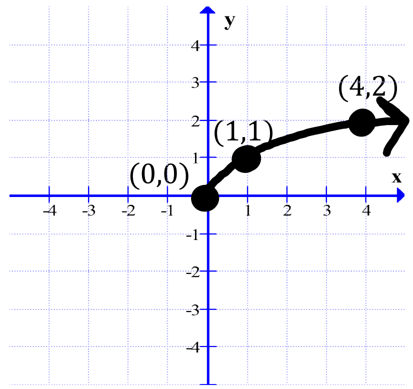
C12 - 2.1 - Radical Translations Notes

$y = \sqrt{x}$

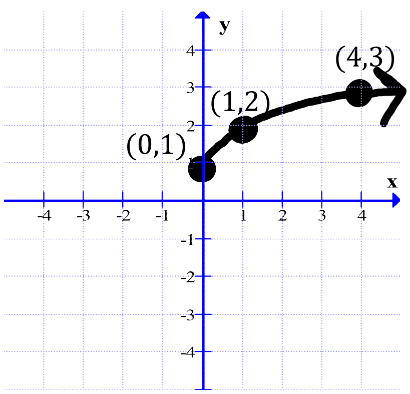
x	y
-1	und
0	0
1	1
4	2
9	3



$y = \sqrt{x}$

Notice it's half a parabola!

Remember: Choose increments of x in your table of values that square root easily.



$y = \sqrt{x} + 1$

Up 1

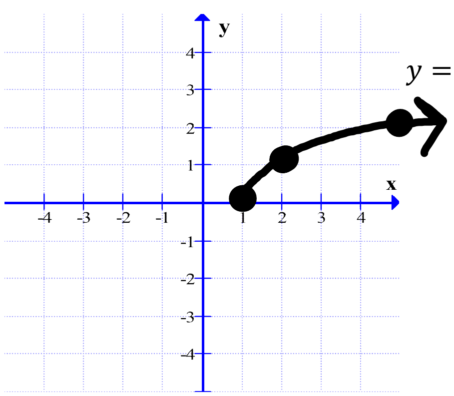
Domain: Set Underneath root ≥ zero and solve

$x \geq 0$

Range

$y \geq 1$

$y = \sqrt{x - 1}$

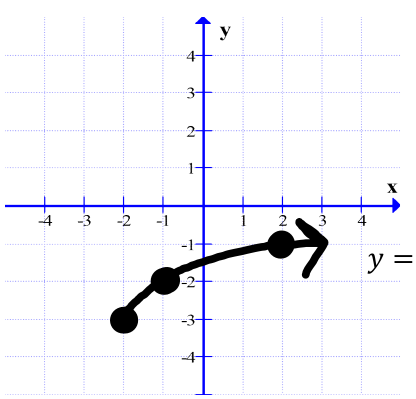


Right 1

$x - 1 \geq 0$

$x \geq 1$

$y \geq 0$



$y = \sqrt{x + 2} - 3$

Left 2, Down 3

$x + 2 \geq 0$

$x \geq -2$

$y \geq -3$

$y = \sqrt{x - h} + k$

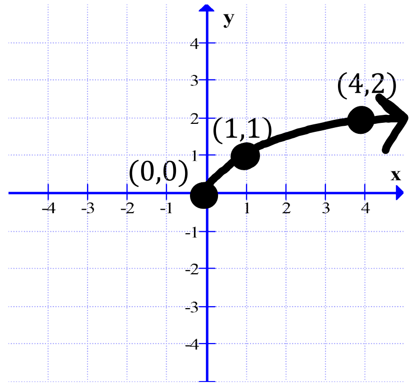
Vertex (h, k)

Vertex $(-2, -3)$

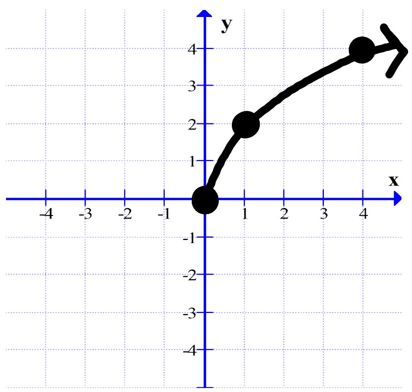
C12 - 2.2 - Radical Transformations Notes

$y = \sqrt{x}$

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



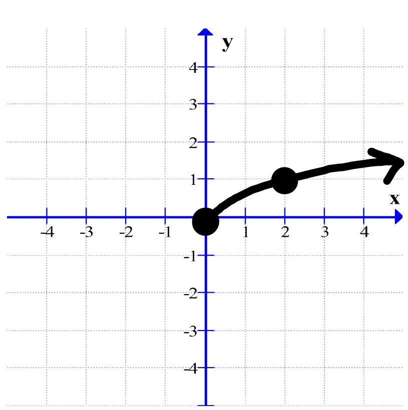
$y = \sqrt{x}$



$y = 2\sqrt{x}$ Vertical Expansion = 2

Domain: $x \geq 0$

$Range$ $y \geq 0$

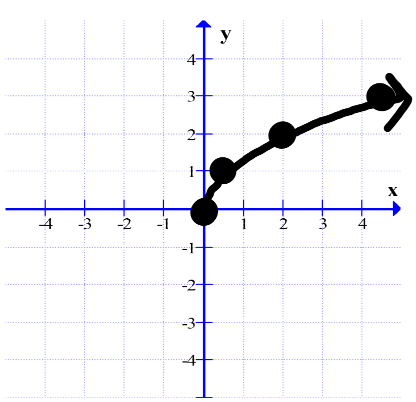


$y = \sqrt{\frac{1}{2}x}$ Horizontal Expansion = 2

$\frac{1}{2}x \geq 0$

$x \geq 0$

$y \geq 0$



$y = \sqrt{2x}$ $Horizontal\ Compression = \frac{1}{2}$

$2x \geq 0$

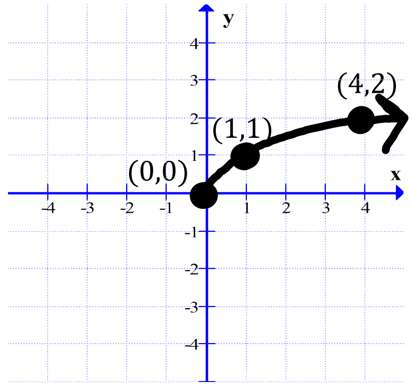
$x \geq 0$

$y \geq 0$

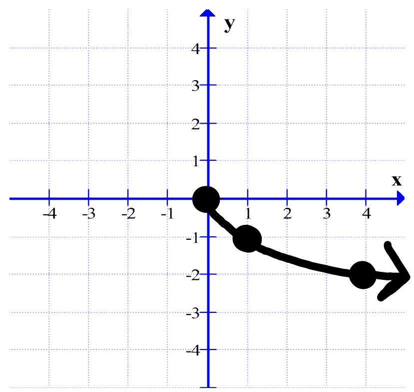
C12 - 2.3 - Radical Reflections Notes

$y = \sqrt{x}$

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



$y = \sqrt{x}$



$y = -\sqrt{x}$

Vertical Reflection

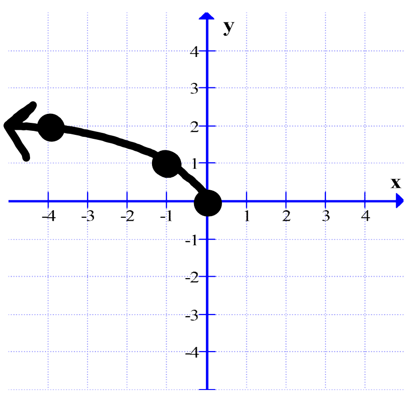
Domain:

$Range$

$x \geq 0$

$x \geq 0$

$y \leq 0$



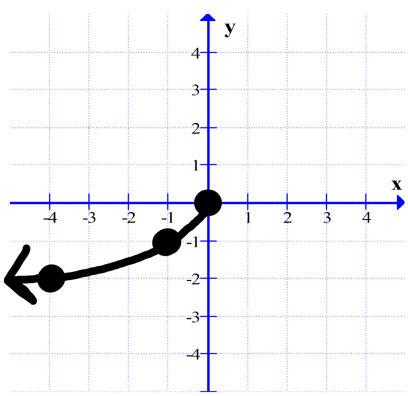
$y = \sqrt{-x}$

Horizontal Reflection

$-x \geq 0$

$x \leq 0$

$y \geq 0$



$y = -\sqrt{-x}$

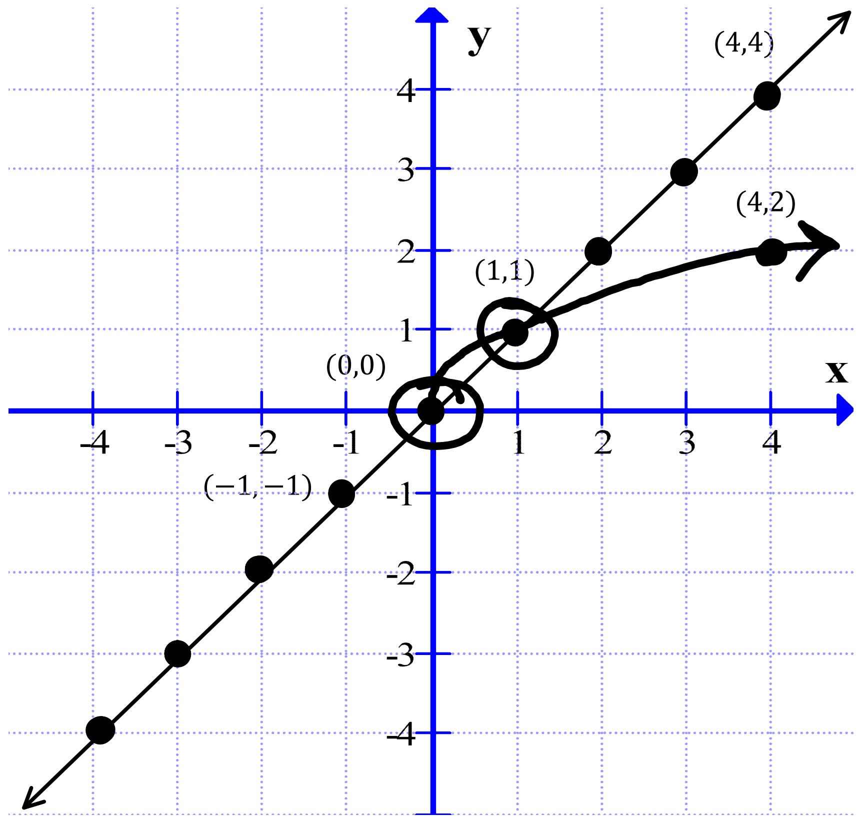
Vertical and Horizontal Reflection

$-x \geq 0$
$x \leq 0$

$y \leq 0$

C12 - 2.4 - Square Root Functions Notes

Draw the graph of $\sqrt{x}$ *from the graph of* $f(x)$ *and label the invariant points and state the domain and range.*



x	$f(x)$	$\sqrt{f(x)}$
-1	-1	und
0	0	0
1	1	1
4	4	2

Pick an x value on $f(x)$*.*
Square root the $y-value$
Draw the new point.

$y = x$

x	$y = f(x)$
-1	-1
0	0
1	1
4	4

Invariant Points:

$(0,0)$

$(1,1)$

$y = \sqrt{x}$

x	$\sqrt{f(x)}$
-1	und
0	0
1	1
4	2

Domain: $x \in \mathbb{R}$

Range: $y \in \mathbb{R}$

Domain: $x \geq 0$

Range: $y \geq 0$

Remember: Cant square root a negative
Remember: Choose x-values whose y values can square root evenly if possible
Remember: Invariant points are on the line $y = 1$ *and* $y = 0$
Remember: Any point with a $y - value$ *of* "1" or "0" is *invariant.* $(x, 1)$ *and* $(x, 0)$