Math 0410143 Aleks Std
06-12-18
DSM
DSM

1. $0 > -9$

2. $|-13| =$

$(13) =$

$13 =$

3. $2x - y, \quad x = 2, y = -5$

$2(2) - (-5) =$

$4 + 5 =$

$9 =$

4. $-11^2 =$

$-(11)(11) =$

$-(121) =$

$-121 =$

5. $\frac{-7}{0} =$

undefined

6. $(-4)^2 =$

$(-4)(-4) =$

$(16) =$

$16 =$

7. $(-2)^5 =$

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

$-32 =$

8. $(-12) + 8 \div 4 =$

$(-12) + 2 =$

$-12 + 2 =$

$-10 =$

9. $3 + 8 \cdot 6 - 15 =$

$3 + 48 - 15 =$

$51 - 15 =$

$36 =$

10. $8(-4) - (-16) =$

$-32 + 16 =$

$-16 =$

11. $|4 - 34| \div 3 =$

$|-30| \div 3 =$

$(30) \div 3 =$

$10 =$

12. $(-14 - 46) \div 15 - 28 =$

$(-60) \div 15 - 28 =$

$-4 - 28 =$

$-32 =$

13. $8(-12) \div [2(-8) - 5(-3)] =$

$8(-12) \div [-16 + 15] =$

$8(-12) \div [-1] =$

$-96 \div [-1] =$

$96 =$

14. $2x - 5y - 4z$, $x = -2$, $y = 2$, $z = -1$

$2(-2) - 5(2) - 4(-1) =$

$-4 - 10 + 4 =$

$-14 + 4 =$

$-10 =$

15. $x^2 - y$, $x = -5$, $y = 6$

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

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

$(25) - (6) =$

$25 - 6 =$

$19 =$

16. $d - 6 = -17$

$d - 6 + 6 = -17 + 6$

$d = -11$

17. $-4z = 24$

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

$z = -6$

18. $\frac{n}{3} = -5$

$\frac{1n}{3} = \frac{-5}{1}$ rewrite

$\frac{3}{1}\left(\frac{1n}{3}\right) = \frac{3}{1}\left(\frac{-5}{1}\right)$

$n = \frac{-15}{1}$

$n = -15$

19. $-10x = 0$

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

$x = 0$

20 $\frac{x}{-5} = -8$

$\frac{1x}{-5} = \frac{-8}{1}$ rewrite

$\frac{-5}{1}\left(\frac{1x}{-5}\right) = \frac{-5}{1}\left(\frac{-8}{1}\right)$

$x = \frac{40}{1}$

$x = 40$

21. $3(a-7) =$

$3a - 21 =$

22. $-6(3x+9) =$

$-18x - 54$

23. $-5(7n-6) + 3n =$

$-35n + 30 + 3n =$

$-32n + 30 =$

24. $18y - 20y =$

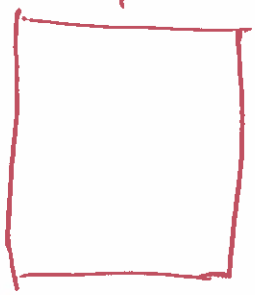
$-2y =$

25. $5y - 2(y-2) + 3 =$

$5y - 2y + 4 + 3 =$

$3y + 7 =$

26. Find area



$A = L \cdot W$

$A = (4y)(9)$

$A = 36y$ square inches

27. $P = 2L + 2W$ $L = 24$ feet, $W = 19$ feet

$P = 2(24) + 2(19)$

$P = 48 + 38$

$P = 86$ feet

square feet

28. $3w - 10w = 21$

$-7w = 21$

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

$w = -3$

29. $35 = t + 6t$

$35 = 1t + 6t$

$35 = 7t$

$\frac{35}{7} = \frac{7t}{7}$

$5 = t$

30. $-2x - 2x = 40 - 4$

$-4x = 36$

$\frac{-4x}{-4} = \frac{36}{-4}$

$x = -9$

31.

$$3(2x-3)=7x$$
$$6x-9=7x$$
$$6x-9+9=7x+9$$
$$6x=7x+9$$
$$6x-7x=7x+9-7x$$
$$-1x=9$$
$$\frac{-1x}{-1}=\frac{9}{-1}$$
$$x=-9$$

32.

$$33y=4(8y-2)$$
$$33y=32y-8$$
$$33y-32y=32y-8-32y$$
$$1y=-8$$
$$y=-8$$

33. $3(y-2) = y-6$

$3y-6 = y-6$

$3y-6 = 1y-6$

$3y-6+6 = 1y-6+6$

$3y = 1y$

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

$2y = 0$

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

$y = 0$

34. $-\frac{3}{7} \cdot \frac{4}{9} =$

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

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

$\frac{-4}{21} =$

35. $\frac{3}{10} \div \frac{19}{20} =$

$\frac{3}{10} \cdot \frac{20}{19} =$

$\frac{(3)}{(2)(5)} \cdot \frac{(2)(2)(5)}{(19)} =$

$\frac{(3)}{(2)(5)} \cdot \frac{(2)(2)(5)}{(19)} =$

$\frac{6}{19} =$

Primes 2, 3, 5, 7

2 | 10
5 | 5
1

2 | 20
2 | 10
5 | 5
1

36. $\frac{4}{15} + \frac{8}{15} =$

$\frac{(4)+(8)}{15} =$

$\frac{4+8}{15} =$

$\frac{12}{15} =$

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

$\frac{4}{5}$

Primes 2, 3, 5, 7...

2 | 12
2 | 6
3 | 3
1

3 | 15
5 | 5
1

37 $\frac{1}{5} + \frac{1}{10} =$ LCD = 10

$\frac{1}{5}\left(\frac{2}{2}\right) + \frac{1}{10} =$

$\frac{2}{10} + \frac{1}{10} =$

$\frac{(2)+(1)}{10} =$

$\frac{2+1}{10} =$

$\frac{3}{10} =$

38 $\frac{1}{4} - \frac{5}{14} =$

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

2|4 2|14

2|2 7|7

1 1

$4 = 2 \cdot 2$

$14 = 2 \cdot 7$

LCD = 2.2.7

= 28

$\frac{1}{4}\left(\frac{7}{7}\right) - \frac{5}{14}\left(\frac{2}{2}\right) =$

$\frac{7}{28} - \frac{10}{28} =$

$\frac{(7)-(10)}{28} =$

$\frac{7-10}{28} =$

$\frac{-3}{28} =$

39. $\dfrac{\frac{2}{5}}{\frac{2}{9}} =$

$\frac{2}{5} \cdot \frac{9}{2} =$

$\frac{9}{5} =$

40. $-24 = \frac{4}{11}x$

$\frac{11}{4}\left(\frac{-24}{1}\right) = \frac{11}{4}\left(\frac{4x}{11}\right)$ mult

$\frac{(11)(-1)(2)(2)(2)(3)}{(2)(2)(1)} = x$

$\frac{-66}{1} =$

$-66 = x$

Prime 2, 3, 5, 7

2 | 24
2 | 12
2 | 6
3 | 3
1

41. $\frac{k}{5} = \frac{k}{7} + 4$ LCD = 35

$\frac{k}{5}(35) = \frac{k}{7}(35) + \frac{4}{1}(35)$

$k(7) = k(5) + 4(35)$

$7k = 5k + 140$

$7k - 5k = 5k + 140 - 5k$

$2k = 140$

$\frac{2k}{2} = \frac{140}{2}$

$k = 70$

42. $-5.293 * 1000 =$

$-5293. =$ move decimal right 3 times

43. $\frac{93.575}{100} =$ move decimal left 2 times

$0.93575 =$

44. $3.4x - 63 = 2.5x + 9$

$3.4x - 63 + 63 = 2.5x + 9 + 63$

$3.4x = 2.5x + 72$

$3.4x - 2.5x = 2.5x + 72 - 2.5x$

$.9x = 72$

$\frac{.9x}{.9} = \frac{72}{.9}$

$x = 80$

45. $\frac{3}{8} = \frac{x}{24}$

$3(24) = 8(x)$ cross mult

$72 = 8x$

$\frac{72}{8} = \frac{8x}{8}$

$9 = x$

46 $\frac{12}{60} = \frac{18}{x}$

$12(x) = 60(18)$ cross multiply

$12x = 1080$

$\frac{12x}{12} = \frac{1080}{12}$

$x = 90$

47. Write the percent as a decimal

$76.4\% =$

$.764 =$

48 Write the decimal as a percent

$0.28 =$

$28\% =$

(49) Write the fraction as a percent

$$\frac{3}{4} = \frac{x}{100}$$

$3(100) = 4(x)$ Cross Mult

$300 = 4x$

$$\frac{300}{4} = \frac{4x}{4}$$

$75 = x$ OR 75%

(50.) 35% written as a decimal

$.35 =$

35% written as a fraction (simplified)

$$\frac{35}{100} =$$

$$\frac{(5)(7)}{(2)(2)((5)(5)} =$$

$$\frac{(5)(7)}{(2)(2)(5)(5)} =$$

$$\frac{7}{20} =$$

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

5 | 35
7 | 7
1

2 | 100
2 | 50
5 | 25
5 | 5
1

51. $A = P - PD$, $P = \$339$, $D = 20\% = .20$

$A = \$339 - \$339(.20)$

$A = \$339 - \$67.80$ ← discount

$A = \$271.20$ ← Sale price

52. $A = P + PRT$, $P = \$54{,}000$

$R = 7.5\% = .075$

$T = 4$ years

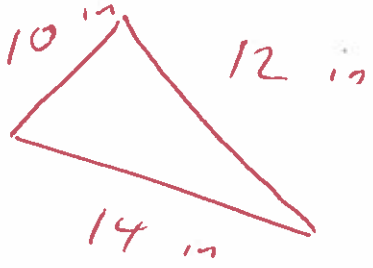
$A = \$54{,}000 + \$54{,}000(.075)(4)$

$A = \$54{,}000 + \$54000(.30)$

$A = \$54{,}000 + \$16200$ ← Interest paid on loan

$A = \$70{,}200$ ← Total amount paid

53 Find perimeter

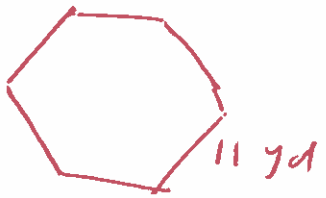


$P = S_1 + S_2 + S_3$

$P = 10 + 12 + 14$

$P = 36$ inches

54 Find the perimeter of the regular Polygon



$P = 6s$

$P = 6(11)$

$P = 66$ yards

55 Find the area of the circle

$\pi = 3.14$

$A = \pi r^2$

$A = 3.14(20.5)^2$

$A = 3.14(20.5)(20.5)$

$A = 3.14(420.25)$

$A = 1319.585$ approx

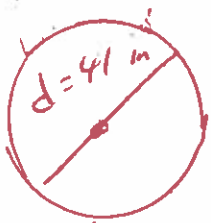
OR

$A = \pi(20.5)^2$

$A = \pi(20.5)(20.5)$

$A = \pi(420.25)$

$A = 420.25\pi$ Exact



$r = \frac{1}{2}d = \frac{1}{2}(41)$

$= 20.5$

56 $8(x-7)+6=-50$

$8x-56+6=-50$

$8x-50=-50$

$8x-50+50=-50+50$

$8x=0$

$\frac{8x}{8}=\frac{0}{8}$

$x=0$

57 $7(6x+9)=42x+63$

$42x+63=42x+63$

$42x+63-63=42x+63-63$

$42x=42x$

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

$0=0$

The solution is all real numbers

58 $\frac{x}{6} + 1 = \frac{x}{6}$ LCD = 6

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

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

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

$1x + 6 = 1x$

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

$1x = 1x - 6$

$1x - 1x = 1x - 6 - 1x$

$0 \neq -6$

There is no solution

59 Solve for y

$2x + y = 6$

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

$y = 6 - 2x$

OR

$y = -2x + 6$

60. $A = B + Bcd$ $C =$

$A - B = B + Bcd - B$

$A - B = Bcd$

$\frac{A-B}{Bd} = \frac{Bcd}{Bd}$

$\frac{A-B}{Bd} = C$

61. $3x < -18$

$\frac{3x}{3} < \frac{-18}{3}$

$x < -6$

divide by a positive and do not turn the alligator around

$(-\infty, -6)$

62 $-5x \leq 15$

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

divide by a negative number and turn the alligator around

$x \geq -3$

$[-3, \infty)$

63 $-8x + 4 \geq 4(3 - x)$

$-8x + 4 \geq 12 - 4x$

$-8x + 4 - 4 \geq 12 - 4x - 4$

$-8x \geq -4x + 8$

$-8x + 4x \geq -4x + 8 + 4x$

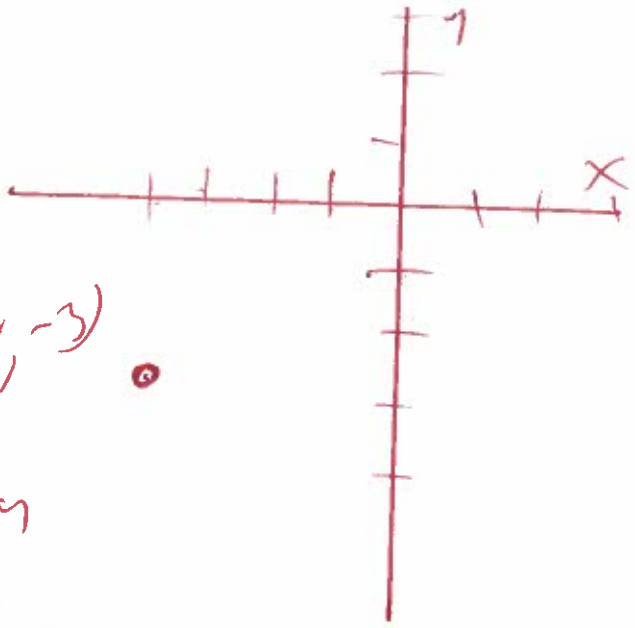
$-4x \geq 8$

$\frac{-4x}{-4} \leq \frac{8}{-4}$ divide by negative turn alligator around

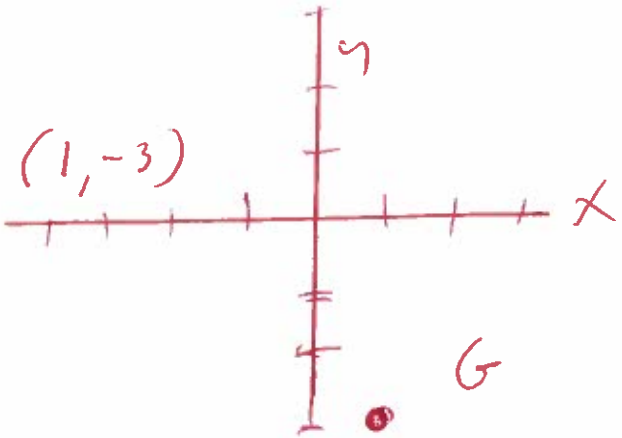
$x \leq -2$

$(-\infty, -2]$

64. $(-4, -3)$ graph



65. graph G $(1, -3)$



66. $y = -2x + 3$

$y = -2(0) + 3$

$y = 0 + 3$

$y = 3$

$y = -2(1) + 3$

$y = -2 + 3$

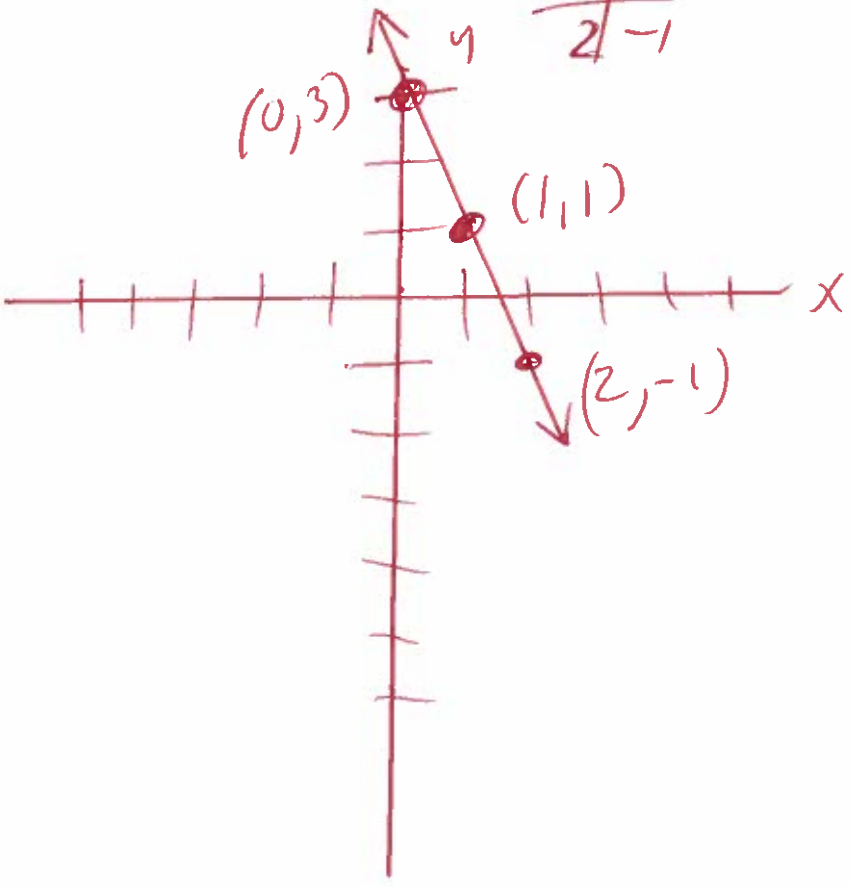
$y = 1$

$y = -2(2) + 3$

$y = -4 + 3$

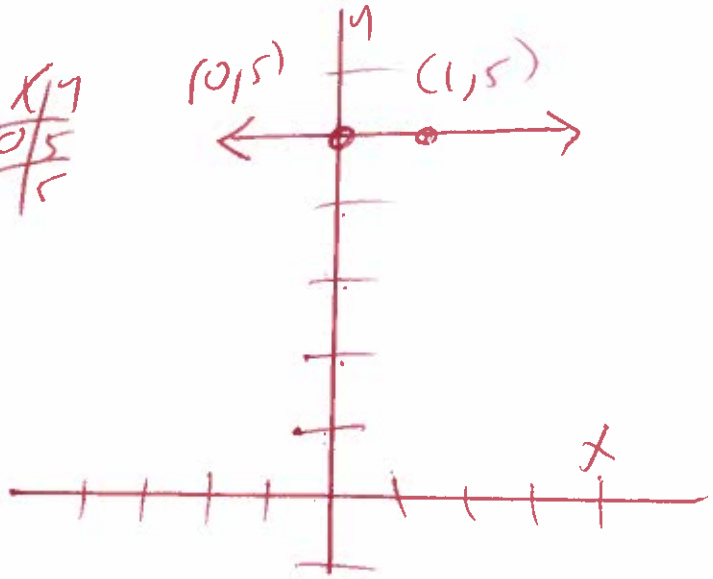
$y = -1$

x	y
0	3
1	1
2	-1



67) $y = 5$ graph

x	y
0	5
1	5



68) $y = -\frac{1}{2}x + 1$ graph

x	y
0	1
2	0

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

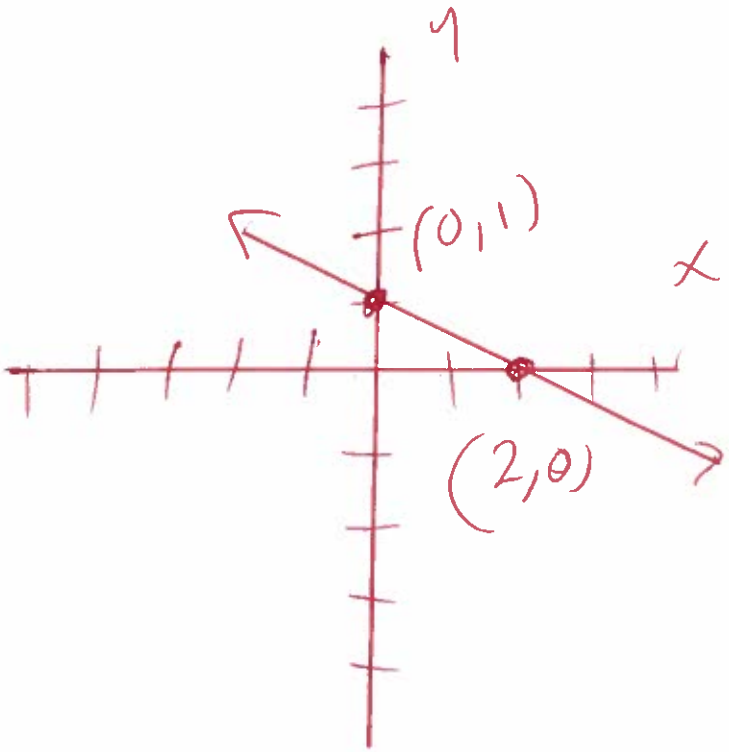
$y = 0 + 1$

$y = 1$

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

$y = -1 + 1$

$y = 0$



69) $8x - 2y = 8$ graph

Find x-intercept let $y = 0$

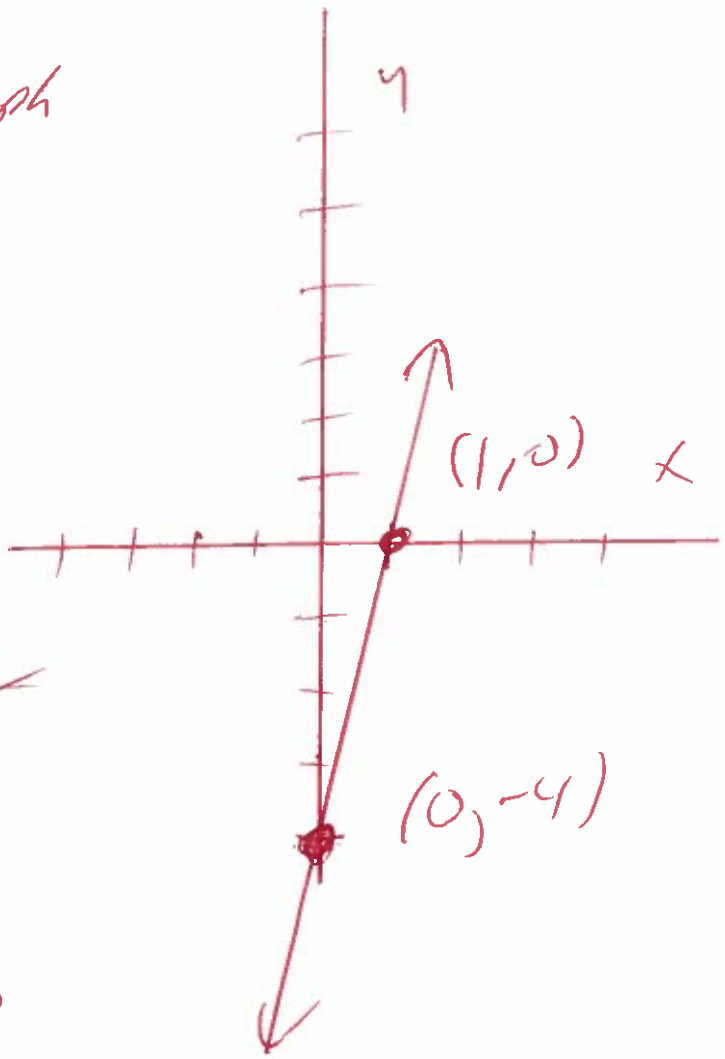
$8x - 2(0) = 8$

$8x - 0 = 8$

$8x = 8$

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

$x = 1$ x-intercept $(1, 0)$



$8x - 2y = 8$

Find y-intercept let $x = 0$

$8(0) - 2y = 8$

$0 - 2y = 8$

$-2y = 8$

$\frac{-2y}{-2} = \frac{8}{-2}$ y-intercept

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

70) $(1, 6)$ and $(0, -2)$ Find Slope

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

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

$$m = \frac{(6) - (-2)}{(1) - (0)}$$

$$m = \frac{6 + 2}{1 - 0}$$

$$m = \frac{8}{1}$$

$$m = 8$$

71) $(10, -2)$ and $(5, -3)$ Find Slope

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

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

$$m = \frac{(-2) - (-3)}{(10) - (5)}$$

$$m = \frac{-2 + 3}{10 - 5}$$

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

72) $y = 2x + 8$ find slope

slope $= m = 2$; y-intercept $= 8$

formula: $y = mx + b$; slope $= m$; y-intercept $= b$

---

73) Find the slope

$2x + y = 2$

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

$y = 2 - 2x$

$y = -2x + 2$

slope $= m = -2$; y-intercept $= 2$

formula: $y = mx + b$; slope $= m$, y-intercept $= b$

---

74) $2x - 9y = 18$ find slope

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

$-9y = 18 - 2x$

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

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

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

$y = mx + b$

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

slope $= m = \frac{2}{9}$; y-intercept $= -2$

75. equation of the line

slope $= m = 4$ point $(-7, 9)$ x_1 y_1

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

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

$y - 9 = 4(x + 7)$

$y - 9 = 4x + 28$

$y - 9 + 9 = 4x + 28 + 9$

$y = 4x + 37$

76. $x^2 - 3x + 2$ eval $x = -1$

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

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

$1 + 3 + 2 =$

$4 + 2 =$

$6 =$

77 $3x - y = 14$

$x + 2y = 7$

is $(6, 4)$ a solution
$x \quad y$

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

$18 - 4 = 14$

$14 = 14$ ✓

NO
(6, 4)
is
not a solution

$(6) + 2(4) = 7$

$6 + 8 = 7$

$14 \neq 7$ ✗

NO

$3x - y = 14$

$x + 2y = 7$

is $(5, 1)$ a solution
$x \quad y$

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

$15 - 1 = 14$

$14 = 14$ ✓ yes

YES
(5, 1)
is a solution

$(5) + 2(1) = 7$

$5 + 2 = 7$

$7 = 7$ ✓ yes

78 $x+y=3$

$x=2y$

$(2y)+y=3$

$2y+1y=3$

$3y=3$

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

$y=1$

$x=2y$

$x=2(1)$

$x=2$ ✓

$(x,y)=(2,1)$

79. $y=5x+1$

$2y-6x=10$

$2(5x+1)-6x=10$

$10x+2-6x=10$

$4x+2=10$

$4x+2-2=10-2$

$4x=8$

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

$x=2$

Subst

$y=5x+1$

$y=5(2)+1$

$y=10+1$

$y=11$

$(x,y)=(2,11)$

80

$5x - y = 11$

$4x + y = 16$

$9x + 0 = 27$

$9x = 27$

$\frac{9x}{9} = \frac{27}{9}$

$x = 3$

Subst

$5x - y = 11$

$5(3) - y = 11$

$15 - y = 11$

$15 - y - 15 = 11 - 15$

$-y = -4$

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

$y = 4$

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

81.

$x + 4y = 3$

$4x + 3y = -14$

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

$(4x + 3y = -14)(4)$ Mult

$-3x - 12y = -9$

$16x + 12y = -56$

$13x + 0 = -65$

$\frac{13x}{13} = \frac{-65}{13}$

$x = -5$

Subst

$x + 4y = 3$

$(-5) + 4y = 3$

$-5 + 4y = 3$

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

$4y = 8$

$\frac{4y}{4} = \frac{8}{4}$

$y = 2$

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

(82)

$$4x - 4y = 16$$
$$3x + 5y = -52$$

$$\begin{pmatrix} 4x - 4y = 16 \\ 3x + 5y = -52 \end{pmatrix} \begin{matrix} (5) \\ (4) \end{matrix}$$

$$20x - 20y = 80$$
$$12x + 20y = -208$$

$$32x + 0 = -128$$

$$32x = -128$$

$$\frac{32x}{32} = \frac{-128}{32}$$

$$x = -4$$

Subst

$$4x - 4y = 16$$
$$4(-4) - 4y = 16$$
$$-16 - 4y = 16$$
$$+16 \quad -4y + 16 = 16 + 16$$
$$-4y = 32$$
$$\frac{-4y}{-4} = \frac{32}{-4}$$
$$y = -8$$

$$(x, y) = (-4, -8)$$

83 $(-6x^5y^6)(7xy^2) =$

$(-6x^5y^6)(7x^1y^2) =$

$-42x^{5+1}y^{6+2} =$

$-42x^6y^8 =$

84 $(4z^{10})(-3z^6)(z^3) =$

$(4z^{10})(-3z^6)(1z^3) =$

$-12z^{10+6+3} =$

$-12z^{19} =$

85 $(x^8)^2 =$

$x^{(8)(2)} =$ Mult Powers

$x^{16} =$

86. $(6m^8)^2 =$

$(6^1 m^8)^2 =$

$6^{1(2)} m^{8(2)} =$

$6^2 m^{16} =$

$(6)(6) m^{16} =$

$36m^{16} =$

87. $(-8a^5b^4c)^2 =$

$((-8)^1 a^5 b^4 c^1)^2 =$

$(-8)^{1(2)} a^{5(2)} b^{4(2)} c^{1(2)} =$

$(-8)^2 a^{10} b^8 c^2 =$

$(-8)(-8) a^{10} b^8 c^2 =$

$64a^{10}b^8c^2 =$

88 $\left(\frac{-3xz^3}{y^3}\right)^3 =$

$\left(\frac{(-3)^1 x^1 z^3}{y^3}\right)^3 =$

$\frac{(-3)^{1(3)} x^{1(3)} z^{3(3)}}{y^{3(3)}} =$ Mult Powers

$\frac{(-3)^3 x^3 z^9}{y^9} =$

$\frac{(-3)(-3)(-3) x^3 z^9}{y^9} =$

$\frac{-27 x^3 z^9}{y^9} =$

89 $b^2 \cdot b^5 \cdot b^6 =$

$b^{2+5+6} =$

$b^{13} =$

90 $\frac{9x^5y^2z}{x^3yz} =$

$\frac{9x^5y^2z^1}{x^3y^1z^1} =$

$9x^{5-3}y^{2-1} =$

$9x^2y^1 =$

$9x^2y =$

91) $P(x) = x^2 + x + 3$ find $P(6)$

$P(6) = (6)^2 + (6) + 3$

$P(6) = (6)(6) + (6) + 3$

$P(6) = 36 + 6 + 3$

$P(6) = 42 + 3$

$P(6) = 45$

92) $Q(x) = 3x^2 - 1$ find $Q(-7)$

$Q(-7) = 3(-7)^2 - 1$

$Q(-7) = 3(-7)(-7) - 1$

$Q(-7) = 3(49) - 1$

$Q(-7) = 147 - 1$

$Q(-7) = 146$

93) $-6a^2 - 3ab + 9b^2 - 8a^2 - 6ab + 8b^2 =$

$$-14a^2 - 9ab + 17b^2 =$$

94) $(9y^2 + 6y - 3) - (-4y + 8) =$

$9y^2 + 6y - 3 + 4y - 8 =$

$$9y^2 + 10y - 11 =$$

95) $(-7y^2 - 7y) + (5y^2 + y - 9) =$

$-7y^2 - 7y + 5y^2 + y - 9 =$

$-7y^2 - 7y + 5y^2 + 1y - 9 =$

$$-2y^2 - 6y - 9 =$$

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

$x^4 - 4x^2 + 2x + 3x^3 - 12x + 6 =$

$$x^4 + 3x^3 - 4x^2 - 10x + 6 =$$

97 $-2x(x^2+3x-9) =$

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

98 $(a+5)(a^2-8a+8) =$

$a^3-8a^2+8a+5a^2-40a+40 =$

$a^3-3a^2-32a+40 =$

99 $(5x+7)(7x^2-6x-2)$

$35x^3-30x^2-10x+49x^2-42x-14 =$

$35x^3+19x^2-52x-14 =$

100. Find the area of the triangle

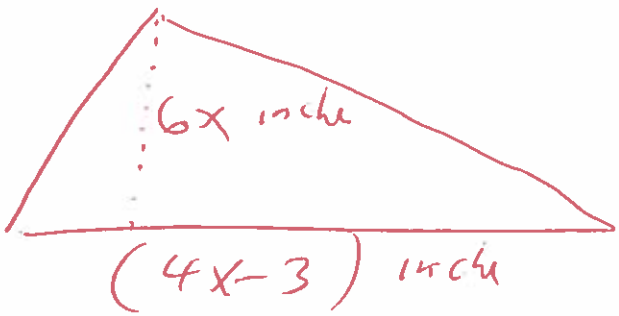
$A = \frac{1}{2}BH$

$A = \frac{1}{2}(4x-3)(6x)$

$A = \frac{1}{2}(24x^2-18x)$

$A = \frac{1}{2}(24x^2) - \frac{1}{2}(18x)$

$A = 12x^2-9x$ square inch



101

$4(y-2)(7y-1) =$

$4(7y^2 - 1y - 14y + 2) =$

$4(7y^2 - 15y + 2) =$

$28y^2 - 60y + 8 =$

102

$(a-5)(a+5) =$

$a^2 + 5a - 5a - 25 =$

$a^2 - 25 =$

103

$(2b-4c)^2 =$

$(2b-4c)(2b-4c) =$

$4b^2 - 8bc - 8bc + 16c^2 =$

$4b^2 - 16bc + 16c^2 =$

104. $6^{-3} =$

$\frac{1}{6^3} =$ rewrite

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

$\frac{1}{216} =$

105. $\left(\frac{1}{4}\right)^{-2} =$

$\left(\frac{1^1}{4^1}\right)^{-2} =$

$\frac{1^{1(-2)}}{4^{1(-2)}} =$

$\frac{1^{-2}}{4^{-2}} =$

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

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

$\frac{16}{1} =$

16

106) $\frac{p^{-3}}{Q^{-9}} =$

$\frac{Q^{9}}{p^{3}} =$ rewrite

107) $\frac{s^{-2}}{s^{-7}} =$

$\frac{s^{7}}{s^{2}} =$ rewrite

$s^{7-2} =$

$s^{5} =$

108) $(-3x^{4}y^{-4})(5x^{-1}y^{2}) =$

$-15x^{4-1}y^{-4+2} =$

$-15x^{3}y^{-2} =$

$\frac{-15x^{3}}{y^{2}} =$ rewrite

10) $(a^{-1}b^{6})^{-4} =$

$a^{-1(-4)}\, b^{6(-4)} =$ Mult pow...

$a^{4}\, b^{-24} =$

$\frac{a^{4}}{b^{24}} =$ Rewrite

11d) Write the number in scientific Notation

$31{,}000 =$

$3.1 * 10^{4} =$

11) Write the number in scientific Notation

$0.0000021 =$

$1.21 * 10^{-6} =$

112 32, 80 find GCF

GCF = 2·2·2·2

= 16

Primes 2, 3, 5, 7...

32	80
2 | 32	2 | 80
2 | 16	2 | 40
2 | 8	2 | 20
2 | 4	2 | 10
2 | 2	5 | 5
1	1

$32 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

$80 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 5$

113 $9x + 18 =$ factor GCF

$9(x+2) =$

114. $-20x^2y^4 - 28x^3y^2 =$ factor GCF

$4x^2y^2(-5y^2 - 7x) =$

115 $x^2 - 3x + 2 =$

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

2.1 Possib

116 $x^2 - 2x - 63 =$ factor

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

Possible
$63 \cdot 1$
$21 \cdot 3$
$9 \cdot 7$

117 $36x^2 - 49y^2 =$

$(6x)^2 - (7y)^2 =$

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

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

118. $(x-2)(x+1) = 0$

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

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

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

119. $x(x+1)=0$

set $x=0$ OR $x+1=0$

$x+1-1=0-1$

$x=-1$

(20.) $7x(x-9)=0$

Let $7x=0$ OR $x-9=0$

$\frac{7x}{7}=\frac{0}{7}$ OR $x-9+9=0+9$

$x=0$ OR $x=9$

(21.) $(5x+7)(4x-7)=0$

Let $5x+7=0$ OR $4x-7=0$

$5x+7-7=0-7$ OR $4x-7+7=0+7$

$5x=-7$ OR $4x=7$

$\frac{5x}{5}=\frac{-7}{5}$ OR $\frac{4x}{4}=\frac{7}{4}$

$x=-\frac{7}{5}$ OR $x=\frac{7}{4}$

122.

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

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

32.1
16 2
4.8
Possible

set

$x - 4 = 0$ or $x - 8 = 0$

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

$x = 4$ or $x = 8$

123.

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

35.1
7.5
Possible

$(x-5)(x+7) = 0$

set $x - 5 = 0$ or $x + 7 = 0$

$x - 5 + 5 = 0 + 5$ or $x + 7 - 7 = 0 - 7$

$x = 5$ or $x = -7$

124.

$x^2 - 8x = 0$

$x(x-8) = 0$

set $x = 0$ or $x - 8 = 0$

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

$x = 8$

(125) $$\frac{t^2+15t+50}{t^2+7t-18} \cdot \frac{t^2+5t-14}{t^2+20t+100} =$$

$$\frac{(t+5)(t+10)}{(t-2)(t+9)} \cdot \frac{(t-2)(t+7)}{(t+10)(t+10)} =$$

$$\frac{(t+5)(t+10)}{(t-2)(t+9)} \cdot \frac{(t-2)(t+7)}{(t+10)(t+10)} =$$

$$\frac{(t+5)(t+7)}{(t+9)(t+10)} =$$

(126.) $$\frac{3z^4}{5z^5} \div \frac{5z}{10z^4} =$$

$$\frac{3z^4}{5z^5} \cdot \frac{10z^4}{5z^1} = \text{rewrite}$$

$$\frac{(3)(10)\,z^4 z^4}{(5)(5)\,z^5 \cdot z^1} =$$

$$\frac{(3)(2)(5)\,z^{4+4}}{(5)(5)\,z^{5+1}} =$$

$$\frac{6z^8}{5z^6} =$$

$$\frac{6z^{8-6}}{5} =$$

$$\frac{6z^2}{5} =$$

(127) $\frac{5m}{2n} + \frac{5m}{2n} =$

$\frac{(5m)+(5m)}{2n} =$

$\frac{5m+5m}{2n} =$

$\frac{10m}{2n} =$

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

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

(128) $\frac{v-4}{3} = \frac{v}{5}$

$5(v-4) = 3(v)$ cross Mult

$5v-20 = 3v$

$5v-20+20 = 3v+20$

$5v = 3v+20$

$5v-3v = 3v+20-3v$

$2v = 20$

$\frac{2v}{2} = \frac{20}{2}$

$v = 10$

129 $|2x-1| = 5$

formula
$|x| = a$
$x = -a$ or $x = a$

Let

$2x-1 = -5$ or $2x-1 = 5$

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

$2x = -4$ or $2x = 6$

$\frac{2x}{2} = \frac{-4}{2}$ or $\frac{2x}{2} = \frac{6}{2}$

$x = -2$ or $x = 3$

130. $|x-7| < 5$

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

$-5 < x-7 < 5$

$-5+7 < x-7+7 < 5+7$

$2 < x < 12$

$(2, 12)$

131 $\sqrt{36x^6} =$

$6x^{\frac{6}{2}}$ = divide powers

$6x^3 =$

132 $\sqrt[3]{512} =$ Primes 2, 3, 5, 7

$\sqrt[3]{2^9} =$

$2^{\frac{9}{3}} =$ divide powers

$2^3 =$

$2 \cdot 2 \cdot 2 =$

$8 =$

2 | 512
2 | 256
2 | 128
2 | 64
2 | 32
2 | 16
2 | 8
2 | 4
2 | 2
1

133. $\sqrt{\frac{4}{9}} =$

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

$\frac{2}{3} =$

134. $\left(\frac{1}{81}\right)^{1/4}$

$\left(\frac{1}{3^4}\right)^{1/4}$ rewrite

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

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

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

$3^{-1} =$

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

$\frac{1}{3} =$

Prime 2, 3, 5, 7...

3 | 81
3 | 27
3 | 9
3 | 3
1

135. $625^{\frac{3}{4}} =$

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

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

$5^{\frac{12}{4}}$

$5^3 =$

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

$125 =$

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

5 | 625
5 | 125
5 | 25
5 | 5
1

136. $\sqrt{40} =$

$\sqrt{4 \cdot 10} =$

$\sqrt{4}\sqrt{10} =$

$2\sqrt{10} =$

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

2 | 40
2 | 20
2 | 10
5 | 5
1

137. $\sqrt{x-13} = 6$

$(\sqrt{x-13})^2 = (6)^2$

$x - 13 = 36$

$x - 13 + 13 = 36 + 13$

$x = 49$

Check

$\sqrt{x-13} = 6$?

$\sqrt{49-13} = 6$?

$\sqrt{36} = 6$?

$6 = 6$ yes

138 $7\sqrt{-99}$

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

$7\sqrt{-9 \cdot 11} =$

$7\sqrt{-9}\sqrt{11} =$

$7(3i)\sqrt{11} =$

$21i\sqrt{11} =$

3 | 99

3 | 33

11 | 11

1

formula

$\sqrt{-1} = i$

$\sqrt{-4} = 2i$

$\sqrt{-9} = 3i$

$\sqrt{-16} = 4i$

139 $(x+4)^2 = 4$

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

$x+4 = \pm 2$

$x+4 = -2$ or $x+4 = 2$

$x+4-4 = -2-4$ or $x+4-4 = 2-4$

$x = -6$ or $x = -2$

Clc

$(x+4)^2 = 4$

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

$(-2)^2 = 4$

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

$4 = 4$

Good

Clc

$(x+4)^2 = 4$

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

$(2)^2 = 4$

$(2)(2) = 4$

$4 = 4$

Good

140 $m^2 - 3m - 10 = 0$

10.1 pass 164

2.5

let $(m+2)(m-5) = 0$

$m+2=0$ or $m-5=0$

$m+2-2=0-2$ or $m-5+5=0+5$

$m=-2$ or $m=5$

OR use Quadratic formula

$1m^2 - 3m - 10 = 0$

$a=1,\ b=-3,\ c=-10$

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

$m = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-10)}}{2(1)}$

$m = \frac{3 \pm \sqrt{9+40}}{2}$

$m = \frac{3 \pm \sqrt{49}}{2}$

$m = \frac{3 \pm 7}{2}$

$m = \frac{3-7}{2}$ or $m = \frac{3+7}{2}$

$m = \frac{-4}{2}$ or $m = \frac{10}{2}$

$m = -2$ OR $m = 5$

(14) $3y = 2y^2 + 1$

$0 = 2y^2 + 1 - 3y$

$0 = 2y^2 - 3y + 1$ rewrite

Possible (2, 1) (1, 1)

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

set $2y - 1 = 0$ or $y - 1 = 0$

$2y - 1 + 1 = 0 + 1$ or $y - 1 + 1 = 0 + 1$

$2y = 1$ or $y = 1$

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

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

use Quadratic formula

$2y^2 - 3y + 1$

$a = 2 \quad b = -3, \quad c = 1$

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

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

$$y = \frac{3 \pm \sqrt{9 - 8}}{4}$$

$$y = \frac{3 \pm \sqrt{1}}{4}$$

$$y = \frac{3 \pm 1}{4}$$

$y = \frac{3-1}{4}$ or $y = \frac{3+1}{4}$

$y = \frac{2}{4}$ or $y = \frac{4}{4}$

$y = \frac{2(1)}{2(2)}$ or $y = \frac{4}{4}$

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

(42) $1x^2-6x+9=0$ Use Quadratic formula

$a=1,\ b=-6,\ c=9$

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

$$x=\frac{-(-6)\pm\sqrt{(-6)^2-4(1)(9)}}{2(1)}$$

$$x=\frac{6\pm\sqrt{36-36}}{2}$$

$$x=\frac{6\pm\sqrt{0}}{2}$$

$$x=\frac{6\pm0}{2}$$

$x=\frac{6+0}{2}$ OR $x=\frac{6-0}{2}$

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

$x=3$ OR $x=3$

$x^2-6x+9=0$ Possible 9.1 3.3

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

If $x-3=0$ OR $x-3=0$

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

$x=3$ OR $x=3$

143 $1x^2+6x+25=0$

$a=1,\ b=6,\ c=25$

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

$$x=\frac{-(6)\pm\sqrt{(6)^2-4(1)(25)}}{2(1)}$$

$$x=\frac{-6\pm\sqrt{36-100}}{2}$$

$$x=\frac{-6\pm\sqrt{-64}}{2}$$

$$x=\frac{-6\pm 8i}{2}$$

$$x=-3\pm 4i$$

$x=-3-4i$ or $x=-3+4i$