

① $3x - 6 < 7x + 2$

✓✓✓

$3x - \cancel{6} + 6 < 7x + 2 + 6$

$3x < 7x + 8$

$3x - 7x < 7x + 8 - 7x$

$-4x < 8$

$\frac{-4x}{-4} > \frac{8}{-4}$

$x > -2$

Math 032057 Step
03241800

$(-2, \infty)$



② $h(x) = 5x^2 - 1$ find $h(-5)$, $h(0)$, $h(2)$

$h(-5) = 5(-5)^2 - 1$

$h(-5) = 5(-5)(-5) - 1$

$h(-5) = 5(25) - 1$

$h(-5) = 125 - 1$

$h(-5) = 124$

$h(2) = 5(2)^2 - 1$

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

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

$h(2) = 20 - 1$

$h(2) = 19$

$h(0) = 5(0)^2 - 1$

$h(0) = 5(0)(0) - 1$

$h(0) = 5(0) - 1$

$h(0) = 0 - 1$

$h(0) = -1$

③ determine if $(2, 3)$ is a solution

$$x + y = 5 \quad x \quad y$$

$$2x + 3y = 13$$

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

Subst

$$2 + 3 = 5$$

$$5 = 5$$

Good

YES $(2, 3)$ is a solution

$$2(2) + 3(3) = 13$$

$$4 + 9 = 13$$

Subst

$$13 = 13$$

Good

determine if $(3, 2)$ is a solution

$$x + y = 5$$

x y

$$2x + 3y = 13$$

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

Subst

$$3 + 2 = 5$$

$$5 = 5$$

Good

$$2(3) + 3(2) = 13$$

$$6 + 6 = 13$$

$$12 \neq 13$$

NO $(3, 2)$ is not a solution

4

$$5x + 4y = 33$$

$$2x - 4y = 2$$

$$7x + 0 = 35$$

$$7x = 35$$

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

$$x = 5$$

$$5x + 4y = 33$$

$$5(5) + 4y = 33$$

$$25 + 4y = 33$$

$$4y + 25 - 25 = 33 - 25$$

$$4y = 8$$

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

$$y = 2$$

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

5

$$x + 2y = 2$$

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

$$\begin{pmatrix} x + 2y = 2 \\ 5x + 3y = -4 \end{pmatrix} \begin{pmatrix} -3 \\ 2 \end{pmatrix}$$

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

$$10x + 6y = -8$$

$$7x + 0 = -14$$

$$7x = -14$$

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

$$x = -2$$

$$x + 2y = 2$$

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

$$-2 + 2y = 2$$

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

$$2y = 4$$

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

$$y = 2$$

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

$$\textcircled{6} (7x^2 + 13x + 10) \div (x+1) =$$

$$\frac{7x^2 + 13x + 10}{x+1} =$$

use synthetic division

$$\begin{array}{r} -1 \mid 7 \quad 13 \quad 10 \\ \hline \end{array}$$

$$7 \quad 6 \quad \textcircled{4} \text{ rem}$$

$$7x + 6 + \frac{4}{x+1}$$

$$\textcircled{7} 4x + 20 = \text{factor}$$

$$\text{GCF } 4(x+5) =$$

$$\textcircled{8} 6x^2 - 12xy - 7x + 14y = \text{factor by (grouping)}$$

$$(6x^2 - 12xy) + (-7x + 14y) =$$

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

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

9. $-42x^2y^6 - 18x^3y^3 =$ factor

$6x^2y^3(-7y^3 - 3x) =$

10. $196x^2 - 169y^2 =$ factor

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

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

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

11. Solve

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

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

set $x-2=0$ OR $x+4=0$

$x-x+2=0+2$ OR $x+x-x=0-4$

$x=2$

OR $x=-4$

8.1

2.44

possible

$\{2, -4\}$

12. Solve

$x^2 - 8x = 0$

$x(x-8) = 0$

set $x=0$ OR $x-8=0$

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

OR $x=8$

$\{0, 8\}$

13. Solve
 $x^2 - 5x = 36$
 $x^2 - 5x - 36 = 0$

36.1
 18.2
 6.3
 12.3
 4.9

$\{-4, 9\}$

$(x + 4)(x - 9) = 0$

Let $x + 4 = 0$ OR $x - 9 = 0$

$x + 4 - 4 = 0 - 4$ OR $x - 9 + 9 = 0 + 9$

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

14. Solve
 $x^3 - 11x^2 + 18x = 0$

18.1
 9.2
 6.3

$\{0, 2, 9\}$

$x(x^2 - 11x + 18) = 0$

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

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

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

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

15. Solve
 $16x^3 - x = 0$
 $x(16x^2 - 1) = 0$

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

$x((4x)^2 - (1)^2) = 0$

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

Let $x = 0$ OR $4x + 1 = 0$ OR $4x - 1 = 0$

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

$4x = -1$ OR $4x = 1$

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

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

$\{0, -\frac{1}{4}, \frac{1}{4}\}$

16

Solve

$$48x^3 - 18x^2 - 3x = 0$$

$$3x(16x^2 - 6x - 1) = 0$$

$$3x(8x+1)(2x-1) = 0$$

Set $3x = 0$ OR $8x+1 = 0$ OR $2x-1 = 0$

$$\frac{3x}{3} = \frac{0}{3}$$

OR $8x + \cancel{x} = 0 - 1$ OR $2x - \cancel{1x} = 0 + 1$

OR $8x = -1$

OR $2x = 1$

$$x = 0$$

OR $\frac{8x}{8} = \frac{-1}{8}$

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

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

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

$$\left\{0, -\frac{1}{8}, \frac{1}{2}\right\}$$

possible
~~16.1~~
~~8.2~~
~~4.4~~
~~1.1~~

17

Solve

$$x^2 - 8 = -2x$$

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

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

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

Set $x-2 = 0$ OR $x+4 = 0$

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

$$x = 2$$

OR $x = -4$

$$\{2, -4\}$$

possible
~~8.1~~
~~2.4~~

18

Solve

$$2x^2 - 13x - 45 = 0$$

$$(2x + 5)(x - 9) = 0$$

Let $2x + 5 = 0$ OR $x - 9 = 0$

$$2x + \cancel{x} - 5 = 0 - 5 \quad \text{OR} \quad x - \cancel{9} + \cancel{9} = 0 + 9$$

$$2x = -5 \quad \text{OR} \quad x = 9$$

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

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

2.1

45.1
15.3
9.5 possible

$$\left\{ -\frac{5}{2}, 9 \right\}$$

19

$$\frac{2}{6a-4} = \text{simplify}$$

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

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

20

$$\frac{-4x + 4y}{x-y} = \text{simplify}$$

$$\frac{-4(\cancel{x-y})}{(\cancel{x-y})} =$$

$$-4 =$$

21. $f(x) = \frac{x+8}{2x-1}$ find $f(6)$, $f(0)$ and $f(-1)$

$$f(6) = \frac{(6)+8}{2(6)-1}$$

$$f(6) = \frac{6+8}{12-1}$$

$$f(6) = \frac{14}{11} \checkmark$$

$$f(0) = \frac{(0)+8}{2(0)-1}$$

$$f(0) = \frac{0+8}{0-1}$$

$$f(0) = \frac{8}{-1}$$

$$f(0) = -8 \checkmark$$

$$f(-1) = \frac{(-1)+8}{2(-1)-1}$$

$$f(-1) = \frac{-1+8}{-2-1}$$

$$f(-1) = \frac{7}{-3} \checkmark$$

22.

$$\frac{x}{2x-16} \cdot \frac{x^2-8x}{2} =$$

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

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

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

23.

$$\frac{m^2-n^2}{m+n} \div \frac{m}{m^2+nm} =$$

$$\frac{m^2-n^2}{m+n} \cdot \frac{m^2+nm}{m} =$$

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

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

$$(m+n)(m-n) =$$

OR

$$m^2 - mn + mn - n^2 =$$

OR

$$m^2 - n^2 =$$

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

24.

$$\frac{x^2 + 8x + 7}{x - 2} \div \frac{x^2 - 2x - 3}{x - 2} =$$

$$\frac{x^2 + 8x + 7}{x - 2} \cdot \frac{x - 2}{x^2 - 2x - 3} =$$

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

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

25.

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

$$\frac{(6) + (y+5)}{3+y} =$$

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

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

$$\textcircled{26} \quad \frac{3x^2 + 16x}{x-1} - \frac{8x+11}{x-1} =$$

$$\frac{(3x^2 + 16x) - (8x + 11)}{x-1} =$$

$$\frac{3x^2 + 16x - 8x - 11}{x-1} =$$

$$\frac{3x^2 + 8x - 11}{x-1} =$$

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

$$3x+11 =$$

possibla



$$\textcircled{27} \quad \frac{7x+12}{x^2+7x+10} - \frac{6x+7}{x^2+7x+10} =$$

$$\frac{(7x+12) - (6x+7)}{x^2+7x+10} =$$

$$\frac{7x+12-6x-7}{x^2+7x+10} =$$

$$\frac{1x+5}{x^2+7x+10} =$$

$$\frac{x+5}{(x+2)(\cancel{x+5})} =$$

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

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

28 $f(x) = -2x + 5$ graph

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

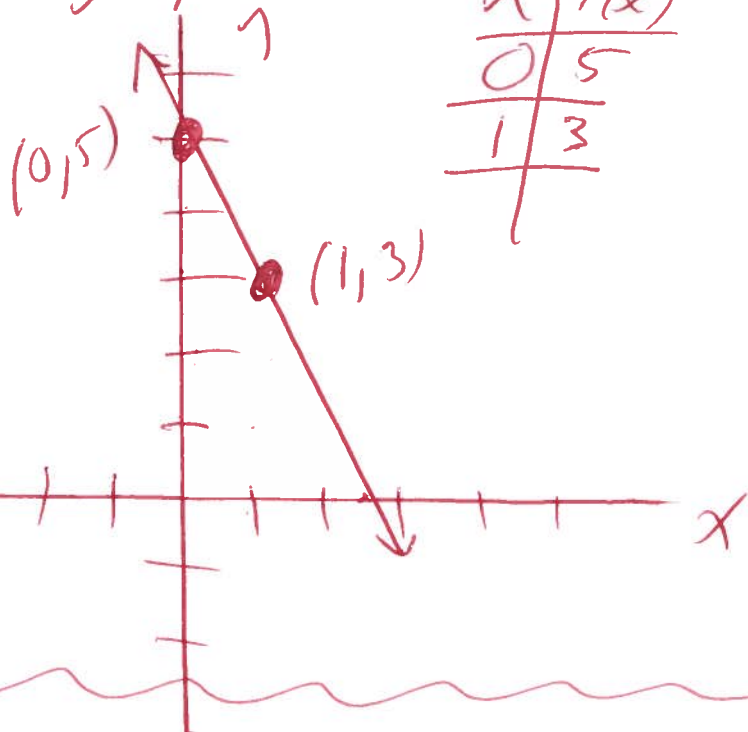
$$f(0) = 0 + 5$$

$$f(0) = 5$$

$$f(1) = -2(1) + 5$$

$$f(1) = -2 + 5$$

$$f(1) = 3$$



x	$f(x)$
0	5
1	3

29 $y = f(x) = x^2 - 4x + 7$ $x = 0, 1, 2, 3, 4$

$$f(0) = (0)^2 - 4(0) + 7$$

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

$$f(0) = 0 - 0 + 7$$

$$f(0) = 7$$

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

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

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

$$f(1) = 4$$

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

$$f(2) = (2)(2) - 4(2) + 7$$

$$f(2) = 4 - 8 + 7$$

$$f(2) = 3$$

$$f(3) = (3)^2 - 4(3) + 7$$

$$f(3) = (3)(3) - 4(3) + 7$$

$$f(3) = 9 - 12 + 7$$

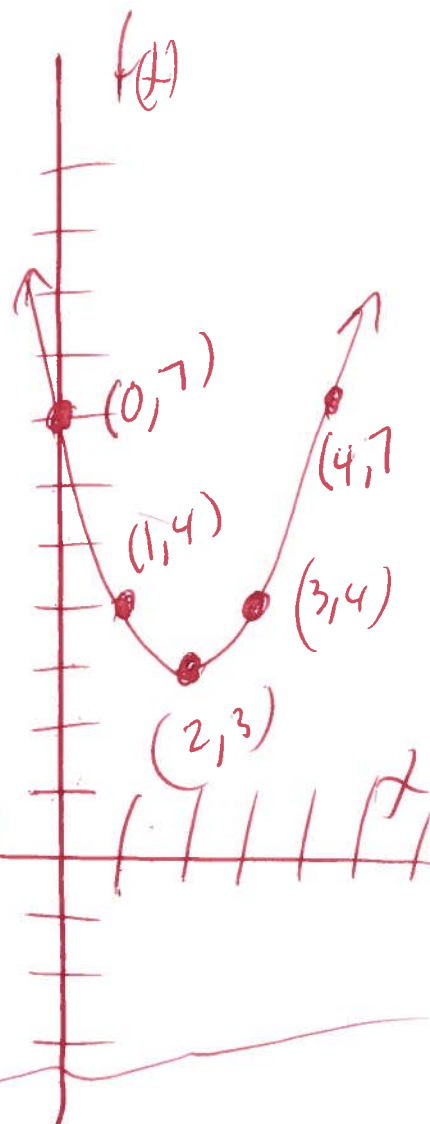
$$f(3) = 4$$

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

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

$$f(4) = 16 - 16 + 7$$

$$f(4) = 7$$



$$30) -13 \leq 3x - 10 \leq 11$$

$$-13 + 10 \leq 3x - 10 + 10 \leq 11 + 10$$

$$-3 \leq 3x \leq 21$$

$$\frac{-3}{3} \leq \frac{3x}{3} \leq \frac{21}{3}$$

$$-1 \leq x \leq 7$$



$$[-1, 7]$$

$$31) |2x - 1| = 3$$

formula

$$|x| = a$$

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

wt

$$2x - 1 = -3 \text{ OR } 2x - 1 = 3$$

$$2x - 1 + 1 = -3 + 1 \text{ OR } 2x - 1 + 1 = 3 + 1$$

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

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

$$x = -1$$

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

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

32. $|x-5| < 5$

$$-5 < x-5 < 5$$

$$-5 + 5 < x - \cancel{5} + 5 < 5 + 5$$

$$0 < x < 10$$



$$(0, 10)$$

Formula
 $|x| < a$
 $-a < x < a$

33. $|x+10| \geq 6$

Formula
 $|x| > a$
 $x < -a$ OR $x > a$

$$x+10 \leq -6 \text{ OR } x+10 \geq 6$$

$$x + \cancel{10} - 10 \leq -6 - 10 \text{ OR } x + \cancel{10} - 10 \geq 6 - 10$$

$$x \leq -16 \text{ OR } x \geq -4$$



$$(-\infty, -16] \cup [-4, \infty)$$

$$\textcircled{34} \sqrt{49a^8b^{40}} =$$

$$\sqrt[2]{49a^8b^{40}} =$$

$$\textcircled{7a^4b^{20}} =$$

Divide the Powers by 2

$$\textcircled{35} \sqrt[3]{-64x^{12}y^9} =$$

$$\sqrt[3]{(-4)^3x^{12}y^9} =$$

$$(-4)^{\frac{3}{3}}x^{\frac{12}{3}}y^{\frac{9}{3}} =$$

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

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

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

2	64
2	32
2	16
2	8
2	4
2	2
	1

36

$f(x) = \sqrt{5x+7}$ find $f(2)$

$f(2) = \sqrt{5(2)+7}$

$f(2) = \sqrt{10+7}$

$f(2) = \sqrt{17}$

37

$1024 = 2^{\frac{2}{5}}$

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

$(2^{10})^{\frac{2}{5}} =$

$(2^{\frac{40}{1}})^{\frac{2}{5}} =$

$2^{\frac{10(2)}{1(5)}} =$

$2^{\frac{20}{5}} =$

$2^4 =$

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

$2 \overline{)1024}$
 $2 \overline{)512}$
 $2 \overline{)256}$
 $2 \overline{)128}$
 $2 \overline{)64}$
 $2 \overline{)32}$
 $2 \overline{)16}$
 $2 \overline{)8}$
 $2 \overline{)4}$
 $2 \overline{)2}$
 1

$16 =$

38.

$$\sqrt{12} =$$

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

$$\sqrt{4 \cdot 3} =$$

$$\sqrt{4} \sqrt{3} =$$

$$2\sqrt{3} =$$

$$\begin{array}{r}
 2 \overline{) 12} \\
 \underline{4} \\
 8 \\
 \underline{6} \\
 0
 \end{array}$$

$$\begin{array}{r}
 3 \overline{) 3} \\
 \underline{3} \\
 0
 \end{array}$$

39.

$$\sqrt[3]{375}$$

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

$$\sqrt[3]{5^3 \cdot 3^1} =$$

$$(5)^{\frac{3}{3}} \sqrt[3]{3} =$$

$$5^1 \sqrt[3]{3} =$$

$$5\sqrt[3]{3} =$$

$$\begin{array}{r}
 3 \overline{) 375} \\
 \underline{3} \\
 0 \\
 5 \overline{) 125} \\
 \underline{5} \\
 0 \\
 5 \overline{) 25} \\
 \underline{5} \\
 0
 \end{array}$$

40.

$$\sqrt{121x^5} =$$

$$\sqrt{121x^4x^1} =$$

$$11x^{\frac{4}{2}} \sqrt{x^1} =$$

$$11x^2 \sqrt{x}$$

41 $\sqrt[3]{256x^8}$ Prime: 2, 3, 5, 7, ...

$$\sqrt[3]{256x^8} = 2 \sqrt[3]{128x^8}$$

$$2 \sqrt[3]{64x^8}$$

$$2 \sqrt[3]{32x^8}$$

$$2 \sqrt[3]{16x^8}$$

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

$$2 \sqrt[3]{4x^8}$$

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

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

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

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

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

$$2^{\frac{6}{3}} x^{\frac{6}{3}} \sqrt[3]{2x^2} = 2^2 x^2 \sqrt[3]{2x^2}$$

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

$$4x^2 \sqrt[3]{4x^2} =$$

42 $\sqrt{121a^4b^5} =$

$$\sqrt{121a^4b^4b} =$$

$$11a^{\frac{4}{2}}b^{\frac{4}{2}}\sqrt{b} =$$

$$11a^2b^2\sqrt{b} =$$

$$11a^2b^2\sqrt{b} =$$

$$43 \quad \sqrt[3]{81x^6y^4} =$$

Primes 2, 3, 5, 7, 11, ...

$$\sqrt[3]{3^4 x^6 y^4} =$$

$$\sqrt[3]{\underbrace{3^3}_{\text{3}} \cdot \underbrace{3^1}_{\text{3}'} x^6 y^{\underbrace{3}_{\text{3}} y^{\underbrace{1}_{\text{3}'}}} =$$

$$\begin{array}{r} 3 \overline{) 81} \\ \underline{3 27} \\ 3 9 \\ \underline{3 3} \\ 1 \end{array}$$

$$3^{1/3} x^{6/3} y^{3/3} \sqrt[3]{3^1 y^1} =$$

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

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

$$44 \quad \sqrt{x-1} = 6$$

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

$$x-1 = 36$$

$$x - \cancel{x} + \cancel{1} = 36 + 1$$

$$x = 37$$

$$(45) \quad (9 - 9i) + (3 + 7i) =$$

$$9 - 9i + 3 + 7i =$$

$$12 - 2i =$$

$$(46) \quad (6 + 7i) - (8 - 9i) =$$

$$6 + 7i - 8 + 9i =$$

$$-2 + 16i =$$

$$(47) \quad (4 + 4i)(5 + i) =$$

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

$$20 + 24i + 4i^2 =$$

$$20 + 24i + 4(-1) =$$

$$20 + 24i - 4 =$$

$$16 + 24i =$$

$$\textcircled{48} \quad \frac{8-7i}{8+i} =$$

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

$$\frac{64 - 8i - 56i + 7i^2}{64 - 8i + 8i - i^2} =$$

$$\frac{64 - 64i + 7i^2}{64 - i^2} =$$

$$\frac{64 - 64i + 7(-1)}{64 - (-1)} =$$

$$\frac{64 - 64i - 7}{64 + 1} =$$

$$\frac{57 - 64i}{65} =$$

$$\frac{57 - 64i}{65} =$$

$$\frac{57}{65} - \frac{64}{65}i =$$

$$49. (x+6)^2 = 9$$

$$\sqrt{(x+6)^2} = \pm\sqrt{9}$$

$$x+6 = \pm 3$$

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

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

$$x = -9 \quad \text{OR} \quad x = -3$$

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

$$50. m^2 + 5m - 6 = 0$$

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

$$m-1=0 \quad \text{OR} \quad m+6=0$$

$$m-1+1=0+1 \quad \text{OR} \quad m+6-6=0-6$$

$$m = 1 \quad \text{OR} \quad m = -6$$

$$\begin{matrix} 6 \cdot 1 \\ 2 \cdot 3 \end{matrix}$$

$$\{1, -6\}$$

Use Quadratic formula $m = \frac{-5-7}{2}$ OR $m = \frac{-5+7}{2}$

$$1m^2 + 5m - 6 = 0$$

$$a=1, b=5, c=-6$$

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

$$m = \frac{-5 \pm \sqrt{5^2 - 4(1)(-6)}}{2(1)}$$

$$m = \frac{-5 \pm \sqrt{25 + 24}}{2}$$

$$m = \frac{-5 \pm \sqrt{49}}{2}$$

$$m = \frac{-5 \pm 7}{2}$$

$$m = \frac{-12}{2} \quad \text{OR} \quad m = \frac{2}{2}$$

$$m = -6 \quad \text{OR} \quad m = 1$$

$$\{1, -6\}$$

$$51. -y = 3y^2 - 4$$

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

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

$$0 = (3y + 4)(y - 1)$$

$$\text{or } 3y + 4 = 0 \text{ or } y - 1 = 0$$

$$3y + 4 - 4 = 0 - 4 \text{ or } y - 1 + 1 = 0 + 1$$

$$3y = -4$$

$$\text{or } y = 1$$

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

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

use Quadratic formula

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

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

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

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

$$y = \frac{-1 \pm \sqrt{1 + 48}}{6}$$

$$y = \frac{-1 \pm \sqrt{49}}{6}$$

$$y = \frac{-1 \pm 7}{6}$$

$$y = \frac{-1 - 7}{6} \text{ or } y = \frac{-1 + 7}{6}$$

$$y = \frac{-8}{6} \text{ or } y = \frac{6}{6}$$

3.1 4.1 possible
2.2

$$y = \frac{2(-4)}{2(3)} \text{ or } y = \frac{6}{6}$$

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

$$\left\{ -\frac{4}{3}, 1 \right\}$$

$$52 \quad x^2 + 10x + 25 = 0$$

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

$$\therefore x+5=0 \text{ OR } x+5=0$$

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

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

Use Quadratic formula

$$x^2 + 10x + 25 = 0$$

$$a=1, b=10, c=25$$

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

$$x = \frac{-(10) \pm \sqrt{(10)^2 - 4(1)(25)}}{2(1)}$$

$$x = \frac{-10 \pm \sqrt{100 - 100}}{2}$$

$$x = \frac{-10 \pm \sqrt{0}}{2}$$

$$x = \frac{-10 \pm 0}{2}$$

$$x = \frac{-10-0}{2} \text{ OR } x = \frac{-10+0}{2}$$

$$x = \frac{-10}{2} \text{ OR } x = \frac{-10}{2}$$

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

25:1
5:5 possible

$\{-5\}$

$\{-5\}$

$$53) 1x^2 + x - 5 = 0$$

$$a=1, b=1, c=-5$$

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

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(-5)}}{2(1)}$$

$$x = \frac{-1 \pm \sqrt{1 + 20}}{2}$$

$$x = \frac{-1 \pm \sqrt{21}}{2}$$

$$x = \frac{-1 - \sqrt{21}}{2} \quad \text{OR}$$

$$x = \frac{-1 + \sqrt{21}}{2}$$

$$\left\{ \frac{-1 - \sqrt{21}}{2} \right\}$$

$$\frac{-1 + \sqrt{21}}{2}$$

USE

Quadratic
formula

$$(54) \quad x^2 + 2x + 26 = 0$$

$$1x^2 + 2x + 26 = 0$$

$$a=1, b=2, c=26$$

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

$$x = \frac{-2 \pm \sqrt{2^2 - 4(1)(26)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 - 104}}{2}$$

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

$$x = \frac{-2 \pm 10i}{2}$$

$$x = -1 \pm 5i$$

$$x = -1 - 5i$$

OR

$$x = -1 + 5i$$

$$\{-1 - 5i, -1 + 5i\}$$

58. $f(x) = x^2 - 7$

$f(-1) = (-1)^2 - 7$

$f(-1) = (-1)(-1) - 7$

$f(-1) = 1 - 7$

$f(-1) = -6$

$f(0) = (0)^2 - 7$

$f(0) = (0)(0) - 7$

$f(0) = 0 - 7$

$f(0) = -7$

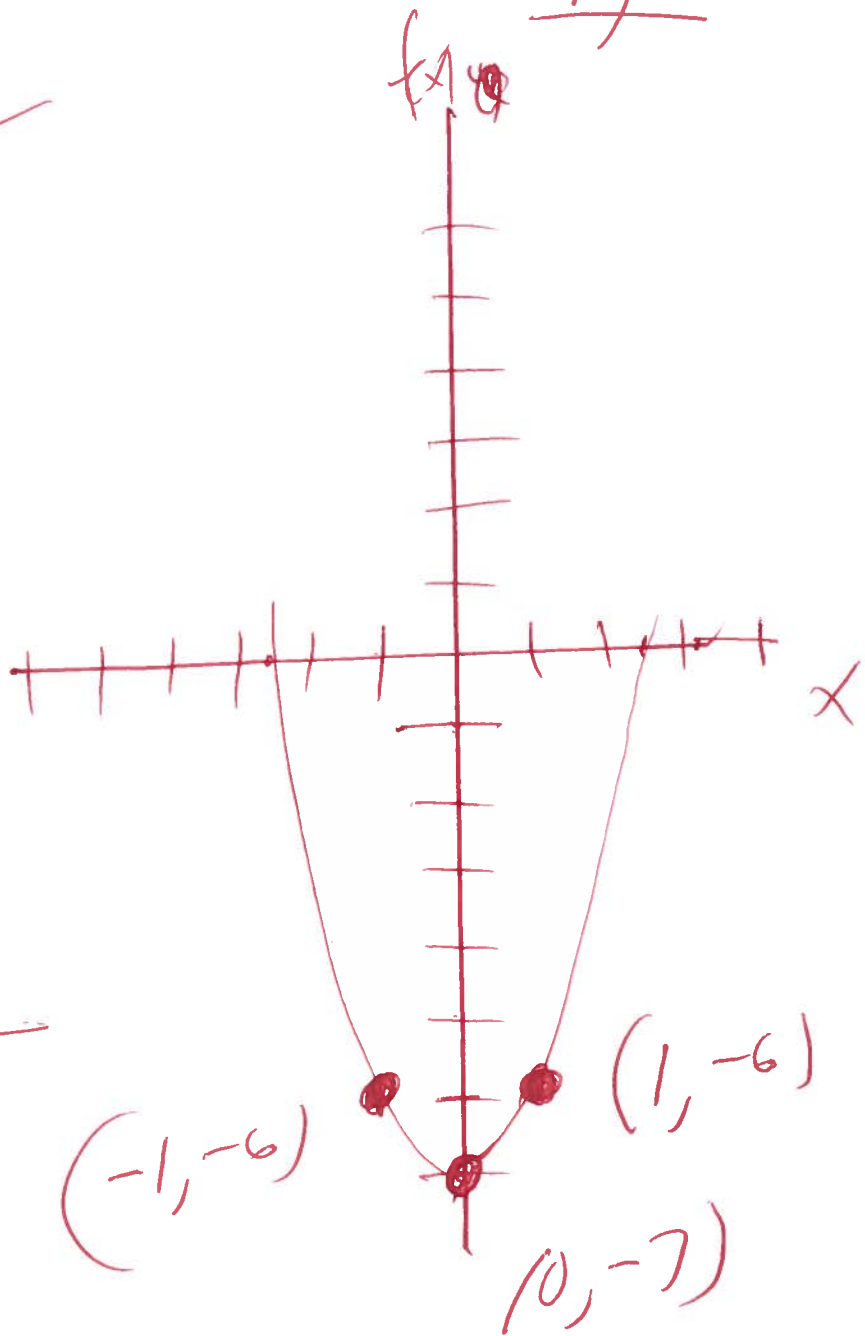
$f(1) = (1)^2 - 7$

$f(1) = (1)(1) - 7$

$f(1) = 1 - 7$

$f(1) = -6$

x	f(x)
-1	-6
0	-7
1	-6



56 $f(x) = -4x^2 - 8x + 8$ Find Vertex (Max this time)
 $a = -4, b = -8, c = 8$

$$\text{Vertex} = \left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

$$\text{Vertex} = \left(\frac{-(-8)}{2(-4)}, f\left(\frac{-(-8)}{2(-4)}\right)\right)$$

$$\text{Vertex} = \left(\frac{8}{-8}, f\left(\frac{8}{-8}\right)\right)$$

$$\text{Vertex} = (-1, f(-1))$$

$$\text{Vertex} = (-1, -4(-1)^2 - 8(-1) + 8)$$

$$\text{Vertex} = (-1, -4(-1)(-1) - 8(-1) + 8)$$

$$\text{Vertex} = (-1, -4(1) - 8(-1) + 8)$$

$$\text{Vertex} = (-1, -4 + 8 + 8)$$

$$\text{Vertex} = (-1, 4 + 8)$$

$$\text{Vertex} = (-1, 12)$$

Also

MAX

this time

$$57. A = P \left(1 + \frac{r}{n} \right)^{nt}$$

$$P = \$3000$$

$$r = 6\% = .06$$

$$n = 4$$

$$t = 10$$

$$A = \$3000 \left(1 + \frac{.06}{4} \right)^{4(10)}$$

$$A = \$3000 (1 + .015)^{40}$$

$$A = \$3000 (1.015)^{40}$$

$$A = \$3000 (1.814018409)$$

$$A = \$5442.055227$$

$$= \$5,442.06$$

use graphing
calculator

$$(1.015)^{40}$$

