.14(6)(6)(7)$$

$$V = 3.14(36)(7)$$

$$V = 3.14(252)$$

$$V = 791.28$$

$$\frac{791.28}{10} =$$

$$79.128 \approx \text{round}$$

32.

$$A = \pi r^2 \quad r = 7, \quad \pi = 3.14$$

$$A = 3.14(7)^2$$

$$A = 3.14(7)(7)$$

$$A = 3.14(49)$$

$$A = 153.86$$

33.

$$C = 2\pi r \quad \text{solve for } r$$

$$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$$

$$\frac{C}{2\pi} = r$$

34)  $A = LW$  solve for  $W$

$$\frac{A}{L} = \frac{\cancel{L}W}{\cancel{L}}$$

$$\frac{A}{L} = W$$

35)  $I = Prt$  solve for  $r$

$$\frac{I}{Pt} = \frac{P\cancel{r}\cancel{t}}{\cancel{P}\cancel{t}}$$

$$\frac{I}{Pt} = r$$

36)  $V = \frac{1}{3}Ah$  solve for  $h$

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

$$3V = Ah$$

$$\frac{3V}{A} = \frac{Ah}{A}$$

$$\frac{3V}{A} = h$$

37)  $p = a + b + c$  solve for  $c$

$$p - a = \cancel{a} + b + c - \cancel{a}$$

$$p - a = b + c$$

$$p - a - b = \cancel{b} + c - \cancel{b}$$

$$p - a - b = c$$



(38)  $A = P + PRT$  Solve for  $R$

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

$$A - P = PRT$$

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

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



(39)  $A = \frac{1}{2}h(B + b)$  Solve for  $B$

$$2A = 2\left(\frac{1}{2}\right)h(B + b)$$

$$2A = h(B + b)$$

$$2A = hB + hb$$

$$2A - hb = hB + hb - hb$$

$$2A - hb = hB$$

$$\frac{2A - hb}{h} = \frac{hB}{h}$$

$$\frac{2A - hb}{h} = B$$

OR

$$\frac{2A - bh}{h} = B$$

(40)  $4x - 5y = 2$  Solve for  $y$

$$4x - 5y - 4x = 2 - 4x$$

$$-5y = 2 - 4x$$

$$\frac{-5y}{-5} = \frac{2 - 4x}{-5}$$

$$y = \frac{-4x + 2}{-5}$$

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

$$y = \frac{4x - 2}{5}$$

41.  $14x + 9y = 10$  Solve for  $y$

$$\cancel{14x} + 9y - \cancel{14x} = 10 - 14x$$

$$9y = 10 - 14x$$

$$\frac{9y}{9} = \frac{10 - 14x}{9}$$

$$y = \frac{10 - 14x}{9}$$

13

42. The sum of a number and three is negative eleven. Find the number.

$$x + 3 = -11$$

$$\cancel{x} + \cancel{3} - \cancel{3} = -11 - 3$$

$$x = -14$$

43. Six times a number, added to 18, is 36. Find the number.

$$6x + 18 = 36$$

$$\cancel{6x} + \cancel{18} - \cancel{18} = 36 - 18$$

$$6x = 18$$

$$\frac{6x}{6} = \frac{18}{6}$$

$$x = 3$$

- (44) 2 times a number less than 7 times the same number is 35. Find the number.

$$7x - 2x = 35$$

$$5x = 35$$

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

$$x = 7$$

14

- (45) What is 10% of 400?

$$.10(400) =$$

$$40 =$$

- (46) 11% of students at a university attended a lecture. If 4000 students are enrolled at the University, about how many students attended the lecture?

$$.11(4000) =$$

$$440 =$$

- (47) Logan bought stocks and later sold them for \$823,900, making a profit of 7%. How much did he pay for the stocks

$$X + .07X = 823900$$

$$1.00X + .07X = 823900$$

$$1.07X = 823900$$

$$\frac{1.07X}{1.07} = \frac{823900}{1.07}$$

$$X = \$770,000$$

- 48) After receiving a discount of 7.5% on its bulk order of typewriter ribbons, John's Office Supply pays \$4810. What was the price of the order before the discount?

$$X - .075X = 4810$$

$$1.00X - .075X = 4810$$

$$.925X = 4810$$

$$\frac{.925X}{.925} = \frac{4810}{.925}$$

$$X = 5200$$

- 49) Find two complementary angles such that the measure of the first angle is  $X^\circ$ , and the measure of the second angle is  $(3X-2)^\circ$ .

$$(X) + (3X-2) = 90$$

$$X + 3X - 2 = 90$$

$$4X - 2 = 90$$

$$4X - 2 + 2 = 90 + 2$$

$$4X = 92$$

$$\frac{4X}{4} = \frac{92}{4}$$

$$X = 23$$

Subst

$$3X - 2 =$$

$$3(23) - 2 =$$

$$69 - 2 =$$

$$67 =$$

- (50) Find two supplementary angles such that the first angle is  $30^\circ$  more than 5 times the second.

$$(5x+30) + x = 180$$

$$5x + 30 + x = 180$$

$$6x + 30 = 180$$

$$6x + \cancel{30} - \cancel{30} = 180 - 30$$

$$6x = 150$$

$$\frac{6x}{6} = \frac{150}{6}$$

$$x = 25$$

Subst

$$5x + 30 =$$

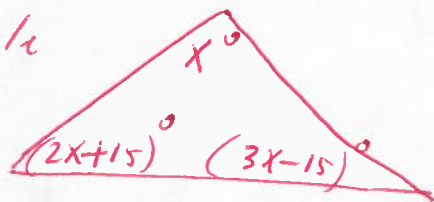
$$5(25) + 30 =$$

$$125 + 30 =$$

$$155 =$$



- (51) Find the measure of each angle of the triangle



$$(x) + (2x+15) + (3x-15) = 180$$

$$x + 2x + 15 + 3x - 15 = 180$$

$$6x = 180$$

$$\frac{6x}{6} = \frac{180}{6}$$

$$x = 30$$

Subst

$$2x + 15 =$$

$$2(30) + 15 =$$

$$60 + 15 =$$

$$75$$

Subst

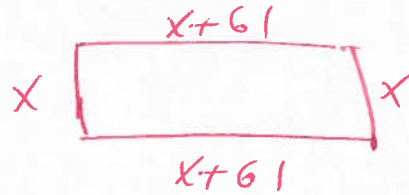
$$3x - 15 =$$

$$3(30) - 15 =$$

$$90 - 15 =$$

$$75 =$$

- 52) A rectangular carpet has a perimeter of 198 inches. The length of the carpet is 61 inches more than the width. What are the dimensions of the carpet?



$$P = 2L + 2W$$

$$198 = 2(x+61) + 2(x)$$

$$198 = 2x + 122 + 2x$$

$$198 = 4x + 122$$

$$198 - 122 = 4x + 122 - 122$$

$$76 = 4x$$

$$\frac{76}{4} = \frac{4x}{4}$$

$$19 = x$$

Subst

$$x + 61 =$$

$$(19) + 61 =$$

$$80 =$$

- 53) A motorcycle traveling at 50 miles per hour overtakes a car traveling at 30 miles per hour that had a three-hour head start. How far from the starting point are the two vehicles?

$$50x - 30x = 90$$

$$20x = 90$$

$$\frac{20x}{20} = \frac{90}{20}$$

$$x = 4.5$$

Subst

$$50(4.5) =$$

$$225 =$$

(54) Two cars start from the same point and travel in the same direction. If one car is traveling 60 miles per hour and the other car is traveling at 56 miles per hour, how far apart will they be after 8 hours?

$$60x - 56x =$$

$$4x =$$

subst

$$4(8) =$$

$$32 =$$

(55)

$x > -2$  Graph



$$(-2, \infty)$$

(56)

$x \geq 3$  Graph



$$[3, \infty)$$

(57)



use interval notation

$$(-\infty, -1]$$

(58)



use interval notation

$$(-\infty, 3)$$

170

59 use interval notation



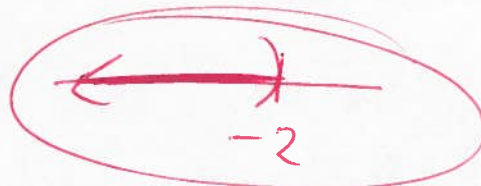
$$[-6, 1)$$

19

60.  $x - 3 < -5$

$$x - 3 + 3 < -5 + 3$$

$$x < -2$$



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

61.  $x - 1 \leq -5$

$$x - 1 + 1 \leq -5 + 1$$

$$x \leq -4$$



$$(-\infty, -4]$$

62.  $x + 5 < 1$

$$x + 5 - 5 < 1 - 5$$

$$x < -4$$



$$(-\infty, -4)$$

63.  $7x \geq -21$

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

$$x \geq -3$$

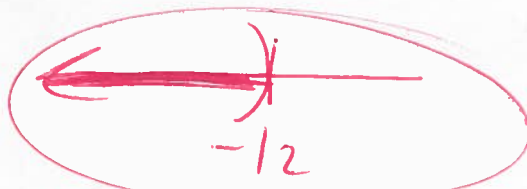


$$[-3, \infty)$$

64.  $-3x > 36$

$$\frac{-3x}{-3} < \frac{36}{-3}$$

$$x < -12$$



$$(-\infty, -12)$$

20

65.

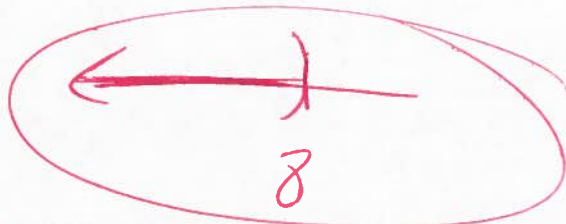
$$2x + 6 < 22$$

$$2x + \cancel{6} - \cancel{6} < 22 - 6$$

$$2x < 16$$

$$\frac{2x}{2} < \frac{16}{2}$$

$$x < 8$$



$$(-\infty, 8)$$

66.

$$6x + 3 > 5x - 1$$

$$6x + \cancel{3} - \cancel{3} > 5x - 1 - 3$$

$$6x > 5x - 4$$

$$6x - 5x > 5x - 4 - 5x$$

$$x > -4$$



$$(-4, \infty)$$

67.

$$1.4x - 3.8 > 0.7x - 1.07$$

$$1.4x - \cancel{3.8} + \cancel{3.8} > 0.7x - 1.07 + 3.8$$

$$1.4x > 0.7x + 2.73$$

$$1.4x - 0.7x > 0.7x + 2.73 - 0.7x$$

$$.7x > 2.73$$

$$\frac{.7x}{.7} > \frac{2.73}{.7}$$

$$x > 3.9$$

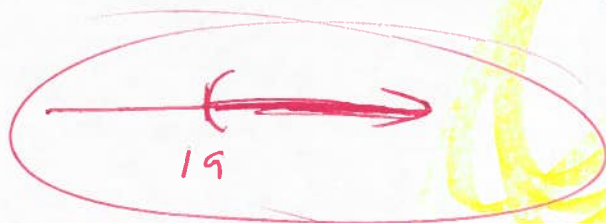


$$(3.9, \infty)$$

68.  $6x - 2 < 7(x - 3)$   
 $6x - 2 < 7x - 21$   
 $6x - \cancel{2} + 2 < 7x - 21 + 2$   
 $6x < 7x - 19$

$6x - 7x < 7x - 19 - 7x$   
 $-1x < -19$

$\frac{-1x}{-1} > \frac{-19}{-1}$  Turn the alligator around



$(19, \infty)$

$x > 19$

69.  $35x + 35 > 5(6x + 6)$

$35x + 35 > 30x + 30$

$35x + \cancel{35} - \cancel{35} > 30x + 30 - 35$

$35x > 30x - 5$

$35x - 30x > 30x - 5 - 30x$

$5x > -5$

$\frac{5x}{5} > \frac{-5}{5}$



$(-1, \infty)$

$x > -1$

70.  $5 - 3(1 - x) \leq 11$

$5 - 3 + 3x \leq 11$

$2 + 3x \leq 11$

$\cancel{2} + 3x - \cancel{2} \leq 11 - 2$

$3x \leq 9$

$\frac{3x}{3} \leq \frac{9}{3}$



$(-\infty, 3]$

$x \leq 3$

21.

- 71) Decide whether or not the ordered pair is a solution to the equation.

$$4x + 2y = 16$$

$$(2, 4)$$

$$x, y$$

$$4(2) + 2(4) = 16$$

$$8 + 8 = 16$$

$$16 = 16$$

Yes

- 72) Decide whether or not the ordered pair is a solution to the equation

$$3x - 5y = 35$$

$$(5, 4)$$

$$x, y$$

$$3(5) - 5(4) = 35$$

$$15 - 20 = 35$$

$$-5 \neq 35$$

No

- 73) Find an ordered pair that satisfies the equation  $y = -x + 9$  by letting  $x = 5$

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

$$y = -5 + 9$$

$$y = 4$$

$$(x, y) = (5, 4)$$

- 74) Find an ordered pair that satisfies the equation  $4x + y = -34$  by letting  $x = -9$

$$4(-9) + y = -34$$

$$-36 + y = -34$$

$$-36 + y + 36 = -34 + 36$$

$$y = 2$$

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

75. Graph  $y = 2x - 3$

$$y = 2(0) - 3$$

$$y = 0 - 3$$

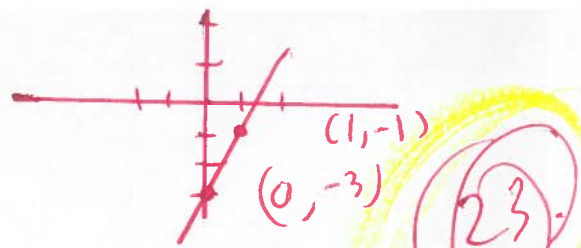
$$y = -3$$

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

$$y = 2 - 3$$

$$y = -1$$

| x | y  |
|---|----|
| 0 | -3 |
| 1 | -1 |



76. Graph  $y = -3x - 6$

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

$$y = 0 - 6$$

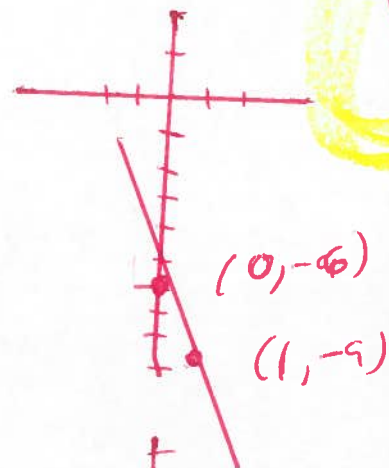
$$y = -6$$

$$y = -3(1) - 6$$

$$y = -3 - 6$$

$$y = -9$$

| x | y  |
|---|----|
| 0 | -6 |
| 1 | -9 |



77. Graph  $y = x - 3$

$$y = (0) - 3$$

$$y = 0 - 3$$

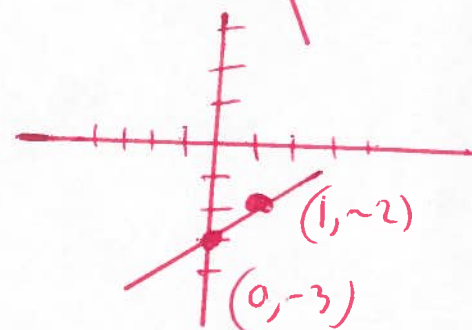
$$y = -3$$

$$y = (1) - 3$$

$$y = 1 - 3$$

$$y = -2$$

| x | y  |
|---|----|
| 0 | -3 |
| 1 | -2 |



78. Graph  $6y - 3x = -9$

$$6y - 3x + 3x = -9 + 3x$$

$$6y = 3x - 9$$

$$\frac{6y}{6} = \frac{3x}{6} - \frac{9}{6}$$

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

$$y = \frac{1}{2}(0) - \frac{3}{2}$$

$$y = 0 - \frac{3}{2}$$

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

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

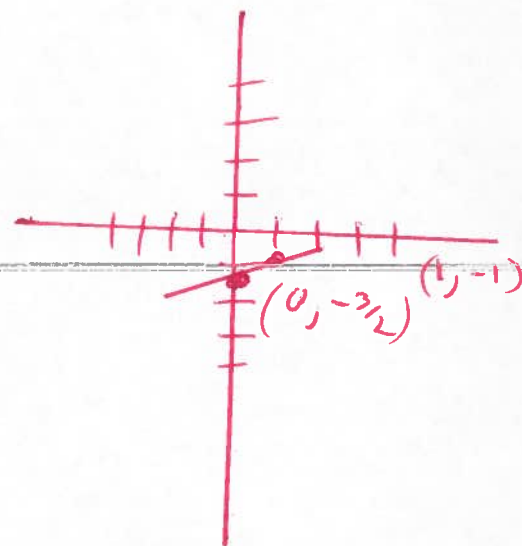
$$y = \frac{1}{2} - \frac{3}{2}$$

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

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

$$y = -1$$

| x | y              |
|---|----------------|
| 0 | $-\frac{3}{2}$ |
| 1 | -1             |



79. Graph

$$-5x - 10y = 30$$

$$-5x - 10y + 5x = 30 + 5x$$

$$-10y = 30 + 5x$$

$$\frac{-10y}{-10} = \frac{30}{-10} + \frac{5x}{-10}$$

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

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

$$y = -\frac{1}{2}(0) - 3$$

$$y = 0 - 3$$

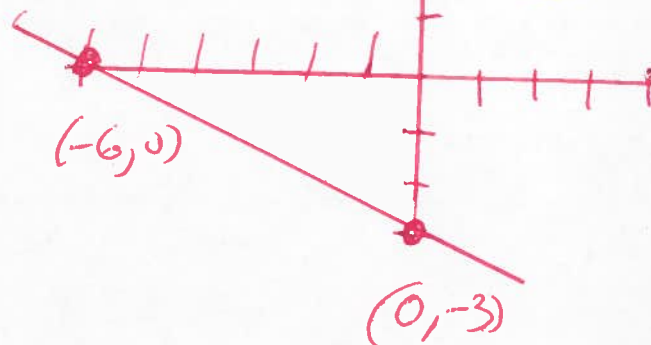
$$y = -3$$

$$y = -\frac{1}{2}(-6) - 3$$

$$y = 3 - 3$$

$$y = 0$$

| X  | Y  |
|----|----|
| 0  | -3 |
| -6 | 0  |



24

80. Graph  $y = -3x + 1$

$$y = -3(0) + 1$$

$$y = 0 + 1$$

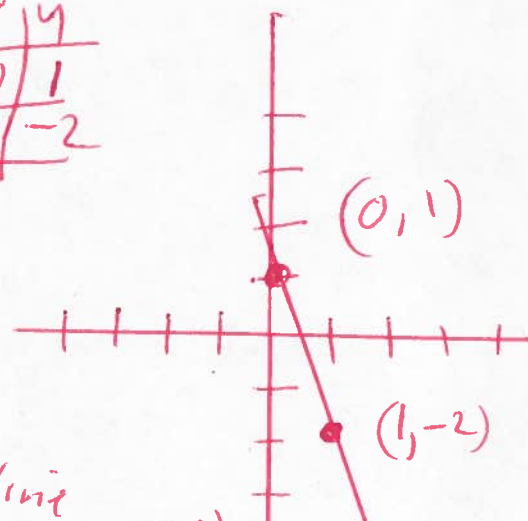
$$y = 1$$

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

$$y = -3 + 1$$

$$y = -2$$

| X | Y  |
|---|----|
| 0 | 1  |
| 1 | -2 |



81. Find the slope of the line through the points.

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

$$(0, 0) \quad (3, 1)$$

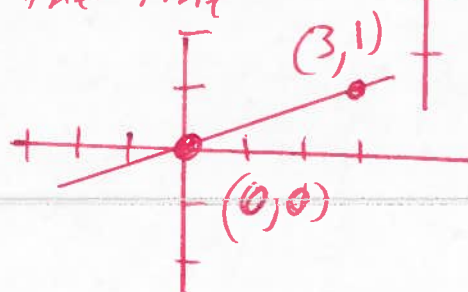
$$x_1 \quad y_1 \quad x_2 \quad y_2$$

$$m = \frac{(0) - (1)}{(0) - (3)}$$

$$m = \frac{0 - 1}{0 - 3}$$

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

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



82 Find the slope of the line through the two points

$(1, -3)$  and  $(7, 8)$   
 $x_1 \ y_1 \quad x_2 \ y_2$

25.

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

$$m = \frac{(-3) - (8)}{(1) - (7)}$$

$$m = \frac{-3 - 8}{1 - 7}$$

$$m = \frac{-11}{-6}$$

$$m = \frac{11}{6}$$

83 Find the slope of the line through the two points

$(1, -5)$  and  $(-9, 6)$   
 $x_1 \ y_1 \quad x_2 \ y_2$

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

$$m = \frac{(-5) - (6)}{(1) - (-9)}$$

$$m = \frac{-5 - 6}{1 + 9}$$

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

84. Find the slope of the line through the two points  $(-4, 7)$  and  $(-3, -5)$

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

$$m = \frac{(7) - (-5)}{(-4) - (-3)}$$

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

$$m = \frac{12}{-1}$$

$$= -12$$

261

85. Graph

$$y = -3x - 6$$

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

$$y = 0 - 6$$

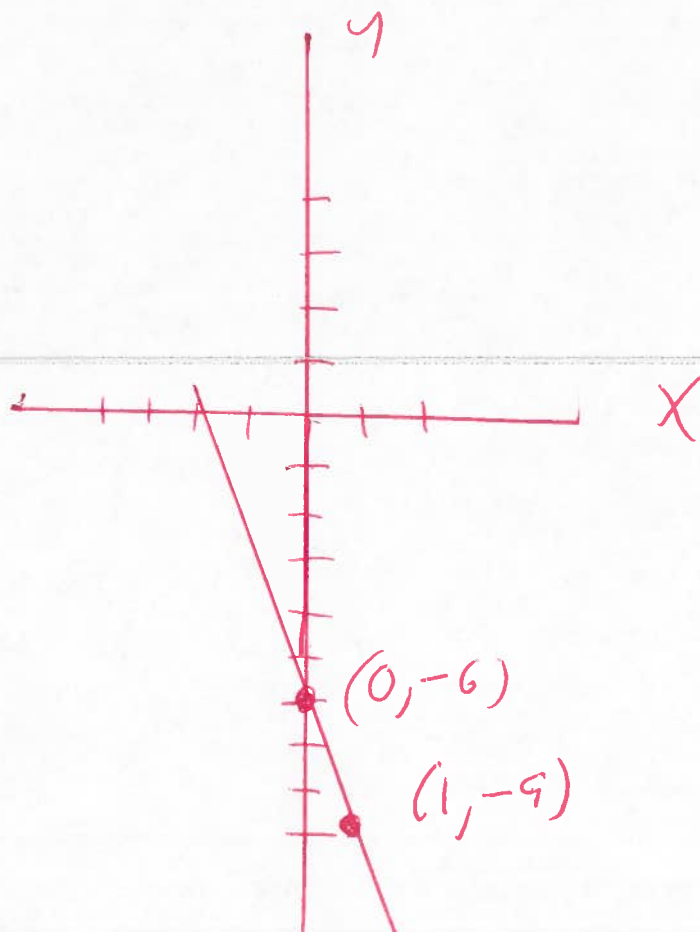
$$y = -6$$

$$y = -3(1) - 6$$

$$y = -3 - 6$$

$$y = -9$$

| x | y  |
|---|----|
| 0 | -6 |
| 1 | -9 |



86 Graph

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

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

$$y = 0 + 2$$

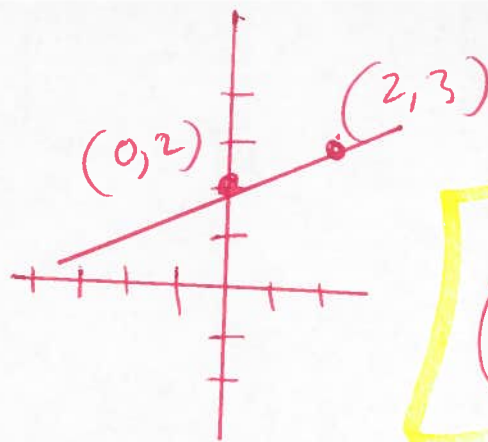
$$y = 2$$

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

$$y = 1 + 2$$

$$= 3$$

| x | y |
|---|---|
| 0 | 2 |
| 2 | 3 |



87. Find the slope and the y-intercept

$$y = 3x + 11$$

$$y = mx + b$$

$$\text{slope} = m = 3$$

and y-intercept = (0, 11) or  $b = 11$

88. Find the slope and the y-intercept

$$y = \frac{2}{3}x + \frac{5}{6}$$

$$y = mx + b$$

$$\text{slope} = m = \frac{2}{3}$$

and y-intercept = (0,  $\frac{5}{6}$ ) or  $b = \frac{5}{6}$

89. Find the slope and the y-intercept

$$3x + y = 4$$

$$y = mx + b$$

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

$$y = 4 - 3x$$

$$y = -3x + 4$$

$$\text{slope} = m = -3$$

and y-intercept = (0, 4) or  $b = 4$

(90.) Find the slope and the y-intercept

$$7x - 3y = -11$$

$$y = mx + b$$

$$7x - 3y - 7x = -11 - 7x$$

$$-3y = -11 - 7x$$

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

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

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

$$\text{Slope} = m = \frac{7}{3}$$

$$\text{and } y\text{-intercept} = (0, \frac{11}{3}) \text{ or } b = \frac{11}{3}$$

28.

(91.) Graph

$$y = 5x - 6$$

$$y = 5(0) - 6$$

$$y = 0 - 6$$

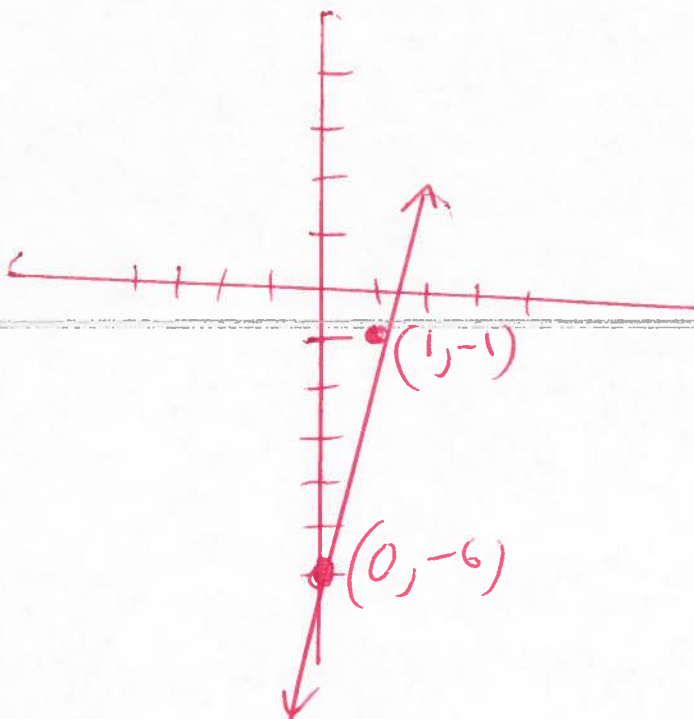
$$y = -6$$

| x | y  |
|---|----|
| 0 | -6 |
| 1 | -1 |

$$y = 5(1) - 6$$

$$y = 5 - 6$$

$$y = -1$$



92. Graph  
 $y = \frac{1}{2}x + 5$

$$y = \frac{1}{2}(0) + 5$$

$$y = 0 + 5$$

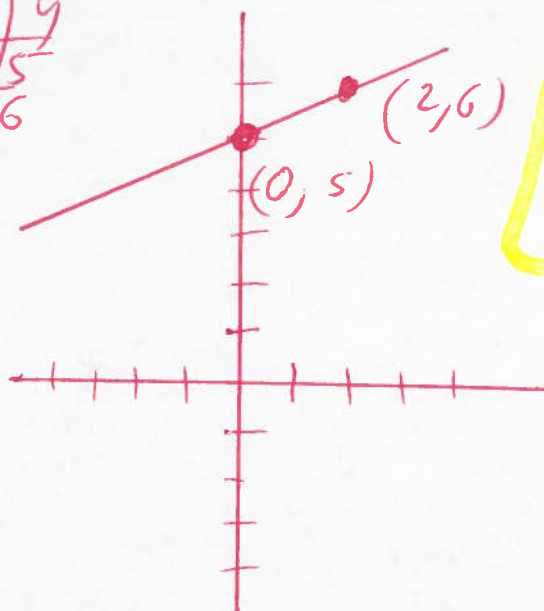
$$y = 5$$

$$y = \frac{1}{2}(2) + 5$$

$$y = 1 + 5$$

$$y = 6$$

| x | y |
|---|---|
| 0 | 5 |
| 2 | 6 |



29.

93. Graph  
 $y = -\frac{1}{2}x + 2$

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

$$y = 0 + 2$$

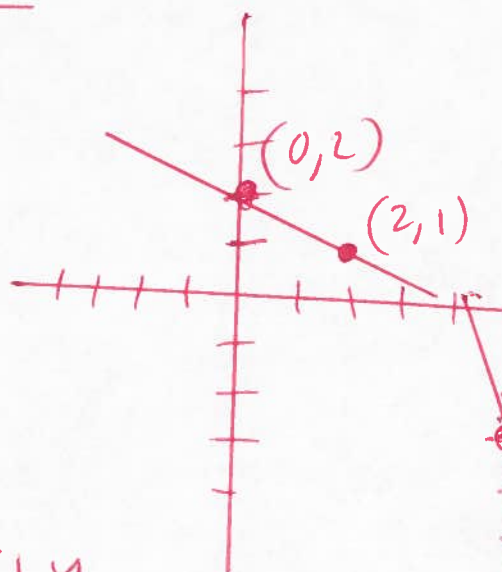
$$y = 2$$

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

$$y = -1 + 2$$

$$y = 1$$

| x | y |
|---|---|
| 0 | 2 |
| 2 | 1 |



94. Graph  
 $7x + 2y = 14$

$$7x + 2y - 7x = 14 - 7x$$

$$2y = 14 - 7x$$

$$\frac{2y}{2} = \frac{14}{2} - \frac{7x}{2}$$

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

$$y = -\frac{7}{2}x + 7$$

| x | y |
|---|---|
| 0 | 7 |
| 2 | 0 |

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

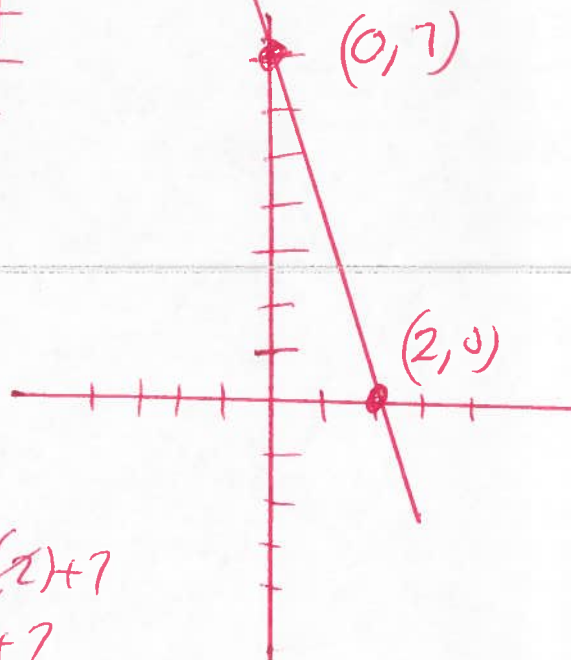
$$y = 0 + 7$$

$$y = 7$$

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

$$y = -7 + 7$$

$$y = 0$$



95) Find the equation of the line with the given slope and intercept

$$\text{slope} = m = -8$$

$$y\text{-intercept} = 2$$

$$m = -8$$

$$(0, 2)$$

point slope formula

$$x_1 \quad y_1$$

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



$$y - (2) = -8(x - (0))$$

$$y - 2 = -8(x - 0)$$

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

$$y - 2 = -8x$$

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

$$y = -8x + 2$$

96) Find the equation of the line with the given slope and ~~intercept~~ ~~point~~

$$\text{slope} = m = -3$$

~~y-intercept~~

$$\text{Point } (4, 3)$$

point slope formula

$$x_1 \quad y_1$$

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

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

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

$$y - 3 = -3x + 12$$

$$y - 3 + 3 = -3x + 12 + 3$$

$$y = -3x + 15$$

97. Find the equation of the line with the given point and slope.

Slope  $m = -2$  point  $(-2, -7)$   
Point slope formula  $x_1, y_1$

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

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

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

$$y + 7 = -2x - 4$$

$$y + 7 - 7 = -2x - 4 - 7$$

$$y = -2x - 11$$



98. Determine if the lines are parallel, perpendicular, or neither

(L1)  $y = x - 6$

(L2)  $y = 2 - x$  rewrite  $\rightarrow y = -x + 2$

(L1)  $y = x - 6$   $m_1 = 1$  Slope line 1

(L2)  $y = -x + 2$   $m_2 = -1$  Slope line 2

$$m_1 \cdot m_2 = (1)(-1) = -1$$

perpendicular ✓

99. Determine if the lines are parallel, perpendicular, or neither

32

L1  $y = 7x + 9$   $m_1 = 7$  Slope

L2  $y = -7x - 3$   $m_2 = -7$  Slope

$$m_1 \cdot m_2 = (7)(-7) = -49$$

NOT perpendicular

$$m_1 = 7 \neq -7 = m_2$$

NOT parallel

NEITHER ✓

100. Determine if the lines are parallel, perpendicular, or neither

L1  $y = 7x + 5$   $m_1 = 7$  Slope

L2  $y = -\frac{1}{7}x + 3$   $m_2 = -\frac{1}{7}$  Slope

$$m_1 \cdot m_2 = (7)\left(-\frac{1}{7}\right) = \frac{-7}{7} = -1$$

Perpendicular ✓

(10) Determine if lines are parallel, perpendicular, or neither

33

(L1)  $6x + 2y = 8$

(L2)  $18x + 6y = 27$   
Solve for y

(L1)  $6x + 2y = 8$

(L1)  $6x + 2y - 6x = 8 - 6x$   
 $2y = 8 - 6x$

(L1)  $\frac{2y}{2} = \frac{8}{2} - \frac{6x}{2}$

(L1)  $y = 4 - 3x$

(L1)  $y = -3x + 4$

$m_1 = -3$

$m_1 = m_2$

Parallel

(L2)  $18x + 6y = 27$

$18x + 6y - 18x = 27 - 18x$

(L2)  $6y = 27 - 18x$

(L2)  $\frac{6y}{6} = \frac{27}{6} - \frac{18x}{6}$

(L2)  $y = \frac{9}{2} - 3x$

(L2)  $y = -3x + \frac{9}{2}$

$m_2 = -3$

(102) Solve the system of equations using substitution

$$x + y = -6$$

$$y = 2x$$

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

$$x + 2x = -6$$

$$3x = -6$$

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

$$x = -2$$

Subst

$$y = 2x$$

$$y = 2(-2)$$

$$y = -4$$

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

34

(103) Solve the system of equations using elimination

$$3x + y = -30$$

$$5x - y = 6$$

$$8x + 0 = -24$$

$$8x = -24$$

$$\frac{8x}{8} = \frac{-24}{8}$$

$$x = -3$$

Subst

$$3x + y = -30$$

$$3(-3) + y = -30$$

$$-9 + y = -30$$

$$-9 + y + 9 = -30 + 9$$

$$y = -21$$

$$(x, y)$$

$$(-3, -21)$$

(104) Solve the system of equations using elimination.

$$x + y = -11$$

$$x - y = -1$$

$$\hline 2x + 0 = -12$$

$$2x = -12$$

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

$$x = -6$$

→ Subst  $x + y = -11$

$$(-6) + y = -11$$

$$-6 + y = -11$$

$$\cancel{-6} + y + \cancel{6} = -11 + 6$$

$$y = -5$$

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

35

(105) Solve the system of equations using elimination.

$$\left( \begin{array}{l} x + 6y = 45 \\ 6x + 6y = 30 \end{array} \right) \begin{array}{l} (-1) \\ (1) \end{array}$$

$$-1x - 6y = -45$$

$$6x + 6y = 30$$

$$\hline 5x + 0 = -15$$

$$5x = -15$$

$$\frac{5x}{5} = \frac{-15}{5}$$

$$x = -3$$

Subst

$$x + 6y = 45$$

$$(-3) + 6y = 45$$

$$-3 + 6y = 45$$

$$\cancel{-3} + 6y + \cancel{3} = 45 + 3$$

$$6y = 48$$

$$\frac{6y}{6} = \frac{48}{6}$$

$$y = 8$$

$$(x, y) = (-3, 8)$$

Solve the system of equations using elimination

$$\begin{array}{r} (106.) \quad \left( \begin{array}{l} x - 4y = 17 \\ -3x - 5y = 51 \end{array} \right) \begin{array}{l} (-5) \\ (4) \end{array} \end{array}$$

$$\begin{array}{r} -5x + 20y = -85 \\ -12x - 20y = 204 \end{array}$$

$$\hline -17x + 0 = 119$$

$$-17x = 119$$

$$\frac{-17x}{-17} = \frac{119}{-17}$$

$$x = -7$$

Subst

$$x - 4y = 17$$

$$(-7) - 4y = 17$$

$$-7 - 4y = 17$$

$$-x - 4y + 1 = 17 + 7$$

$$-4y = 24$$

$$\frac{-4y}{-4} = \frac{24}{-4}$$

$$y = -6$$

$$(x, y) = (-7, -6)$$

36

(107) Solve the system of equations using elimination.

$$\begin{array}{r} \left( \begin{array}{l} x + y = 4 \\ x + y = -6 \end{array} \right) \begin{array}{l} (-1) \\ (1) \end{array} \end{array}$$

$$-1x - 1y = -4$$

$$1x + 1y = -6$$

$$\hline 0 + 0 = -10$$

$$0 \neq -10$$

NO solution, inconsistent,  $\emptyset$

108.

$$\begin{aligned} & (-2x^2 - 5x - 6) + (8x^2 - 5x + 4) = \\ & -2x^2 - 5x - 6 + 8x^2 - 5x + 4 = \\ & 6x^2 - 10x - 2 = \end{aligned}$$

37.

109.

$$\begin{aligned} & (7x^2 + 20x + 5) - (5x^2 - 4x - 12) = \\ & 7x^2 + 20x + 5 - 5x^2 + 4x + 12 = \\ & 2x^2 + 24x + 17 = \end{aligned}$$

110.

$$\begin{aligned} & -2x^2 + 8x - 3 = \text{Eval if } x = -3 \\ & -2(-3)^2 + 8(-3) - 3 = \\ & -2(-3)(-3) + 8(-3) - 3 = \\ & -2(9) + 8(-3) - 3 = \\ & -18 - 24 - 3 = \\ & -42 - 3 = \\ & -45 = \end{aligned}$$

111.

$$\begin{aligned} & (-8x^9y^8z)^2 = \\ & ((-8)^1x^9y^8z^1)^2 = \\ & (-8)^{1(2)}x^{9(2)}y^{8(2)}z^{1(2)} = \\ & (-8)^2x^{18}y^{16}z^2 = \end{aligned}$$

$$\begin{aligned} & (-8)(-8)x^{18}y^{16}z^2 = \\ & 64x^{18}y^{16}z^2 = \end{aligned}$$

$$\begin{aligned} 112. \quad & (-6z^2)(5z^3) = \\ & \quad \quad \quad 2+3 \\ & -30z^{\quad} = \\ & -30z^5 = \end{aligned}$$

$$\begin{aligned} 113. \quad & (7x^6y)(8x^2y^4) = \\ & (7x^6y^1)(8x^2y^4) = \\ & \quad \quad \quad 6+2 \quad 1+4 \\ & 56x^{\quad}y^{\quad} = \\ & 56x^8y^5 = \end{aligned}$$

$$\begin{aligned} 114. \quad & (m^3n)^4(-4m^1n^6) = \\ & (m^3n^1)^4(-4m^1n^6) = \\ & (m^{3(4)}n^{1(4)})(-4m^1n^6) = \\ & (m^{12}n^4)(-4m^1n^6) = \\ & \quad \quad \quad 12+1 \quad 4+6 \\ & -4m^{\quad}n^{\quad} = \\ & -4m^{13}n^{10} = \end{aligned}$$



$$\begin{aligned} 115. \quad & -11x(6x-4) = \\ & -66x^2 + 44x = \end{aligned}$$

$$\begin{aligned} 116. \quad & 2y^2(3y^2+3y-7) = \\ & 6y^4 + 6y^3 - 14y^2 = \end{aligned}$$

$$\begin{aligned} 117. \quad & (x+3)(x+3) = \\ & x^2 + 3x + 3x + 9 = \\ & x^2 + 6x + 9 = \end{aligned}$$

$$\begin{aligned} 118. \quad & (4y-5)(4y-3) = \\ & 16y^2 - 12y - 20y + 15 = \\ & 16y^2 - 32y + 15 = \end{aligned}$$

$$\begin{aligned} 119. \quad & (y-1)(y-4) = \\ & y^2 - 4y - 1y + 4 = \\ & y^2 - 5y + 4 = \end{aligned}$$

$$\begin{aligned} 120. \quad & (b-8)(b+1) = \\ & b^2 + 1b - 8b - 8 = \\ & b^2 - 7b - 8 = \end{aligned}$$

39.

121.  $(4x+3)(x-9) =$

$$4x^2 - 36x + 3x - 27 =$$

$$4x^2 - 33x - 27 =$$

122.  $(3n+5p)(6n+p) =$

$$18n^2 + 3np + 30np + 5p^2 =$$

$$18n^2 + 33np + 5p^2 =$$

123.  $(9x+4y)(7x-2y) =$

$$63x^2 - 18xy + 28xy - 8y^2 =$$

$$63x^2 + 10xy - 8y^2 =$$

124.  $(x+4)(x-4) =$

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

$$x^2 - 16 =$$

125.  $(7p+9)(7p-9) =$

$$49p^2 - 63p + 63p - 81 =$$

$$49p^2 - 81 =$$

126.  $(2x+5y)(2x-5y) =$

$$4x^2 - 10xy + 10xy - 25y^2 =$$

$$4x^2 - 25y^2 =$$

40

127.  $(n+15)^2 =$   
 $(n+15)(n+15) =$   
 $n^2 + 15n + 15n + 225 =$   
 $n^2 + 30n + 225 =$

128.  $(w-11)^2 =$   
 $(w-11)(w-11) =$   
 $w^2 - 11w - 11w + 121 =$   
 $w^2 - 22w + 121 =$

129.  $(4x+3y)^2 =$   
 $(4x+3y)(4x+3y) =$   
 $16x^2 + 12xy + 12xy + 9y^2 =$   
 $16x^2 + 24xy + 9y^2 =$

130.  $(6x-11y)^2 =$   
 $(6x-11y)(6x-11y) =$   
 $36x^2 - 66xy - 66xy + 121y^2 =$   
 $36x^2 - 132xy + 121y^2 =$



(131)



$7x-10$  find area of square

$7x-10$   $A = LW$

$$A = (7x-10)(7x-10)$$

$$A = 49x^2 - 70x - 70x + 100$$

$$= 49x^2 - 140x + 100$$

42.

(132)

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

$$y^3 + 7y^2 - 4y - 7y^2 - 49y + 28 =$$

$$y^3 - 53y + 28 =$$

(133)

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

$$7x^3 - 28x^2 + 7x - 1x^2 + 4x - 1 =$$

$$7x^3 - 29x^2 + 11x - 1 =$$

(134)

$$(2y+11)(5y^2-2y-9) =$$

$$10y^3 - 4y^2 - 18y + 55y^2 - 22y - 99 =$$

$$10y^3 + 51y^2 - 40y - 99 =$$

$$\textcircled{135.} \quad \frac{56m^{20}n^{14}}{7m^{19}n^{10}} =$$

$$\frac{\cancel{7}(8)m^{20-19}n^{14-10}}{\cancel{7}} =$$

$$\textcircled{8m^1n^4 =}$$

$$\textcircled{136.} \quad \frac{24x^6y^{11}}{6x^3y^6} =$$

$$\frac{\cancel{6}(4)x^{6-3}y^{11-6}}{\cancel{6}} =$$

$$\textcircled{4x^3y^5 =}$$

$$\textcircled{137.} \quad \left(\frac{5}{6}\right)^3 =$$

$$\left(\frac{5}{6}\right)\left(\frac{5}{6}\right)\left(\frac{5}{6}\right) =$$

$$\textcircled{\frac{125}{216} =}$$

$$\frac{2^{1(2)}t^{3(2)}}{5^4(2)} =$$

$$\textcircled{\frac{2^2t^6}{5^48} =}$$

$$\frac{(2)(2)t^6}{5^48} =$$

$$\textcircled{\frac{4t^6}{5^48} =}$$

$$\textcircled{138.} \quad \left(\frac{6t^3}{3 \cdot 5^4}\right)^2 =$$

$$\left(\frac{2t^3}{5^4}\right)^2 =$$

43.

$$(139) \quad 9^0 =$$

$$\frac{1}{2}$$

$$(140) \quad \left(\frac{5}{7}\right)^0 =$$

$$1 =$$

$$(141) \quad 7^{-1} =$$

$$\frac{1}{7^1} =$$

$$\frac{1}{7} =$$

$$(142) \quad 3^{-4} =$$

$$\frac{1}{3^4} =$$

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

$$\frac{1}{27} =$$

44

$$(143) \quad \frac{21r^7 - 35r^4}{7r}$$

$$\frac{21r^7}{7r^1} - \frac{35r^4}{7r^1}$$

$$\frac{(3)(7)r^7}{7r^1} - \frac{(5)(7)r^4}{7r^1} =$$

$$3r^{7-1} - 5r^{4-1} =$$

$$3r^6 - 5r^3 =$$

$$(144) \quad \frac{24x^2 + 20x - 11}{4x} =$$

$$\frac{24x^2}{4x} + \frac{20x}{4x} - \frac{11}{4x} =$$

$$\frac{(6)(4)x^2}{4x^1} + \frac{(5)(4)x}{4x} - \frac{11}{4x} =$$

$$6x^{2-1} + 5(1) - \frac{11}{4x} =$$

$$6x + 5 - \frac{11}{4x} =$$

45

145.

$$\frac{x^2 + 13x + 40}{x + 8}$$



Long division

$$\begin{array}{r} x+5 \\ x+8 \overline{) x^2 + 13x + 40} \\ \underline{-(x^2 + 8x)} \phantom{+ 40} \\ 5x + 40 \end{array}$$

$$\begin{array}{r} 5x + 40 \\ \underline{-(5x + 40)} \\ 0 \end{array}$$

0 rem

use Synthetic division

or

$$\frac{x^2 + 13x + 40}{x + 8}$$

app  $x+8$

$$\begin{array}{r|rrrr} -8 & 1 & 13 & 40 & \\ & & -8 & -40 & \\ \hline & 1 & 5 & 0 & \end{array}$$

0 rem

$$x + 5$$

146

$$\frac{3m^2 + 17m - 56}{m + 8} =$$

Long division

$$\begin{array}{r} 3m - 7 \\ m + 8 \overline{) 3m^2 + 17m - 56} \\ \underline{-(3m^2 + 24m)} \phantom{-56} \\ -7m - 56 \\ \underline{-(\overset{+}{-}7m - \overset{+}{56})} \\ 0 \end{array}$$

47

OR

0 Rem

Use Synthetic division

$$\frac{3m^2 + 17m - 56}{m + 8} =$$

$$\begin{array}{r|rrrr} -8 & 3 & 17 & -56 & \\ & & -24 & 56 & \\ \hline & 3 & -7 & 0 & \end{array}$$

0 Rem

$$3x - 7$$

(147) Factor GCF

$$4x^5 + 16x^3 =$$

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

(148) Factor GCF

$$20x^5y + 36xy^6 =$$

$$20x^5y^1 + 36x^1y^6 =$$

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

(149) Factor by Grouping

$$5x + 50 + xy + 10y =$$

$$(5x + 50) + (xy + 10y) =$$

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

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

(150) Factor by Grouping

$$3x - 36 + xy - 12y =$$

$$(3x - 36) + (xy - 12y) =$$

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

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

48.

151

Factor

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

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

$$\begin{array}{l} 20 \cdot 1 \\ 10 \cdot 2 \\ 4 \cdot 5 \end{array}$$

152.

Factor

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

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

$$\begin{array}{l} 35 \cdot 1 \\ 7 \cdot 5 \end{array}$$

153.

Factor

$$x^2 - x - 12 =$$

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

$$\begin{array}{l} 12 \cdot 1 \\ 6 \cdot 2 \\ 3 \cdot 4 \end{array}$$

154.

Factor

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

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

$$\begin{array}{l} 8 \cdot 1 \\ 2 \cdot 4 \end{array}$$

155.

Factor

$$x^2 + 13xy + 36y^2 =$$

$$(x + 4y)(x + 9y) =$$

$$\begin{array}{l} 36 \cdot 1 \\ 18 \cdot 2 \\ 12 \cdot 3 \\ 4 \cdot 9 \end{array}$$

156.

Factor

$$4x^2 + 12x - 40 =$$

$$4(x^2 + 3x - 10) =$$

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

$$\begin{array}{l} 10 \cdot 1 \\ 2 \cdot 5 \end{array}$$



157

Factor

$$81x^2 - 64 =$$

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

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

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

50.

158.

Factor

$$4x^2 - \frac{4}{9} =$$

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

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

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

159.

Factor

$$81x^2 - 16y^2 =$$

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

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

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

160.

Solve

$$x(4x+12) = 0$$

$$\text{Set } x=0 \text{ OR } 4x+12=0$$

$$4x+12-12=0-12$$

$$4x = -12$$

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

$$x = -3$$

$\{0, -3\}$

161

Solve

$$5x(6x+30)=0$$

$$\text{Set } 5x=0 \quad \text{OR} \quad 6x+30=0$$

$$\frac{5x}{5} = \frac{0}{5} \quad \text{OR} \quad 6x + \cancel{30} - \cancel{30} = 0 - 30$$

$$x=0$$

$$\text{OR} \quad 6x = -30$$

$$\frac{6x}{6} = \frac{-30}{6}$$

$$x = -5$$

$$\{0, -5\}$$

162

Solve

$$(y-7)(9y+26)=0$$

$$\text{Set } y-7=0 \quad \text{OR} \quad 9y+26=0$$

$$y-7+7=0+7 \quad \text{OR} \quad 9y + \cancel{26} - \cancel{26} = 0 - 26$$

$$y=7$$

$$\text{OR} \quad 9y = -26$$

$$\frac{9y}{9} = \frac{-26}{9}$$

$$y = -\frac{26}{9}$$

$$\{7, -\frac{26}{9}\}$$

163

Solve

$$12n^2 + 44n = 0$$

$$4n(3n+11)=0$$

$$\text{Set } 4n=0 \quad \text{OR} \quad 3n+11=0$$

$$\frac{4n}{4} = \frac{0}{4} \quad \text{OR} \quad 3n + 11 - 11 = 0 - 11$$

$$3n = -11$$

$$\frac{3n}{3} = \frac{-11}{3}$$

$$n = -\frac{11}{3}$$

$$\{0, -\frac{11}{3}\}$$

164

Solve

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

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

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

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

$x = 6$  OR  $x = -8$

48 : 1  
24 : 2  
12 : 4  
6 : 8

52  
 $\{6, -8\}$

165

Solve

$$x^2 - 17x + 72 = 0$$

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

Set  $x - 8 = 0$  OR  $x - 9 = 0$

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

$x = 8$  OR  $x = 9$

72 : 1  
36 : 2  
8 : 9

$\{8, 9\}$

166

Solve

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

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

Set  $2x - 5 = 0$  OR  $x + 1 = 0$

$$2x - 5 + 5 = 0 + 5 \quad \text{OR} \quad x + 1 - 1 = 0 - 1$$

$$2x = 5$$

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

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

OR  $x = -1$

$\{\frac{5}{2}, -1\}$

(167)

Solve

$$x^2 - x = 42$$

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

$$x^2 - x - 42 = 0$$

$$(x+6)(x-7) = 0$$

$$\text{Set } x+6=0 \quad \text{OR} \quad x-7=0$$

$$x+6-6=0-6 \quad \text{OR} \quad x-7+7=0+7$$

$$x = -6$$

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

$$\begin{array}{r} 42.1 \\ 21.2 \\ 6.7 \end{array}$$

$$\{5, 3\}$$

$$\{-6, 7\}$$

(168)

Solve

$$x^2 = 2x$$

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

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

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

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

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

$$x = 2$$

$$\{0, 2\}$$

(169)

Find  $f(14)$  when  $f(x) = 2x + 12$

$$f(14) = 2(14) + 12$$

$$f(14) = 28 + 12$$

$$f(14) = 40$$

$$\text{OR} \quad (14, 40)$$

(170) Find  $f(5)$  when  $f(x) = -7x + 6$

$$f(5) = -7(5) + 6$$

$$f(5) = -35 + 6$$

$$f(5) = -29$$

OR  $(5, -29)$

54

(171) Find  $f(x-3)$  when  $f(x) = -5x - 7$

$$f(x-3) = -5(x-3) - 7$$

$$f(x-3) = -5x + 15 - 7$$

$$f(x-3) = -5x + 8$$

OR  $(x-3, -5x+8)$

(172) Find  $f(3)$  when  $f(x) = x^2 + 3x - 4$

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

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

$$f(3) = 9 + 9 - 4$$

$$f(3) = 18 - 4$$

$$f(3) = 14$$

OR

$$(3, 14)$$

(173) Find  $f(-9)$  when  $f(x) = |x| - 6$

$$f(-9) = |-9| - 6$$

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

$$f(-9) = 3$$

OR

$$(-9, 3)$$

174.  $f(x) = \frac{x+5}{14x-10}$  find  $f(-10)$

$$f(-10) = \frac{(-10)+5}{14(-10)-10}$$

$$f(-10) = \frac{-10+5}{-140-10}$$

$$f(-10) = \frac{-5}{-150}$$

$$f(-10) = \frac{-5(1)}{-5(30)}$$

$f(-10) = \frac{1}{30}$  OR

$(-10, \frac{1}{30})$

175.  $f(x) = \frac{x-10}{3x+13}$  find  $f(-4)$

$$f(-4) = \frac{(-4)-10}{3(-4)+13}$$

$$f(-4) = \frac{-4-10}{-12+13}$$

$$f(-4) = \frac{-14}{1}$$

$f(-4) = -14$

OR  $(-4, -14)$



(176)  $f(x) = \frac{x^2+3}{x^3+3x}$  find  $f(5)$

$$f(5) = \frac{(5)^2+3}{(5)^3+3(5)}$$

$$f(5) = \frac{(5)(5)+3}{(5)(5)(5)+15}$$

$$f(5) = \frac{25+3}{125+15}$$

$$f(5) = \frac{28}{140}$$

$$f(5) = \frac{28 \cdot (1)}{28 \cdot (5)}$$

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

$$\text{or } (5, \frac{1}{5})$$

(177) Find the domain of the function

$$f(x) = \frac{2x-3}{x+5}$$

$$\text{Set } x+5=0$$

$$x+5-5=0-5$$

$$x = -5$$

$$\text{domain} = \{x \mid x \neq -5\}$$

56.

(178)  $f(x) = \sqrt{2x-1}$  find  $f(13)$

$$f(13) = \sqrt{2(13)-1}$$

$$f(13) = \sqrt{26-1}$$

$$f(13) = \sqrt{25}$$

$$f(13) = 5$$

OR  $(13, 5)$

57

(179) Solve

$$\sqrt{2x} = 6$$

$$(\sqrt{2x})^2 = (6)^2$$

$$2x = 36$$

$$\frac{2x}{2} = \frac{36}{2}$$

$$x = 18$$

$$\{18\}$$

(180) Solve

$$\sqrt{x+5} = 6$$

$$(\sqrt{x+5})^2 = (6)^2$$

$$x+5 = 36$$

$$x + \cancel{5} - \cancel{5} = 36 - 5$$

$$x = 31$$

$$\{31\}$$