4.1

Solving Equations with Two Variables

We have solved equations involving one variable.

(ex) $x+2=5$

$x=3$ is a solution since $3+2=5$.

But what if I have two variables, then I use (x,y)

(ex) Is $(6,4)$ a solution to $y=x-2$

$y=x-2$

$4 \stackrel{?}{=} 6-2=4$

So yes $(6,4)$ is a solution to $y=x-2$

however $(3,0)$ is not since

$0 \neq 3-2=1$

Constructing Tables of Values

(6,4) is a solution to $y=x-2$ but it is not the ONLY solution (ie (8,6), (2,0), (-4,-6), (0,-2), etc.)

Sometimes its helpful to construct a table.

(ex)

x (input)	y (output)	(x,y)
-4	-6	(-4,-6)
-2	-4	(-2,-4)
0	-2	(0,-2)
2	0	(2,0)
4	2	(4,2)

Note: these still are not ALL solutions but they give us a general idea.

Graphing Equations

Steps to Graphing Equations

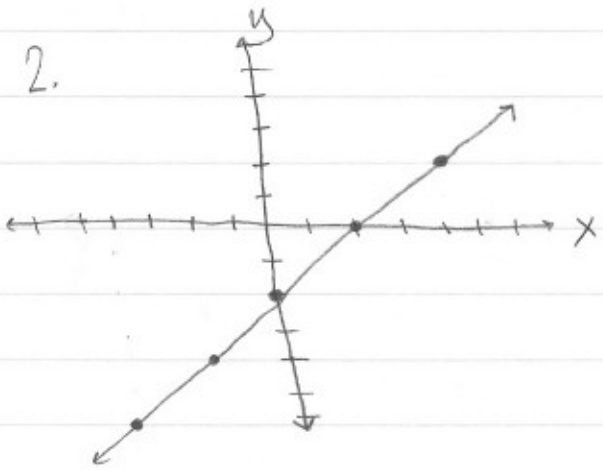
1. Make a table of ordered pairs
2. Plot each ordered pair
3. Draw line/curve connecting the points.

(ex) From $y = x - 2$

1.

x	y	(x, y)
-4	-6	(-4, -6)
-2	-4	(-2, -4)
0	-2	(0, -2)
2	0	(2, 0)
4	2	(4, 2)

2.

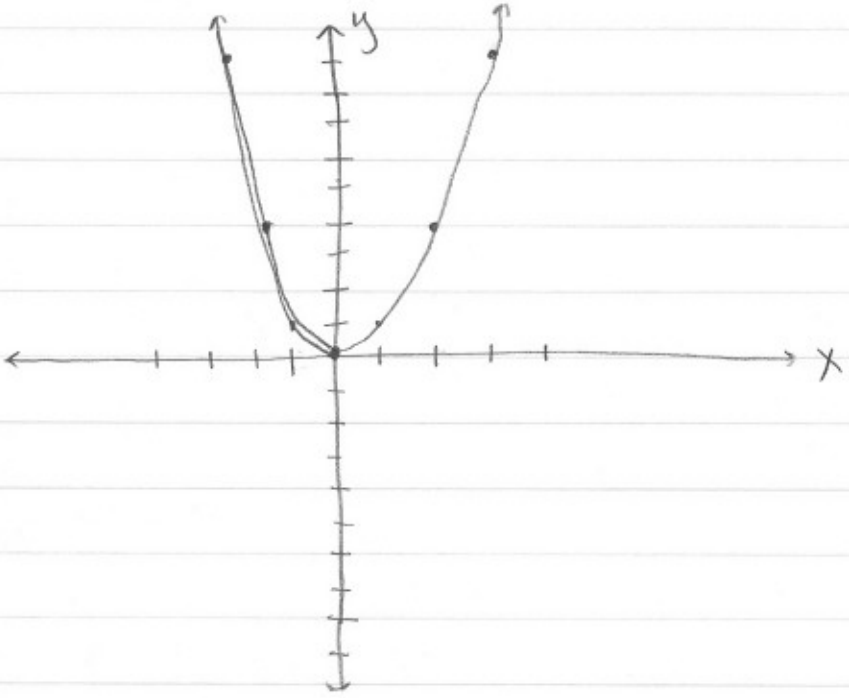


Not always a straight line

(ex) $y = x^2$

1.

x	y	(x, y)
-3	9	(-3, 9)
-2	4	(-2, 4)
-1	1	(-1, 1)
0	0	(0, 0)
1	1	(1, 1)
2	4	(2, 4)
3	9	(3, 9)

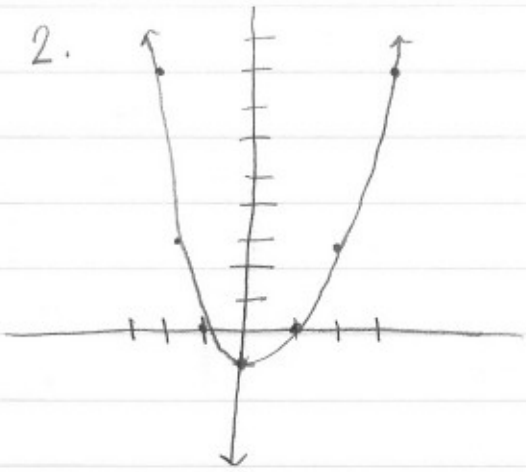


Ex) $y = x^2 - 1$

1.

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

2.



- Notice: Same shape as $y = x^2$ but moved down 1