§2.2 & 2.3: Plotting Functions

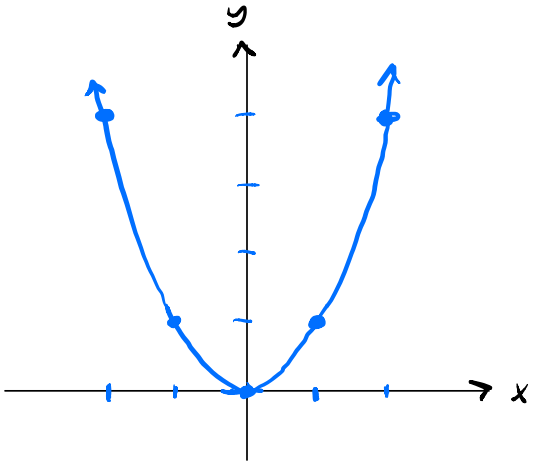
Ex 1) $y = x^2$

D: $(-\infty, \infty)$

R: $[0, \infty)$

x	y
2	4
1	1
0	0
-1	1
-2	4

(0 → center)

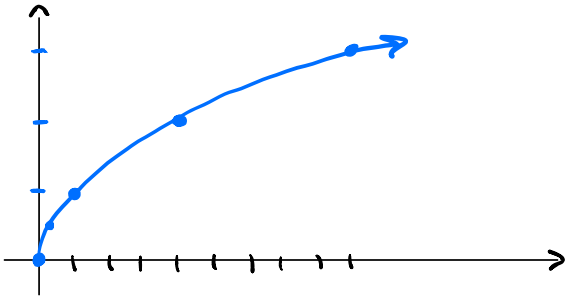


Ex 2) $y = \sqrt{x}$

D: $[0, \infty)$

R: $[0, \infty)$

x	y
0	0
$\frac{1}{4}$	$\frac{1}{2}$
1	1
4	2
9	3

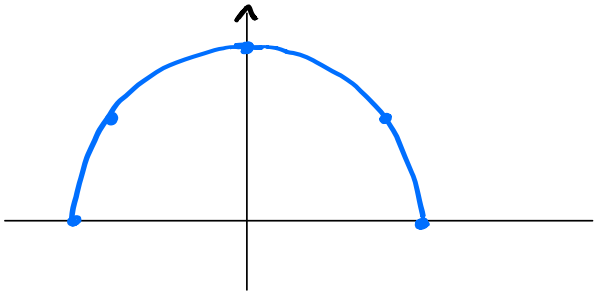


Ex 3) $y = \sqrt{1 - x^2}$

D: $[-1, 1]$

R: $[0, 1]$

x	y
-1	0
$-\frac{4}{5}$	$\frac{3}{5}$
0	1
$+\frac{4}{5}$	$\frac{3}{5}$
1	0



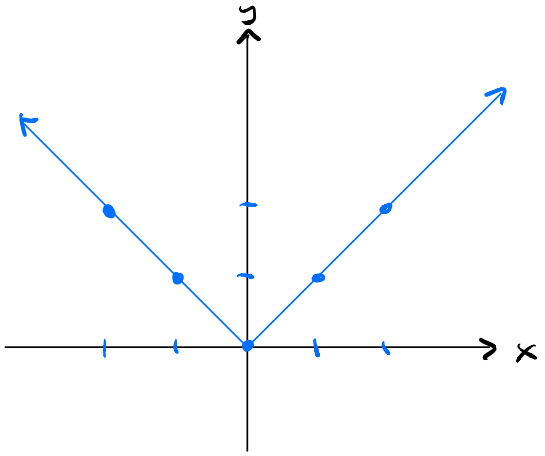
Ex 4) $y = |x|$

D: $(-\infty, \infty)$

R: $[0, \infty)$

x	y
-2	
-1	
0	
1	
2	

← vertex



Transformations

Ex 5) $y = x^2$

D: $(-\infty, \infty)$

R: $[0, \infty)$

x	y
2	4
1	1
0	0
-1	1
-2	4

← vertex

$y = (x+1)^2$

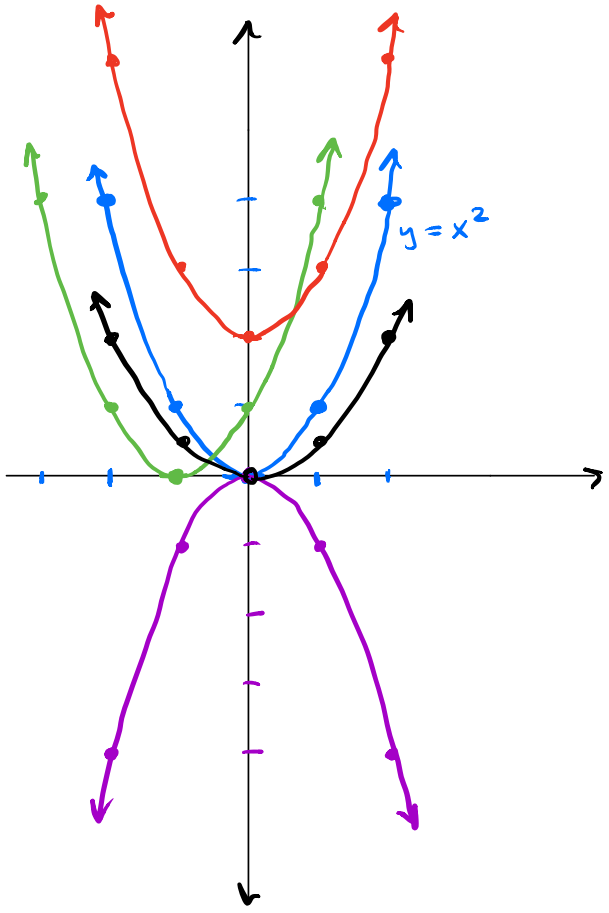
* Horizontal Translation

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

$y = x^2 + 2$

* Vertical Translation

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



$y = -x^2$

* Reflection

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

* Scaling

Stretch / Shrink

scale only y values.

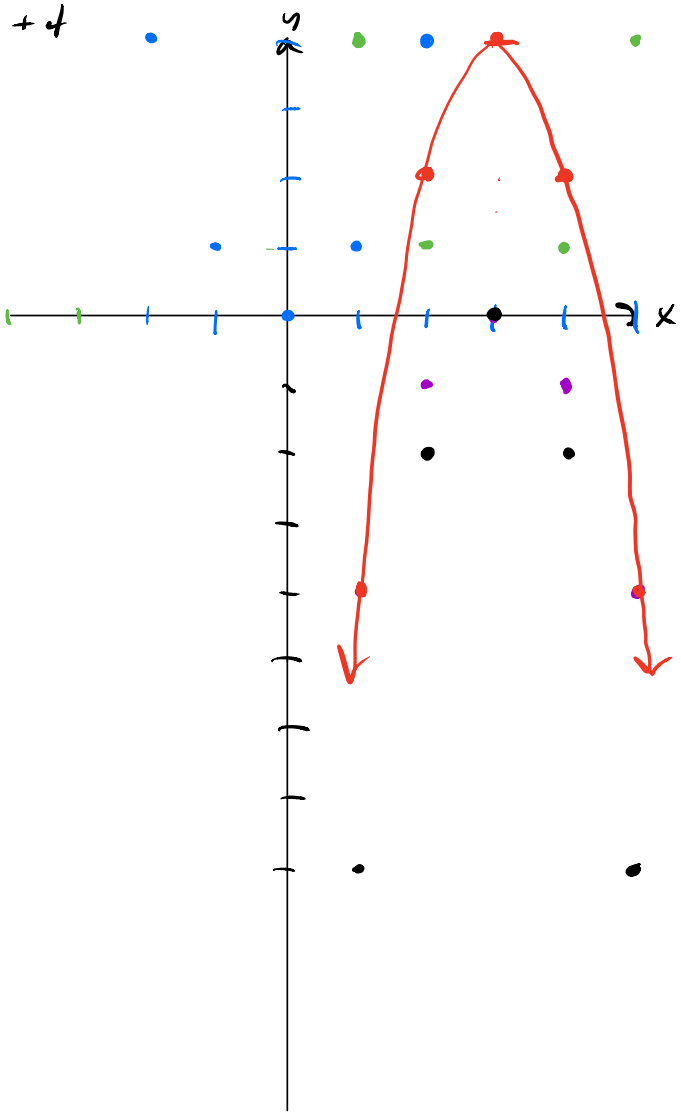
Order
1. Horizontal translation
2. Reflection/Stretch/Shrink
3. Vertical translation

Ex 6) $y = -2(x-3)^2 + 4$

HT: +3
Refl: ✓
Scale: 2
VT: 4

x	y
-2	4
-1	1
0	0
1	1
2	4

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



#60) $y = -\frac{1}{2}\sqrt{x+2}$