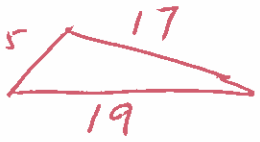
Math 0410 97 Aleks Study Guide 6-8-18

Page 1

1. $0 \quad -5$ <, >, =
2. $|-14|$
3. $5 + 6 \cdot 7 - 10$
4. $|19 - 27| \div 2$
5. $8(-12) \div [2(-8) - 5(-3)]$
6. $3x - 5y - 6z$, $x = -2$, $y = 3$, $z = -1$
7. $x^2 - y$, $x = -4$, $y = 6$
8. $d - 8 = -1$
9. $\frac{x}{-2} = -7$
10. $4y - 2(y - 3) + 4$
11. Find area $A = LW$, $L = 44$, $W = 32$
12. Find perimeter $P = 2L + 2W$, $L = 21$, $W = 14$
13. $4(2x - 2) = 9x$
14. $3(y - 4) = y - 12$
15. $-\frac{2}{7} \cdot \frac{5}{6}$
16. $\frac{5}{6} \div \frac{11}{2}$
17. $\frac{5}{28} + \frac{11}{28}$
18. $\frac{1}{8} - \frac{5}{12}$
19. $\frac{\frac{5}{7}}{\frac{5}{6}}$
20. $-12 = \frac{2x}{13}$
21. $\frac{x}{6} = \frac{x}{7} - 1$
22. $\frac{75.296}{100}$
23. $3.8x - 63 = 2.2x + 9$
24. $\frac{7}{9} = \frac{x}{18}$
25. 75.9% as a decimal
26. $\frac{9}{10}$ write fraction as a percent
27. 44% write as fraction (simplified)
28. $A = P + PRT$ $P = \$100000$, $R = 15.5\%$, $T = 4$
29. Find Perimeter Triangle



30. find area circle $\pi = 3.14$

d=29

31. $6(7x + 8) = 42x + 48$
32. $W = X + Xyz$ $z =$
33. $-8x \leq 16$
34. $y = -2x + 5$ graph
35. $y = -1$ graph
36. $y = \frac{1}{2}x - 1$ graph
37. $5x - 4y = 20$ graph (find x and y-intercepts first)

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38 $(2,-2)$ and $(-2,9)$ find slope

39 $9x-2y=18$ find slope & y-intercept

40 find equation of line $m=2$, $(-7,9)$

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

42
$$x+y=10$$
$$x=4y$$

43
$$y=3x+1$$
$$3y-4x=13$$

44
$$5x-y=22$$
$$3x+y=18$$

45 $(-3m^6n^3)(8mn^3)$

46 $(6z^{11})(-3z^8)(z^2)$

47 $(z^8)^4$

48 $(5c^6)^2$

49 $(-5a^2b^6c)^2$

50 $\dfrac{4x^5y^2z}{x^3yz}$

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

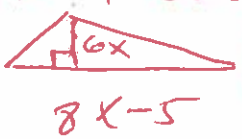
52 $(7y^2+4y-3)-(-9y+4)$

53. $3x(4x^2-4x+5)$

54 $(x+3)(x^3-6x+7)$

55 $(a+2)(a^2-4a+4)$

56 find area triangle



Page 2

57. $6(y-8)(9y-1)$

58 $(a-9)(a+9)$

59. $(3d-4b)^2$

60 2^{-4}

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

62 $\dfrac{p^{-5}}{Q^{-9}}$

63 $\dfrac{m^{-1}}{m^{-6}}$

64 33,000 write in scientific notation

65. 8, 20 find GCF

66 $-63x^2y^4-36x^3y^2$ factor GCF

67 $x^2-2x-48$ factor

68 $169x^2-121y^2$ factor

69. $7x(x-3)=0$

70 $(3x+7)(2x-3)=0$

71 $x^2-10x+21=0$

72 $x^2-10x=0$

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

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

75. $\frac{4m}{3n} + \frac{2m}{3n}$

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

77. $|2x-1| = 3$

78. $|x-9| < 7$

79. $\sqrt{100x^6}$

80. $\sqrt[3]{216}$

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

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

83. $625^{3/4}$

84. $\sqrt{150}$

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

86. $6\sqrt{-63}$

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

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

89. $3y = 2y^2 - 5$

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

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

92. $\frac{1}{10} - \frac{1}{9} \div \frac{2}{6}$

93. $\sqrt{4x-1} = \sqrt{6x-17}$

94. $(4a-3b-2)(5a-2b)$

95. $\left(\frac{1}{125}\right)^{-\frac{2}{3}}$

96. $\frac{4+x}{x-5} = 4$

97. $\frac{2a+5b}{2x} - \frac{5a-10b}{2x}$

Math 0410 97 Aleks Step
06-08-18

1. $0 > -5$

2. $|-14| =$

$(14) =$

$14 =$

3. $5 + 6 \cdot 7 - 10 =$

$5 + 42 - 10 =$

$47 - 10 =$

$37 =$

4. $|19 - 27| \div 2 =$

$|-8| \div 2 =$

$(8) \div 2 =$

$4 =$

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

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

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

$-96 \div [-1] =$

$96 =$

6. $3x - 5y - 6z$, $x = -2$, $y = 3$, $z = -1$

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

$-6 - 15 + 6 =$

$-21 + 6 =$

$-15 =$

7. $x^2 - y$, $x = -4$, $y = 6$

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

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

$(16) - (6) =$

$16 - 6 =$

$10 =$

8. $d - 8 = -1$

$d - 8 + 8 = -1 + 8$

$d = 7$

9. $\frac{x}{-2} = -7$

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

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

$x = 14$

10. $4y - 2(y-3) + 4 =$

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

$2y + 10 =$

Use Pemdas

11. Find area

$A = LW$, $L = 44$, $W = 32$

$A = (44)(32)$

$A = 1408$

12. Find perimeter

$P = 2L + 2W$ $L = 21$, $W = 14$

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

$P = 42 + 28$

$P = 70$

13) $4(2x-2) = 5x$

$8x - 8 = 5x$

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

$8x = 5x + 8$

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

$3x = 8$

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

$x = -8$

14) $3(y-4) = y - 12$

$3y - 12 = y - 12$

$3y - 1x + 12 = y - 12 + 1x$

$3y = y$

$3y = 1y$

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

$2y = 0$

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

$y = 0$

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

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

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

$-\frac{5}{21}$

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

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

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

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

$\frac{10}{11} =$

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

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

$\frac{16}{28} =$

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

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

$\frac{4}{7} =$

Prime 2, 3, 5, 7...

2 | 16 — 2 | 8 — 2 | 4 — 2 | 2 — 1

2 | 28 — 2 | 14 — 7 | 7 — 1

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

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

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

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

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

LCD =

Prime 2, 3, 5, 7...

2 | 8 — 2 | 4 — 2 | 2 — 1

2 | 12 — 2 | 6 — 3 | 3 — 1

$8 = 2 \cdot 2 \cdot 2$

$12 = 2 \cdot 2 \cdot 3$

LCD $= 2 \cdot 2 \cdot 2 \cdot 3$

$= 24$

19. $\dfrac{\frac{5}{7}}{\frac{5}{6}} =$

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

$\frac{6}{7} =$

20. $-12 = \frac{2x}{13}$

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

$\frac{(13)}{(2)} \cdot \frac{-1(2)(2)(3)}{(1)} = x$

$\frac{-78}{1}$

$-78 =$

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

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

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

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

$7x = 6x - 42$

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

$1x = -42$

$x = -42$

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

$0.75296 =$ move decimal left 2 places

23. $3.8x - 63 = 2.2x + 9$

$3.8x - 63 + 63 = 2.2x + 9 + 63$

$3.8x = 2.2x + 72$

$3.8x - 2.2x = 2.2x + 72 - 2.2x$

$1.6x = 72$

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

$x = 45$

24. $\frac{7}{9} = \frac{x}{18}$

$7(18) = 9(x)$ cross mult

$126 = 9x$

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

$14 = x$

25 75.9% as a decimal

$0.759 =$

26 $\frac{9}{10}$ Write fraction as a percent

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

$9(100) = 10(x)$ Cross Mult

$900 = 10x$

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

$90 = x$ OR 90%

27. 44% write as fraction (simplified)

$\frac{44}{100} =$

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

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

$\frac{11}{25} =$

Prime 2, 3, 5, 7, 11.

2 | 44
2 | 22
11 | 11
1

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

28 $A = P + PRT$

$P = \$100{,}000$
$R = 15.5\% = .155$
$T = 4$

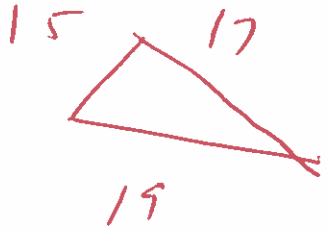
$A = \$100{,}000 + \$100{,}000(.155)(4)$

$A = 100{,}000 + \$100{,}000(.62)$

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

$A = \$162{,}000$

29 Find Perimeter



$P = S_1 + S_2 + S_3$

$P = 15 + 17 + 19$

$P = 51$

30 Find area of circle

$\pi = 3.14$

$A = \pi r^2$

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

$A = 3.14(14.5)^2$

$A = 3.14(14.5)(14.5)$

$A = 3.14(210.25)$

$A = 660.185$

31. $6(7x+8) = 42x+48$

$42x + 48 = 42x + 48$

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

$42x = 42x$

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

$0 = 0$

The solution is all real numbers

32. $w = x + xyz$ $z =$

$w - x = x + xyz - x$

$w - x = xyz$

$\frac{w-x}{xy} = \frac{xyz}{xy} =$

$\frac{w-x}{xy} = z$

33. $-8x \leq 16$

$\frac{-8x}{-8} \geq \frac{16}{-8}$ divide by a negative and turn alligator around

$x \geq -2$

$[-2, \infty)$

34. $y = -2x + 5$ graph

x	y
0	5
1	3

$y = -2(0) + 5$

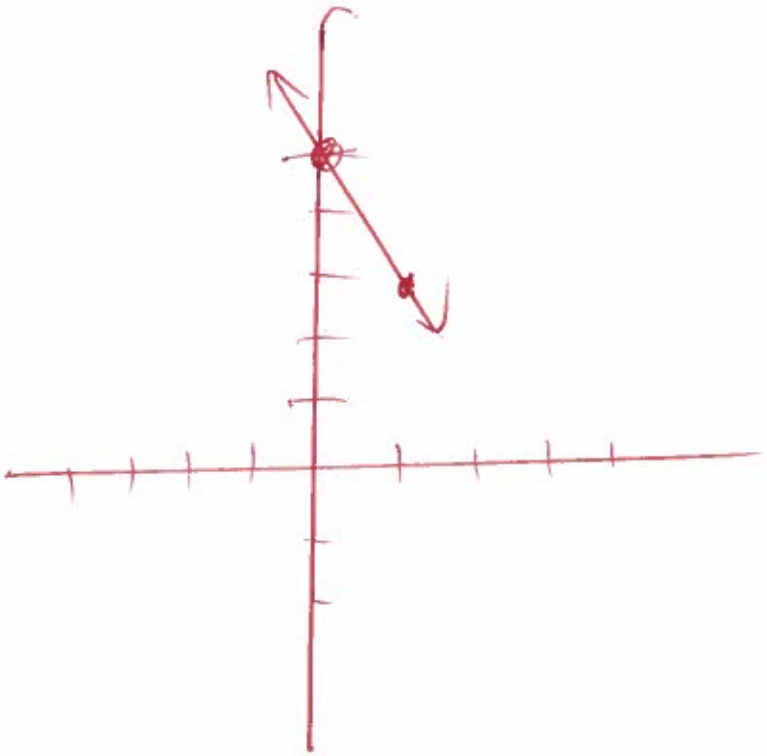
$y = 0 + 5$

$y = 5$

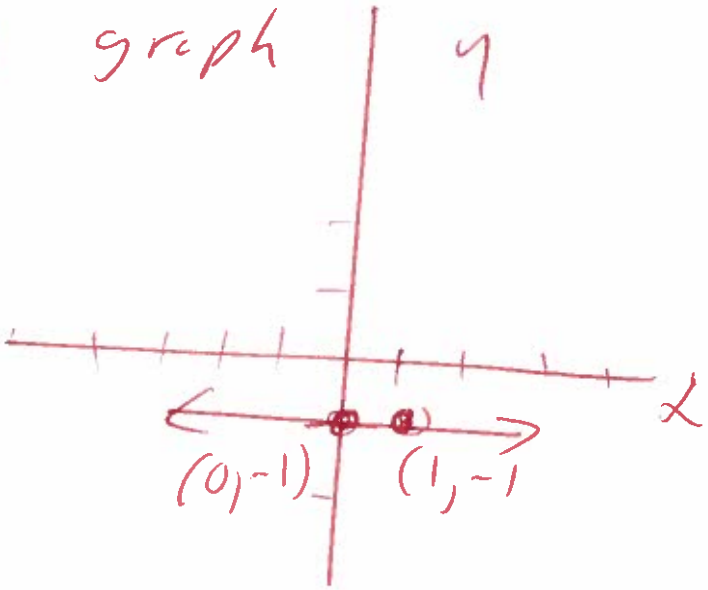
$y = -2(1) + 5$

$y = -2 + 5$

$y = 3$



35. $y = -1$ graph



x	y
0	-1
1	-1

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

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

$y = 0 - 1$

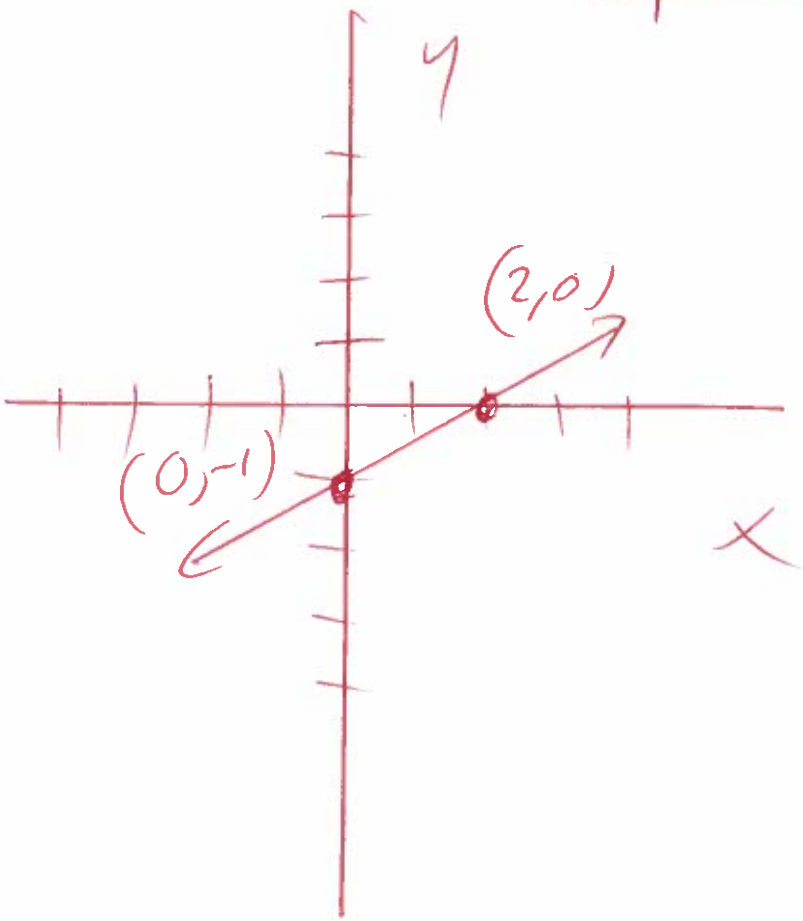
$y = -1$

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

$y = 1 - 1$

$y = 0$

x	y
0	-1
2	0



(32) $5x - 4y = 20$ graph

find x-intercept let $y = 0$

$5x - 4(0) = 20$

$5x - 0 = 20$

$5x = 20$

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

$x = 4$

x-intercept

$(4, 0)$

find y-intercept let $x = 0$

$5(0) - 4y = 20$

$0 - 4y = 20$

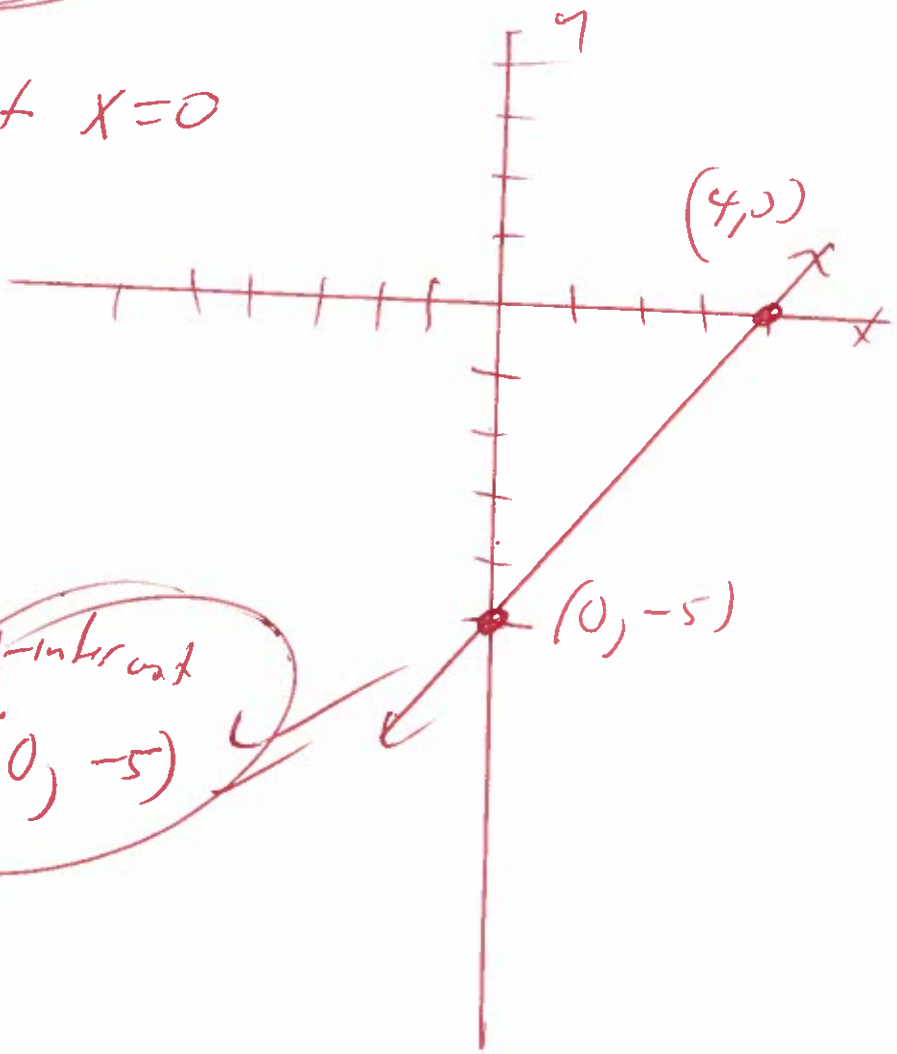
$-4y = 20$

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

$y = -5$

y-intercept

$(0, -5)$



38) $(2, -2)$ and $(-2, 9)$ find slope

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

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

slope formula

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

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

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

39) $9x - 2y = 18$ find slope & y-intercept

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

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

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

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

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

formula

$y = mx + b$

slope = m y-intercept = b

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

y intercept $= -9$

40. Find equation of the line

$m = 2, \quad (-7, 9)$ (x_1, y_1)

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

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

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

$y - 9 = 2x + 14$

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

$y = 2x + 23$

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

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

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

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

$1 + 7 + 4 =$

$8 + 4 =$

$12 =$

(42) $x+y=10$

$x=4y$

subst

$(4y)+y=10$

$4y+1y=10$

$5y=10$

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

$y=2$

subst

$x+y=10$

$x+(2)=10$

$x+2-x=10-2$

$x=8$

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

(43) $y = 3x + 1$

$3y - 4x = 13$

Subst

$3(3x+1) - 4x = 13$

$9x + 3 - 4x = 13$

$5x + 3 = 13$

$5x + 3 - 3 = 13 - 3$

$5x = 10$

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

$x = 2$

Subst

$y = 3x + 1$

$y = 3(2) + 1$

$y = 6 + 1$

$y = 7$

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

49

$$\begin{array}{r} 5x - y = 22 \\ +\ 3x + y = 18 \\ \hline 8x + 0 = 40 \end{array}$$

$$8x = 40$$

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

$$x = 5$$

Subst

$$5x - y = 22$$

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

$$25 - y = 22$$

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

$$-y = -3$$

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

$$y = 3$$

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

45. $(-3m^6n^3)(8mn^3) =$

$(-3m^6n^3)(8m^1n^3) =$

$-24m^{6+1}n^{3+3} =$

$-24m^7n^6$

46. $(6z^{11})(-3z^8)(z^2) =$

$(6z^{11})(-3z^8)(1z^2) =$

$-18z^{11+8+2} =$

$-18z^{21} =$

47. $(z^8)^4 =$

$z^{(8)(4)} =$

$z^{32} =$

48 $(5c^6)^2 =$

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

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

$5^2c^{12} =$

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

$25c^{12} =$

49 $(-5a^2b^6c)^2 =$

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

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

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

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

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

50) $\frac{4x^5y^2z}{x^3yz} =$

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

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

$4x^2y^1 =$

$4x^2y =$

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

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

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

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

$Q(-10) = 400 - 1$

$Q(-10) = 399$

52 $(7y^2+4y-3)-(-9y+4)=$

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

$7y^2+13y-7$

53 $3x^1(4x^2-4x+5)=$

$12x^{1+2}-12x^{1+1}+15x^1=$

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

54 $(x+3)(x^3-6x+7)=$

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

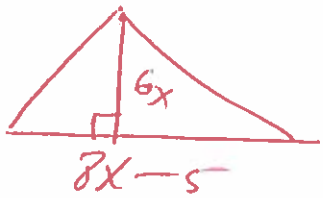
$x^4+3x^3-6x^2-11x+21$

55 $(a+2)(a^2-4a+4)=$

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

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

56 Find area of triangle



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

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

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

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

$A = 24x^2 - 15x$

57 $6(y-8)(9y-1) =$

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

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

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

58 $(a-9)(a+9) =$

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

$a^2 - 81 =$

59 $(3d - 4b)^2 =$

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

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

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

60. $2^{-4} =$

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

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

$\frac{1}{16} =$

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

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

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

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

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

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

$\frac{9}{1} =$

$9 =$

62 $\frac{p^{-5}}{q^{-9}} =$

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

63. $\frac{m^{-1}}{m^{-6}} =$

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

$m^{6-1} =$

$m^{5} =$

64 33,000 write in scientific Notation

$3.3 * 10^{4} =$

65) 8, 20 Find GCF

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

$8 = 2 \cdot 2 \cdot 2$

$20 = 2 \cdot 2 \cdot 5$

GCF $= 2 \cdot 2$

$= 4$

66) $-63x^2y^4 - 36x^3y^2$ factor GCF

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

67) $x^2 - 2x - 48$ factor

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

possible

$48 \cdot 1$

$24 \cdot 2$

$12 \cdot 4$

$6 \cdot 8$

$16 \cdot 3$

68) $169x^2 - 121y^2 =$

$(13x)^2 - (11y)^2 =$

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

formula

$a^2 - b^2$

$(a+b)(a-b)$

69 $7x(x-3)=0$

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

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

$x=0$ OR $x=3$

70 $(3x+7)(2x-3)=0$

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

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

$3x=-7$ OR $2x=3$

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

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

71 $x^2-10x+21=0$

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

21.1
3.7
Possibl

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

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

$x=3$ OR $x=7$

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

$x(x-10) = 0$

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

$x - 10 + 10 = 0 + 10$

$x = 10$

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

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

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

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

(74)

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

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

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

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

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

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

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

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

75 $\frac{4m}{3n} + \frac{2m}{3n} =$

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

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

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

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

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

76 $\frac{v-5}{2} = \frac{v}{7}$

$7(v-5) = 2(v)$ cross mult

$7v - 35 = 2v$

$7v - 35 + 35 = 2v + 35$

$7v = 2v + 35$

$7v - 2v = 2v + 35 - 2v$

$5v = 35$

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

$v = 7$

77) $|2x-1|=3$

formula

$|x|=a$

$x=-a$ or $x=a$

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

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

$2x=-2$ OR $2x=4$

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

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

78) $|x-9|<7$

formula

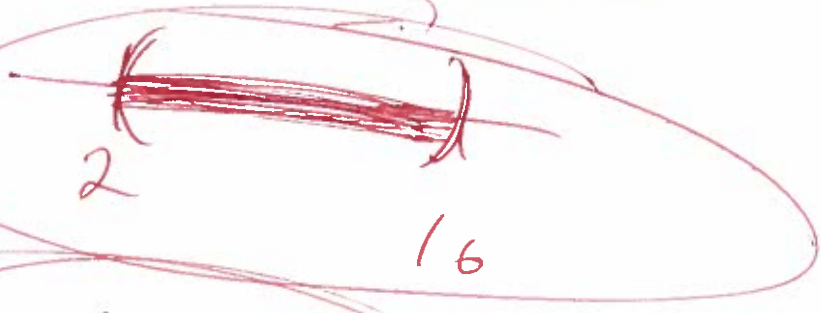
$|x|<a$

$-a<x<a$

$-7<x-9<7$

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

$2<x<16$



$(2,16)$

79 $\sqrt{100x^6}$ =

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

$10x^{6/2}$ = divide powers

$10x^3$ =

80 $\sqrt[3]{216}$ =

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

$6^{3/3}$ =

6^1 =

6 =

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

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

$\frac{9}{4}$ =

82

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

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

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

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

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

$$3^{-1} =$$

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

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

83

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

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

$$5^{\frac{4}{1}\left(\frac{3}{4}\right)} =$$

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

$$5^3 =$$

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

$125 =$

84 $\sqrt{150} =$

Primes 2, 3, 5, 7...

$\sqrt{25 \cdot 6} =$

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

$5\sqrt{6} =$

2	150
3	75
5	25
5	5
	1

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

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

$x - 15 = 16$

$x - 15 + 15 = 16 + 15$

$x = 31$

86. $6\sqrt{-63} =$

Primes 2, 3, 5, 7...

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

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

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

$18i\sqrt{7} =$

3	63
3	21
7	7
	1

Formula

$\sqrt{-1} = i$

$\sqrt{-4} = 2i$

$\sqrt{-9} = 3i$

$\sqrt{-16} = 4i$

$\sqrt{-25} = 5i$

⋮

81 $(x+2)^2 = 16$

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

$x+2 = \pm 4$

$x+2 = -4$ OR $x+2 = 4$

$x+2-2 = -4-2$ OR $x+2-2 = 4-2$

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

88 $m^2 - 3m + 2 = 0$ (2.1 Possible)

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

$m-1 = 0$ or $m-2 = 0$

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

$m = 1$ or $m = 2$

85 $3y = 2y^2 - 5$

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

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

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

Possible 2.1 5.1

Let $2y - 5 = 0$ or $y + 1 = 0$

$2y - 5 + 5 = 0 + 5$ OR $y + 1 - 1 = 0 - 1$

$2y = 5$ or $y = -1$

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

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

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

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

36.1
18.2
12.3
4, 9
Possible

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

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

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

91. Solve using Quadratic Formula

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

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

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

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

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

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

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

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

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

92

$$\frac{1}{10} - \frac{1}{9} \div \frac{2}{6} =$$

$$\frac{1}{10} - \frac{1}{9} \cdot \frac{6}{2} =$$

$$\frac{1}{10} - \frac{1}{(3)(3)} \cdot \frac{(2)(3)}{(2)} =$$

$$\frac{1}{10} - \frac{1}{(3)(3)} \cdot \frac{(2)(3)}{(2)}$$

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

LCD = 30

$$\frac{1}{10}\left(\frac{3}{3}\right) - \frac{1}{3}\left(\frac{10}{10}\right) =$$

$$\frac{3}{30} - \frac{10}{30} =$$

$$\frac{(3)-(10)}{30} =$$

$$\frac{3-10}{30} =$$

$$\frac{-7}{30} =$$

93) $\sqrt{4x-1} = \sqrt{6x-17}$

$(\sqrt{4x-1})^2 = (\sqrt{6x-17})^2$

$4x-1 = 6x-17$

$4x-1-4x = 6x-17+1$

$4x = 6x-16$

$4x-6x = 6x-16-6x$

$-2x = -16$

$\frac{-2x}{-2} = \frac{-16}{-2}$

$x = 8$

Check

$\sqrt{4x-1} = \sqrt{6x-17}$

$\sqrt{4(8)-1} = \sqrt{6(8)-17}$

$\sqrt{32-1} = \sqrt{48-17}$

$\sqrt{31} = \sqrt{31}$ ✓

Good

94) $(4a-3b-2)(5a-2b) =$

$20a^2 - 8ab - 15ab + 6b^2 - 10a + 4b =$

$20a^2 + 6b^2 - 23ab - 10a + 4b =$

95) $\left(\frac{1}{125}\right)^{-\frac{2}{3}} =$

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

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

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

$5^{\frac{6}{3}} =$

$5^2 =$

$5 \cdot 5 =$

$25 =$

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

$\frac{4+x}{x-5} = \frac{4}{1}$

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

$4 + 1x = 4x - 20$

$4 + 1x - 4 = 4x - 20 - 4$

$1x = 4x - 24$

$1x - 4x = 4x - 24 - 4x$

$-3x = -24$

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

$x = 8$

97

$$\frac{2a+5b}{2x} - \frac{5a-10b}{2x} =$$

$$\frac{(2a+5b)-(5a-10b)}{2x} =$$

$$\frac{2a+5b-5a+10b}{2x} =$$

$$\frac{-3a+15b}{2x} =$$