3-4 Graphing Radical Functions

Objectives:

3-4a: I can graph radical functions by hand.

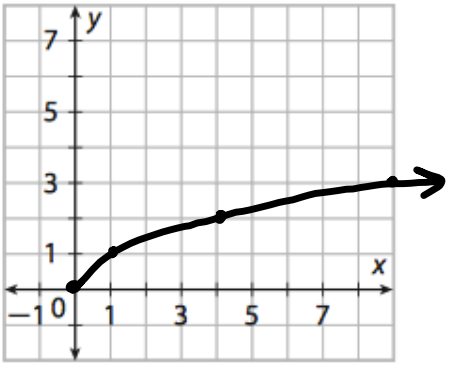
3-4b: I can identify the transformations of a radical function.

3-4c: I can write the equation of a radical function from a graph.

Graph the following and state the domain, range, and end behavior

$$f(x) = \sqrt{x}$$

x	$f(x) = \sqrt{x}$
0	0
1	1
4	2
9	3



Domain: $[0, \infty)$

Range: $[0, \infty)$

End Behavior NO LEFT END BEHAVIOR

~~$x \to -\infty$~~

$x \to \infty, y \to \infty$

Transformation Form:

$$f(x) = \pm a(x-h)+k$$

right h
th left

up k
-k down

Reflected

>1, Stretch
0<a<1, Compress

Transformation Form:

$$f(x) = a\sqrt{(x-h)}+k$$

	Vertical (Range)	Horizontal (Domain)
Shift	k	h
Stretch	a	-----
Reflection	−	-----

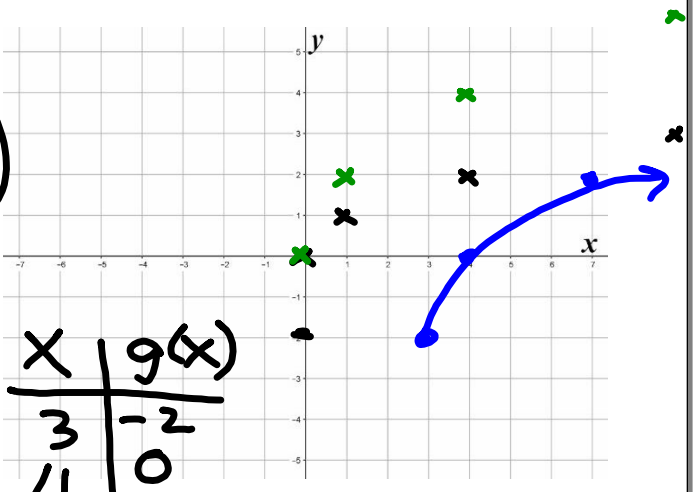
Domain changes
Range changes

Graph, state the transformations, and find the Domain and Range

$$g(x) = 2\sqrt{x-3} - 2$$

Domain: $[3, \infty)$

Range: $[-2, \infty)$



x	g(x)
3	-2
4	0
7	2

Transformations:

Str 2

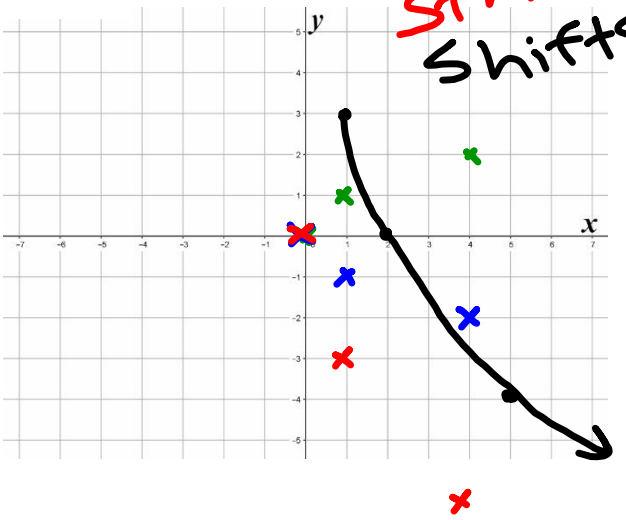
R 3

D 2

Graph, state the transformations, and find the Domain and Range

$$f(x) = -3\sqrt{x-1} + 3$$

P.F
Reflection
Stretch
Shifts



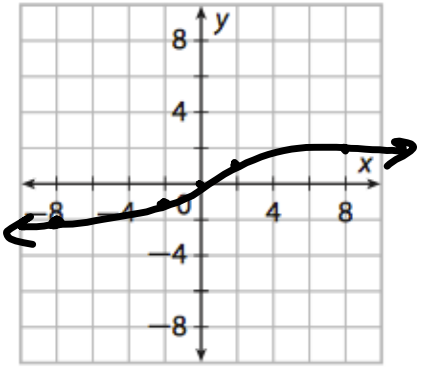
Domain:

Range:

Transformations:

Graph the following and state the domain, range, and end behavior $f(x) = \sqrt[3]{x}$

x	y	x, y
–8	-2	
–1	-1	
0	0	
1	1	
8	2	



Domain: $(-\infty, \infty)$ End Behavior

Range: (∞, ∞)

$x \to -\infty, y \to -\infty$

$x \to \infty, y \to \infty$

Transformation Form:

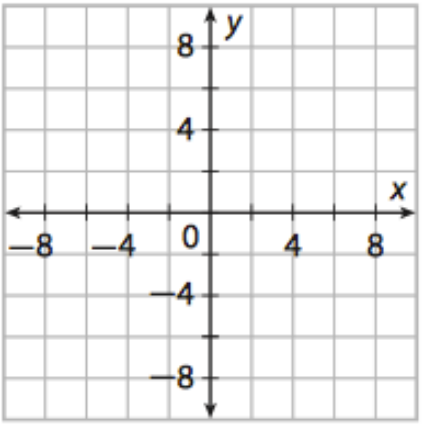
$$f(x) = a\sqrt[3]{(x-h)}+k$$

	Vertical (Range)	Horizontal (Domain)
Shift		
Stretch		-----
Reflection		-----

Domain changes
Range changes

Graph the following and state the transformations, domain and range.

$$g(x) = 2\sqrt[3]{x-3}+5$$



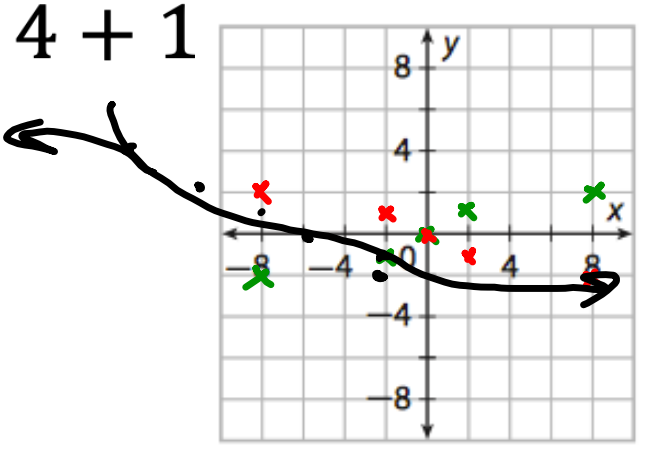
Domain:

Range:

Transformations:

Graph the following and state the transformations, domain and range.

$$f(x) = -\sqrt[3]{x+4} + 1$$

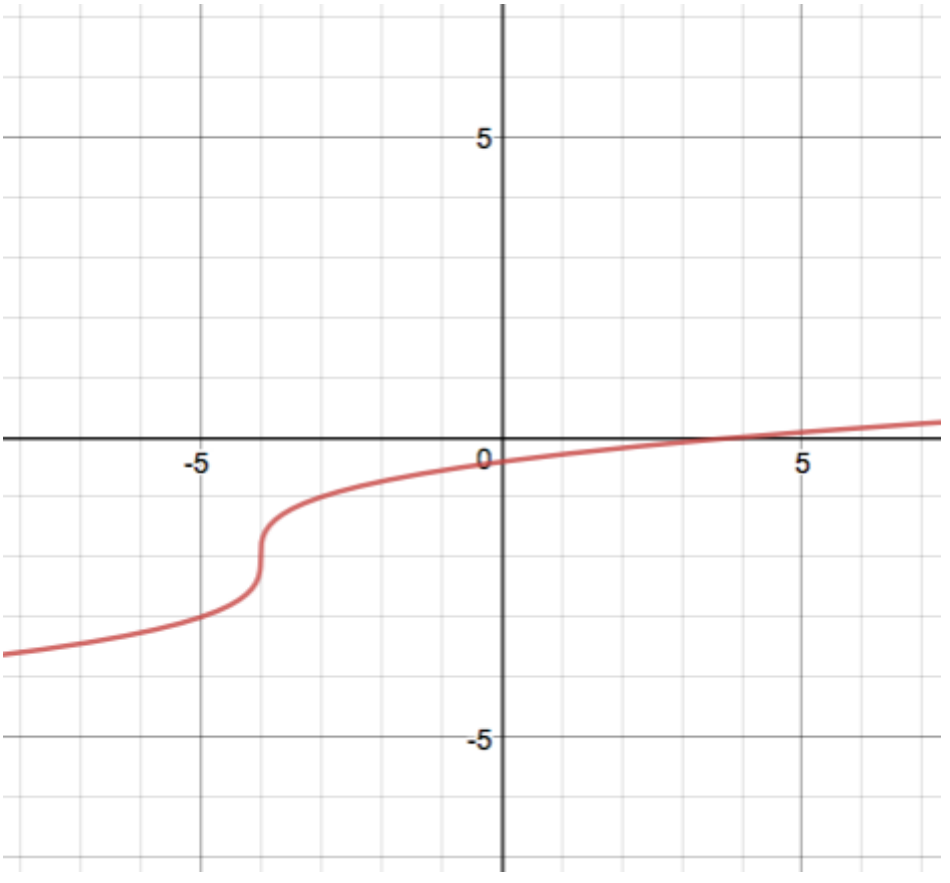


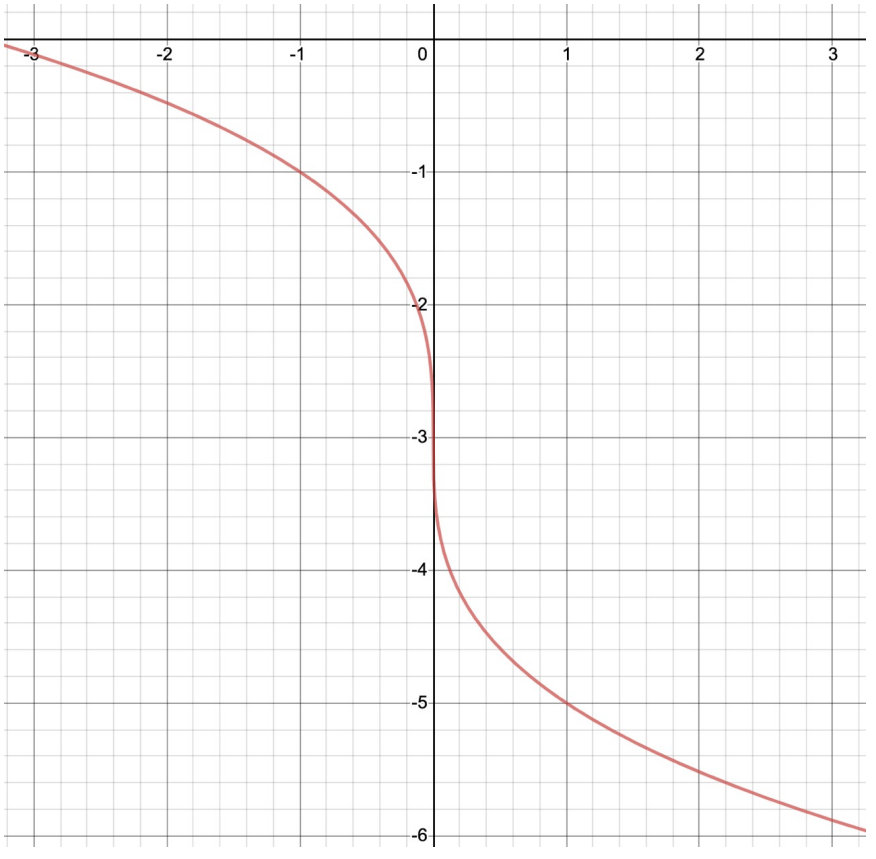
Domain:

Range:

Transformations:

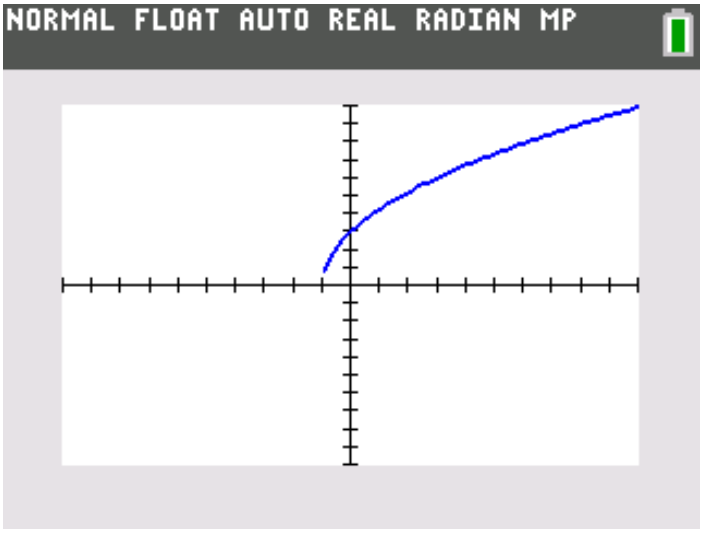
Write an equation to represent the following

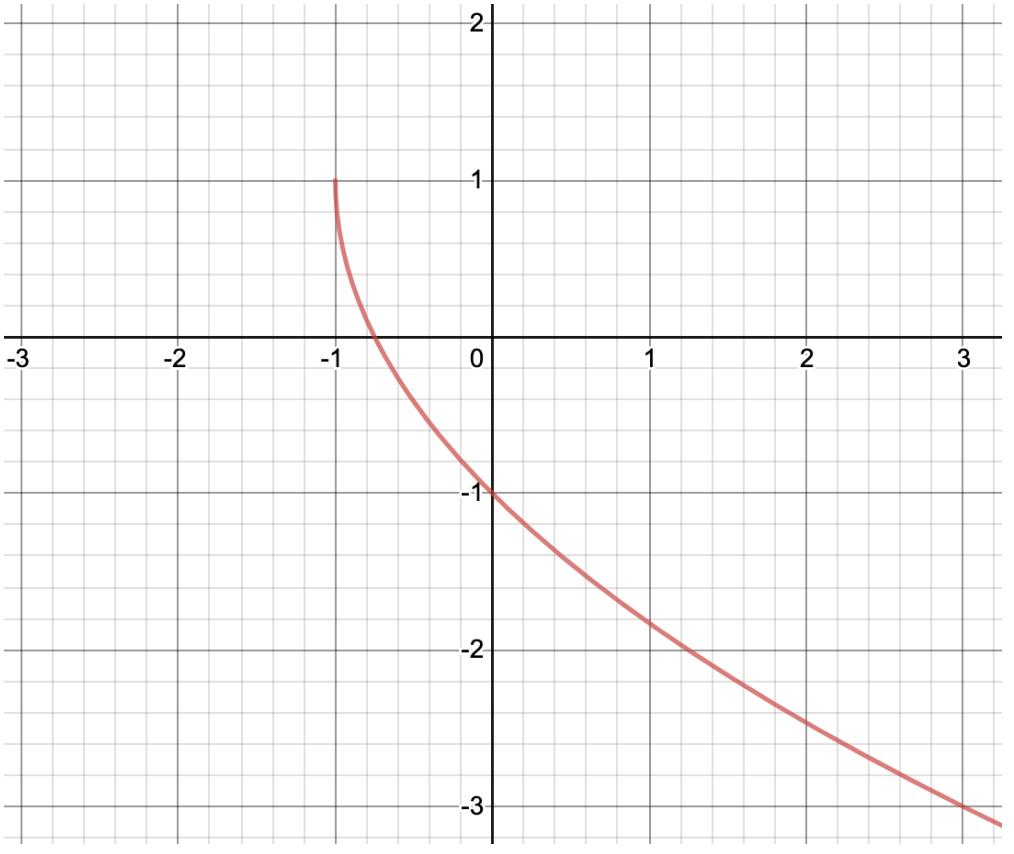



-3
-2
-1
0
1
2
3
-1
-2
-3
-4
-5
-6

$$f(x) = -2\sqrt[3]{x} - 3$$

Write an equation to represent the following




2
1
-3
-2
-1
0
1
2
3
-1
-2
-3

$$f(x) = -2\sqrt{(x+1)} + 1$$