

1

Factor

$$81x^2 - 49 =$$

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

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

For mula

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

1

~~more~~ 050 steps

MATH 032050 REVIEW

~~041211~~

2.

Solve

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

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

$$2x+1-1=0-1 \quad \text{OR} \quad 5x-3+3=0+3$$

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

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

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

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

3.

Solve

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

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

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

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

$$x = 8$$

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

- 30.1
  - 40.2
  - 20.4
  - 10.8
- Possible

4.

Solve

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

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

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

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

$$x = -2$$

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

- 18.1
  - 9.2
  - 6.3
- Possible

5.

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  $x - 9 = 0$

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

$$x = -8 \quad \text{OR} \quad x = 9$$

72.1  
36.2  
18.4  
9.8

Possible

2

6.

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  $x + 7 = 0$

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

$$x = 4 \quad \text{OR} \quad x = -7$$

28.1  
14.2  
9.7

7.

Solve

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

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

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

$$2x - 9 + 9 = 0 + 9 \quad \text{OR} \quad x + 1 - 1 = 0 - 1$$

$$2x = 9 \quad \text{OR} \quad x = -1$$

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

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

2.1

9.1  
3.3

8.

Solve

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

$$x(15x - 8) = 0$$

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

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

$$15x = 8$$

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

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

3

9.

Solve

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

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

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

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

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

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

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

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

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

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

10.

Solve

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

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

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

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

$$x = -3$$

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

OR  $x = -4$

possible

12-1  
6-2  
3-4

11.

Solve

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

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

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

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

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

$$3x+5-5=0-5 \text{ OR } 5x+2-x=0-2$$

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

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

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

15.1  
3.5

10.1  
2.5

4

Possibly

12

Solve

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

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

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

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

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

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

12.1  
6.2  
3.4

13.

Solve

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

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

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

$$y=0 \text{ OR } y+3=0 \text{ OR } y+3=0$$
  
$$y+3-3=0-3 \text{ OR } y+3-3=0-3$$
  
$$y=-3 \text{ OR } y=-3$$

9.1, 3.3

Possibly

Solve

14.

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

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

$$\begin{matrix} 9 \cdot 1 \\ 3 \cdot 3 \end{matrix}$$

$$\begin{matrix} 4 \cdot 1 \\ 2 \cdot 2 \end{matrix}$$

9

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

$$3x + \cancel{x} - \cancel{x} = 0 - 2 \quad \text{OR} \quad 3x + 2 - 2 = 0 - 2 \quad \text{OR} \quad 3x + 2 - 2 = 0 - 2$$

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

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

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

15.

Solve

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

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

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

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

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

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

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

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

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

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



16.

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  $5x-4=0$

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

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

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

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

25.1  
5.5  
8.1  
2.4  
Possible  
6

17.

Simplify

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

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

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

Simplify

18.

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

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

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

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

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

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

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

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

$$x-2 =$$

Solve

20.

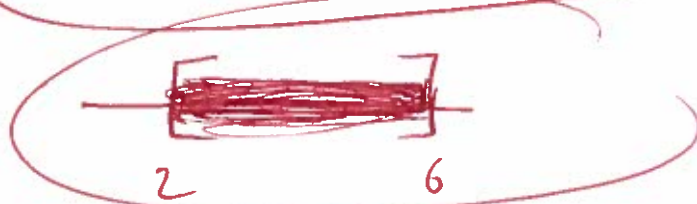
$$13 \leq 4t + 5 \leq 29$$

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

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

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

$$2 \leq t \leq 6$$



$$[2, 6]$$

12-1  
6-2  
3-4 possible

10

21.

Solve

$$|x+3|=6$$

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

8

or  $x+3=-6$  or  $x+3=6$

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

$$x=-9$$

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

22.

Solve

$$|x+18| < 9$$

formula

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

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

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

$$-27 < x < -9$$



$$(-27, -9)$$

23.

Solve

$$|x+3| > 4$$

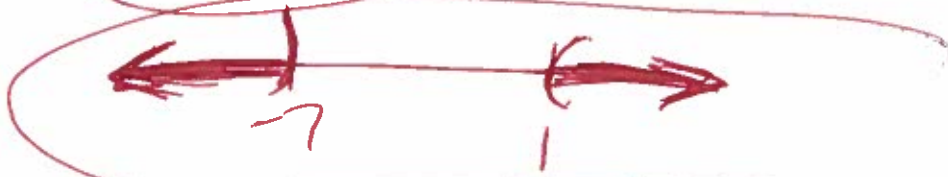
$|x| > a$   
 $x < -a$  or  $x > a$

or  $x+3 < -4$  or  $x+3 > 4$

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

$$x < -7$$

$$\text{or } x > 1$$



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



24.

Simplify

$$\sqrt{16 \times 10} =$$

$$\sqrt{4^2 \times 10} =$$

$$4^1 \times 10^{\frac{1}{2}} =$$

$$4 \times 10^{\frac{1}{2}} =$$

25.

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

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

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

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

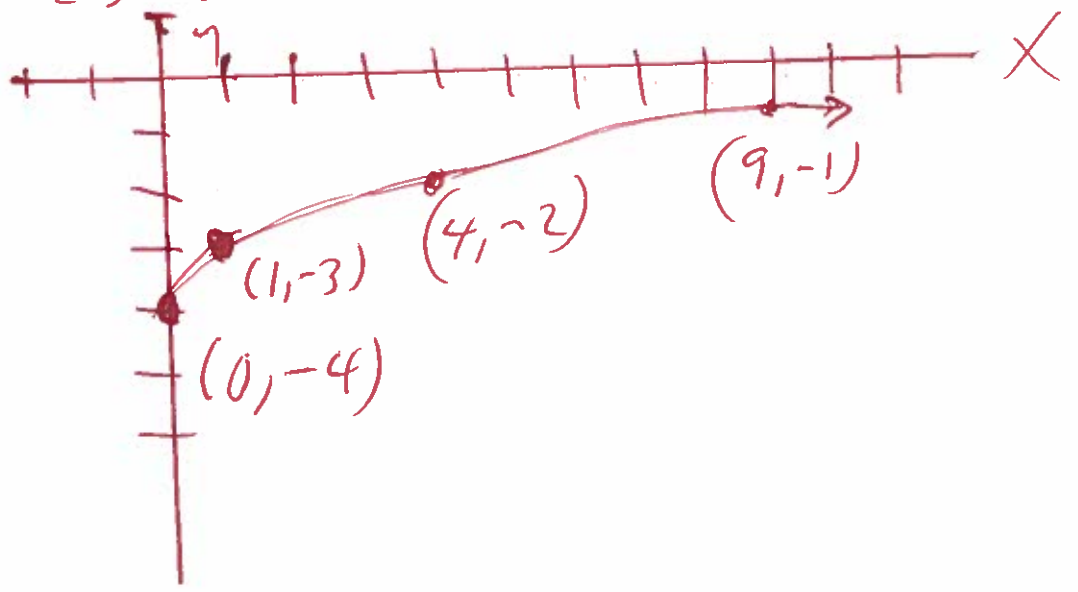
$$f(37) = 9$$

26.

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

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

$f(0) = \sqrt{0} - 4 = 0 - 4 = -4$   
 $f(1) = \sqrt{1} - 4 = 1 - 4 = -3$   
 $f(4) = \sqrt{4} - 4 = 2 - 4 = -2$   
 $f(9) = \sqrt{9} - 4 = 3 - 4 = -1$



(12)

27

$$256^{\frac{1}{4}} =$$

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

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

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

$$4^1 =$$

$$4 =$$

28

Simplify      Primes 2, 3, 5, 7, ...

$$\sqrt{20} =$$

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

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

$$2\sqrt{5} =$$

$$\begin{array}{r} 2 \overline{) 20} \\ \underline{4} \phantom{0} \\ 16 \phantom{0} \\ \underline{16} \phantom{0} \\ 0 \phantom{0} \\ 0 \phantom{0} \\ \underline{0} \\ 0 \end{array}$$

29

Simplify      Primes 2, 3, 5, 7, ...

$$\sqrt{320 k^7 q^8} =$$

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

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

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

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

$$\begin{array}{r} 2 \overline{) 320} \\ \underline{640} \\ 2 \overline{) 160} \\ \underline{320} \\ 2 \overline{) 80} \\ \underline{160} \\ 2 \overline{) 40} \\ \underline{80} \\ 2 \overline{) 20} \\ \underline{40} \\ 2 \overline{) 10} \\ \underline{20} \\ 5 \overline{) 5} \\ \underline{5} \\ 0 \end{array}$$

30  $\sqrt[3]{512x^4y^5}$  Primes 2, 3, 5, 7, ...

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

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

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

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

$$\begin{array}{r} 2 \overline{) 512} \\ \underline{256} \phantom{0} \\ 2 \overline{) 256} \\ \underline{128} \phantom{0} \\ 2 \overline{) 128} \\ \underline{64} \phantom{0} \\ 2 \overline{) 64} \\ \underline{32} \phantom{0} \\ 2 \overline{) 32} \\ \underline{16} \phantom{0} \\ 2 \overline{) 16} \\ \underline{8} \phantom{0} \\ 2 \overline{) 8} \\ \underline{4} \phantom{0} \\ 2 \overline{) 4} \\ \underline{2} \phantom{0} \\ 2 \overline{) 2} \\ \underline{0} \phantom{0} \end{array}$$

31 Find distance  $(x_1, y_1)$  and  $(x_2, y_2)$

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

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

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

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

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

$$d = \sqrt{100}$$

$$d = 10$$

32 Find mid point  $(x_1, y_1)$  and  $(x_2, y_2)$

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

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

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

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

$$= (2, -2)$$

33

Solve

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

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

$$x+4 = 64$$

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

$$x = 60$$

12

34

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

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

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

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

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

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

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

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

Let  $x-4=0$  or  $x-4=0$

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

$x=4$

OR  $x=4$

ck

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

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

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

$$\sqrt{100} = 10$$

$$10 = 10$$



Good

possible

16.1

8.2

4.4

{ 4 }

$$\begin{aligned}
 35 \quad (6+6i) - (-9+i) &= \\
 6+6i+9-i &= \\
 6+6i+9-i &= \\
 15+5i &=
 \end{aligned}$$

13.

$$\begin{aligned}
 36 \quad (5+3i)(5-3i) &= \\
 25 - 15i + 15i - 9i^2 &= \\
 25 - 9i^2 &= \\
 25 - 9(-1) &= \\
 25 + 9 &= \\
 34 &= \text{ OR } 34 + 0i
 \end{aligned}$$

Formula  
 $i^2 = -1$

$$\begin{aligned}
 37 \quad \frac{8+7i}{9-2i} &= \\
 \frac{(8+7i)(9+2i)}{(9-2i)(9+2i)} &= \\
 \frac{72 + 16i + 63i + 14i^2}{81 + 18i - 18i - 4i^2} &= \\
 \frac{72 + 79i + 14i^2}{81 - 4i^2} &= \\
 \frac{72 + 79i + 14(-1)}{81 - 4(-1)} &= \\
 \frac{72 + 79i - 14}{81 + 4} &= \\
 \frac{58 + 79i}{85} &=
 \end{aligned}$$

Formula  
 $i^2 = -1$

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



4.

$$38 \quad (x-5)^2 = 36$$

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

$$x-5 = \pm 6$$

$$\text{L.A. } x-5 = -6 \quad \text{OR} \quad x-5 = 6$$

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

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

$$39 \quad x^2 + 24x + 144 = 0 \quad \text{use Quadratic formula}$$

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

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

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

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

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

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

$$x = -12 \pm 0$$

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

$$x = -12 + 0$$

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

$$40 \quad 1x^2 + 18x + 70 = 0$$

$$a=1, b=18, c=70$$

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

$$x = \frac{-(18) \pm \sqrt{(18)^2 - 4(1)(70)}}{2(1)}$$

$$x = \frac{-18 \pm \sqrt{324 - 280}}{2}$$

$$x = \frac{-18 \pm \sqrt{44}}{2}$$

$$x = \frac{-18 \pm \sqrt{4 \cdot 11}}{2}$$

$$x = \frac{-18 \pm \sqrt{4} \sqrt{11}}{2}$$

$$x = \frac{-18 \pm 2\sqrt{11}}{2}$$

$$x = -9 \pm \sqrt{11}$$

$$x = -9 + \sqrt{11}$$

$$x = -9 - \sqrt{11} \quad \text{or}$$

$$x = -9 + \sqrt{11}$$

Prime 2, 3, 5, 7, 11, 13, 15.

$$\begin{array}{r} 2 \overline{) 44} \\ \underline{22} \\ 22 \\ \underline{22} \\ 0 \end{array}$$

41)  $x^2 - 8x + 20 = 0$   
 $a=1, b=-8, c=20$

Use Quadratic formula

16.

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

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

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

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

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

$$x = 4 \pm 2i$$

$$x = 4 - 2i \text{ or}$$

$$x = 4 + 2i$$

use Quadratic Formula

42)  $2x^2 - 7x - 9 = 0$   
 $a=2, b=-7, c=-9$

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

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(2)(-9)}}{2(2)}$$

$$x = \frac{7 \pm \sqrt{49 + 72}}{4}$$

$$x = \frac{7 \pm \sqrt{121}}{4}$$

$$x = \frac{7 \pm 11}{4}$$

$$x = \frac{7-11}{4} \text{ or}$$

$$x = \frac{7+11}{4}$$

$$x = \frac{-4}{4} \text{ or}$$

$$x = \frac{18}{4}$$

$$x = -1 \text{ or}$$

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

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

$$43 \quad 7x^2 = -12x - 3$$

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

$$a=7, b=12, c=3$$

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

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(7)(3)}}{2(7)}$$

$$x = \frac{-12 \pm \sqrt{144 - 84}}{14}$$

$$x = \frac{-12 \pm \sqrt{60}}{14}$$

$$x = \frac{-12 \pm \sqrt{4 \cdot 15}}{14}$$

$$x = \frac{-12 \pm \sqrt{4} \sqrt{15}}{14}$$

$$x = \frac{-12 \pm 2\sqrt{15}}{14}$$

$$x = \frac{2(-6 \pm \sqrt{15})}{2(7)}$$

$$x = \frac{-6 \pm \sqrt{15}}{7}$$

$$x = \frac{-6 - \sqrt{15}}{7} \text{ OR}$$

$$x = \frac{-6 + \sqrt{15}}{7}$$

(use Quadratic formula)

(17)

Prime 2, 3, 5, 7

$$\begin{array}{r} 2 \overline{) 60} \\ 2 \overline{) 30} \\ 3 \overline{) 15} \\ 5 \overline{) 3} \\ 1 \end{array}$$

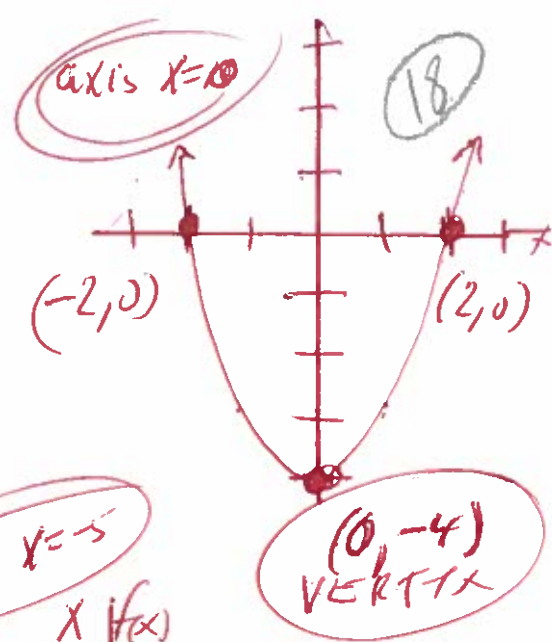
44 graph  $f(x) = x^2 - 4$

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

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

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

x	f(x)
-2	0
0	-4
2	0



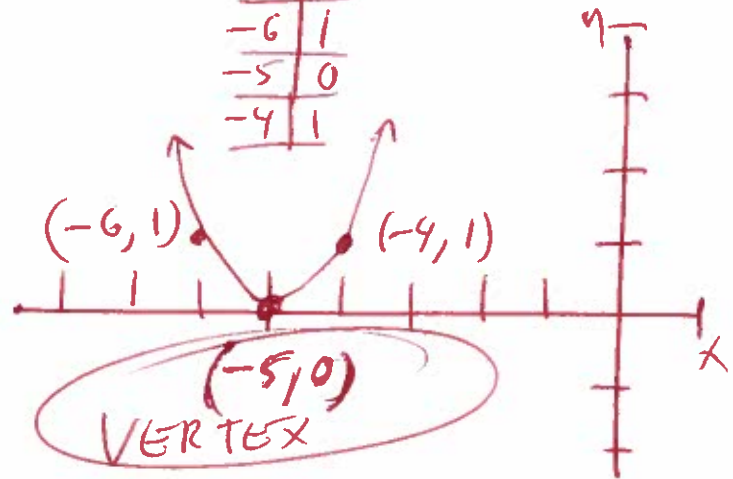
45 graph  $f(x) = (x+5)^2$

$$f(-6) = (-6+5)^2 = (-1)^2 = (-1)(-1) = 1$$

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

$$f(-4) = (-4+5)^2 = (1)^2 = (1)(1) = 1$$

x	f(x)
-6	1
-5	0
-4	1



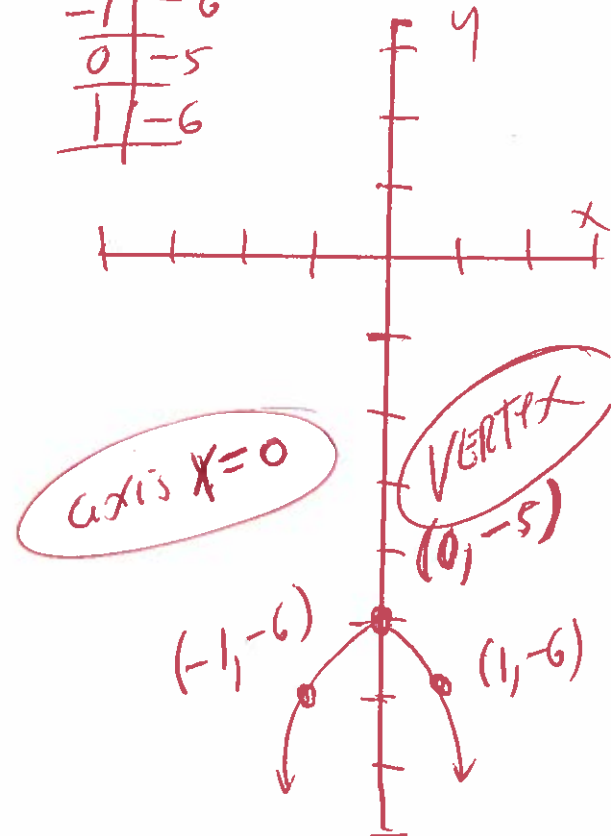
46 graph  $f(x) = -x^2 - 5$

$$f(-1) = -(-1)^2 - 5 = -(-1)(-1) - 5 = -1 - 5 = -6$$

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

$$f(1) = -(1)^2 - 5 = -(1)(1) - 5 = -1 - 5 = -6$$

x	f(x)
-1	-6
0	-5
1	-6





47) graph

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

$$f(4) = 2(4-5)^2 + 3$$

$$f(4) = 2(-1)^2 + 3$$

$$f(4) = 2(-1)(-1) + 3$$

$$f(4) = 2(1) + 3$$

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

$$f(4) = 5$$

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

$$f(5) = 2(0)^2 + 3$$

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

$$f(5) = 0 + 3$$

$$f(5) = 3$$

$$f(6) = 2(6-5)^2 + 3$$

$$f(6) = 2(1)^2 + 3$$

$$f(6) = 2(1)(1) + 3$$

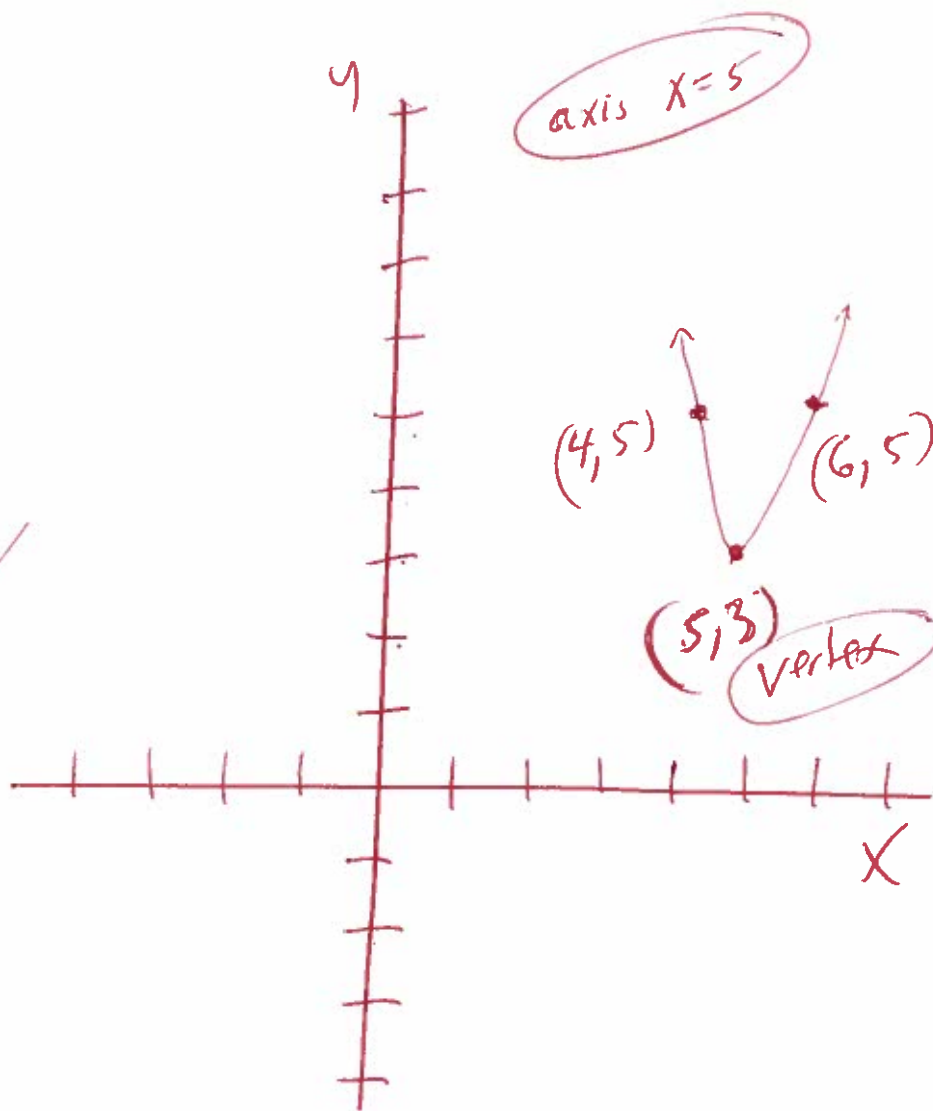
$$f(6) = 2(1) + 3$$

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

$$f(6) = 5$$

x	f(x)
4	5
5	3
6	5

19



(48) graph

$$f(x) = \frac{1}{5}(x+4)^2 + 2$$

$$f(-5) = \frac{1}{5}(-5+4)^2 + 2$$

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

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

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

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

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

$$f(-4) = \frac{1}{5}(-4+4)^2 + 2$$

$$f(-4) = \frac{1}{5}(0)^2 + 2$$

$$f(-4) = \frac{1}{5}(0)(0) + 2$$

$$f(-4) = \frac{1}{5}(0) + 2$$

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

$$f(-4) = 2$$

$$f(-3) = \frac{1}{5}(-3+4)^2 + 2$$

$$f(-3) = \frac{1}{5}(1)^2 + 2$$

$$f(-3) = \frac{1}{5}(1)(1) + 2$$

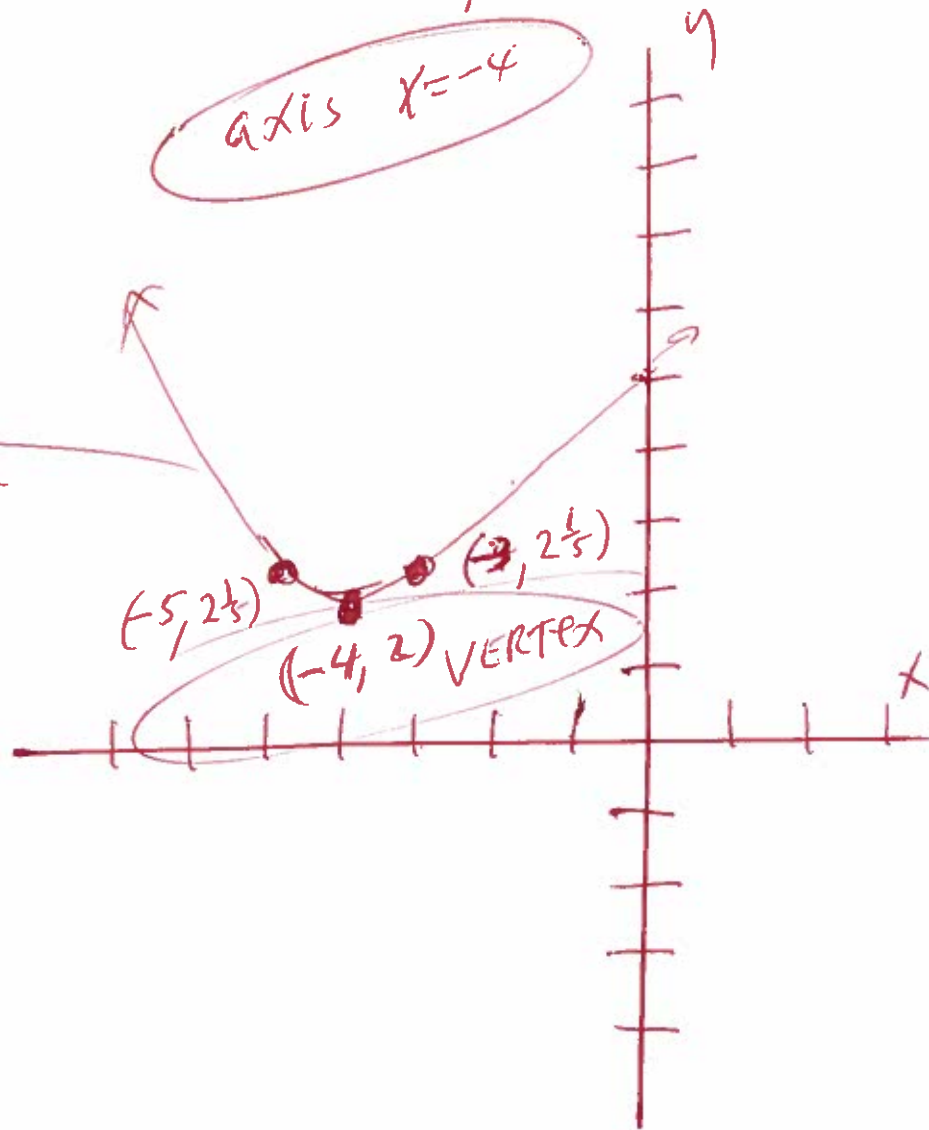
$$f(-3) = \frac{1}{5}(1) + 2$$

$$f(-3) = \frac{1}{5} + 2$$

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

x	f(x)
-5	$2\frac{1}{5}$
-4	2
-3	$2\frac{1}{5}$

(2d)



49 Graph

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

$$f(-1) = 3(-1)^2 - 4$$

$$f(-1) = 3(-1)(-1) - 4$$

$$f(-1) = 3(1) - 4$$

$$f(-1) = 3 - 4$$

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

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

$$f(0) = 3(0)(0) - 4$$

$$f(0) = 3(0) - 4$$

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

$$f(0) = -4$$

$$f(1) = 3(1)^2 - 4$$

$$f(1) = 3(1)(1) - 4$$

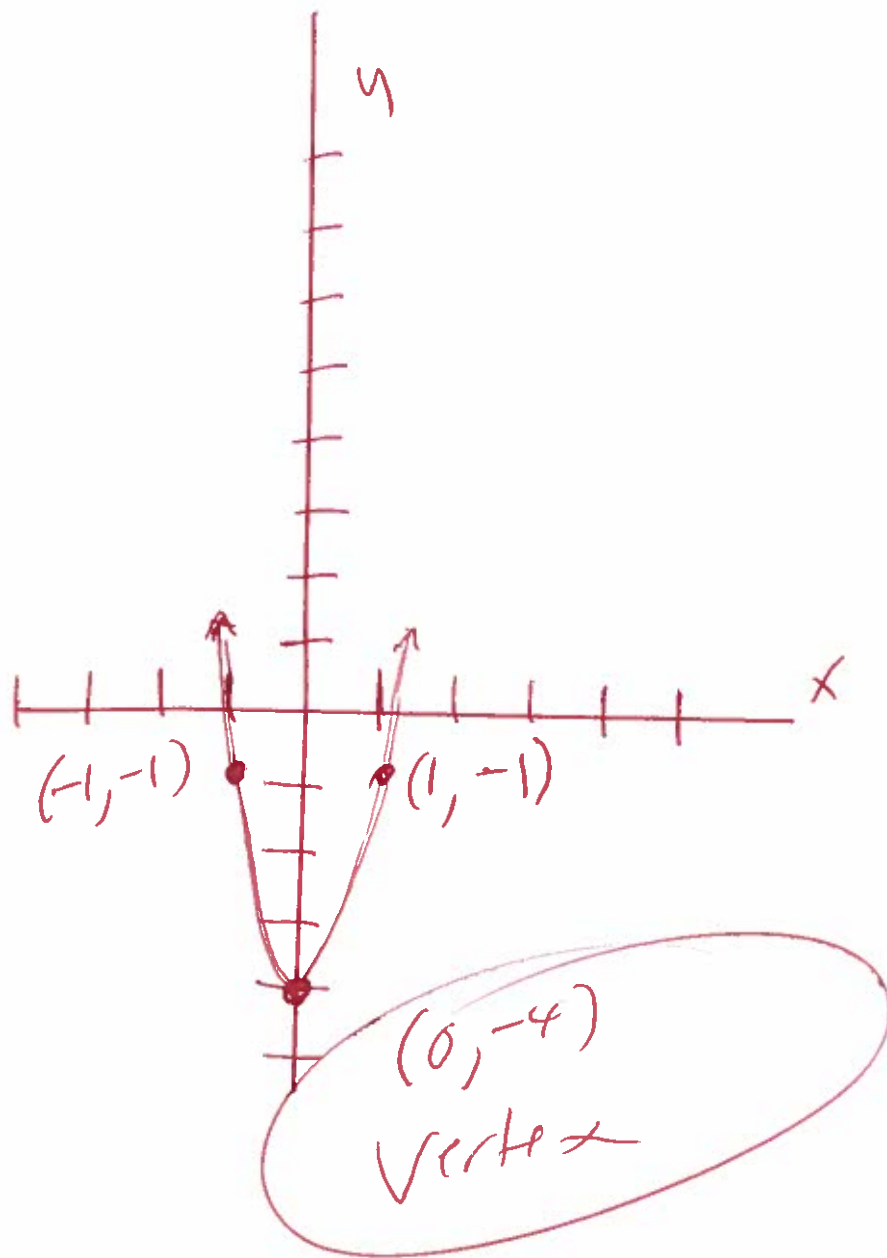
$$f(1) = 3(1) - 4$$

$$f(1) = 3 - 4$$

$$f(1) = -1$$

x	f(x)
-1	-1
0	-4
1	-1

(21)



50.

Graph

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

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

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

$$f(3) = -(-1)(-1)$$

$$f(3) = -(1)$$

$$f(3) = -1$$

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

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

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

$$f(4) = 0$$

$$f(5) = -(5-4)^2$$

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

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

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

$$f(5) = -1$$

x	f(x)
3	-1
4	0
5	-1

21.

