

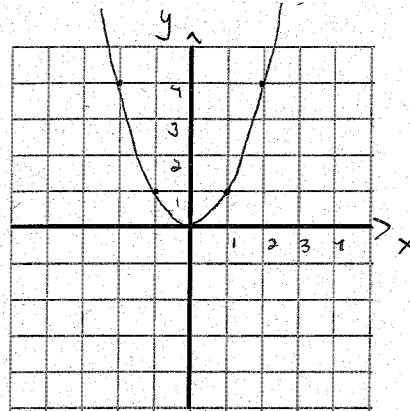
2.4

Math 172 – Section ~~172~~: Translations and Reflections

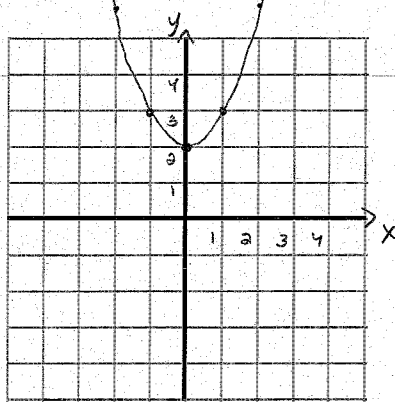
## Translations

Sketch the graph of  $f(x) = x^2$ .

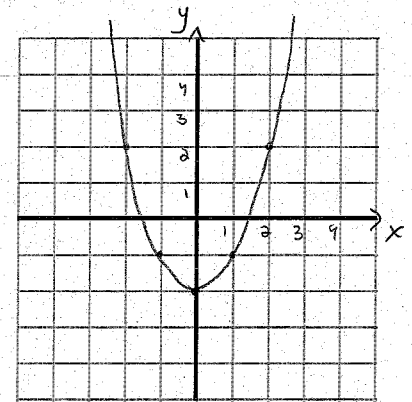
x	y
-4	16
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9
4	16

Sketch the graph of  $f(x) = x^2 + 2$ .

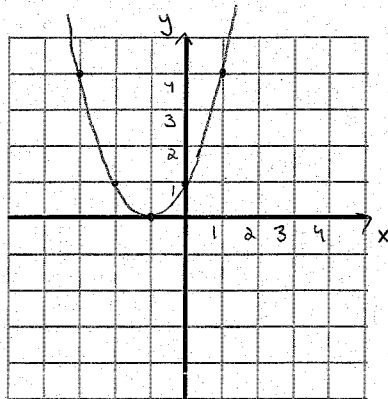
x	y
-4	18
-3	11
-2	6
-1	3
0	2
1	3
2	6
3	11
4	16

shifted up by 2Sketch the graph of  $f(x) = x^2 - 2$ .

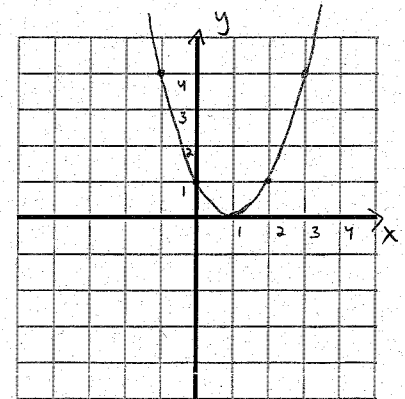
x	y
-4	14
-3	7
-2	2
-1	-1
0	-2
1	-1
2	2
3	7
4	14

shifted down by 2Sketch the graph of  $f(x) = (x+1)^2$ .

x	y
-4	9
-3	4
-2	1
-1	0
0	1
1	4
2	9
3	16
4	25

shifted left by 1Sketch the graph of  $f(x) = (x-1)^2$ .

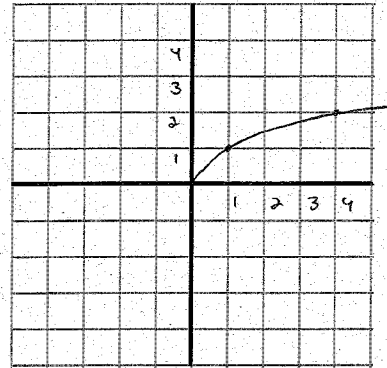
x	y
-4	25
-3	16
-2	9
-1	4
0	1
1	0
2	1
3	4
4	9

shifted right by 1

## Reflections

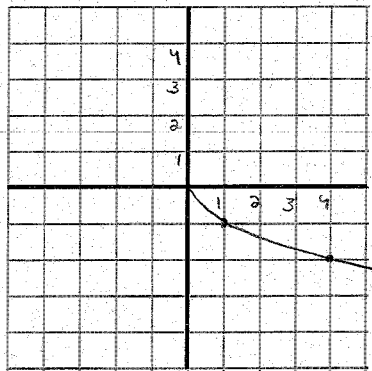
Sketch the graph of  $f(x) = \sqrt{x}$ .

x	y
-4	not real
-3	"
-2	"
-1	"
0	0
1	1
2	$\sqrt{2} \approx 1.4$
3	$\sqrt{3} \approx 1.7$
4	2



Sketch the graph of  $f(x) = -\sqrt{x}$ .

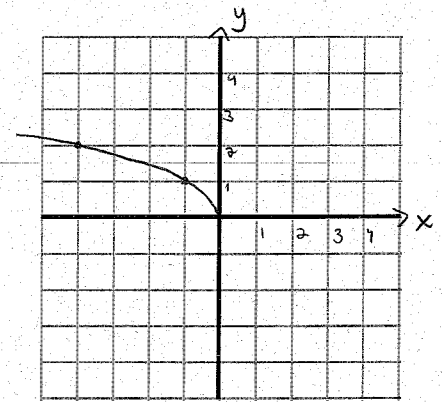
x	y
-4	not real
-3	"
-2	"
-1	"
0	0
1	-1
2	$-\sqrt{2} \approx -1.4$
3	$-\sqrt{3} \approx -1.7$
4	-2



flipped over x-axis

Sketch the graph of  $f(x) = \sqrt{-x}$ .

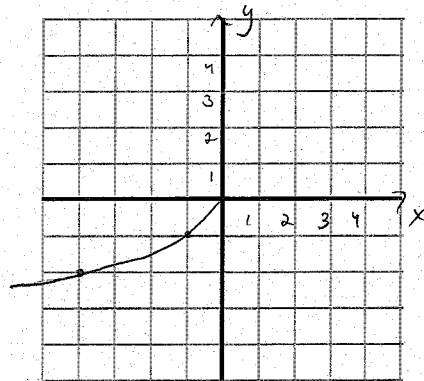
x	y
-4	2
-3	$\sqrt{3}$
-2	$\sqrt{2}$
-1	1
0	0
1	not real
2	"
3	"
4	"



flipped over y-axis

Sketch the graph of  $f(x) = -\sqrt{-x}$ .

x	y
-4	-2
-3	$-\sqrt{3}$
-2	$-\sqrt{2}$
-1	-1
0	0
1	not real
2	"
3	"
4	"



flipped over both