

Learning Target(s): I am able to graph radical functions such as square root and cube root.
I am able to graph a translated root function.

Notes: 6.5 Graph Square Root and Cube Root Functions

Radical Function – a function containing a radical such as $y = \sqrt{x}$.

Graphs of Radical Functions

$y = a\sqrt{x-h} + k$ OR $y = a\sqrt[3]{x-h} + k$

h shifts the graph right if it's positive left if it's negative

k shifts the graph up if it's positive down if it's negative

If $|a| > 1$ vertical stretch If $|a| < 1$ vertical shrink

If $|a| = 1$ no stretch or shrink!

Parent Function: $y = \sqrt{x}$

Step 1: Make a table of values. Pick "nice" numbers.

x	0	1	4	9
y	0	1	2	3

Step 2: Plot the points and draw the graph.

Step 3: State the domain and range.

D: $x \geq 0$ R: $y \geq 0$
 $[0, \infty)$ $[0, \infty)$

* Smallest # to biggest #

Parent Function: $y = \sqrt[3]{x}$

Step 1: Make a table of values. Pick "nice" numbers.

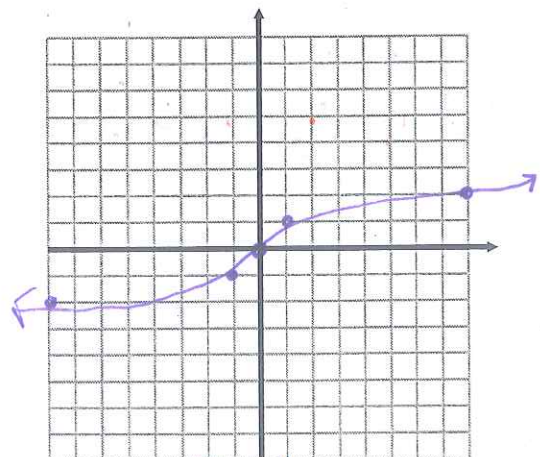
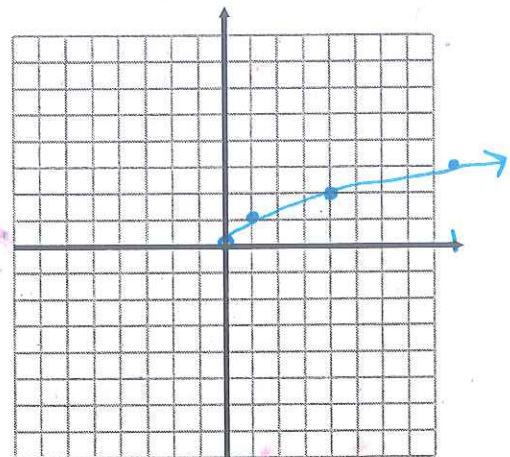
x	-8	-1	0	1	8
y	-2	-1	0	1	2

Step 2: Plot the points and draw the graph.

Step 3: State the domain and range.

D: \mathbb{R} R: \mathbb{R}
 $(-\infty, \infty)$ $(-\infty, \infty)$

* D & R for cube roots are ALWAYS \mathbb{R} *



Ex. 1: Graph $y = 2\sqrt{x}$

Step 1: Make a table of values.

x	0	1	4	9
y	0	2	4	6

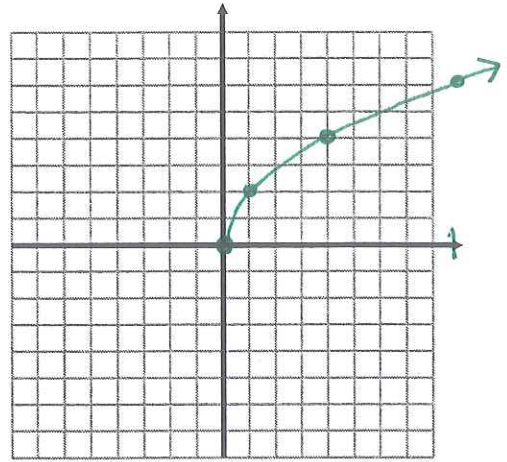
Step 2: Multiply the y values by "a"

Step 3: Plot the points and draw the graph.

Step 4: State the domain and range. D: $[0, \infty)$ R: $[0, \infty)$

Step 5: Compare to the parent graph.

stretch of 2



Ex 2: Graph $y = 3\sqrt{x-1} + 2$.

Shift 1 unit right Shift 2 units up

Draw "new y axis and x axis"

Step 1: Make a table of values.

x	0	1	4	9
y	0	3	6	9

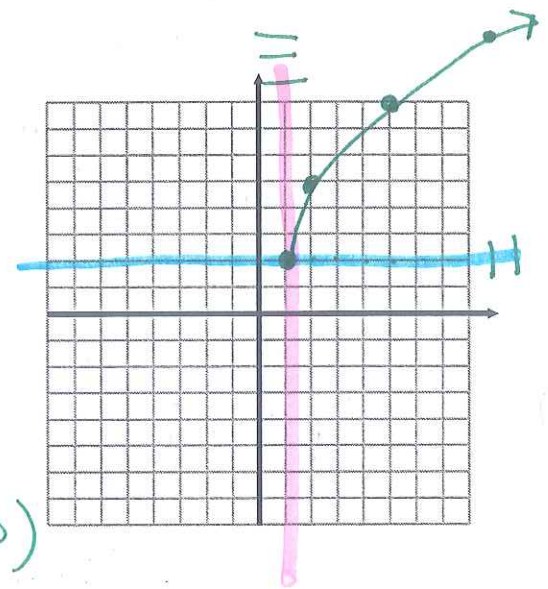
Step 2: Multiply the y values by "a"

Step 3: Plot the points and draw the graph.

Step 4: State the domain and range. D: $[1, \infty)$ R: $[2, \infty)$

Step 5: Compare to the parent graph.

right 1, up 2, stretch of 3



Ex 4: Graph $y = -2\sqrt[3]{x+3} - 2$.

Shift 3 units left Shift 2 units down

Draw "new y axis and x axis"

Step 1: Make a table of values.

x	-8	-1	0	1	8
y	-2	-4	-2	-2	-4

Step 2: Multiply the y values by "a"

Step 3: Plot the points and draw the graph.

Step 4: State the domain and range. D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

Step 5: Compare to the parent graph.

left 3, down 2, stretch 2, reflected over x-axis

