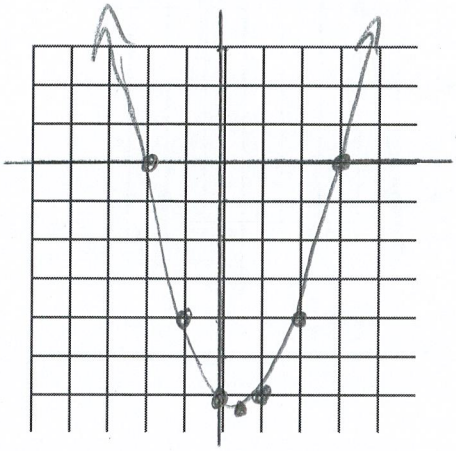
Name KEY

Solve the equation using both the graphing method and the quadratic formula.

1. $x^2 - x - 6 = 0$

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

x	y
-2	0
-1	-4
0	-6
$\frac{1}{2}$	-6.25
1	-6
2	-4
3	0



Quadratic Formula:

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

$$= \frac{1 \pm \sqrt{25}}{2}$$

$$= \frac{1+5}{2} \qquad \frac{1-5}{2}$$

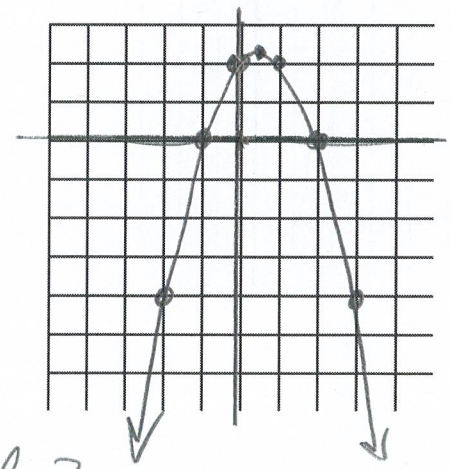
$$= 3 \qquad = -2$$

Solution: -2 and 3

2. $-x^2 + x = -2$ $\quad -x^2 + x + 2 = 0$

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

x	y
-2	-4
-1	0
0	2
$\frac{1}{2}$	2.25
1	2
2	0
3	-4



Quadratic Formula:

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

$$\frac{-1 \pm \sqrt{9}}{-2}$$

$$\frac{-1+3}{-2} \qquad \frac{-1-3}{-2}$$

$$-1 \qquad 2$$

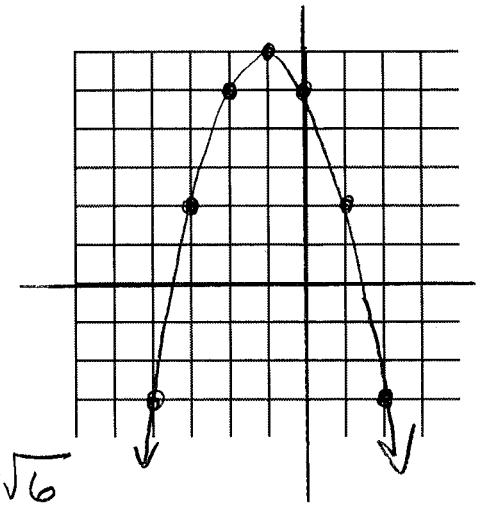
Solution: -1 and 2

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

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

x	y
-4	-3
-3	2
-2	5
-1	6
0	5
1	2
2	-3

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



Quadratic Formula:

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

$$\frac{2 \pm \sqrt{24}}{-2}$$

$$= \frac{2+2\sqrt{6}}{-2} \qquad \frac{2-2\sqrt{6}}{-2}$$

$$= -1-\sqrt{6} \text{ and } -1+\sqrt{6}$$

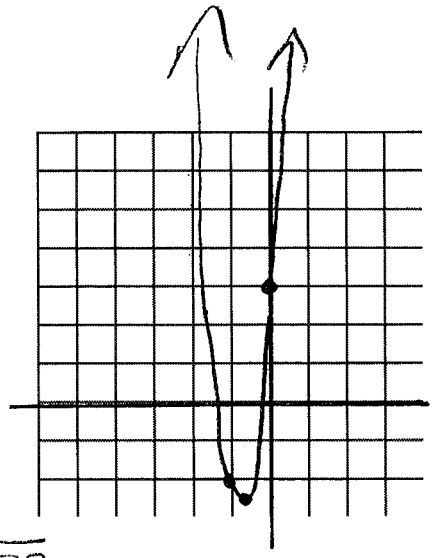
$-3.45 \qquad 1.45$

Solution: $\frac{-1 \pm \sqrt{6}}{-3.45 \text{ and } 1.45}$

4. $9x^2 + 14x + 3 = 0$

x	y
-3	42
-2	11
-1	-2
-7/9	-2.4
0	3
1	26
2	67

$\frac{-14}{2(9)} = \frac{-14}{18} = \frac{-7}{9}$



Quadratic Formula:

$$\frac{-14 \pm \sqrt{(14)^2 - 4(9)(3)}}{2(9)}$$

$$= \frac{-14 \pm \sqrt{88}}{18}$$

$$= \frac{-14+2\sqrt{22}}{18} \qquad \frac{-14-2\sqrt{22}}{18}$$

$$\frac{-7 \pm \sqrt{22}}{9}$$

$-.26 \qquad -1.30$

Solution: $\frac{-7 \pm \sqrt{22}}{9}$

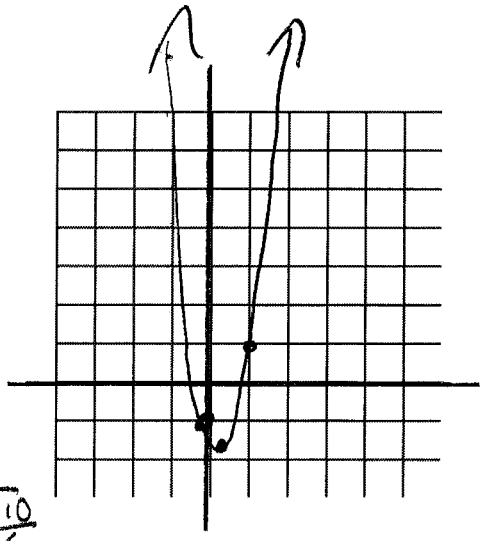
$-.26$ and -1.30

5. $6x^2 - 4x - 1 = 0$

x	y
-2	31
-1	9
0	-1
1/3	-1.7
1	1
2	15
3	41

$\frac{-(-4)}{2(6)} = \frac{4}{12}$

$= 1/3$



Solution: $\frac{1}{3} \pm \frac{\sqrt{10}}{6}$

.86 and -.19

Quadratic Formula:

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

$$= \frac{4 \pm \sqrt{40}}{12}$$

$$= \frac{4 + 2\sqrt{10}}{12} \qquad \frac{4 - 2\sqrt{10}}{12}$$

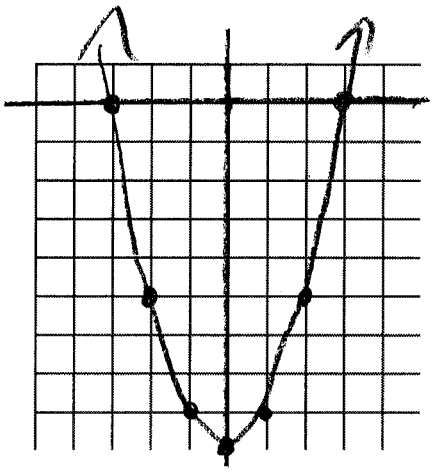
$$= \frac{1}{3} \pm \frac{\sqrt{10}}{6}$$

.86 and -.19

6. $x^2 - 9 = 0$

x	y
-3	0
-2	-5
-1	-8
0	-9
1	-8
2	-5
3	0

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



Solution: ± 3

Quadratic Formula:

not needed

$x^2 - 9 = 0$

$x^2 = 9$

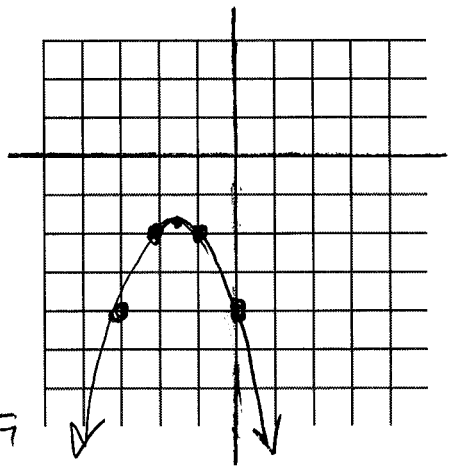
$x = \pm 3$

7. $-x^2 - 3x = 4$

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

x	Y
-4	-8
-3	-4
-2	-2
-3/2	-1.75
-1	-2
0	-4
1	-8

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



Solution: $\frac{3 \pm i\sqrt{7}}{2}$

No real solution

Quadratic Formula:

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

$$\frac{3 \pm \sqrt{-7}}{-2}$$

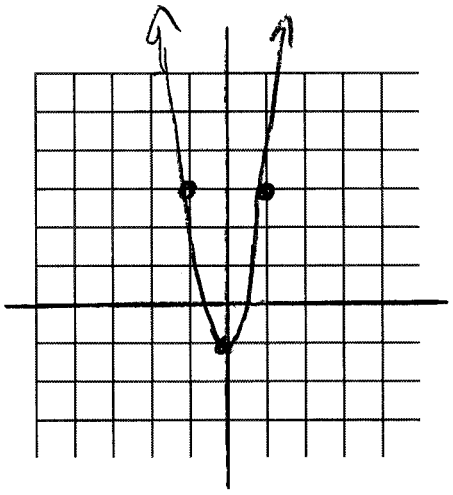
No real solution

$$\frac{3 \pm i\sqrt{7}}{2}$$

8. $4x^2 - 1 = 0$

x	y
-3	35
-2	15
-1	3
0	-1
1	3
2	15
3	35

$\frac{-0}{2(4)} = \frac{0}{8} = 0$



Solution: $\pm \frac{1}{2}$

Quadratic Formula:

$4x^2 - 1 = 0$

$4x^2 = 1$

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

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