Name: Key 4-15-13 MON Period: _____

Unit 9: Review-Finding Solutions and Miscellaneous Problems

Finding Solutions from Tables:

Example 1:

$x^2 + 6x + 5 = 0$

Rule: Solutions are x-intercepts so look in table where y=0 to find them

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

(-5,0), (-1,0) or {-5,-1}

X=-5 and X=-1

Practice: ***Use the tables to solve the following quadratics***

1. $x^2 - 7x + 12 = 0$

X=3 and X=4

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

2. $x^2 + 10x + 16 = 0$

X=-8 & X=-2

x	y
-9	7
-8	0
-5	-9
-4	-8
-2	0
-1	7

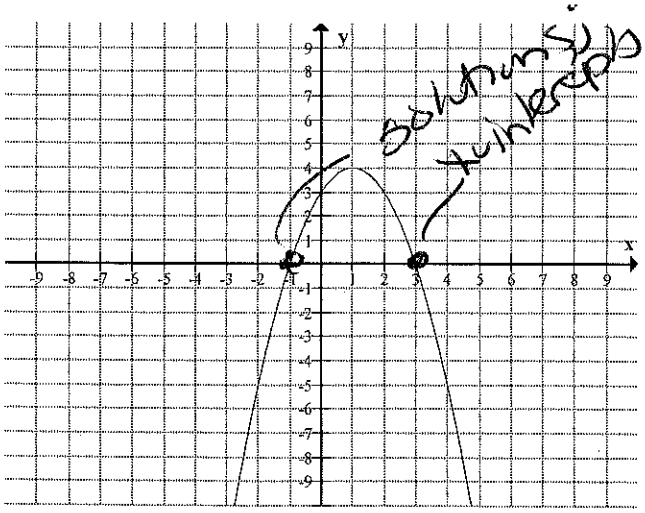
3. $9x^2 - 9 = 0$

X=-1 and X=1

x	y
-3	72
-2	27
-1	0
0	-9
1	0
2	27

Finding Solutions from Graphs:

Example 2:



The function $y = -x^2 + 2x + 3$ is graphed on the grid at the left. What are the solutions of $-x^2 + 2x + 3 = 0$?

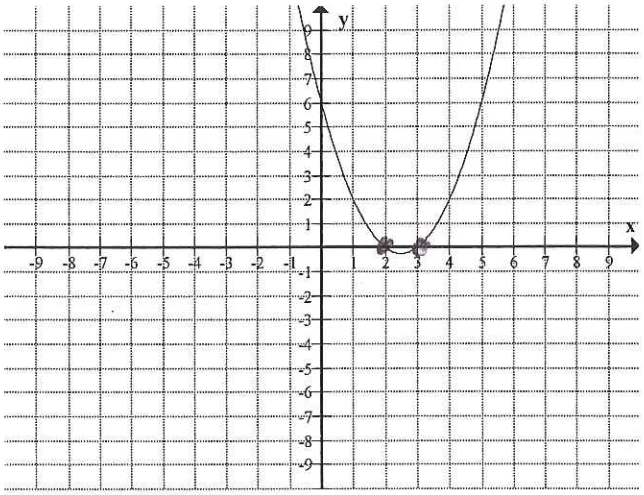
$x =$ -1

$x =$ 3

* Find where the graph of the equation crosses the x-axis, the points are the solutions

Practice: ***Use the graphs to solve the following quadratics:***

1. $y = x^2 - 5x + 6$

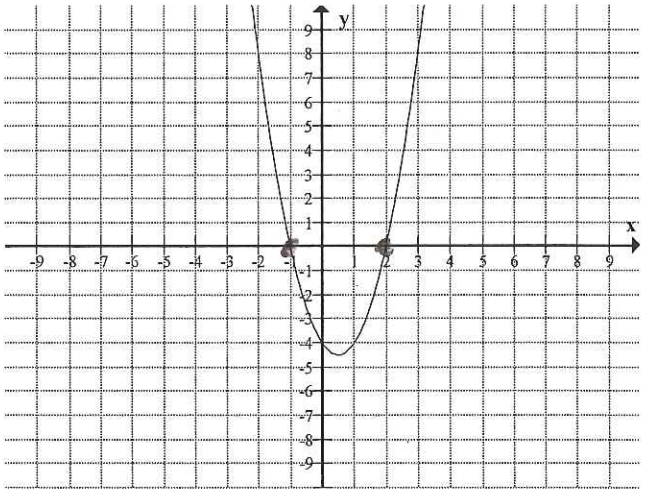


What are the solutions of $x^2 - 5x + 6 = 0$?

$x = 2$

$x = 3$

2. $y = 2x^2 - 2x - 4$

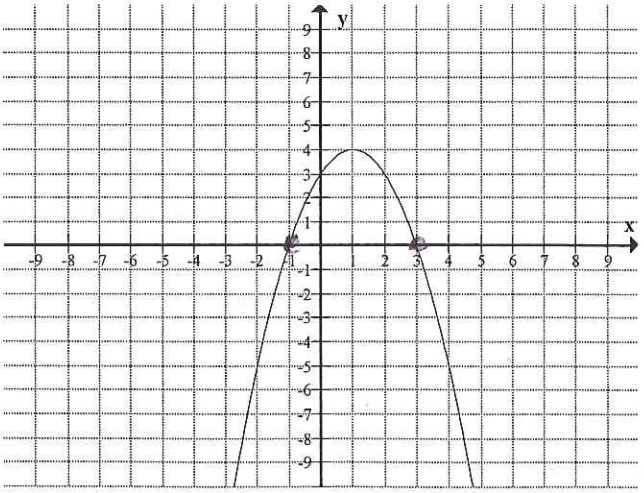


What are the zeros of $0 = 2x^2 - 2x - 4$?

$x = -1$

$x = 2$

3. $y = -x^2 + 2x + 3$

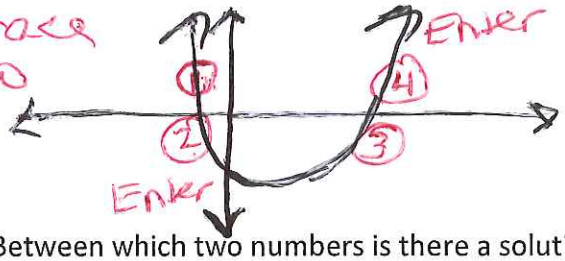


What are the solutions of $-x^2 + 2x + 3 = 0$?

$x = -1$

$x = 3$

Estimating Solutions from Graphs 2nd → Trace 2: zero



Example 3:

Use your calculator and locate the solutions. Between which two numbers is there a solution to the equation

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

Between -2 and -3 $\quad X \approx -2.35$

Between 0 and 1 $\quad X \approx 0.85$

Practice:

1. Use your calculator and locate the solutions. Between which two numbers is there a solution to the equation

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

Between 1 and 2 $\quad X \approx 1.54$

Between 0 and -1 $\quad X \approx -0.87$

2. Use your calculator and locate the solutions. Between which two numbers is there a solution to the equation

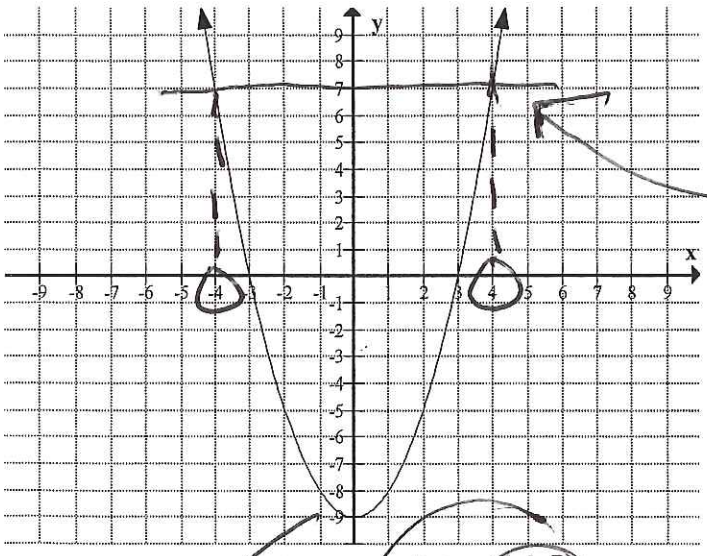
$$-2x^2 - 3x + 4 = 0$$

Between -2 and -3 $\quad X \approx -2.35$

Between 0 and 1 $\quad X \approx 0.85$

Finding Other Points from Graphs

Example 4:



Look at the graph on the left. What is the best estimate of the positive value of x for which this function equals 7?

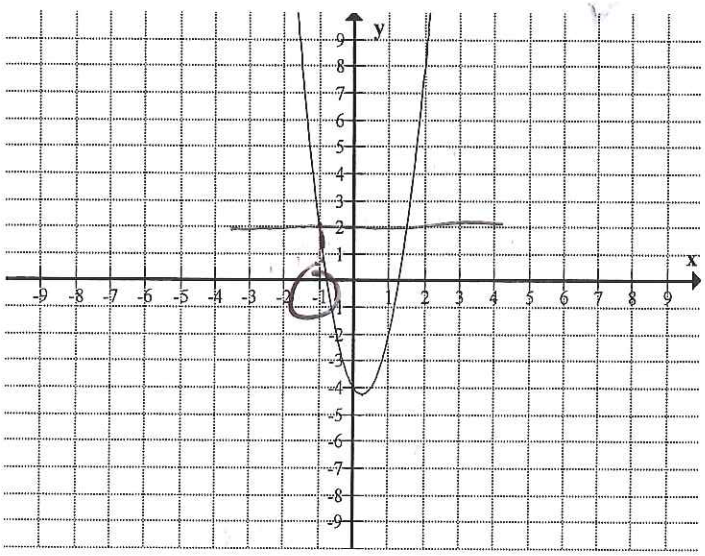
$f(x) = y$ so $y = 7$

$X = -4$

$X = 4$ positive value

Practice:

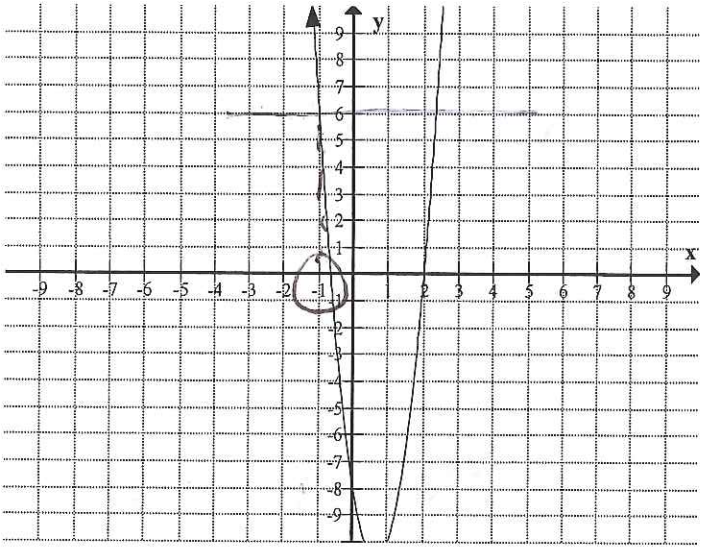
1.



Look at the graph on the left. What is the best estimate of the negative value of x for which this function equals 2?

$x = -1$

2.



Look at the graph on the left. What is the best estimate of the negative value of x for which this function equals 6?

$x = -1$

Finding the Constant, *c*

Example 5:

Use the following equation to find the value of the constant, *c*, if $x = -2$.

f for x & solve for c
s
s
need positive 'c'

f $2x^2 - 3x + c = 0$

s $2(-2)^2 - 3(-2) + c = 0$

$8 + 6 + c = 0$

$14 + c = 0$

$-14 \quad -14$

$c = -14$

Practice:

Solve for the constant, *c*:

1. $x^2 - 3x - c = 0$; let $x = -4$

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

$16 + 12 - c = 0$

$28 - c = 0$

$+c \quad +c$

$28 = c$

2. $-x^2 + x - c = 0$; let $x = -3$

$-(-3)^2 + (-3) - c = 0$

$-9 - 3 - c = 0$

$-12 - c = 0$

$+c \quad +c$

$-12 = c$

3. $x^2 + c = 3x$; let $x = -2$

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

$4 + c = -6$

$-4 \quad -4$

$c = -10$

Solve by taking the square root of both sides of the equation.

Example 6:

$\sqrt{(x-2)^2} = \sqrt{16}$ $\quad (x-2) = \pm 4$

① $x - 2 = 4$, $+2 \quad +2$, $x = 6$ or ② $x - 2 = -4$, $+2 \quad +2$, $x = -2$

Practice:

1. $\sqrt{(x+3)^2} = \sqrt{25}$ $\quad x + 3 = \pm 5$

① $x + 3 = 5$, $-3 \quad -3$, $x = 2$ or ② $x + 3 = -5$, $-3 \quad -3$, $x = -8$

2. $\sqrt{(5x-3)^2} = \sqrt{49}$ $\quad 5x - 3 = \pm 7$

① $5x - 3 = 7$, $+3 \quad +3$, $\frac{5x}{5} = \frac{10}{5}$, $x = 2$ or ② $5x - 3 = -7$, $+3 \quad +3$, $\frac{5x}{5} = \frac{-4}{5}$, $x = \frac{-4}{5}$

3. $\sqrt{(2x-4)^2} = \sqrt{9}$ $\quad 2x - 4 = \pm 3$

① $2x - 4 = 3$, $+4 \quad +4$, $\frac{2x}{2} = \frac{7}{2}$, $x = \frac{7}{2}$ or ② $2x - 4 = -3$, $+4 \quad +4$, $\frac{2x}{2} = \frac{1}{2}$, $x = \frac{1}{2}$