

$$① 7^2 - 3 \cdot 5 =$$

$$(7)(7) - 3 \cdot 5 =$$

$$49 - 15 =$$

$$\textcircled{34} =$$

$$② \frac{193 + 7}{3^2 - 4} =$$

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

$$\frac{193 + 7}{9 - 4} =$$

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

$$\textcircled{40} =$$

$$③ \text{ Evaluate if } x=8, y=6$$

$$4x + 5y =$$

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

$$32 + 30 =$$

$$\textcircled{62} =$$

$$④ \text{ Evaluate if } x=4$$

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

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

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

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

$$128 + 20 =$$

$$\textcircled{148} =$$

M0410243 ST100

032817

①

$$5 \quad |16| =$$

$$(16) =$$

$$16 =$$

$$6 \quad |-22| =$$

$$(22) =$$

$$22 =$$

$$7 \quad 3 + (-4) =$$

$$3 - 4 =$$

$$-1 =$$

$$8 \quad -9 + (-3) =$$

$$-9 - 3 =$$

$$-12 =$$

$$9 \quad \text{Evaluate if } x=3 \text{ and } y=-12$$

$$2x + y =$$

$$2(3) + (-12) =$$

$$6 - 12 =$$

$$-6 =$$

$$10 \quad -11 - (-7) =$$

$$-11 + 7 =$$

$$-4 =$$

2.

$$\textcircled{11.} \quad 2-2 =$$
$$\textcircled{0 =}$$

$$\textcircled{12.} \quad -15-15 =$$
$$\textcircled{-30 =}$$

$$\textcircled{13.} \quad -3(6) =$$
$$\textcircled{-18 =}$$

$$\textcircled{14.} \quad -18(-10) =$$
$$\textcircled{180 =}$$

$$\textcircled{15.} \quad 0(-6) =$$
$$\textcircled{0 =}$$

$\textcircled{16.}$ Find the average

$-13, -7, -3, -4, 0, -9$

$$\frac{(-13) + (-7) + (-3) + (-4) + (0) + (-9)}{6} =$$

$$\frac{-13 - 7 - 3 - 4 + 0 - 9}{6} =$$

$$\frac{-36}{6} =$$

$$\textcircled{-6 =}$$

$\textcircled{3}$

$$\begin{aligned} 17. \quad a + 1 &= 13 \\ a + \cancel{1} - \cancel{1} &= 13 - 1 \\ a &= 12 \end{aligned}$$

4.

$$\begin{aligned} 18. \quad F + 1 &= -2 \\ F + \cancel{1} - \cancel{1} &= -2 - 1 \\ F &= -3 \end{aligned}$$

$$\begin{aligned} 19. \quad d - 5 &= -18 \\ d - \cancel{5} + \cancel{5} &= -18 + 5 \\ d &= -13 \end{aligned}$$

$$\begin{aligned} 20. \quad 19 &= y - 11 \\ 19 + \cancel{11} &= y - \cancel{11} + \cancel{11} \\ 30 &= y \end{aligned}$$

$$\begin{aligned} 21. \quad 8V &= 7V - 16 \\ 8V - 7V &= \cancel{7V} - 16 - \cancel{7V} \\ 1V &= -16 \\ V &= -16 \end{aligned}$$

$$\begin{aligned} 22. \quad 6x &= 54 \\ \frac{6x}{6} &= \frac{54}{6} \\ x &= 9 \end{aligned}$$

23.

$$4z = -12$$

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

$$z = -3$$

51

24.

$$-7y = 42$$

$$\frac{-7y}{-7} = \frac{42}{-7}$$

$$y = -6$$

25.

$$-2x = -12$$

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

$$x = 6$$

26.

Simplify

$$5x + 2x =$$

$$7x =$$

27.

Simplify

$$7x - 11x - x =$$

$$7x - 11x - 1x =$$

$$-4x - 1x =$$

$$-5x =$$

28.

Simplify

$$8a - 2a + a - 12 =$$

$$8a - 2a + 1a - 12 =$$

$$6a + 1a - 12 =$$

$$7a - 12 =$$

6.

29.

Multiply

$$9(5x + 4) =$$

$$45x + 36 =$$

30.

Simplify

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

$$12x - 20 + 5x =$$

$$17x - 20 =$$

31.

Simplify

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

$$8x + 4 + 3x + 12 =$$

$$11x + 16 =$$

32.

Solve

$$x - 7 = -4 - 29$$

$$x - 7 = -33$$

$$x - 7 + 7 = -33 + 7$$

$$x = -26$$

33

Solve

$$-12 = 3x - 5x$$

$$-12 = -2x$$

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

$$6 = x$$

7

34

Solve

$$7x = 8(x+6) - 7$$

$$7x = 8x + 48 - 7$$

$$7x = 8x + 41$$

$$7x - 8x = 8x + 41 - 8x$$

$$-1x = 41$$

$$\frac{-1x}{-1} = \frac{41}{-1}$$

$$x = -41$$

35

Solve

$$4w - 16 = 0$$

$$4w - 16 + 16 = 0 + 16$$

$$4w = 16$$

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

$$w = 4$$

36

Solve

$$5x + 4 = 49$$

$$5x + 4 - 4 = 49 - 4$$

$$5x = 45$$

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

$$x = 9$$

8

37

Solve

$$96 = 10x - 4$$

$$96 + 4 = 10x - 4 + 4$$

$$100 = 10x$$

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

$$10 = x$$

38

Solve

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

$$10x - 4 = 8x$$

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

$$10x = 8x + 4$$

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

$$2x = 4$$

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

$$x = 2$$

39

Solve

$$2(x-12) = -15-3$$

$$2x - 24 = -18$$

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

$$2x = 6$$

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

$$x = 3$$

9

40

Solve

$$9 - t = 21$$

$$9 - t - 9 = 21 - 9$$

$$-t = 12$$

$$-1t = 12$$

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

$$t = -12$$

41

Solve

$$3w + 12 = 0$$

$$3w + 12 - 12 = 0 - 12$$

$$3w = -12$$

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

$$w = -4$$

42.

Solve

$$3x - 9 = 0$$

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

$$3x = 9$$

$$\frac{\cancel{3}x}{\cancel{3}} = \frac{9}{3}$$

$$x = 3$$

10.

43.

Solve

$$76 = 6 - 10x$$

$$76 - 6 = \cancel{6} - 10x - \cancel{6}$$

$$70 = -10x$$

$$\frac{70}{-10} = \frac{-10x}{-10}$$

$$-7 = x$$

44.

Solve

$$19 = 3x - 5$$

$$19 + 5 = 3x - 5 + 5$$

$$24 = 3x$$

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

$$8 = x$$

45

Solve

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

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

$$5x = 2x - 24$$

$$5x - 2x = 2x - 24 - 2x$$

$$3x = -24$$

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

$$x = -8$$



46

Solve

$$15 - 29 = 2(x - 3)$$

$$15 - 29 = 2x - 6$$

$$-14 = 2x - 6$$

$$-14 + 6 = 2x - \cancel{6} + \cancel{6}$$

$$-8 = 2x$$

$$\frac{-8}{2} = \frac{\cancel{2}x}{\cancel{2}}$$

$$-4 = x$$

47. The product of 6 and a number amounts to 66. Find the number

$$6x = 66$$

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

$$x = 11$$

(48) Five times some number, added to 4, amounts to 10 added to the product of 3 and the number. Find the number.

$$5x + 4 = 3x + 10$$

$$5x + 4 - 4 = 3x + 10 - 4$$

$$5x = 3x + 6$$

$$5x - 3x = 3x + 6 - 3x$$

$$2x = 6$$

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

$$x = 3$$

(12)

(49)

Solve

$$x + \frac{1}{7} = \frac{6}{7} \quad \text{mult by } \text{LCD} = 7$$

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

$$x(7) + 1(1) = 6(1)$$

$$7x + 1 = 6$$

$$7x + 1 - 1 = 6 - 1$$

$$7x = 5$$

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

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

50

Solve

$$4x - \frac{2}{5} - 3x = \frac{3}{10}$$

$$1x - \frac{2}{5} = \frac{3}{10}$$

13

$$1x(10) - \frac{2}{5}(10) = \frac{3}{10}(10) \text{ Mult by LCD}=10$$

$$10x - 2(2) = 3(1)$$

$$10x - 4 = 3$$

$$10x - \cancel{4} + \cancel{4} = 3 + 4$$

$$10x = 7$$

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

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

51

Solve

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

$$\frac{1}{5}(15) - \frac{1}{3}(15) = \frac{x}{15}(15) \text{ Mult by LCD}=15$$

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

$$3 - 5 = 1x$$

$$-2 = x$$

52

Solve

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

14

$$\frac{x}{5}(30) = \frac{x}{6}(30) + \frac{2}{5}(30) \text{ Mult by LCD} = 30$$

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

$$6x = 5x + 12$$

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

$$1x = 12$$

$$x = 12$$

53

Solve

$$\frac{1}{5} + \frac{x}{4} = \frac{19}{20}$$

$$\frac{1}{5}(20) + \frac{x}{4}(20) = \frac{19}{20}(20) \text{ Mult by LCD} = 20$$

$$1(4) + x(5) = 19(1)$$

$$4 + 5x = 19$$

$$4 + 5x - 4 = 19 - 4$$

$$5x = 15$$

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

$$x = 3$$

54

Solve

$$\frac{1}{5} - \frac{2}{7} = \frac{x}{35}$$

$$\frac{1}{5}(35) - \frac{2}{7}(35) = \frac{x}{35}(35) \text{ Mult by LCD} = 35$$

$$1(7) - 2(5) = x(1)$$

$$7 - 10 = 1x$$

$$-3 = x$$

151

55

Solve

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

$$\frac{x}{5}(30) = \frac{x}{6}(30) + \frac{6}{5}(30) \text{ Mult by LCD} = 30$$

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

$$6x = 5x + 36$$

$$6x - 5x = 5x + 36 - 5x$$

$$1x = 36$$

$$x = 36$$

56

Solve

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

$$\frac{x}{5}(10) + \frac{2}{1}(10) = \frac{x}{2}(10) - 4(10) \text{ Mult by LCD} = 10$$

$$x(2) + 2(10) = x(5) - 4(10)$$

$$2x + 20 = 5x - 40$$

$$2x + 20 - 20 = 5x - 40 - 20$$

$$2x = 5x - 60$$

$$2x - 5x = 5x - 60 - 5x$$

$$-3x = -60$$

$$\frac{-3x}{-3} = \frac{-60}{-3}$$

$$x = 20$$

57

Solve

$$1.7 = 23.3 - x$$

$$1.7 - 23.3 = \cancel{23.3} - x - \cancel{23.3}$$

$$-21.6 = -x$$

$$\frac{-21.6}{-1} = \frac{-x}{-1}$$

$$21.6 = x$$

58

Solve

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

$$1.1x + \cancel{4.3} - \cancel{4.3} = 0.7x + 1.14 - 4.3$$

$$1.1x = 0.7x - 3.16$$

$$1.1x - 0.7x = \cancel{0.7x} - 3.16 - \cancel{0.7x}$$

$$0.4x = -3.16$$

$$\frac{0.4x}{0.4} = \frac{-3.16}{0.4}$$

$$x = -7.9$$

59

Solve

$$x + 2.9 = 8.7$$

$$x + \cancel{2.9} - \cancel{2.9} = 8.7 - 2.9$$

$$x = 5.8$$

60

Solve

$$5(X - 102) = 9.3$$

$$5X - 6 = 9.3$$

$$5X - 6 + 6 = 9.3 + 6$$

$$5X = 15.3$$

$$\frac{5X}{5} = \frac{15.3}{5}$$

$$X = 3.06$$

17

61. Find the mean
17, 8, 23, 17

$$\frac{17 + 8 + 23 + 17}{4} =$$

$$\frac{65}{4} =$$

$$16.25 =$$

16.3 \equiv Round

62

Find the median

1, 3, 11, 26, 44, 45, 48

1, 3, 11, 26, 44, 45, 48

middle

Median = 26

right
order

48 \leftarrow

63. Find Median
4, 6, 25, 23, 43, 47

4, 6, 23, 25, 43, 47 right order

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

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

$$24 = \text{Median}$$

64. Find the mode (most)

20, 23, 46, 23, 49, 23, 49.

20, 23, 23, 23, 46, 49, 49

Mode = 23 most

65. Translate to an equation and solve
75% of 12 is what number

$$\frac{75}{100} = \frac{x}{12}$$

$$75(12) = 100x \quad \text{cross mult}$$

$$900 = 100x$$

$$\frac{900}{100} = \frac{100x}{100}$$

$$9 = x$$

66. 19 is 4% of what number?

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

$$4(x) = 100(19) \quad \text{Cross Mult}$$

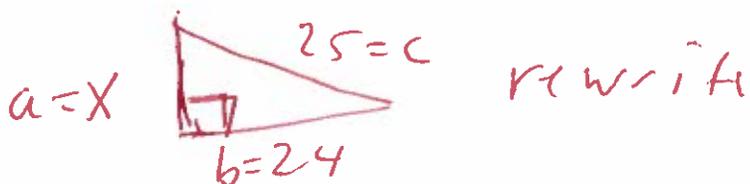
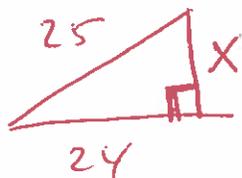
$$4x = 1900$$

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

$$x = 475$$

19

67. Solve for x



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

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

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

$$x^2 + 576 = 625$$

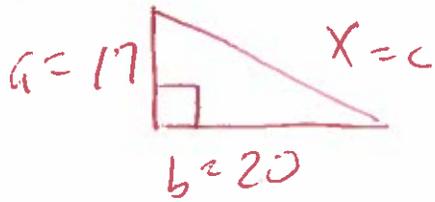
$$x^2 + 576 - 576 = 625 - 576$$

$$x^2 = 49$$

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

$$x = 7$$

68 Solve for x



20

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

$$(17)^2 + (20)^2 = (x)^2$$

$$289 + 400 = x^2$$

$$689 = x^2$$

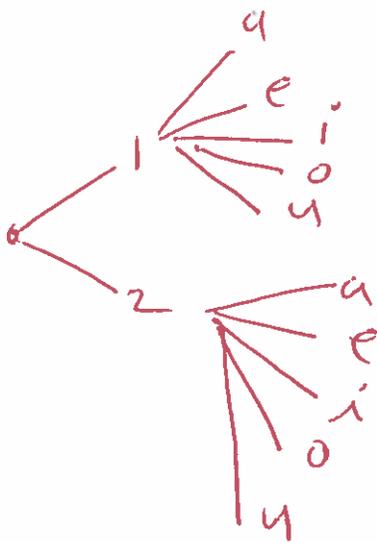
$$\sqrt{689} = \sqrt{x^2}$$

$$26.488095 = x$$

$$26.249 = x$$

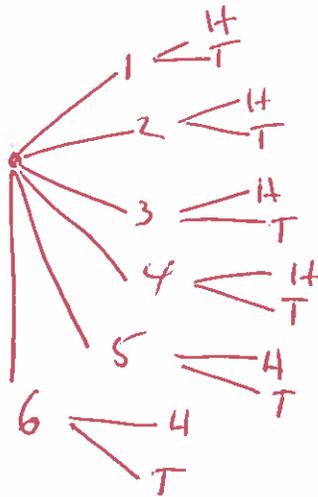
round

69 Choose a number 1, 2, and then a vowel a, e, i, o, u.



10 outcomes

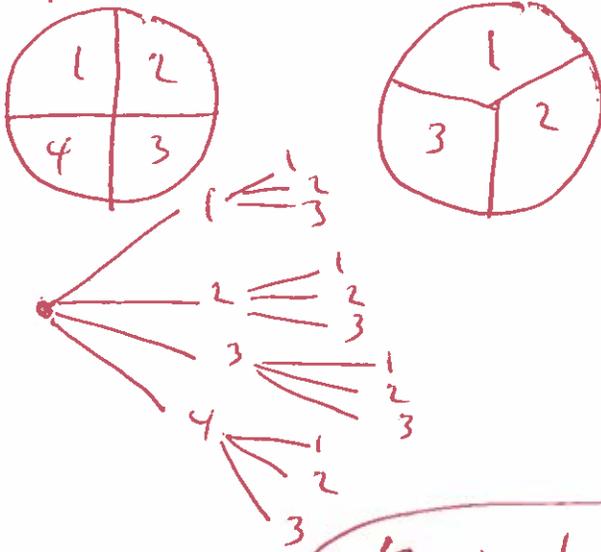
70 Roll a single die, and then toss a coin.



12 Outcomes

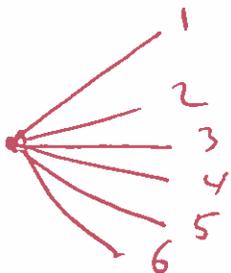
21

71. spin the first spinner once and the second spinner once.



12 Outcomes

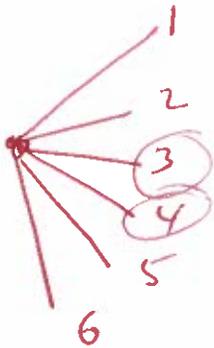
72. If a single die is tossed once. Find the probability of the following event. A 2.



possible

$\frac{1}{6}$

73. If a single die is tossed once, find the probabilities of the following events. A 3 or 4.



(2L)

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

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

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

74. 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?

$$\frac{\text{red}}{\text{all}} =$$
$$\frac{7}{7+7+6+6} =$$

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

75. 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~~ drawn?

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

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

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

76. 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? (23)

$$\frac{\text{want}}{\text{all}} = \frac{\text{not blue}}{\text{all}} = \frac{7+1}{7+2+1} =$$

$$\frac{8}{10} =$$

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

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

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

Lower Cholesterol
134

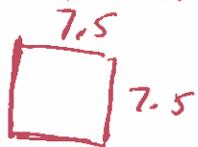
Higher Cholesterol
8

Cholesterol not Changed
58

If a person is testing this drug, what is the probability that their cholesterol will be lower?

$$\frac{\text{want}}{\text{all}} = \frac{134}{134+8+58} = \frac{134}{200} = \frac{2(67)}{2(100)} = \frac{67}{100}$$

78. Find the perimeter of the square.



24

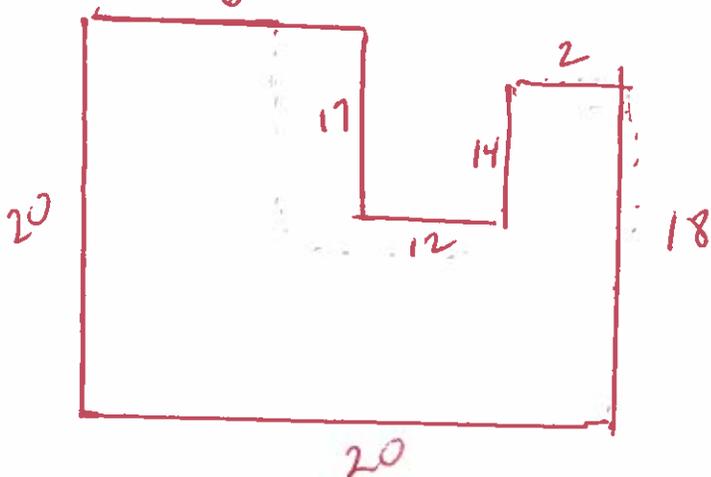
$$P = 2L + 2W$$

$$P = 2(7.5) + 2(7.5)$$

$$P = 15 + 15$$

$$P = 30$$

79. Find the perimeter



$$P = 20 + 20 + 18 + 2 + 14 + 12 + 17 + 6$$

$$= 109$$

80. Find the exact or approximate circumference of the circle.



$$D = 30$$

$$\pi = 3.14$$

$$C = \pi D \quad \text{formula}$$

$$C = \pi(30)$$

$$C = 30\pi$$

$$C = 30(3.14)$$

$$C = 94.2 \quad \text{round}$$

81) Find the exact circumference.



$$r = 58$$

$$C = 2\pi r$$

$$C = 2\pi(58)$$

$$C = 116\pi$$

251

82) Find the area



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

$$r = \frac{9}{2} = 4.5$$

$$A = \pi r^2$$

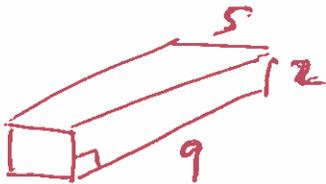
$$A = 3.14(4.5)^2$$

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

$$A = 3.14(20.25)$$

$$A = 63.585$$

83) Find the volume



$$L = 9, w = 5, H = 2$$

$$V = LWH$$

$$V = (9)(5)(2)$$

$$V = 45(2)$$

$$V = 90$$

84. Find the volume.



$$\text{use } \pi = \frac{22}{7}$$

$$r = \frac{1}{2}(15) = \frac{15}{2}$$

$$h = 18$$

$$V = \pi r^2 h$$

$$V = \frac{22}{7} \left(\frac{15}{2}\right)^2 (18)$$

$$V = \frac{22}{7} \left(\frac{15}{2}\right) \left(\frac{15}{2}\right) (18)$$

$$V = \frac{2(11)(15)(15)(2)9}{7(2)(2)}$$

$$V = \frac{11(15)(15)9}{7}$$

$$V = \frac{22275}{7}$$

$$V = 3182 \frac{1}{7}$$

20

$$\begin{array}{r} 3182 \frac{1}{7} \\ 7 \overline{) 22275} \\ \underline{+21} \\ 12 \\ \underline{-(7)} \\ 57 \\ \underline{-(56)} \\ 15 \\ \underline{-(14)} \\ 1 \text{ rem} \end{array}$$

85.

Solve

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

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

$$3x + 1 = 2$$

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

$$3x = 1$$

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

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

86.

Solve

$$8x - (4x - 1) = 2$$

$$8x - \sqrt{(4x - 1)} = 2$$

$$8x - 4x + 1 = 2$$

$$4x + 1 = 2$$

$$4x + x - x = 2 - 1$$

$$4x = 1$$

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

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

27.

87.

Solve

$$6p = 8(4p + 9)$$

$$6p = 32p + 72$$

$$6p - 32p = 32p + 72 - 32p$$

$$-26p = 72$$

$$\frac{-26p}{-26} = \frac{72}{-26}$$

$$p = \frac{2(36)}{2(-13)}$$

$$p = -\frac{36}{13}$$

88.

Solve

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

$$\frac{2x}{5}(15) - \frac{x}{3}(15) = \frac{4}{1}(15) \quad \text{LCD} = 15$$

$$2x(3) - x(5) = 4(15)$$

$$6x - 5x = 60$$

$$1x = 60$$

$$x = 60$$

Solve

89.

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

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

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

$$5x + 8 = 4x$$

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

$$5x = 4x - 8$$

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

$$1x = -8$$

$$x = -8$$

28.

90.

Solve

$$9x + 5 - 9x - 5 = 6x - 6x - 3$$

$$0 \neq -3$$

No solution.

91.

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

92.

Solve

Six times a number, added to 2, is 20.
Find the number.

$$6x + 2 = 20$$

$$6x + x - x = 20 - 2$$

$$6x = 18$$

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

$$x = 3$$

29.

93.

Use the formula $F = \frac{9}{5}C + 32$ to write -40°C as degrees Fahrenheit.

$$F = \frac{9}{5}C + 32$$

$$C = -40$$

$$F = \frac{9}{5}(-40) + 32$$

$$F = 9(-8) + 32$$

$$F = -72 + 32$$

$$F = -40$$

94.

Use the formula $C = \frac{5}{9}(F - 32)$ to write 212°F as degrees Celsius.

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

$$F = 212$$

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

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

$$C = 5(20)$$

$$C = 100$$

95) Solve for r

$$d = vt$$

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

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

30

96) Solve for t

$$I = Prt$$

$$\frac{I}{Pr} = \frac{Prt}{Pr}$$

$$\frac{I}{Pr} = t$$

97) Solve for L

$$P = 2L + 2W$$

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

$$P - 2W = 2L$$

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

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

98) Solve for T

$$A = P + PrT$$

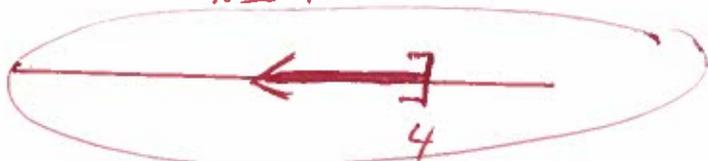
$$A - P = P + PrT - P$$

$$A - P = PrT$$

$$\frac{A - P}{Pr} = \frac{PrT}{Pr}$$

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

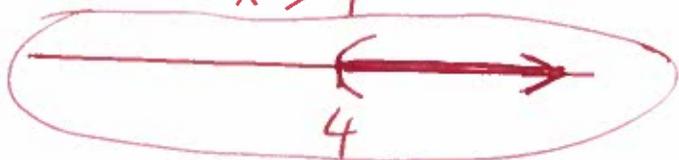
99. Graph
 $x \leq 4$



$(-\infty, 4]$

31

100. Graph
 $x > 4$



$(4, \infty)$

101

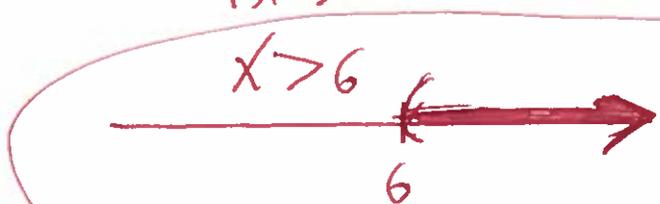
Solve
 $x - 3 < -4$
 $x - 3 + 3 < -4 + 3$
 $x < -1$



$(-\infty, -1)$

102

Solve
 $-7x - 1 > -8x + 5$
 $-7x - x + x > -8x + 5 + 1$
 $-7x > -8x + 6$
 $-7x + 8x > -8x + 6 + 8x$
 $1x > 6$



$(6, +\infty)$

103

Solve
 $6x \leq 66$

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

$$x \leq 11$$

34



$$(-\infty, 11]$$

104

Solve

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

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

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

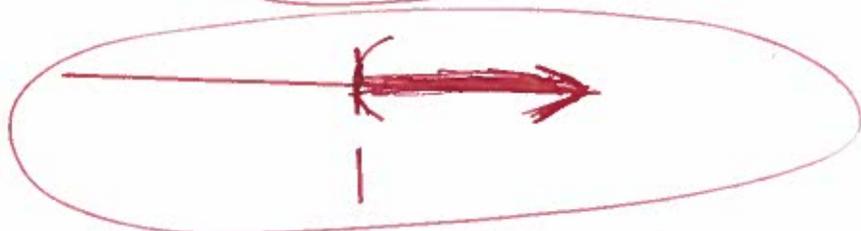
$$21x > 18x + 3$$

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

$$3x > 3$$

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

$$x > 1$$



$$(1, +\infty)$$

Solve

105

$$-2(3x+14) < -8x-16$$

$$-6x - 28 < -8x - 16$$

$$-6x - \cancel{28} + \cancel{28} < -8x - 16 + 28$$

$$-6x < -8x + 12$$

$$-6x + 8x < -8x + 12 + 8x$$

$$2x < 12$$

$$\frac{2x}{2} < \frac{12}{2}$$

$$x < 6$$



$$(-\infty, 6)$$

106.

Solve

$$6x + 8 + 9x < 4 + 13x + 4$$

$$15x + 8 < 13x + 8$$

$$15x + \cancel{8} - \cancel{8} < 13x + \cancel{8} - \cancel{8}$$

$$15x < 13x$$

$$15x - 13x < 13x - 13x$$

$$2x < 0$$

$$\frac{2x}{2} < \frac{0}{2}$$

$$x < 0$$

$$(-\infty, 0)$$



107 Determine whether the ordered pair is a solution of the given linear equation.

$$2x - 5y = 13$$

$$(-1, 3)$$

x y

34

$$2(-1) - 5(3) = 13 \quad ?$$

$$-2 - 15 = 13 \quad ?$$

$$-17 \neq 13$$

NO

108 Determine whether the ordered pair is a solution of the given linear equation.

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

$$(5, 0)$$

x y

$$-2(0) + 3(5) = -15$$

$$0 + 15 = -15$$

$$15 \neq -15$$

NO

109 graph $y = 2x + 4$

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

$$y = 0 + 4$$

$$y = 4$$

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

$$y = 2 + 4$$

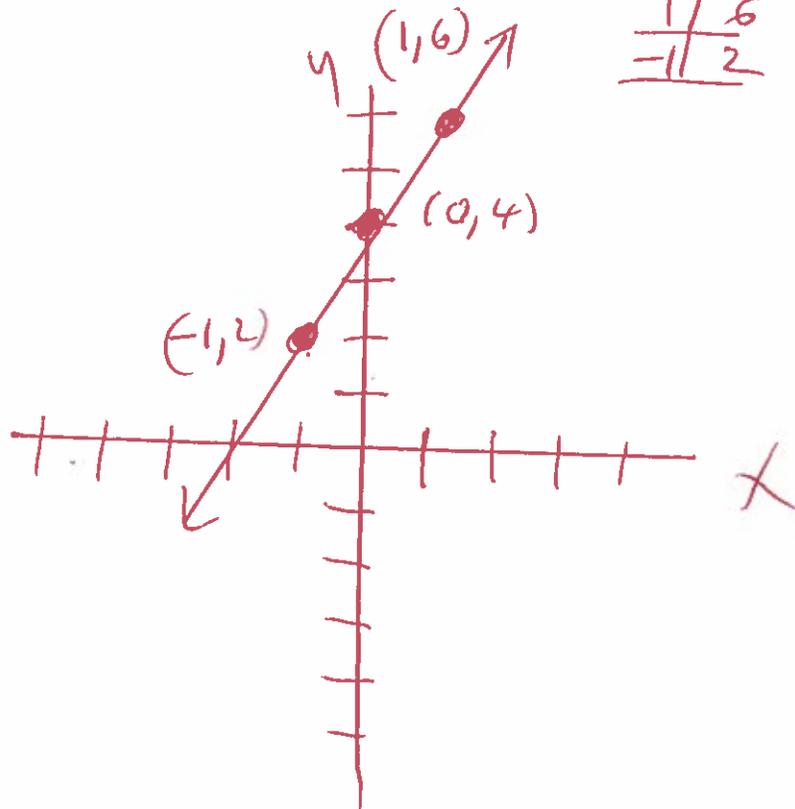
$$y = 6$$

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

$$y = -2 + 4$$

$$y = 2$$

x	y
0	4
1	6
-1	2



110

graph
 $y = -2x - 4$

$y = -2(0) - 4$

$y = 0 - 4$

$y = -4$

$y = -2(1) - 4$

$y = -2 - 4$

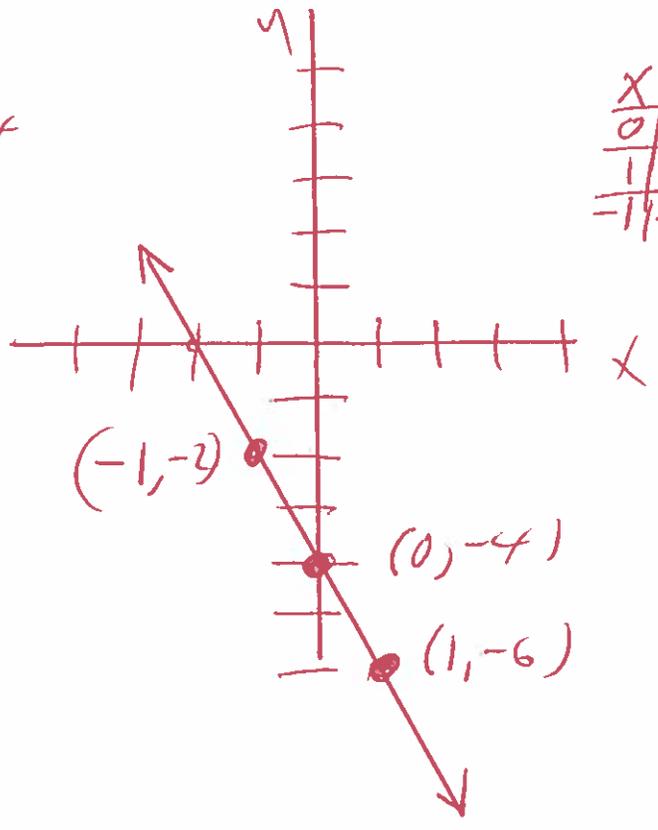
$y = -6$

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

$y = 2 - 4$

$y = -2$

x	y
0	-4
1	-6
-1	-2



35

111

graph
 $y = x + 2$

$y = (4) + 2$

$y = 4 + 2$

$y = 6$

$y = (-6) + 2$

$y = -6 + 2$

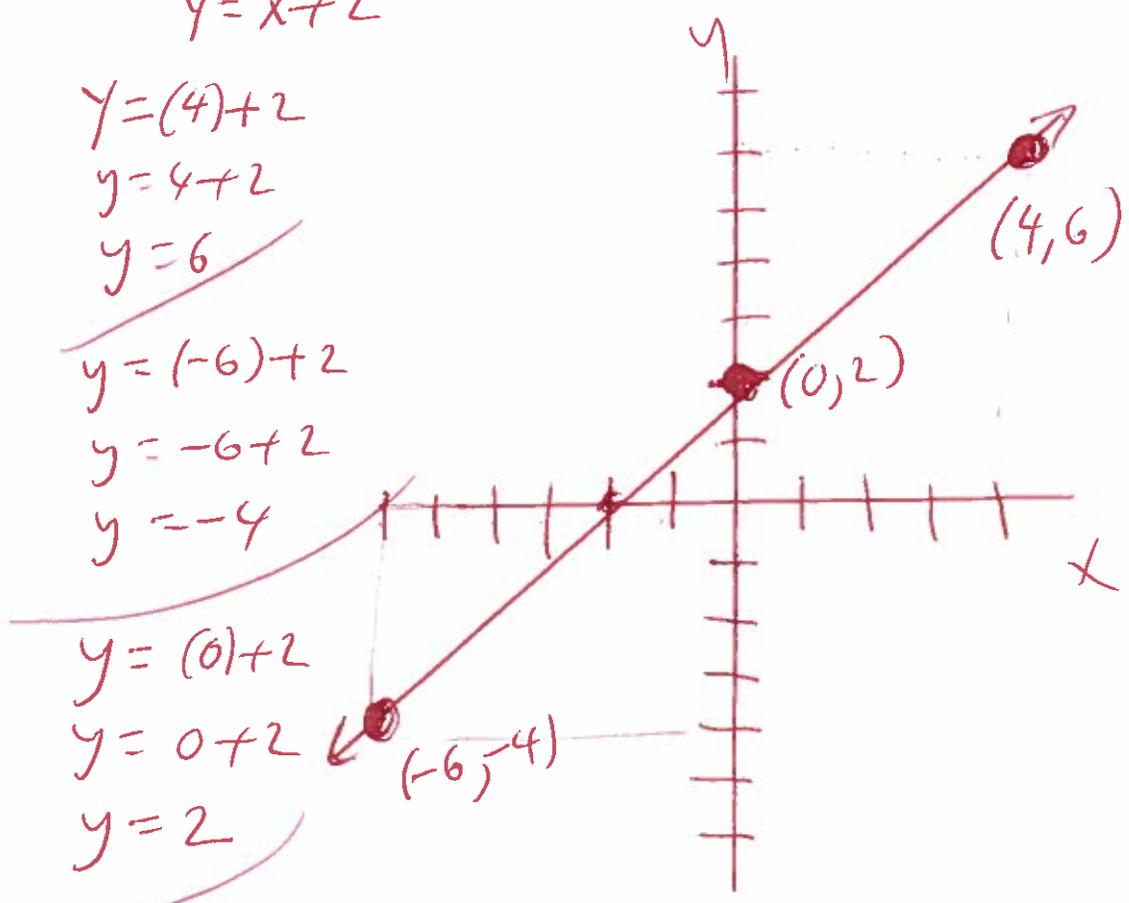
$y = -4$

$y = (0) + 2$

$y = 0 + 2$

$y = 2$

x	y
4	6
-6	-4
0	2



112 Graph

$$5y - 25x = 10$$

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

$$5y = 10 + 25x$$

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

$$y = 2 + 5x$$

$$y = 5x + 2$$

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

$$y = 0 + 2$$

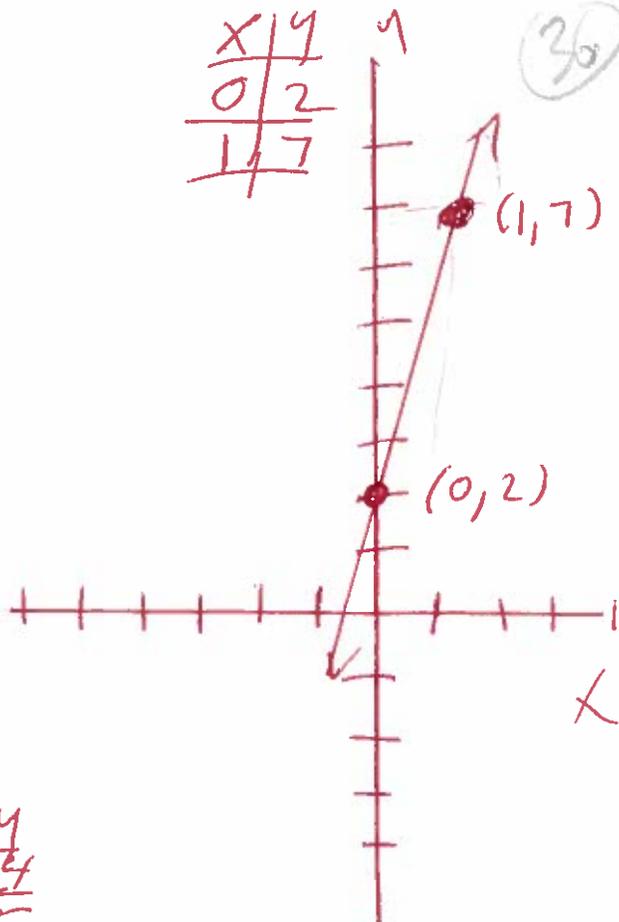
$$y = 2$$

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

$$y = 5 + 2$$

$$y = 7$$

x	y
0	2
1	7



113 Graph

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

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

$$y = 0 + 4$$

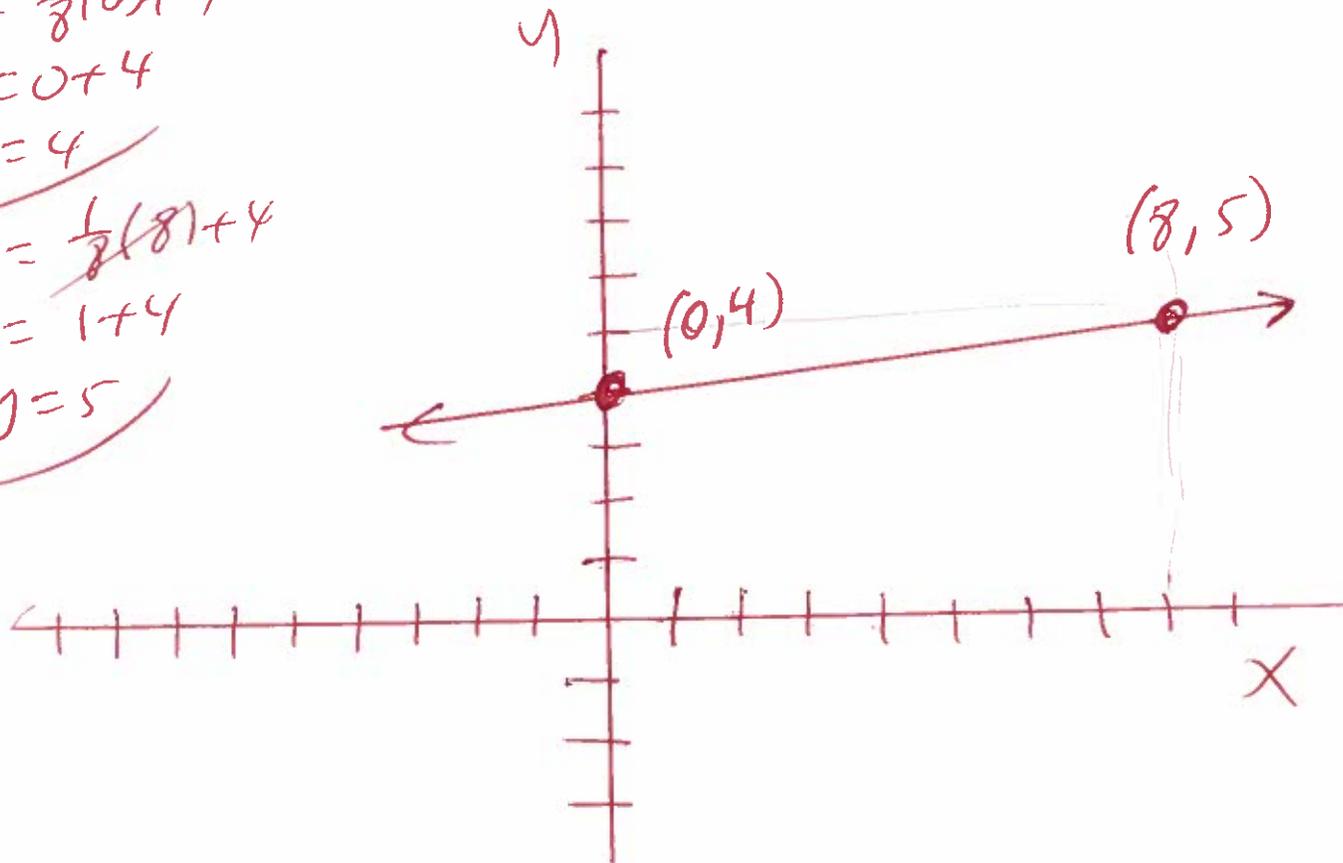
$$y = 4$$

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

$$y = 1 + 4$$

$$y = 5$$

x	y
0	4
8	5



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

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

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

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

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

$$m = -2$$

115) Find the slope of the line that passes through the given points. $(-4, -5)$ and $(17, 10)$

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

$$m = \frac{(-5) - (10)}{(-4) - (17)}$$

$$m = \frac{-5 - 10}{-4 - 17}$$

$$m = \frac{-15}{-21}$$

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

$$m = \frac{5}{7}$$

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

$$y = -5x + 1 \rightarrow m_1 = -5$$

$$y = 5x - 8 \quad m_2 = 5$$

$m_1 \neq m_2$ NOT parallel

$m_1 = -5$ and $m_2 \neq \frac{1}{5}$ NOT perpendicular

Neither

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

$$y = \frac{5}{2}x + 2 \quad m_1 = \frac{5}{2}$$

$$y = -\frac{2}{5}x + 5 \quad m_2 = -\frac{2}{5}$$

$m_1 = \frac{5}{2}$ and $m_2 = -\frac{2}{5}$ perpendicular

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

$$\begin{aligned} 9x + 3y &= 12 \\ 27x + 9y &= 38 \end{aligned}$$

$$\begin{aligned} \rightarrow 27x + 9y &= 38 \\ 27x + 9y - 27x &= 38 - 27x \end{aligned}$$

$$9y = 38 - 27x$$

$$\frac{9y}{9} = \frac{38}{9} - \frac{27x}{9}$$

$$y = \frac{38}{9} - 3x$$

$$y = -3x + \frac{38}{9} \quad m_2 = -3$$

$$9x + 3y = 12$$

$$9x + 3y - 9x = 12 - 9x$$

$$3y = 12 - 9x$$

$$\frac{3y}{3} = \frac{12}{3} - \frac{9x}{3}$$

$$y = 4 - 3x$$

$$y = -3x + 4 \quad m_1 = -3$$

$m_1 = m_2$ parallel

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

$$y - y_1 = m(x - x_1) \quad \text{Point Slope formula}$$

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

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

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

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

$$y = 2x - 8$$

120) Find the equation of the line with slope $m=-3$ through point $(-2,3)$

$$y - y_1 = m(x - x_1) \quad \text{Point Slope formula}$$

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

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

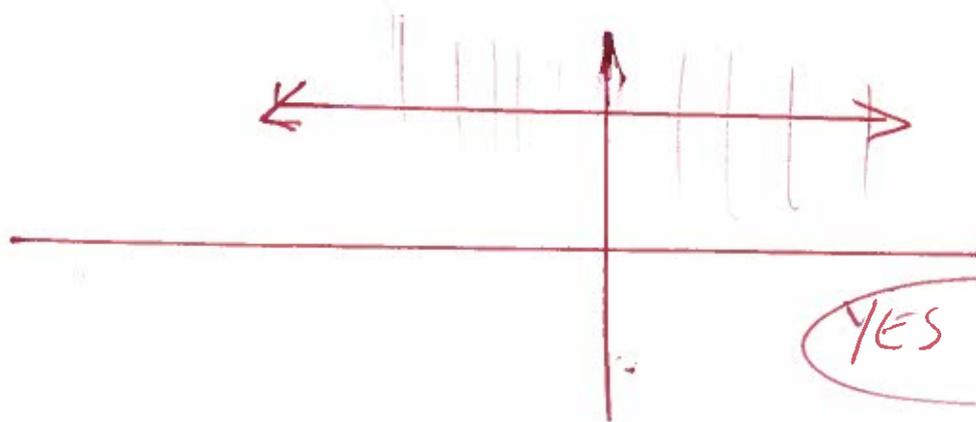
$$y - 3 = -3x - 6$$

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

$$y = -3x - 3$$

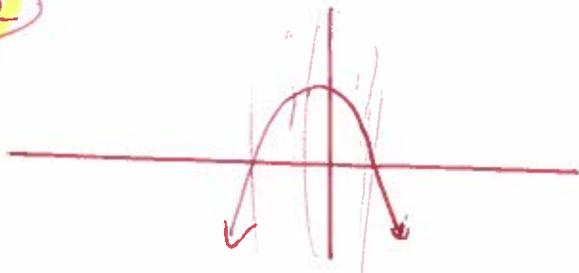
121) Determine whether the graph is the graph of a function.

Use vertical line test



YES a function

122

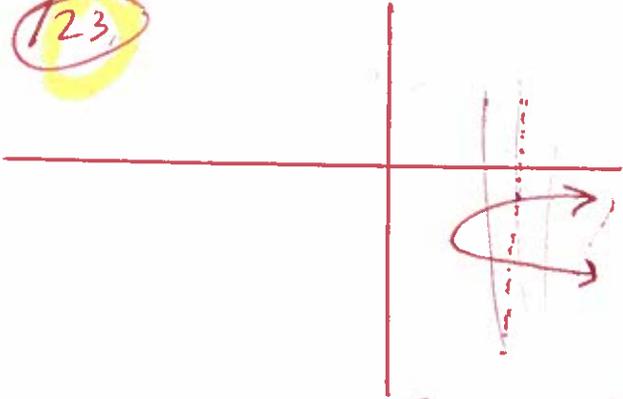


YES a function

40

Use the vertical line Test

123



Not a function

Use the vertical line Test

124



YES a function

Use the vertical line Test

125 Evaluate the function $f(4)$

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

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

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

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

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

$$f(4) = 29$$

126 Evaluate $f(0)$

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

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

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

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

$$f(0) = 4$$

127 Evaluate $f(-3)$

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

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

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

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

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

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

$$f(-3) = 12$$

128 Evaluate $f(19)$

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

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

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

$$f(19) = 18$$

41

(29) Solve by substitution

$$x + y = 56$$

$$\rightarrow y = -9x$$

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

$$1x - 9x = 56$$

$$-8x = 56$$

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

$$x = -7$$

Subst

$$y = -9x$$

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

$$y = 63$$

(42)

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

Solve by substitution

(30)

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

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

$$-3x + 3y = -18$$

$$\rightarrow -3x + 3(-10 + 2x) = -18$$

$$-3x - 30 + 6x = -18$$

$$3x - 30 = -18$$

$$3x - 30 + 30 = -18 + 30$$

$$3x = 12$$

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

$$x = 4$$

Subst

$$y = -10 + 2x$$

$$y = -10 + 2(4)$$

$$y = -10 + 8$$

$$y = -2$$

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

131

Solve by elimination

$$5x + y = -58$$

$$5x - y = 8$$

$$10x + 0 = -50$$

$$10x = -50$$

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

$$x = -5$$

Subst

$$5x + y = -58$$

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

$$-25 + y = -58$$

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

$$y = -33$$

43.

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

132

Solve by elimination

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

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

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

(-5)

mult

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

(3)

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

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

$$1x = -4$$

$$x = -4$$

Subst

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

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

$$8 + 3y = 2$$

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

$$3y = -6$$

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

$$y = -2$$

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

133

Solve

$$x+y=7$$

$$x+y=4$$

$$\begin{array}{r} (x+y=7) \\ (x+y=4) \end{array} \begin{array}{r} (-1) \\ (1) \end{array} \text{Mult}$$

44.

$$-x-y=-7$$

$$x+y=4$$

$$0+0=-3$$

$$0 \neq -3$$

Never

no solution

134

Solve

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

$$6x-6y=15$$

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

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

$$12x-12y=30$$

$$0+0=0$$

$$0=0$$

Always

infinite number of solutions

135

Simplify

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

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

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

451

136

Simplify

$$(20x^2-16) - (2x^2-6) =$$

$$20x^2-16-2x^2+6 =$$

$$18x^2-10 =$$

137

Simplify

$$(5 \cdot 6x^6)(4x^5) =$$

$$22 \cdot 4x^{6+5} =$$

$$22 \cdot 4x^{11} =$$

138

Simplify

$$9x(-8x+11) =$$

$$-72x^2 + 99x =$$

139

Simplify

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

$$-12x^4 + 12x^3 + 36x^2 =$$

140

Simplify

$$(a+8)(a+1) =$$

$$a^2 + 1a + 8a + 8 =$$

$$a^2 + 9a + 8 =$$

141.

Simplify

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

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

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

46.

142.

Simplify

$$(9z+11)^2 =$$

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

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

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

143.

Simplify

$$(6x-4)(3x-12) =$$

$$18x^2 - 72x - 12x + 48 =$$

$$18x^2 - 84x + 48 =$$

144.

Simplify

$$(b-5)(b^2+5b+3) =$$

$$b^3 + 5b^2 + 3b - 5b^2 - 25b - 15 =$$

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

145.

Simplify

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

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

$$x^3 + 1 =$$

146. $(2x+3)(6x+5)$
 $12x^2 + 10x + 18x + 15 =$
 $12x^2 + 28x + 15 =$

47.

147. $(6x-1)(x^2-4x+1) =$
 $6x^3 - 24x^2 + 6x - 1x^2 + 4x - 1 =$
 $6x^3 - 25x^2 + 10x - 1 =$

148. $(x+4)(x+9) =$
 $x^2 + 9x + 4x + 36 =$
 $x^2 + 13x + 36 =$

149. $(x-10)(x+7) =$
 $x^2 + 7x - 10x - 70 =$
 $x^2 - 3x - 70 =$

150. $(x-11y)(x+3y) =$
 $x^2 + 3xy - 11xy - 33y^2 =$
 $x^2 - 8xy - 33y^2 =$

151. Find the area



$A = L \cdot W$

$A = (7x+10)(2x-10)$

$A = 14x^2 - 70x + 20x - 100$

$A = 14x^2 - 50x - 100$

$$\begin{aligned} 152 \quad (3a-7)^2 &= \\ (3a-7)(3a-7) &= \\ 9a^2 - 21a - 21a + 49 &= \\ 9a^2 - 42a + 49 &= \end{aligned}$$

48.

$$\begin{aligned} 153 \quad (x+11)(x-11) &= \\ x^2 - 11x + 11x - 121 &= \\ x^2 - 121 &= \end{aligned}$$

$$\begin{aligned} 154 \quad (13p+6)(13p-6) &= \\ 169p^2 - 78p + 78p - 36 &= \\ 169p^2 - 36 &= \end{aligned}$$

$$\begin{aligned} 155 \quad (-5x^4y^{-5})(3x^{-1}y) &= \\ (-5x^4y^{-5})(3x^{-1}y^1) &= \\ -15x^{4-1}y^{-5+1} &= \\ -15x^3y^{-4} &= \\ \frac{-15x^3}{y^4} &= \end{aligned}$$

156

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

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

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

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

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

49

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

157

$$\frac{x^2 + 6x + 8}{x + 4}$$

opp $x + 4$

-4	1	6	8	
		-4	-8	
	1	2	0	rem

$x + 2$

use synthetic division

long division

$$\begin{array}{r} x+2 \\ x+4 \overline{) x^2+6x+8} \\ \underline{-(x^2+4x)} \\ 2x+8 \\ \underline{-(2x+8)} \\ 0 \text{ rem} \end{array}$$

158. $\frac{5m^2 + 5m - 10}{m+2}$

opp $m+2$

$$\begin{array}{r} -2 \overline{) 5 \quad 5 \quad -10} \\ \underline{-10 \quad 10} \\ 5 \quad -5 \quad 0 \text{ rem} \end{array}$$

Long division

use Synthetic division

$$\begin{array}{r} m+2 \overline{) 5m^2 + 5m - 10} \\ \underline{-(5m^2 + 10m)} \\ -5m - 10 \\ \underline{-(-5m + 10)} \\ 0 \text{ rem} \end{array}$$

$5m - 5$

159. $\frac{p^2 + 5p - 10}{p+7}$

opp $p+7$

$$\begin{array}{r} -7 \overline{) 1 \quad 5 \quad -10} \\ \underline{-7 \quad 14} \\ 1 \quad -2 \quad 4 \text{ rem} \end{array}$$

Synthetic division

Long division

$$\begin{array}{r} p+7 \overline{) p^2 + 5p - 10} \\ \underline{-(p^2 + 7p)} \\ -2p - 10 \\ \underline{-(-2p + 14)} \\ 4 \text{ rem} \end{array}$$

$p - 2 + \frac{4}{p+7}$

Long division

$$\begin{array}{r} x+2 \overline{) x^2 + 9x + 6} \\ \underline{-(x^2 + 2x)} \\ 7x + 6 \\ \underline{-(7x + 14)} \\ -8 \end{array}$$

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

opp $x+2$

Synthetic division

$$\begin{array}{r} -2 \overline{) 1 \quad 9 \quad 6} \\ \underline{-2 \quad -14} \\ 1 \quad 7 \quad -8 \text{ rem} \end{array}$$

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

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

$$(161) \quad (x^2 + 5x - 36) \div (x - 4)$$

use synthetic
division

$$\begin{array}{r|rrrr} 4 & 1 & 5 & -36 & \\ & & 4 & 36 & \\ \hline & 1 & 9 & 0 & \text{rem} \end{array}$$

51.

$$x + 9$$

$$(162) \quad (x^2 + 15x + 52) \div (x + 6)$$

use synthetic
division

$$\begin{array}{r|rrrr} -6 & 1 & 15 & 52 & \\ & & -6 & -54 & \\ \hline & 1 & 9 & -2 & \text{rem} \end{array}$$

$$x + 9 - \frac{2}{x + 6}$$

(163) Factor GCF

$$30x + 10 =$$

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

(164)

Factor GCF

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

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

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

165 Factor GCF

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

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

52

166 Factor GCF

$$w(z-15) - 7(z-15) =$$

$$(z-15)(w-7) =$$

167 Factor by grouping

$$2x + 24 + xy + 12y =$$

$$(2x + 24) + (xy + 12y) =$$

$$2(x + 12) + y(x + 12) =$$

$$(x + 12)(2 + y) =$$

168 Factor by grouping

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

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

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

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

169

Factor
 $x^2 - x - 42 =$

- 42.1
- 21.2
- 6.7
- 14.3

possibly

3

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

170

Factor
 $x^2 + x - 30 =$

- 30.1
- 15.2
- 10.3
- 6.5

possibly

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

171

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

- 88.1
- 44.2
- 22.4
- 11.7

possibly

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

172

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

- 28.1
- 14.2
- 4.7

possibly

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

173

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

- 18.1
- 9.2
- 6.3

possibly

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

174

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

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

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

formula

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

54

factor

$$81x^2 - 49 =$$
$$(9x)^2 - (7)^2 =$$

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

formula

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

175

176

factor

$$121 - w^2 =$$

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

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

Solve

177

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

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

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

$$x=6$$

$$x=-4$$

Solve

178

$$(2x+1)(5x-3) = 0$$

set $2x+1=0$ OR $5x-3=0$

$$2x+1-1=0-1$$
 OR $5x-3+3=0+3$

$$2x=-1$$
 OR $5x=3$

$$\frac{2x}{2} = \frac{-1}{2}$$
 OR $\frac{5x}{5} = \frac{3}{5}$

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

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

179.

Solve

$$(2y + 29)(7y + 15) = 0$$

$$\text{or } 2y + 29 = 0 \quad \text{or } 7y + 15 = 0$$

$$2y + \cancel{29} - \cancel{29} = 0 - 29 \quad \text{or } 7y + \cancel{15} - \cancel{15} = 0 - 15$$

$$2y = -29$$

$$\frac{2y}{2} = \frac{-29}{2}$$

$$y = -\frac{29}{2}$$

$$\text{or } 7y = -15$$

$$\text{or } \frac{7y}{7} = \frac{-15}{7}$$

$$\text{or } y = \frac{-15}{7}$$

55

180.

Solve

$$4x(8x - 3) = 0$$

$$\text{or } 4x = 0 \quad \text{or } 8x - 3 = 0$$

$$\frac{4x}{4} = \frac{0}{4} \quad \text{or } 8x - \cancel{3} + \cancel{3} = 0 + 3$$

$$x = 0$$

$$8x = 3$$

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

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

181

Solve

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

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

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

$$x-8+8=0+8 \text{ OR } x+10-10=0-10$$

$$x=8$$

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

80.1

40.2

20.4

10.8

possible

56.

182

Solve

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

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

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

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

$$x=-2$$

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

18.1

9.2

3.6

possible

183

Solve

$$x^2 - x = 72$$

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

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

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

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

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

$$x=-8$$

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

72.1

36.2

18.4

possible

184.

Solve

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

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

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

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

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

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

$x = 4$ OR $x = -7$

28.1

14.2

4.7

possible

57.

185.

Solve

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

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

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

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

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

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

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

48.1

24.2

12.4

6.8

possible

186.

Solve

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

$$5x^2 + 8x = 4$$

$$5x^2 + 8x - 4 = 4 - 4$$

$$5x^2 + 8x - 4 = 0$$

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

Let $5x - 2 = 0$ OR $x + 2 = 0$

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

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

5.1

4.1

2.2

187

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

~~2.1~~ ~~9.1~~ ~~3.5~~ possible 52

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

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

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

$2x = 9$ OR $x = -1$

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

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

188

Solve $x^2 - 36 = 35x$

36.1
17.2
9.4 possible

$x^2 - 36 - 35x = 35x - 35x$

$x^2 - 35x - 36 = 0$

$(x + 1)(x - 36) = 0$

Let $x + 1 = 0$ OR $x - 36 = 0$

$x + 1 - 1 = 0 - 1$ OR $x - 36 + 36 = 0 + 36$

$x = -1$ OR $x = 36$

189

Solve $15x^2 - 8x = 0$

$x(15x - 8) = 0$

Let $x = 0$ OR $15x - 8 = 0$

OR $15x - 8 + 8 = 0 + 8$

$15x = 8$

OR $\frac{15x}{15} = \frac{8}{15}$

$x = 0$

$x = \frac{8}{15}$

190

Solve

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

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

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

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

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

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

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

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

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

191

Solve

$$16x^2 - 11 = 40x$$

$$16x^2 - 11 - 40x = 40x - 40x$$

$$16x^2 - 40x - 11 = 0$$

$$(4x+1)(4x-11) = 0$$

but $4x+1=0$ OR $4x-11=0$

$$4x+1-1=0-1 \text{ OR } 4x-11+11=0+11$$

$$4x = -1 \text{ OR } 4x = 11$$

$$\frac{4x}{4} = \frac{-1}{4} \text{ OR } \frac{4x}{4} = \frac{11}{4}$$

$$x = -\frac{1}{4} \text{ OR } x = \frac{11}{4}$$

16 1
4 4

11 1
possible

192

Solve

$$3x^2 + 21x + 36 = 0$$

$$3(x^2 + 7x + 12) = 0$$

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

but $3 \neq 0$ OR $x+3=0$ OR $x+4=0$

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

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

12 1
6 2
3 4
possible

193

Solve

$$15x^2 + 31x + 1 = -9$$

$$15x^2 + 31x + 1 + 9 = -9 + 9$$

$$15x^2 + 31x + 10 = 0$$

15.1
3.5

10.1
2.5

possible

$$(3x + 5)(5x + 2) = 0$$

Let $3x + 5 = 0$ OR $5x + 2 = 0$

$3x + 5 - 5 = 0 - 5$ OR $5x + 2 - 2 = 0 - 2$

$3x = -5$ OR $5x = -2$

$\frac{3x}{3} = \frac{-5}{3}$ OR $\frac{5x}{5} = \frac{-2}{5}$

$x = -\frac{5}{3}$ OR $x = -\frac{2}{5}$

194

Solve

$$(x+6)(x+1) = 24$$

$$x^2 + 1x + 6x + 6 = 24$$

$$x^2 + 7x + 6 = 24$$

$$x^2 + 7x + 6 - 24 = 24 - 24$$

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

18.1

9.2

3.6

possible

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

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

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

$x = 2$ OR $x = -9$

195.

Solve

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

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

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

12.1
6.2
3.4

Possible

6/1

wt $10x = 0$ OR $x+3 = 0$ OR $x+4 = 0$

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

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

196.

Solve

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

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

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

wt $y = 0$ OR $y+3 = 0$ OR $y+3 = 0$

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

OR $y = -3$ OR $y = -3$

197.

Solve

$$(3x+2)(9x^2 + 12x + 4) = 0$$

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

wt $3x+2 = 0$ OR $3x+2 = 0$ OR $3x+2 = 0$

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

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

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

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

198

Solve

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

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

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

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

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

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

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

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

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

62

199

Solve

$$25x^3 - 30x^2 + 8x = 0$$

$$x(25x^2 - 30x + 8) = 0$$

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

Let $x=0$ OR $5x-2=0$ OR $5x-4=0$

$$5x-2+2=0+2 \text{ OR } 5x-4+4=0+4$$

$$5x=2 \text{ OR } 5x=4$$

$$\frac{5x}{5} = \frac{2}{5} \text{ OR } \frac{5x}{5} = \frac{4}{5}$$

$$x = \frac{2}{5} \text{ OR } x = \frac{4}{5}$$

25.1
5.2

8.1
2.4

Possible

200

Solve

$$3x^3 - 4x^2 - 7x = 0$$

$$x(3x^2 - 4x - 7) = 0$$

$$x(3x-7)(x+1) = 0$$

Let $x=0$ OR $3x-7=0$ OR $x+1=0$

$$3x-7+7=0+7 \text{ OR } x+1-1=0-1$$

$$\text{OR } 3x=7$$

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

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

$$x=0$$

$$x=-1$$

3.1 7.1

201

Simplify

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

63

$$\frac{2x^2}{4} \cdot \frac{4(6)}{x^3} =$$

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

$$\frac{12x^2}{x^3} =$$

$$\frac{12}{x^{3-2}} =$$

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

Simplify

202

$$\frac{2y}{4y+2} \cdot \frac{10y+5}{7} =$$

$$\frac{2y}{2(2y+1)} \cdot \frac{5(2y+1)}{7} =$$

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

203

Simplify

$$\frac{z^2 - m^2}{z+m} \cdot \frac{z}{z^2 - zm} =$$

$$\frac{(z+m)(z-m)}{(z+m)} \cdot \frac{z}{z(z-m)} =$$

$$\frac{z}{z} =$$

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

$$1 =$$

formula

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

204

$$\frac{2x^{13}}{7x^6} \cdot \frac{4x}{14x^3} =$$

$$\frac{2x^{13}}{7x^6} \cdot \frac{14x^3}{4x^1} =$$

$$\frac{(2)(14)x^{13+3}}{(7)(4)x^{6+1}} =$$

$$\frac{(2)(2)(7)x^{16}}{(7)(2)(2)x^7} =$$

$$\frac{x^{16}}{x^7} =$$

$$x^{16-7} =$$

$$x^9 =$$

65

Simplif. divide

$$\textcircled{205} \frac{x^2 - y^2}{x + y} \div \frac{x}{x^2 - xy} =$$

$$\frac{x^2 - y^2}{x + y} \cdot \frac{x^2 - xy}{x} =$$

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

$$(x - y)(x - y) =$$

$$\textcircled{(x - y)^2} =$$

Simplif. (Add)

$$\textcircled{206} \frac{x^2 - 8x}{x - 6} + \frac{12}{x - 6} =$$

$$\frac{(x^2 - 8x) + (12)}{x - 6} =$$

$$\frac{x^2 - 8x + 12}{x - 6} =$$

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

$$\textcircled{x - 2} =$$

(66)

(207)

Solve

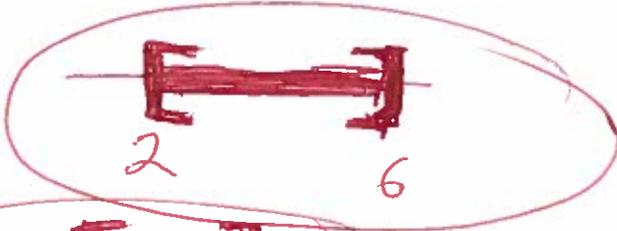
$$13 \leq 4t + 5 \leq 29$$

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

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

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

$$2 \leq t \leq 6$$



$$[2, 6]$$

(208)

Solve

$$-25 \leq -4z - 1 \leq -13$$

$$-25 + 1 \leq -4z - 1 + 1 \leq -13 + 1$$

$$-24 \leq -4z \leq -12$$

$$\frac{-24}{-4} \geq \frac{-4z}{-4} \geq \frac{-12}{-4}$$

turn the alligator around

$$6 \geq z \geq 3$$

$$3 \leq z \leq 6$$
 rewrite



$$[3, 6]$$

(209)

Solve

$$|x+3| = 6$$

formula
 $|x| = a$

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

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

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

$$x = -9$$

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

$$\{-9, 3\}$$

210

Solve

$$|x+18| < 9$$

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

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

$$-27 < x < -9$$

formula

$$|x| < a$$

$$-a < x < a$$

61



$$(-27, -9)$$

211

Solve

$$|x+3| > 4$$

formula

$$|x| > a$$

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

Let

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

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

$$x < -7 \text{ OR } x > 1$$



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

212

Simplify

$$\sqrt[4]{25} =$$

$$5 =$$

213

Simplify

$$\sqrt[4]{16x^{10}} =$$

$$4x^5 =$$

214 If $f(x) = \sqrt{2x-5}$, find $f(13)$

$$f(13) = \sqrt{2(13)-5}$$

$$f(13) = \sqrt{26-5}$$

$$f(13) = \sqrt{21}$$

215 If $f(x) = \sqrt{2x+7}$, find $f(37)$

$$f(37) = \sqrt{2(37)+7}$$

$$f(37) = \sqrt{74+7}$$

$$f(37) = \sqrt{81}$$

$$f(37) = 9$$

216 If $f(x) = \sqrt[3]{x+36}$ find $f(-9)$

$$f(-9) = \sqrt[3]{-9+36}$$

$$f(-9) = \sqrt[3]{27}$$

$$f(-9) = 3$$

217 graph $f(x) = \sqrt{x} - 4$

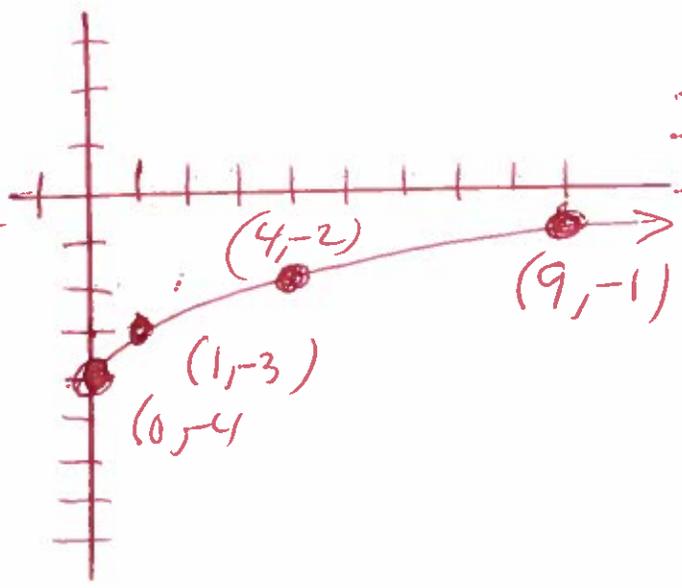
$$f(0) = \sqrt{0} - 4 = 0 - 4 = -4$$

$$f(1) = \sqrt{1} - 4 = 1 - 4 = -3$$

$$f(4) = \sqrt{4} - 4 = 2 - 4 = -2$$

$$f(9) = \sqrt{9} - 4 = 3 - 4 = -1$$

x	f(x)
0	-4
1	-3
4	-2
9	-1



Evaluate

218

$$256^{1/4} =$$

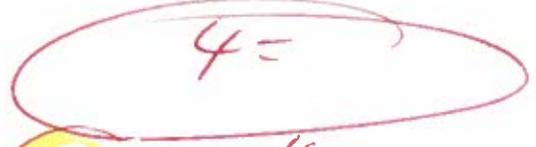
$$(4^4)^{1/4} =$$

$$4^{4(1/4)} =$$

$$4^{1} =$$

$$4^1 =$$

$$4 =$$



219

$$8^{4/3} =$$

$$(2^3)^{4/3} =$$

$$2^{3(4/3)} =$$

$$2^4 =$$

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

$$16 =$$

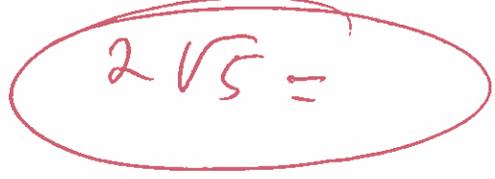
220

$$\sqrt{20} =$$

$$\sqrt{4 \cdot 5} =$$

$$\sqrt{4} \sqrt{5} =$$

$$2\sqrt{5} =$$



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

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

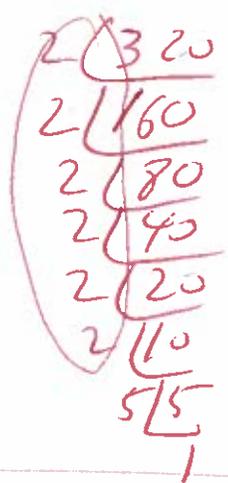
221. $\sqrt{320 k^7 q^8} = \text{Primes } 2, 3, 5, 7$

$\sqrt{2^6 \cdot 5 \cdot k^6 \cdot k^1 \cdot q^8} =$

$2^3 k^3 q^4 \sqrt{5k} =$

$2 \cdot 2 \cdot 2 k^3 q^4 \sqrt{5k} =$

$8 k^3 q^4 \sqrt{5k} =$



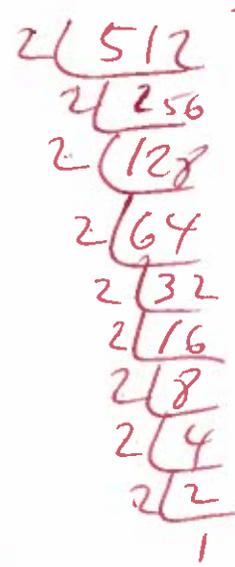
Primes 2, 3, 5, 7

222. $\sqrt[3]{512 x^4 y^5}$
 $\sqrt[3]{2^9 x^3 x^1 y^3 y^2} =$

$2^3 x^1 y^1 \sqrt[3]{x^1 y^2} =$

$2 \cdot 2 \cdot 2 x y \sqrt[3]{x y^2} =$

$8 x y \sqrt[3]{x y^2} =$

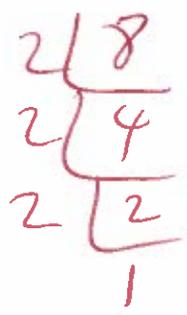


Primes 2, 3, 5, 7

223. $\sqrt[3]{8 x^4 y^5}$
 $\sqrt[3]{2^3 \cdot x^3 \cdot x^1 \cdot y^3 \cdot y^2} =$

$2^1 x^1 y^1 \sqrt[3]{x^1 y^2} =$

$2 x y \sqrt[3]{x y^2} =$



Find the distance between the points:

224 $(-4, 2)$ and $(-12, -4)$
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$d = \sqrt{(-4) - (-12))^2 + ((2) - (-4))^2}$$

$$d = \sqrt{(-4 + 12)^2 + (2 + 4)^2}$$

$$d = \sqrt{(8)^2 + (6)^2}$$

$$d = \sqrt{64 + 36}$$

$$d = \sqrt{100}$$

$$d = 10$$

Find the midpoints between the points

225 $(4, -8)$ and $(0, 4)$
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$\text{Mid point} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\text{Mid point} = \left(\frac{(4) + (0)}{2}, \frac{(-8) + (4)}{2} \right)$$

$$\text{Mid point} = \left(\frac{4 + 0}{2}, \frac{-8 + 4}{2} \right)$$

$$\text{Mid point} = \left(\frac{4}{2}, \frac{-4}{2} \right)$$

$$= (2, -2)$$

Solve

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

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

$$x+4 = 64$$

$$x+x-4 = 64-4$$

$$x = 60$$

72

{60}

Solve

$$\sqrt{20x+20} = x+6$$

$$(\sqrt{20x+20})^2 = (x+6)^2$$

$$20x+20 = (x+6)(x+6)$$

$$20x+20 = x^2+6x+6x+36$$

$$20x+20 = x^2+12x+36$$

$$0 = x^2+12x+36-20x-20$$

$$0 = x^2-8x+16$$

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

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

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

$$x=4$$

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

Good

$$\text{Ck } \sqrt{20x+20} = x+6$$

$$\sqrt{20(4)+20} = (4)+6$$

$$\sqrt{80+20} = 4+6$$

$$\sqrt{100} = 10$$

$$10 = 10 \text{ Good}$$

{4}

simplify

228

$$(3-3i) + (6+5i) =$$

$$3-3i+6+5i =$$

$$9+2i =$$

simplify

229

$$(6+6i) - (-9+i) =$$

$$6+6i+9-i =$$

$$15+5i =$$

simplify

230

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

$$25 - 15i + 15i - 9i^2 =$$

$$25 - 9i^2 =$$

$$25 - 9(-1) =$$

$$25 + 9 =$$

$$34 =$$

formula

$$i^2 = -1$$

$$34 + 0i$$

Form

~~a+bi~~
Form

simplify

231

$$\frac{8+7i}{9-2i} =$$

$$\left(\frac{8+7i}{9-2i}\right) \left(\frac{9+2i}{9+2i}\right) =$$

$$\frac{72 + 16i + 63i + 14i^2}{81 + 18i - 18i - 4i^2} =$$

$$\frac{72 + 79i + 14i^2}{81 - 4i^2} =$$

$$\frac{72 + 79i + 14(-1)}{81 - 4(-1)} =$$

$$\frac{72 + 79i - 14}{81 + 4} =$$

Formula

$$\frac{58 + 79i}{85} =$$

$$i^2 = -1$$

$$\frac{58}{85} + \frac{79i}{85} =$$

Solve

232

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

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

$$x-5 = \pm 6$$

Let $x-5 = -6$ OR $x-5 = 6$

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

$$x = -1$$

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

Solve

Use the Quadratic formula

233

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

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

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

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

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

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

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

$$x = -12 \pm 0$$

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

$$x = -12$$

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

$$\{-12\}$$

Solve

use the Quadratic Formula

15

237 $x^2 + 18x + 70 = 0$
 $a=1, b=18, c=70$

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

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

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

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

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

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

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

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

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

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

OR

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

$$\{-9 - \sqrt{11}, -9 + \sqrt{11}\}$$

Primes 2, 3, 5, 7, 11

$$\begin{array}{r} 2 \overline{) 44} \\ \underline{22} \\ 22 \\ \underline{11} \\ 11 \\ \underline{11} \\ 0 \end{array}$$

Use the Quadratic formula

(235) $1x^2 - 8x + 20 = 0$

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

16

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

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

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

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

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

$$x = 4 \pm 2i$$

$x = 4 - 2i$ OR $x = 4 + 2i$

$\{4 - 2i, 4 + 2i\}$

use the Quadratic formula

Solve

(236) $2x^2 - 7x - 9 = 0$

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

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

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

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

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

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

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

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

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

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

$\{-1, \frac{9}{2}\}$

237

Solve

$$7x^2 = -12x - 3$$

$$7x^2 + 12x + 3 = 0$$

$$a=7, b=12, c=3$$

Use the Quadratic formula

rewrite

11

Primes 2, 3, 5, 7

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

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(7)(3)}}{2(7)}$$

2 | 60
 4 | 30
 3 | 15
 5 | 5
 1

$$x = \frac{-12 \pm \sqrt{144 - 84}}{14}$$

$$x = \frac{-12 \pm \sqrt{60}}{14}$$

$$x = \frac{-12 \pm \sqrt{4 \cdot 15}}{14}$$

$$x = \frac{-12 \pm \sqrt{4\sqrt{15}}}{14}$$

$$x = \frac{-12 \pm 2\sqrt{15}}{14}$$

$$x = \frac{2(-6 \pm 1\sqrt{15})}{2(7)}$$

$$x = \frac{-6 \pm 1\sqrt{15}}{7}$$

$$x = \frac{-6 \pm \sqrt{15}}{7}$$

$$x = \frac{-6 - \sqrt{15}}{7} \text{ OR } x = \frac{-6 + \sqrt{15}}{7}$$

$\left\{ \frac{-6 - \sqrt{15}}{7}, \frac{-6 + \sqrt{15}}{7} \right\}$

Solve

$$\sqrt{20x-60} = x+2$$

$$(\sqrt{20x-60})^2 = (x+2)^2$$

$$20x-60 = (x+2)(x+2)$$

$$20x-60 = x^2+2x+2x+4$$

$$20x-60 = x^2+4x+4$$

$$0 = x^2+4x+4-20x+60$$

$$0 = x^2-16x+64$$

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

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

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

$$x=8$$

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

OK

Good

$$\sqrt{20x-60} = x+2$$

$$\sqrt{20(8)-60} = (8)+2$$

$$\sqrt{160-60} = 8+2$$

$$\sqrt{100} = 10$$

$$10 = 10$$

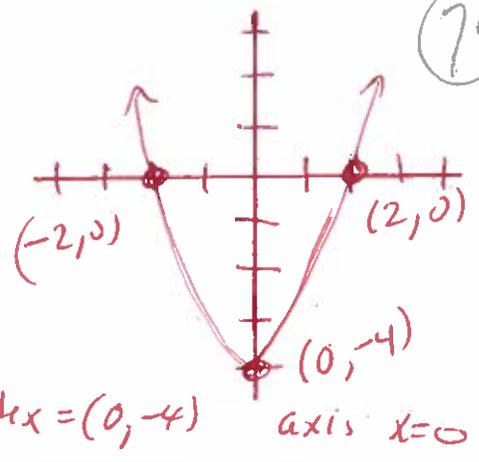
{ 8 }

78

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

x	f(x)
-2	0
0	-4
2	0

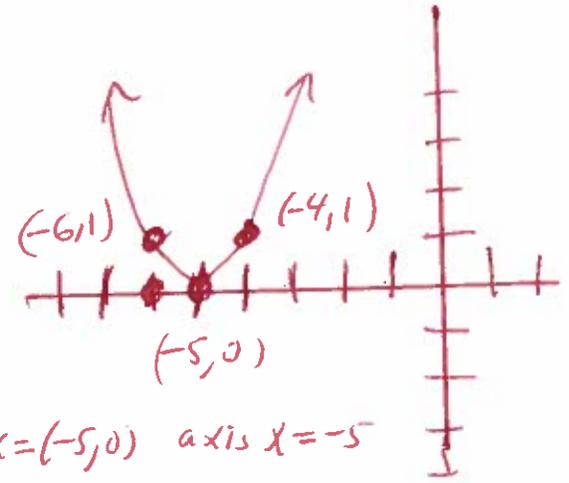
$f(-2) = (-2)^2 - 4 = (-2)(-2) - 4 = 4 - 4 = 0$
 $f(0) = (0)^2 - 4 = (0)(0) - 4 = 0 - 4 = -4$
 $f(2) = (2)^2 - 4 = (2)(2) - 4 = 4 - 4 = 0$



graph
240) $f(x) = (x+5)^2$

x	f(x)
-6	1
-5	0
-4	1

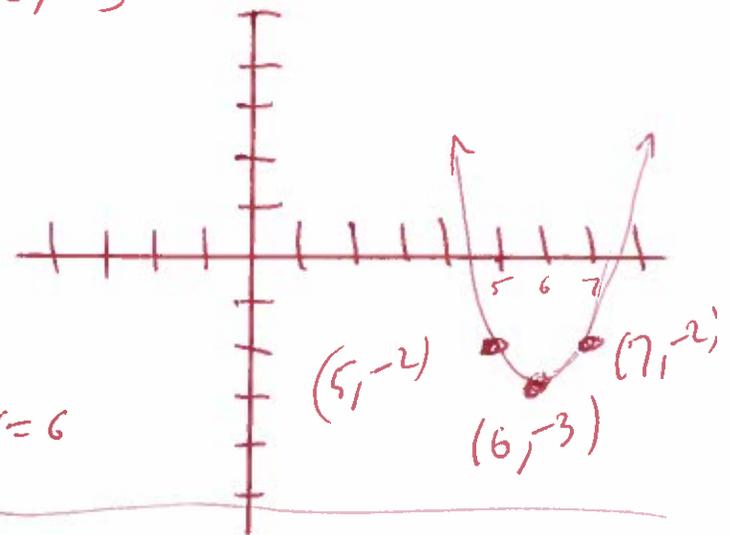
$f(-6) = (-6+5)^2 = (-1)^2 = (-1)(-1) = 1$
 $f(-5) = (-5+5)^2 = (0)^2 = (0)(0) = 0$
 $f(-4) = (-4+5)^2 = (1)^2 = (1)(1) = 1$



graph
241) $f(x) = (x-6)^2 - 3$

x	f(x)
5	-2
6	-3
7	-2

$f(5) = (5-6)^2 - 3 = (-1)^2 - 3 = (-1)(-1) - 3 = 1 - 3 = -2$
 $f(6) = (6-6)^2 - 3 = (0)^2 - 3 = (0)(0) - 3 = 0 - 3 = -3$
 $f(7) = (7-6)^2 - 3 = (1)^2 - 3 = (1)(1) - 3 = 1 - 3 = -2$



graph

242 $f(x) = -x^2 - 5$

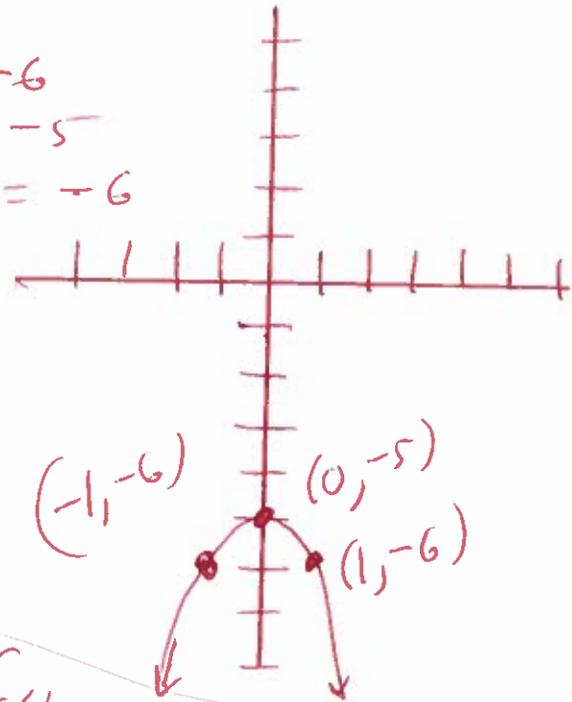
x	f(x)
-1	-6
0	-5
1	-6

(80)

$f(-1) = -(-1)^2 - 5 = -(-1)(-1) - 5 = -1 - 5 = -6$

$f(0) = -(0)^2 - 5 = -(0)(0) - 5 = 0 - 5 = -5$

$f(1) = -(1)^2 - 5 = -(1)(1) - 5 = -1 - 5 = -6$



vertex = (0, -5) axis x=0

Graph

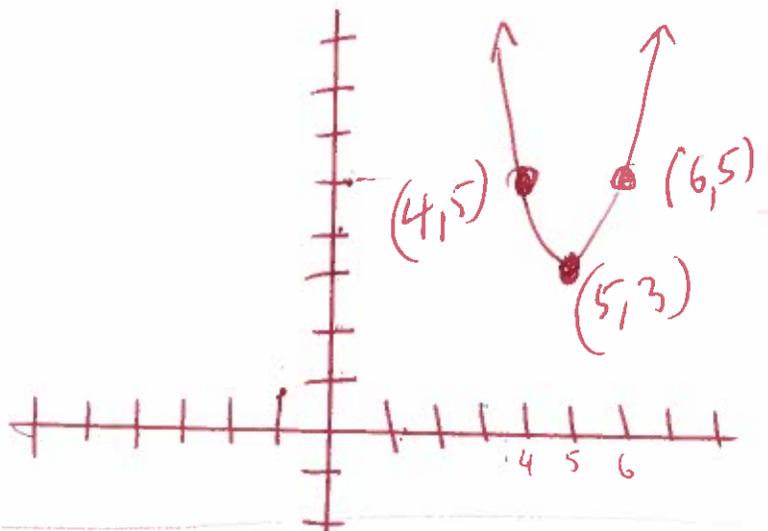
243 $f(x) = 2(x-5)^2 + 3$

x	f(x)
4	5
5	3
6	5

$f(4) = 2(4-5)^2 + 3 = 2(-1)^2 + 3 = 2(-1)(-1) + 3 = 2 + 3 = 5$

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

$f(6) = 2(6-5)^2 + 3 = 2(1)^2 + 3 = 2(1)(1) + 3 = 2 + 3 = 5$



vertex = (5, 3) axis x=5