

Graphing Square Root & Cube root functions

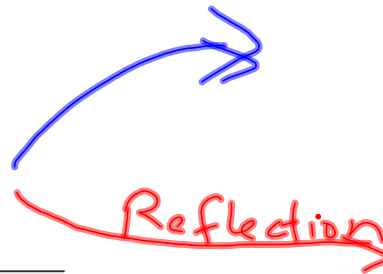
Algebra 2 – Section 5-4

How can you graph transformations of the parent square root and cube root functions?

Square Root Function

- Parent Graph:

$$y = \sqrt{x}$$



- General Format:

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

- Transformations:

- a -

- h -

- k -

↳ V. Shift

↑ ↓ (outside the radical)

↳ V. Shift

↳ V. Shift

↳ V. Shift

↳ V. Shift

↳ V. Shift

Reflection $a < 0$

V. Stretch $a > 1$ | V. Shrink $0 < a < 1$

H. Shift (opposite sign)

↳ V. Shift

↑ ↓ (outside the radical)

↳ V. Shift

↳ V. Shift

↳ V. Shift

↳ V. Shift

↳ V. Shift

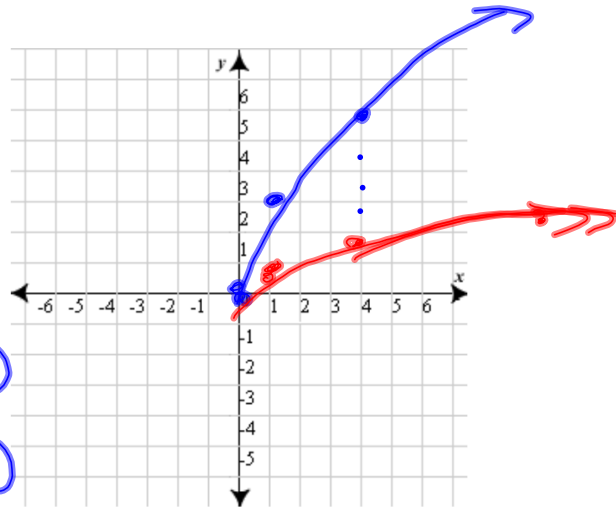
↳ V. Shift

Graph the parent graph, the new graph and describe the transformation

$$y = 3\sqrt{x}$$

$$\begin{array}{r} 0 \ 0 \\ 1 \ 3 \\ \hline 4 \ 16 \end{array}$$

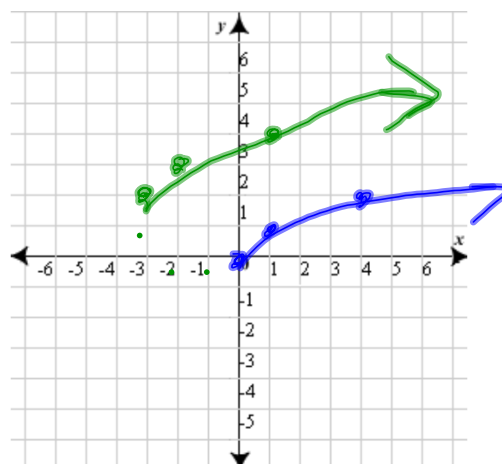
 V. Stretch
 BAFO 3
 D: $x \in \mathbb{R}: x \geq 0$
 R: $y \in \mathbb{R}: y \geq 0$



Graph the parent graph, the new graph, describe the transformations and identify the domain and range

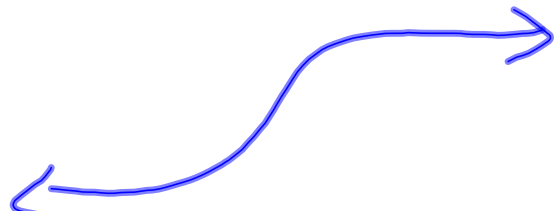
$$y = \sqrt{x+3} + 2$$

H. Shift $\leftarrow 3$
 V. Shift $\uparrow 2$
 D: $x \in \mathbb{R}: x \geq -3$
 R: $y \in \mathbb{R}: y \geq 2$



Cube Root Function

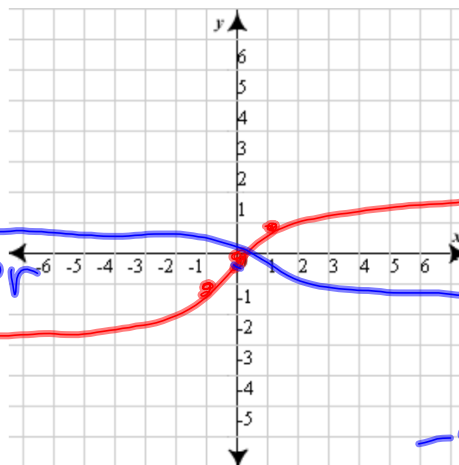
- Parent Graph: $y = \sqrt[3]{x}$
- General Format: $y = a\sqrt[3]{x-h} + k$
- Transformations:
 - a -
 - h -
 - k -



Graph the parent graph, the new graph and describe the transformation

$$y = -0.5\sqrt[3]{x}$$

V. Shrink
BAFO $\frac{1}{2}$
Reflection over
the x-axis
D: $x \in \mathbb{R}$
R: $y \in \mathbb{R}$



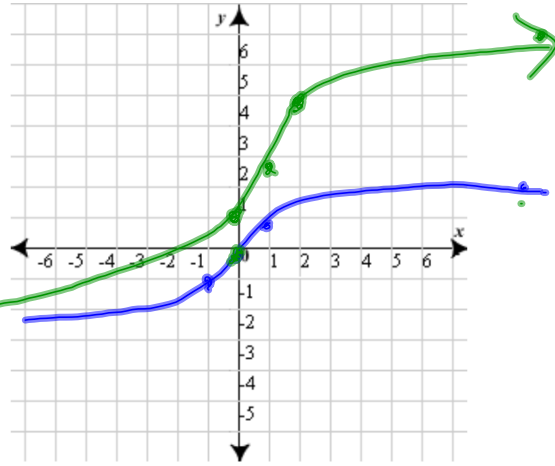
$$\begin{array}{r} \sqrt[3]{x} \\ 8 \overline{) 0} \\ \underline{0} \\ 8 \\ \underline{8} \\ 0 \\ 8 \\ \underline{8} \\ 0 \\ 8 \\ \underline{8} \\ 0 \\ 8 \\ \underline{8} \\ 0 \end{array}$$

$$\begin{array}{r} \sqrt[3]{x} \\ 8 \overline{) 0} \\ \underline{0} \\ 8 \\ \underline{8} \\ 0 \\ 8 \\ \underline{8} \\ 0 \\ 8 \\ \underline{8} \\ 0 \end{array}$$

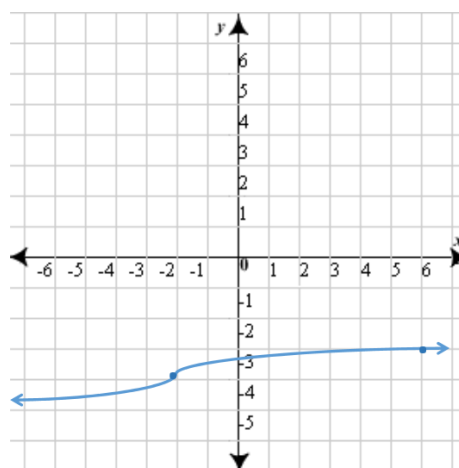
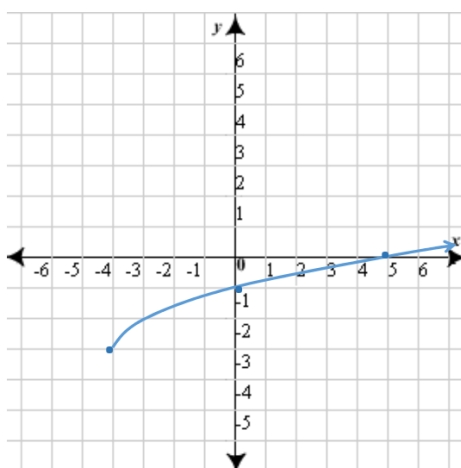
Graph the parent graph, the new graph, describe the transformations and identify the domain and range

$$y = 2\sqrt[3]{x-1} + 3$$

V. Stretch $BAFO_2$
 H. Shift $\rightarrow 1$
 V. Shift $\uparrow 3$
 D: $x \in \mathbb{R}$
 R: $y \in \mathbb{R}$



Write the equation of the function shown



① Ch. 5 Review

② Exam Review

May 31-2:29 PM