6.5 Graph Square Root and Cube Root Functions

Parent Functions:

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

Dom: $x \geq 0$ Range: $y \geq 0$ Dom: $\mathbb{R}$
Range: $\mathbb{R}$
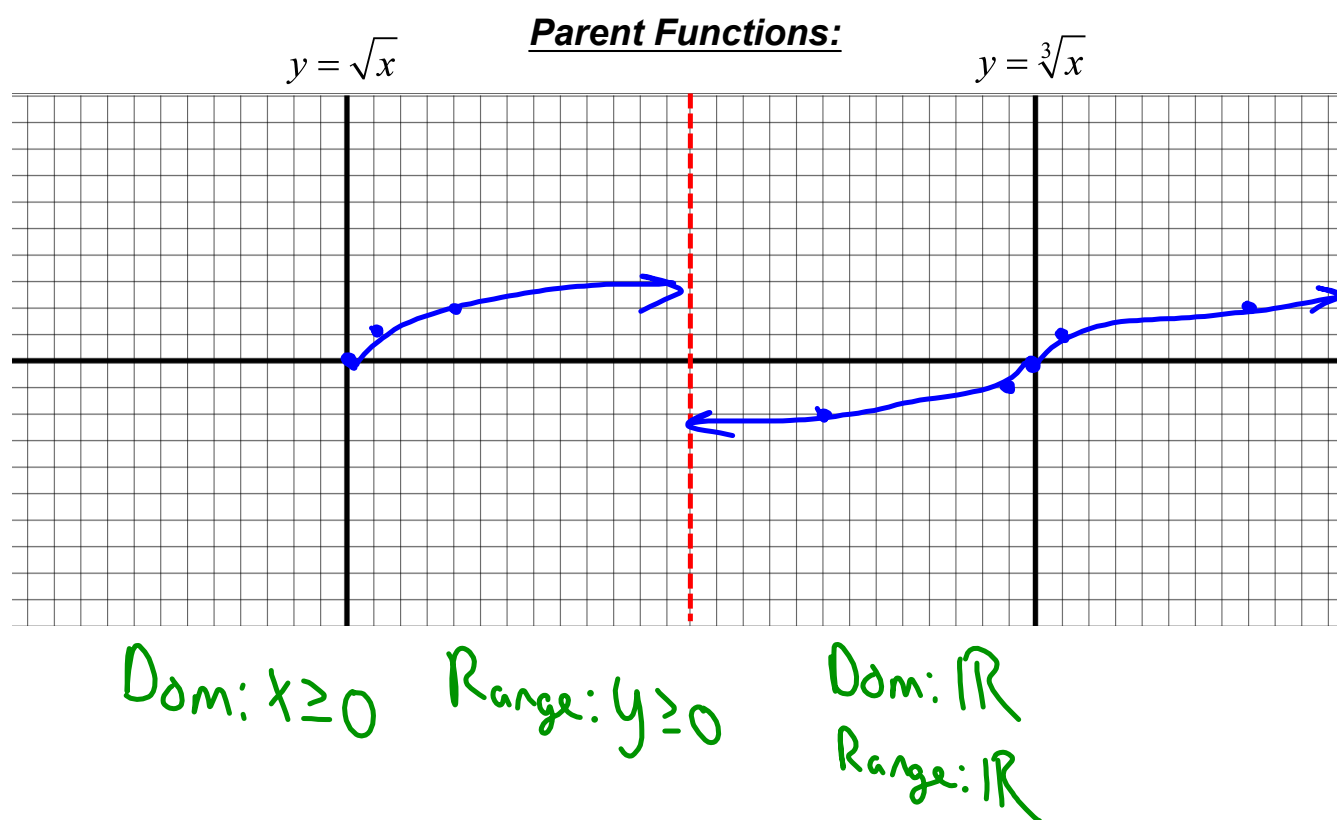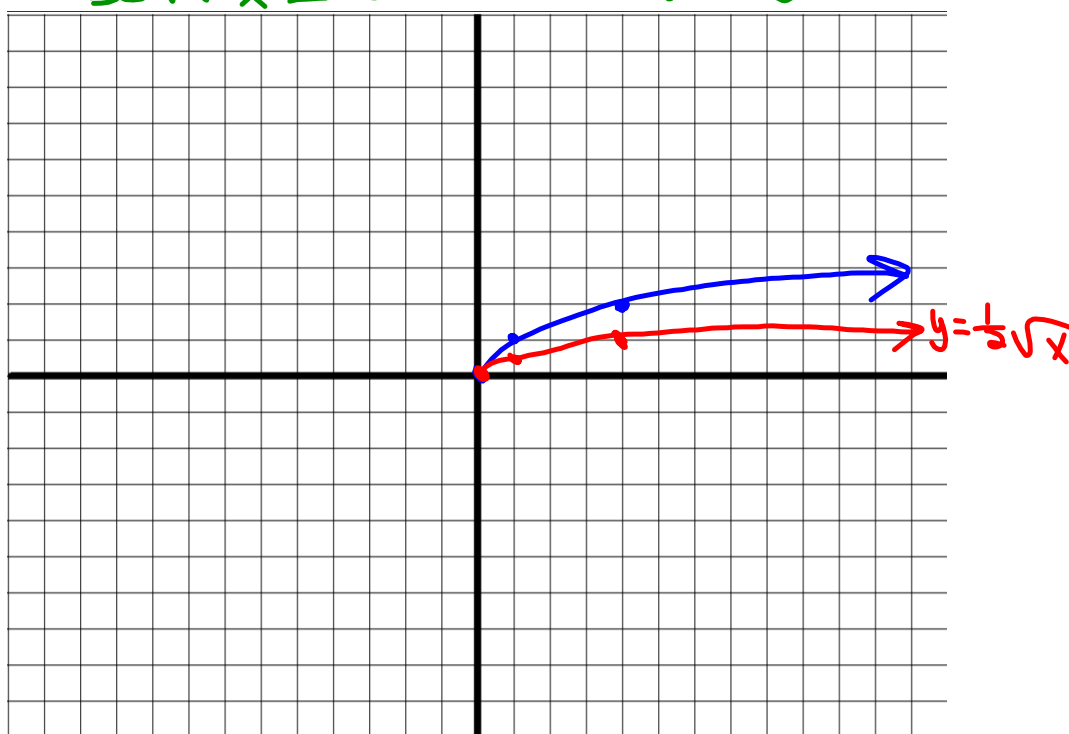
EXAMPLE 1   **Graph a square root function**

Graph $y = \frac{1}{2}\sqrt{x}$, and state the <u>domain</u> and <u>range</u>. Compare the graph with the graph of $y = \sqrt{x}$.

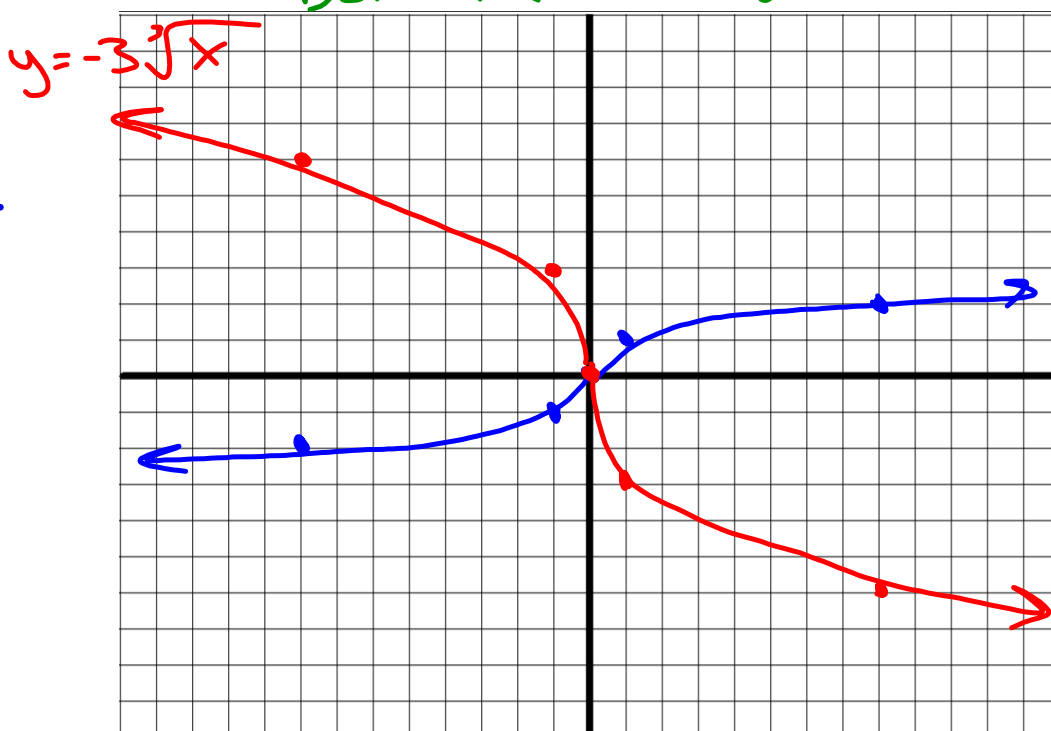Dom: $x \geq 0$ Range: $y \geq 0$

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

EXAMPLE 2　**Graph a cube root function**

Graph $y = -3\sqrt[3]{x}$, and state the underlined domain and range. Compare the graph with the graph of $y = \sqrt[3]{x}$.
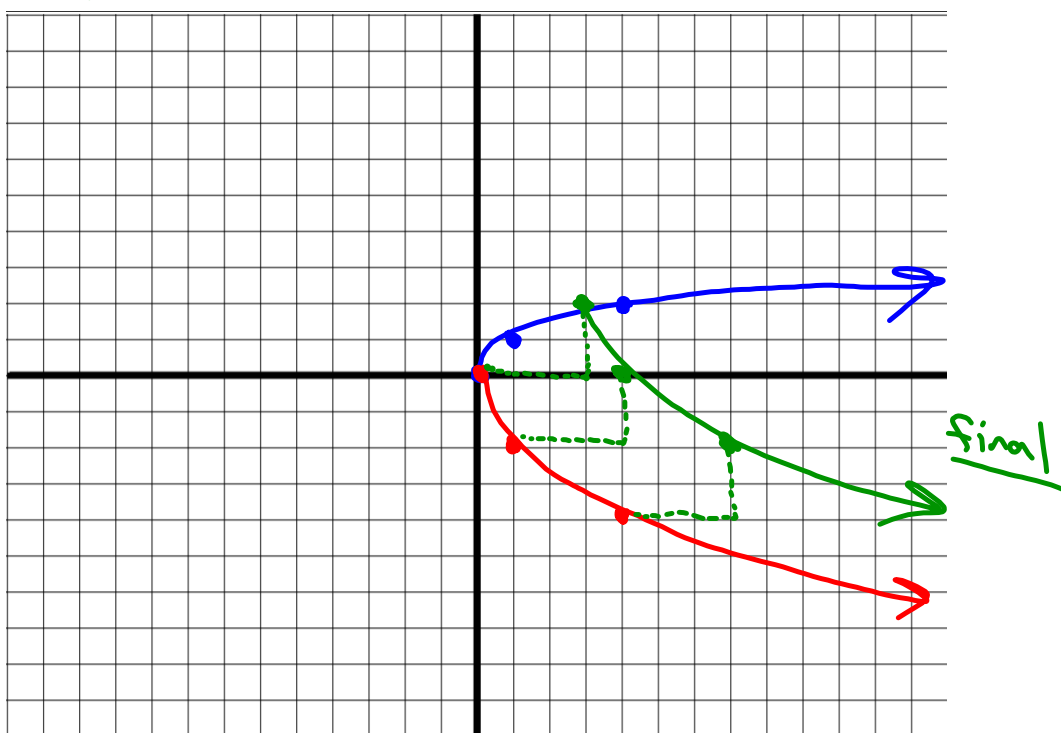
Dom: $\mathbb{R}$　　Range: $\mathbb{R}$

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

EXAMPLE 4 **Graph a translated square root function**

Graph $y = -2\sqrt{x-3} + 2$. Then state the domain and range.

Dom: $x \geq 3$ Range: $y \leq 2$

final

EXAMPLE 5 **Graph a translated cube root function**

Graph $y = 3\sqrt[3]{x + 4} - 1$. Then state the domain and range.