1. Solve MO32099 PRACTICE

$5x - 3 \leq 7x - 3x$

$5x - 3 \leq 4x$

$5x - 3 + 3 \leq 4x + 3$

$5x \leq 4x + 3$

$5x - 4x \leq 4x + 3 - 4x$

$1x \leq 3$

$x \leq 3$

$(-\infty, 3]$

2. $2x < -12$

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

$x < -6$

-6

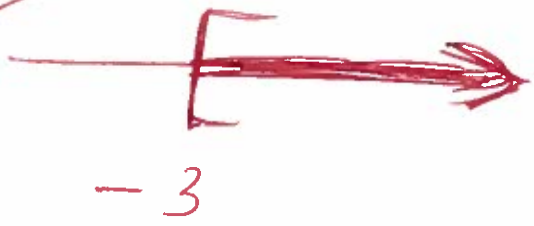
$(-\infty, -6)$

(3) $-6x \leq 18$

(3)

$\frac{-6x}{-6} \geq \frac{18}{-6}$ divide by a negative turn the alligator around

$x \geq -3$



-3

$[-3, \infty)$

4. Graph

$y = -2x + 5$

$y = -2(0) + 5$

$y = 0 + 5$

$y = 5$

$y = -2(1) + 5$

$y = -2 + 5$

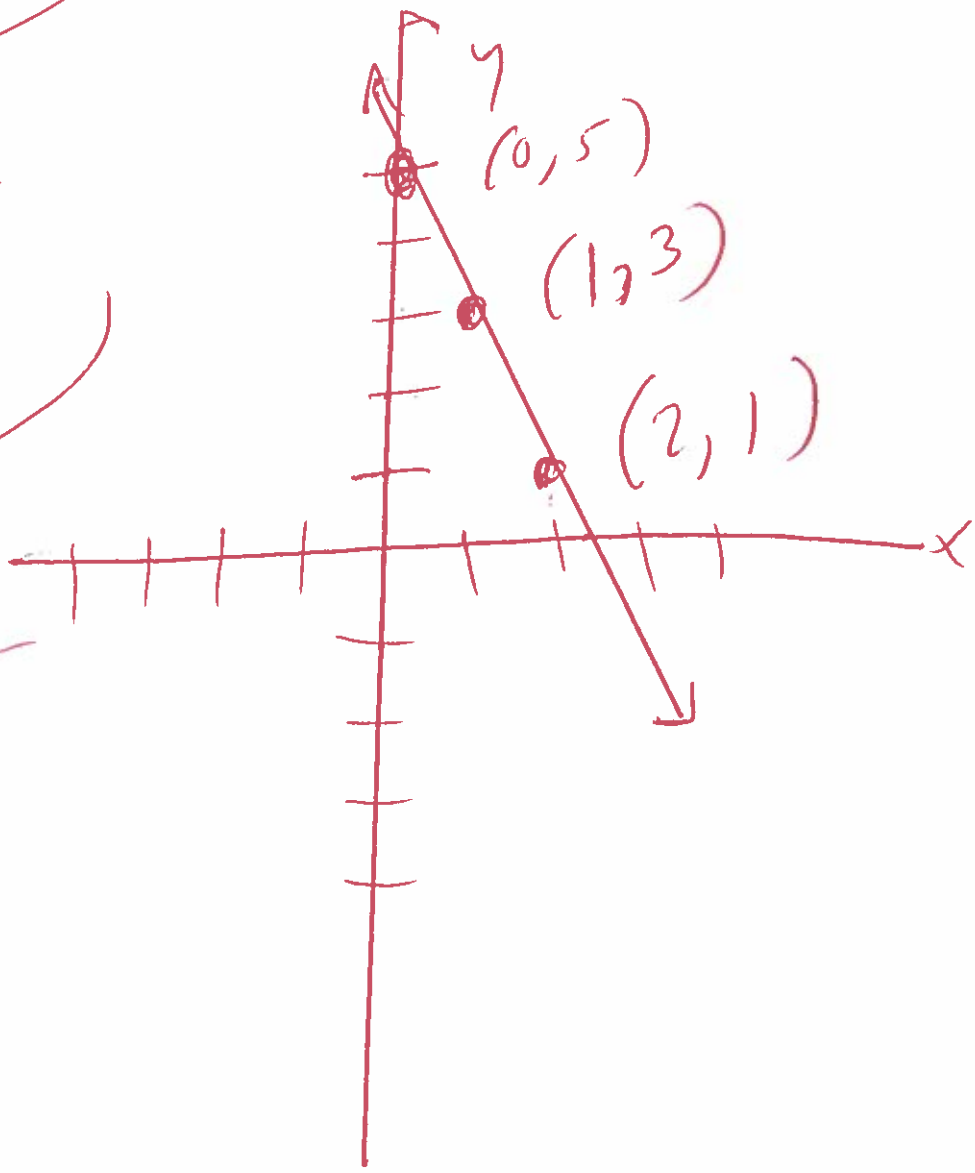
$y = 3$

$y = -2(2) + 5$

$y = -4 + 5$

$y = 1$

x	y
0	5
1	3
2	1



5. graph

$y = 3x + 3$

$y = 3(0) + 3$

$y = 0 + 3$

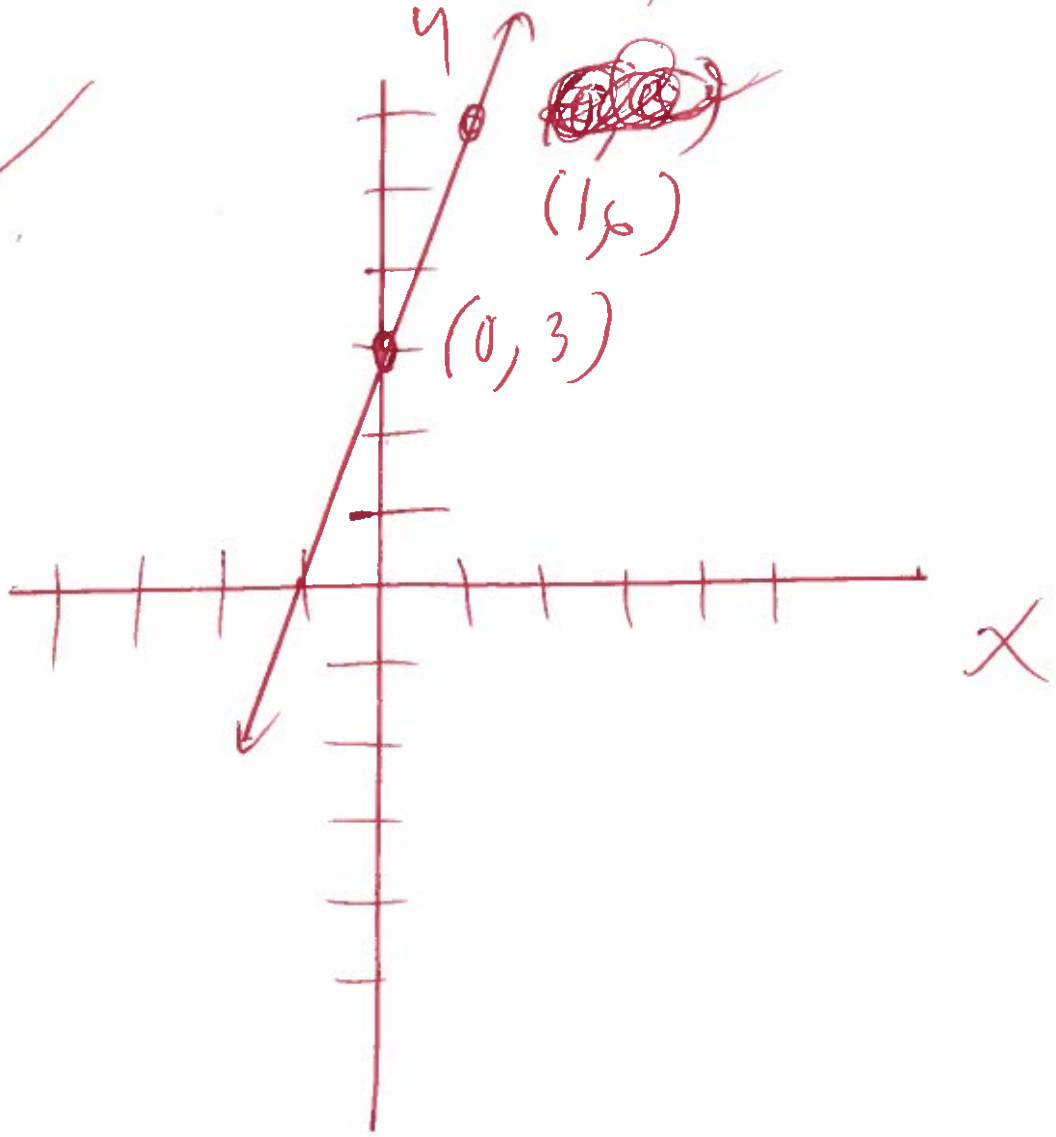
$y = 3$

$y = 3(1) + 3$

$y = 3 + 3$

$y = 6$

x	y
0	3
1	6



6 Find the value of $x^2 - 5x + 3$ for $x = -3$

6.

$x^2 - 5x + 3 =$

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

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

$9 + 15 + 3 =$

$24 + 3 =$

$27 =$

7) $f(x) = |x+8|$

$f(6) = |6+8|$

$f(6) = |14|$

$f(6) = 14$

$f(-5) = |-5+8|$

$f(-5) = |3|$

$f(-5) = 3$

$f(0) = |0+8|$

$f(0) = |8|$

$f(0) = 8$

16

8. $h(x) = 4x^2 + 2$

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

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

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

$h(-1) = 4 + 2$

$h(-1) = 6$

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

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

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

$h(0) = 0 + 2$

$h(0) = 2$

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

$h(4) = 4(4)(4) + 2$

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

$h(4) = 64 + 2$

$h(4) = 66$

7. $P(x) = x^2 + x + 5$ find $P(7)$

$P(7) = (7)^2 + (7) + 5$

$P(7) = (7)(7) + (7) + 5$

$P(7) = 49 + 7 + 5$

$P(7) = 56 + 5$

$P(7) = 61$

9.

10. $-16t^2+1210$ Eval if $x=1$

10

$-16(1)^2+1210$

$-16(1)(1)+1210$

$-16(1)+1210$

$-16+1210 =$

$1194 =$

11

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

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

$a^2 + 2a - 8$

11

12.

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

$15x^2 + 21x - 25x - 35 =$

$15x^2 - 4x - 35 =$

12

13

$(7x-13)(4x+1) =$

$28x^2 + 7x - 52x - 13 =$

$28x^2 - 45x - 13 =$

13

14

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

$14x^3+35x^2-7x+2x^2+5x-1 =$

$14x^3+37x^2-2x-1 =$

14

15.

$(z+17)(3z+1) =$

$3z^2 + 1z + 51z + 17 =$

$3z^2 + 52z + 17 =$

14

16. $(a+5)(a^2-8a+8)=$

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

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

17.

$(6x-7)^2 =$

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

$36x^2 - 42x - 42x + 49 =$

$36x^2 - 84x + 49 =$

17

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

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

$a^2 - 25 =$

(18)

(19) $\frac{5x^2-4x+5}{x-2}$

Long division

$5x + 6 + \frac{17}{x-2}$

$x-2 \overline{)\ 5x^2-4x+5}$

$-(5x^2 \pm 10x)$

$6x+5$

$-(6x \pm 12)$

17 Rem

(19)

Synthetic Division

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

opp ✓ $x-2$

$2 \mid 5 \quad -4 \quad 5$

$\quad\quad 10 \quad 12$

$5 \quad 6 \quad (17)$

$5x+6+\frac{17}{x-2}$ ✓

20. Fctr GCF

$9x + 27 =$

$9(x+3) =$

20.

21. factor

$z(y+7) - 7(y+7) =$

$(y+7)(z-7) =$

21

22 factor

$16xy - 18x^2 =$

$2x(8y - 9x)$

22

23. factor

$-48x^4y^4 - 40x^6y^3 =$

$8x^4y^3(-6y^1 - 5x^2) =$

$8x^4y^3(-6y - 5x^2) =$

23.

24. Factor

$x^2+3x+2=$

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

Possible

1, 2

24

25.

factor

possible

18·1
6·3
2·9

$x^2 - 11x + 18 =$

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

25.

26. factor

$x^2 - 14x + 49 =$

possible
49.1
7.7

$(x-7)(x-7) =$

26

27) factor

$x^2 - 2x - 63 =$

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

possible

63, 1

9, 7

21, 3

28

factor

$x^2 + 2x - 24 =$

possible

24 · 1

12 · 2

6 · 4

3 · 8

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

28

29

factor

$a^2 - 10ab + 16b^2 =$

$(a - 2b)(a - 8b) =$

Possible

16, 1

2, 8

4, 4

29

30. factor

$2x^2+18x+28=$

possible
14.1
2.7

$2(x^2+9x+14)=$

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

30.

31. factor

$4x^3 - 24x^2 + 32x =$

$4x(x^2 - 6x + 8) =$

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

8.1
2.4

31.

32

factor

$r^2 - 17r + 52 =$

$(r-4)(r-13) =$

Possible

52, 1

26, 2

13, 4

32

33. Factor

$2x^2+30x-32=$

$2(x^2+15x-16)=$

$2(x-1)(x+16)=$

Possible

16 1

4 4

2 8

33.

34 factor

$x^2 - 3x - 4 =$

poss

4.1

2.2

34

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

35. factor

$5x^2+34x+24=$

$(5x+4)(x+6)$

Possible:

5·1

24·1
12·2
6·4
3·8

36

Factor

$26y^2 - 51y + 25 =$

$(26y - 25)(y - 1) =$

26·1
13·2

1·25
5·5

36

37.

factor

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

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

2.1 1.3 37

38

factor

$x^2 - 144 =$

$(x)^2 - (12)^2 =$

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

formula

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

38.

39) factor

$25x^2 - 144 =$

$(5x)^2 - (12)^2 =$

$(5x+12)(5x-12) =$

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

39)

(40) factor

formula

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

$196x^2 - 169y^2 =$

$(14x)^2 - (13y)^2 =$

$(14x + 13y)(14x - 13y) =$

(40.

41

factor

$x^2 - \frac{1}{169} =$

formula

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

41.

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

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

(42) factor

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

$x^2 - 169y^2 =$

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

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

42

43. factor

$75r^2 - 27 =$

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

$3(25r^2 - 9) =$

$3((5r)^2 - (3)^2) =$

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

44) factor

$36xy^2 - 25x =$

$x(36y^2 - 25) =$

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

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

44)

45.

factor

$$xy^3 - 81xyz^2 =$$

$$x^1y^3 - 81x^1y^1z^2 =$$

$$x^1y^1(y^2 - 81z^2) =$$

$$xy(y^2 - 81z^2) =$$

$$xy((y)^2 - (9z)^2) =$$

$$xy(y+9z)(y-9z) =$$

45.

(46.) Solve

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

(46)

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

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

$x=2$ or $x=-9$

47. Solve

$7x(x-5)=0$

Set $7x=0$ OR $x-5=0$

$\frac{7x}{7}=\frac{0}{7}$ OR $x-5+5=0+5$

$x=0$ OR $x=5$

47.

48. Solve

$(2x-5)(8x+7)=0$

48

Let $2x-5=0$ OR $8x+7=0$

$2x-5+5=0+5$ OR $8x+7-7=0-7$

$2x=5$ OR $8x=-7$

$\frac{2x}{2}=\frac{5}{2}$ OR $\frac{8x}{8}=\frac{-7}{8}$

$x=\frac{5}{2}$ OR $x=\frac{-7}{8}$

49.

Sum

Possible 35: 1
5 · 7

49

$x^2 - 12x + 35 = 0$

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

ZPP $x-5=0$ OR $x-7=0$

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

$x = 5$ OR $x = 7$

50. Solve

$x^2 + 2x - 15 = 0$

Possible 15·1, 3·5

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

So!

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

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

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

S1.

Solve

possible 28·1, 14·2, 4·7

rewrite

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

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

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

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

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

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

S1.

52. Solve

$36x^2 - 1 = 0$

$(6x)^2 - (1)^2 = 0$

$(6x+1)(6x-1) = 0$

Let $6x+1=0$ OR $6x-1=0$

$6x+1-1 = 0-1$ OR $6x-1+1 = 0+1$

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

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

$x = -1/6$ OR $x = \frac{1}{6}$

52

Possible (5.1) (2.1) (3)

5. Solve

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

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

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

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

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

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

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

54

Simplify

$$\frac{5}{25a-40} =$$

$$\frac{5(1)}{5(5a-8)} =$$

$$\frac{1}{5a-8} =$$

54

55.

Simplify

$$\frac{-6m-6n}{m+n} =$$

$$\frac{-6(m+n)}{(m+n)} =$$

$$-6 =$$

55

56. Simplify

$$\frac{3x+9}{x^2+3x} =$$

$$\frac{3(x+3)}{x(x+3)} =$$

$$\frac{3\cancel{(x+3)}}{x\cancel{(x+3)}} =$$

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

56.

57

Simplify

$$\frac{x+7}{x^2-3x-70} =$$

$$\frac{(x+7)}{(x+7)(x-10)} =$$

$$\frac{\cancel{(x+7)}}{\cancel{(x+7)}(x-10)} =$$

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

Possible

70.1

35.2

10.7

5.14

58 $f(x) = \frac{x+12}{2x-1}$

57.

$f(4) = \frac{(4)+12}{2(4)-1}$

$f(4) = \frac{4+12}{8-1}$

$f(4) = \frac{16}{7}$

$f(0) = \frac{(0)+12}{2(0)-1}$

$f(0) = \frac{0+12}{0-1}$

$f(0) = \frac{12}{-1}$

$f(0) = -12$

$f(-5) = \frac{(-5)+12}{2(-5)-1}$

$f(-5) = \frac{-5+12}{-10-1}$

$f(-5) = \frac{7}{-11}$

59

Simplify

$$\frac{8x}{y^2} \cdot \frac{4y}{7x} =$$

$$\frac{8x}{y \cdot y} \cdot \frac{4y}{7x} =$$

$$\frac{32}{7y} =$$

59

60 Simplify

$$\frac{x}{2x-4} \cdot \frac{x^2-2x}{5} =$$

$$\frac{x}{2(x-2)} \cdot \frac{x(x-2)}{5} =$$

$$\frac{x}{2(x-2)} \cdot \frac{x(x-2)}{5} =$$

$$\frac{x^2}{10} =$$

60

61. Simplify

$$\frac{12x^4}{y^6} \div \frac{2x^4y^6}{5} =$$

$$\frac{12x^4}{y^6} \cdot \frac{5}{2x^4y^6} =$$

$$\frac{12x^4}{y^6} \cdot \frac{5}{2x^4y^6} =$$

$$\frac{12(5)}{2y^{6+6}} =$$

$$\frac{60}{2y^{12}} =$$

$$\frac{2(30)}{2y^{12}} =$$

$$\frac{30}{y^{12}} =$$

61.

62. $\frac{15x}{5x-6} - \frac{18}{5x-6} =$

$\frac{(15x)-(18)}{5x-6} =$

$\frac{15x-18}{5x-6} =$

$\frac{3(5x-6)}{(5x-6)} =$

$\frac{3(5x-6)}{(5x-6)} =$

$3 =$

63

$$\frac{a^2}{a-9} - \frac{22a-117}{a-9}$$

63

$$\frac{(a^2)-(22a-117)}{a-9} =$$

$$\frac{a^2-22a+117}{a-9} =$$

$$\frac{(a-9)(a-13)}{(a-9)} =$$

$$\frac{(a-9)(a-13)}{(a-9)} =$$

$$a-13 =$$

64 Solve

64

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

LCD = $3y$

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

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

$$6 + y = 3$$

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

$$y = -3$$

65. $-6 \leq 5x-6 \leq 14$

$-6+6 \leq 5x-6+6 \leq 14+6$

$0 \leq 5x \leq 20$

$\frac{0}{5} \leq \frac{5x}{5} \leq \frac{20}{5}$

$0 \leq x \leq 4$

$[0, 4]$

66

Solve

$|2x-5|=17$

formula

$|x|=a$ (66)

$x=-a$ OR $x=a$

$2x-5=-17$ OR $2x-5=17$

$2x-5+5=-17+5$ OR $2x-5+5=17+5$

$2x=-12$ OR $2x=22$

$\frac{2x}{2}=\frac{-12}{2}$ OR $\frac{2x}{2}=\frac{22}{2}$

$x=-6$ OR $x=11$

67)

Solve

$|x+8| < 4$

formula

$|x| < a$

$-a < x < a$

$-4 < x+8 < 4$

$-4-8 < x+8-8 < 4-8$

$-12 < x < -4$

$(-12, -4)$

68

Solve

$|x+6| \geq 12$

formula

$|x| > a$

$x < -a$ or $x > a$

68

$x+6 \leq -12$ OR $x+6 \geq 12$

$x+6-6 \leq -12-6$ OR $x+6-6 \geq 12-6$

$x \leq -18$ or $x \geq 6$

$(-\infty, -18] \cup [6, +\infty)$

69

$\sqrt[3]{-64x^{18}} =$

$\sqrt[3]{(-4)^3 x^{18}} =$ divide powers

$(-4)^{\frac{1}{6}} x^{6} =$

$-4 x^{6} =$

69

70

$\sqrt{16x^{18}} =$

$\sqrt{4^2 x^{18}} =$ divide powers

$4^1 x^9 =$

$4x^9 =$

70

7. $\sqrt{25a^2b^{16}} =$

$\sqrt{5^2a^2b^{16}} =$

$5^1a^1b^8 =$ Divide Powers

$5ab^8 =$

12. $\sqrt[3]{-27x^{12}y^9} =$

$\sqrt[3]{(-3)^3 x^{12} y^9} =$

$(-3)^1 x^4 y^3 =$

$-3x^4y^3 =$

12

Juan Kuo =

73. $f(x) = \sqrt{5x+6}$ find $f(3)$

$f(3) = \sqrt{5(3)+6}$

$f(3) = \sqrt{15+6}$

$f(3) = \sqrt{21}$

73

74.

$125^{\frac{1}{3}} =$

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

$(5^{\frac{3}{1}})^{\frac{1}{3}} =$ Mult Pwrs

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

$5^1 =$

$5 =$

74

75.

$$81^{\frac{5}{4}} =$$

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

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

$$3^{\frac{20}{4}} =$$

$$3^5 =$$

$$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 =$$

$$243 =$$

74

16.

$$1000^{-\frac{5}{3}} =$$

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

$$(10^{\frac{3}{1}})^{\frac{-5}{3}} =$$

$$10^{\frac{-15}{3}} =$$

$$10^{-5} =$$

$$\frac{1}{10^5} =$$

$$\frac{1}{10 \cdot 10 \cdot 10 \cdot 10 \cdot 10} =$$

$$\frac{1}{100{,}000} =$$

77) $B(w) = 70w^{3/4}$ Find $B(67)$

77

$B(67) = 70(67)^{3/4}$

$B(67) = 70(23.418339\,73)$

$B(67) = 1639.283781$

78.

$\sqrt{50} =$

$\sqrt{25 * 2} =$

$\sqrt{25}\sqrt{2} =$

$5\sqrt{2} =$

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

79.

$2 \mid 50$

$5 \mid 25$

$5 \mid 5$

1

79

$\sqrt[3]{24} =$

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

$2^1 \sqrt[3]{3^1} =$ divide powers

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

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

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

79

80 Find the distance between the pair of points $(4, 4)$ $(7, 8)$

$x_1\ y_1$ $x_2\ y_2$

80

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

$$d = \sqrt{((4) - (7))^2 + ((4) - (8))^2}$$

$$d = \sqrt{(4 - 7)^2 + (4 - 8)^2}$$

$$d = \sqrt{(-3)^2 + (-4)^2}$$

$$d = \sqrt{9 + 16}$$

$$d = \sqrt{25}$$

$$d = 5$$

81) Find the mid point

$(3, -19)$ and $(3, 7)$

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

81)

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

$$\text{mid point} = \left(\frac{(3)+(3)}{2}, \frac{(-19)+(7)}{2}\right)$$

$$\text{mid point} = \left(\frac{3+3}{2}, \frac{-19+7}{2}\right)$$

$$\text{mid point} = \left(\frac{6}{2}, \frac{-12}{2}\right)$$

$$\text{mid point} = (3, -6)$$

82. Solve

$$\sqrt{x-13} = 3$$

$$(\sqrt{x-13})^2 = (3)^2$$

$$x - 13 = 9$$

$$x - 13 + 13 = 9 + 13$$

$$x = 22$$

82.

B3

Solve

$\sqrt{27-x} = x+3$

$(\sqrt{27-x})^2 = (x+3)^2$

$27-x = (x+3)(x+3)$

$27-x = x^2+3x+3x+9$

$27-x = x^2+6x+9$

$0 = x^2+6x+9-27+x$

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

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

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

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

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

Good ck | BAD ck

$\sqrt{27-(2)} = (2)+3$ | $\sqrt{27-(-9)} = (-9)+3$

$\sqrt{27-2} = 2+3$ | $\sqrt{27+9} = -9+3$

$\sqrt{25} = 5$ | $\sqrt{36} = -6$

$5=5$ ✓ | $6 \neq -6$

Good | BAD

{2}

B3

Possible

18.1

9.2

84. $(5-8i)+(5+7i)=$

$5-8i+5+7i=$

$10-1i=$

$10-i=$

84

25

$$(6+4i)-(9-5i)=$$

$$6+4i-9+5i=$$

$$-3+9i=$$

25

8b $(2-5i)^2 =$

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

formula $i^2 = -1$

$4 - 10i - 10i + 25i^2 =$

$4 - 20i + 25i^2 =$

$4 - 20i + 25(-1) =$

$4 - 20i - 25 =$

$-21 - 20i =$

87. $\frac{9+5i}{1+i} =$

87

$$\left(\frac{9+5i}{1+i}\right)\left(\frac{1-i}{1-i}\right) =$$

$$\frac{9 - 9i + 5i - 5i^2}{1 - 1i + 1i - i^2} =$$

$$\frac{9 - 4i - 5i^2}{1 - i^2} =$$

formula

$i^2 = -1$

$$\frac{9 - 4i - 5(-1)}{1 - (-1)} =$$

$$\frac{9 - 4i + 5}{1 + 1} =$$

$$\frac{14 - 4i}{2} =$$

$$7 - 2i =$$

88

$x^2 = 225$

$\sqrt{x^2} = \pm\sqrt{225}$

$x = \pm 15$

$x = -15$ or $x = 15$

89

89) $(x+9)^2 = 16$

89)

$\sqrt{(x+9)^2} = \pm\sqrt{16}$

$x+9 = \pm 4$

$x+9 = -4$ OR $x+9 = 4$

$x+9-9 = -4-9$ OR $x+9-9 = 4-9$

$x = -13$ OR $x = -5$

90

Solve

$x^2 + 36 = 0$

$x^2 = -36$

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

$x = \pm 6i$

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

90

formula

$\sqrt{-1} = i$

(91) Solve by completing the square

(91)

$x^2 + 8x + 9 = 0$

$x^2 + 8x = -9$

$x^2 + 8x + \left(\frac{1}{2}(8)\right)^2 = -9 + \left(\frac{1}{2}(8)\right)^2$

$x^2 + 8x + (4)^2 = -9 + (4)^2$

$x^2 + 8x + 16 = -9 + 16$

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

$(x+4)^2 = 7$

$\sqrt{(x+4)^2} = \pm\sqrt{7}$

$x + 4 = \pm\sqrt{7}$

$x = -4 \pm \sqrt{7}$

$x = -4 - \sqrt{7}$ OR $x = -4 + \sqrt{7}$

(12) $A = P(1+r)^t$

$237620 = 200000(1+r)^2$

$\frac{237620}{200000} = \frac{200000(1+r)^2}{200000}$

$1.1881 = (1+r)^2$

$\sqrt{1.1881} = \sqrt{(1+r)^2}$

$1.09 = 1+r$

$1.09 - 1 = 1 + r - 1$

$.09 = r$

OR

$9\% = r$

$A = 237,620$

$P = 200,000$

$t = 2$

find r

(11)

93

Use Quadratic formula

$m^2 - m - 2 = 0$

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

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

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

$$m = \frac{1 \pm \sqrt{1+8}}{2}$$

$$m = \frac{1 \pm \sqrt{9}}{2}$$

$$m = \frac{1 \pm 3}{2}$$

$$m = \frac{1-3}{2} \text{ or } m = \frac{1+3}{2}$$

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

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

93

99

Use Quadratic formula

$4y = 3y^2 + 1$

$0 = 3y^2 + 1 - 4y$

$0 = 3y^2 - 4y + 1$

$a = 3, \quad b = -4, \quad c = 1$

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

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

$$y = \frac{4 \pm \sqrt{16 - 12}}{6}$$

$$y = \frac{4 \pm \sqrt{4}}{6}$$

$$y = \frac{4 \pm 2}{6}$$

$y = \frac{4-2}{6}$ or $y = \frac{4+2}{6}$

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

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

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

99

95

Use Quadratic formula

$1x^2 - 4x + 4 = 0$

$a = 1,\ b = -4,\ c = 4$

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

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

$$x = \frac{4 \pm \sqrt{16 - 16}}{2}$$

$$x = \frac{4 \pm \sqrt{0}}{2}$$

$$x = \frac{4 \pm 0}{2}$$

$$x = \frac{4+0}{2} \quad \text{or} \quad x = \frac{4-0}{2}$$

$$x = \frac{4}{2} \quad \text{or} \quad x = \frac{4}{2}$$

$x = 2$ or $x = 2$

95

96. Use Quadratic formula

96

$1x^2 + 7x - 2 = 0$

$a = 1,\ b = 7,\ c = -2$

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

$$x = \frac{-(7) \pm \sqrt{(7)^2 - 4(1)(-4)}}{2(1)}$$

$$x = \frac{-7 \pm \sqrt{49 + 8}}{2}$$

$$x = \frac{-7 \pm \sqrt{57}}{2}$$

$$x = \frac{-7 - \sqrt{57}}{2} \quad \text{OR} \quad x = \frac{-7 + \sqrt{57}}{2}$$

97 Use Quadratic formula

97

$9m^2 + 2m = 6$

$9m^2 + 2m - 6 = 0$

$a = 9,\ b = 2,\ c = -6$

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

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

$$m = \frac{-2 \pm \sqrt{4 + 216}}{18}$$

$$m = \frac{-2 \pm \sqrt{220}}{18}$$

$$m = \frac{-2 \pm \sqrt{4 * 55}}{18}$$

$$m = \frac{-2 \pm \sqrt{4}\sqrt{55}}{18}$$

$$m = \frac{-2 \pm 2\sqrt{55}}{18}$$

$$m = \frac{2(-1 \pm 1\sqrt{55})}{2(9)}$$

Primes: 2, 3, 5, 7, 11, 13,

2	220
2	110
5	55
11	11
	1

$m = \frac{-1 \pm 1\sqrt{55}}{9}$

$m = \frac{-1 - \sqrt{55}}{9}$

$m = \frac{-1 + \sqrt{55}}{9}$

(98) Use Quadratic formula

$x^2 + 6x + 18 = 0$

$a=1,\ b=6,\ c=18$

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

$$x = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(18)}}{2(1)}$$

$$x = \frac{-6 \pm \sqrt{36 - 72}}{2}$$

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

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

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

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

(98)

(9) Graph $f(x) = x^2 - 10$

$f(-1) = (-1)^2 - 10$

$f(-1) = (-1)(-1) - 10$

$f(-1) = 1 - 10$

$f(-1) = -9$

$f(0) = (0)^2 - 10$

$f(0) = (0)(0) - 10$

$f(0) = 0 - 10$

$f(0) = -10$

$f(1) = (1)^2 - 10$

$f(1) = (1)(1) - 10$

$f(1) = 1 - 10$

$f(1) = -9$

x	
-1	-9
0	-10
1	-9

(9)