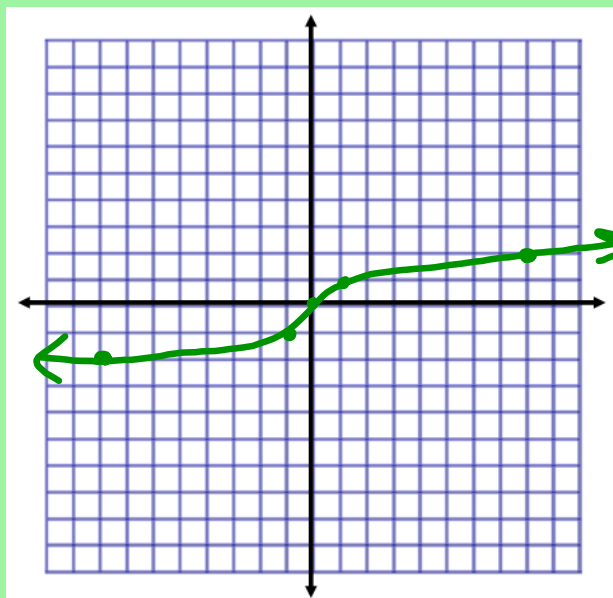


7.5 GRAPHING SQUARE ROOT & CUBE ROOT FUNCTIONS

Example 5

Graph $y = \sqrt[3]{x}$.

x		y
-8	$\sqrt[3]{-8}$	-2
-1	$\sqrt[3]{-1}$	-1
0	$\sqrt[3]{0}$	0
1	$\sqrt[3]{1}$	1
8	$\sqrt[3]{8}$	2



GRAPHS OF CUBE ROOT FUNCTIONS

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

(h,k) is the middle point

h is the opposite of what you see
 k is exactly what you see

Make a table of values.

You want what is **under the radical** to be a **perfect cube**.

Example 6 $\begin{matrix} x-2 = -8 \\ +2 \quad +2 \\ x = -6 \end{matrix}$ $\begin{matrix} x-2 = -1 \\ +2 \quad +2 \\ x = 1 \end{matrix}$ $\begin{matrix} x-2 = 1 \\ +2 \quad +2 \\ x = 3 \end{matrix}$ $\begin{matrix} x-2 = 8 \\ +2 \quad +2 \\ x = 10 \end{matrix}$

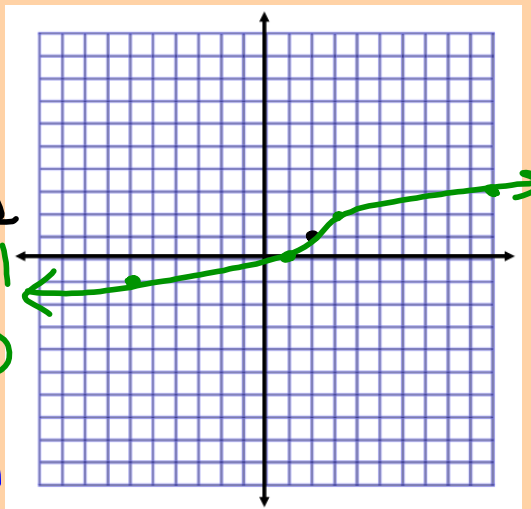
Graph the function below.

~~Then state the domain and range.~~

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

middle point: $(2, 1)$

X	Y
-6	$\sqrt[3]{-6-2} + 1 = \sqrt[3]{-8} + 1 = -2 + 1 = -1$
1	$\sqrt[3]{1-2} + 1 = \sqrt[3]{-1} + 1 = -1 + 1 = 0$
2	~~~~~
3	$\sqrt[3]{3-2} + 1 = \sqrt[3]{1} + 1 = 1 + 1 = 2$
10	$\sqrt[3]{10-2} + 1 = \sqrt[3]{8} + 1 = 2 + 1 = 3$



Example 7 $\begin{matrix} x+2 = -8 \\ -2 \quad -2 \\ x = -10 \end{matrix}$ $\begin{matrix} x+2 = -1 \\ -2 \quad -2 \\ x = -3 \end{matrix}$ $\begin{matrix} x+2 = 1 \\ -2 \quad -2 \\ x = -1 \end{matrix}$ $\begin{matrix} x+2 = 8 \\ -2 \quad -2 \\ x = 6 \end{matrix}$

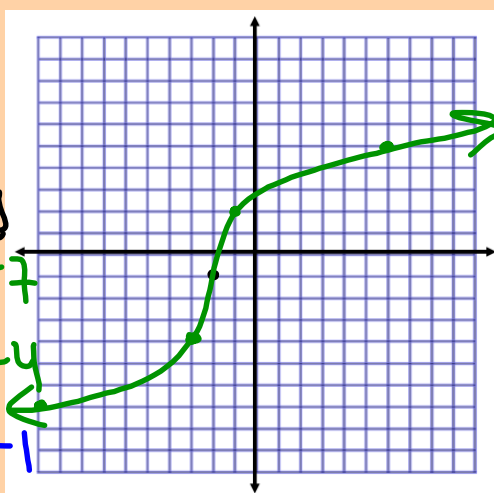
Graph the function below.

~~Then state the domain and range.~~

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

middle point: $(-2, -1)$

X	Y
-10	$3\sqrt[3]{-10+2} - 1 = 3\sqrt[3]{-8} - 1 = 3 \cdot -2 - 1 = -6 - 1 = -7$
-3	$3\sqrt[3]{-3+2} - 1 = 3\sqrt[3]{-1} - 1 = 3 \cdot -1 - 1 = -3 - 1 = -4$
-2	~~~~~
-1	$3\sqrt[3]{-1+2} - 1 = 3\sqrt[3]{1} - 1 = 3 \cdot 1 - 1 = 3 - 1 = 2$
6	$3\sqrt[3]{6+2} - 1 = 3\sqrt[3]{8} - 1 = 3 \cdot 2 - 1 = 6 - 1 = 5$



Example 8 $\begin{matrix} x-3 = -8 \\ +3 \quad +3 \\ x = -5 \end{matrix}$ $\begin{matrix} x-3 = -1 \\ +3 \quad +3 \\ x = 2 \end{matrix}$ $\begin{matrix} x-3 = 1 \\ +3 \quad +3 \\ x = 4 \end{matrix}$ $\begin{matrix} x-3 = 8 \\ +3 \quad +3 \\ x = 11 \end{matrix}$

Graph the function below.

Then state the domain and range.

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

middle point: $(3, 2)$

x	y
-5	$-2\sqrt[3]{-5-3} + 2 = -2\sqrt[3]{-8} + 2$ $-2 \cdot -2 + 2 = 4 + 2$ 6
2	$-2\sqrt[3]{2-3} + 2 = -2\sqrt[3]{-1} + 2$ $-2 \cdot -1 + 2 = 2 + 2$ 4
3	$-2\sqrt[3]{3-3} + 2 = -2\sqrt[3]{0} + 2$ 2
4	$-2\sqrt[3]{4-3} + 2 = -2\sqrt[3]{1} + 2$ $-2 \cdot 1 + 2 = -2 + 2$ 0
11	$-2\sqrt[3]{11-3} + 2 = -2\sqrt[3]{8} + 2$ $-2 \cdot 2 + 2 = -4 + 2$ -2

