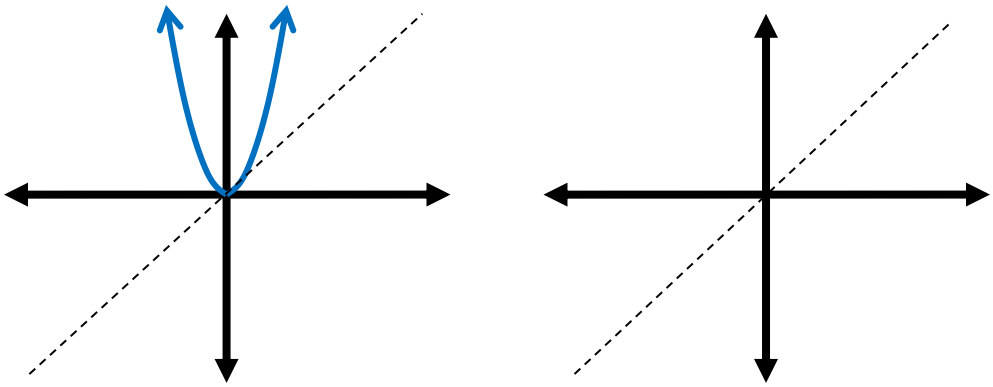
Graphing Square Root & Cube Root Functions

The Square Root Function

Reflect the function $f(x) = x^2$ over the line $y = x$.



What problem do you notice with the reflected "function"?

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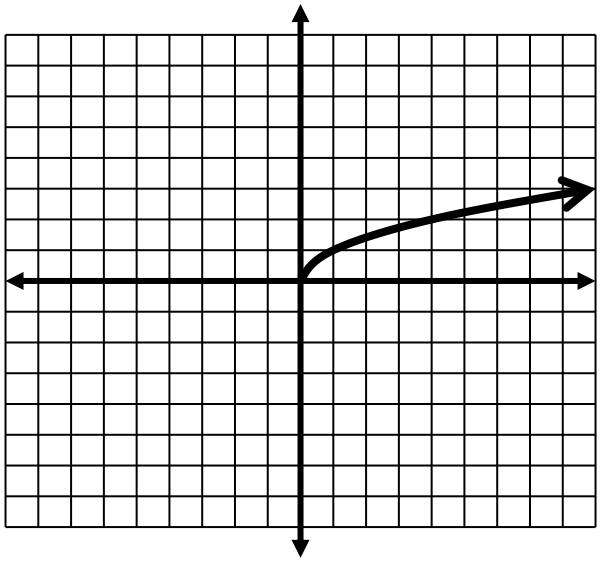
To deal with this problem, we define the Square Root function ($y = \sqrt{x}$) to only use the top part of the graph.

The result: $f(x) = \sqrt{x}$



Characteristics of the graph

Vertex (endpoint)

End Behavior

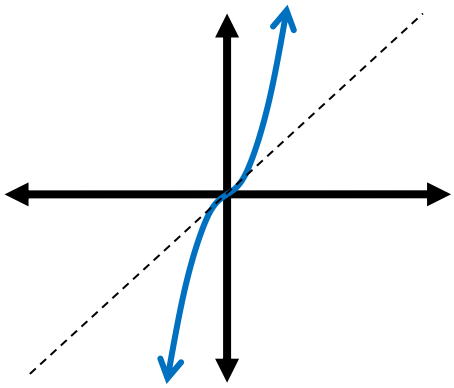
Domain

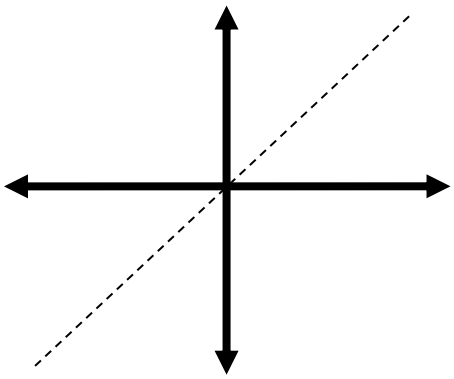
Range

Symmetry

The Cube Root Function

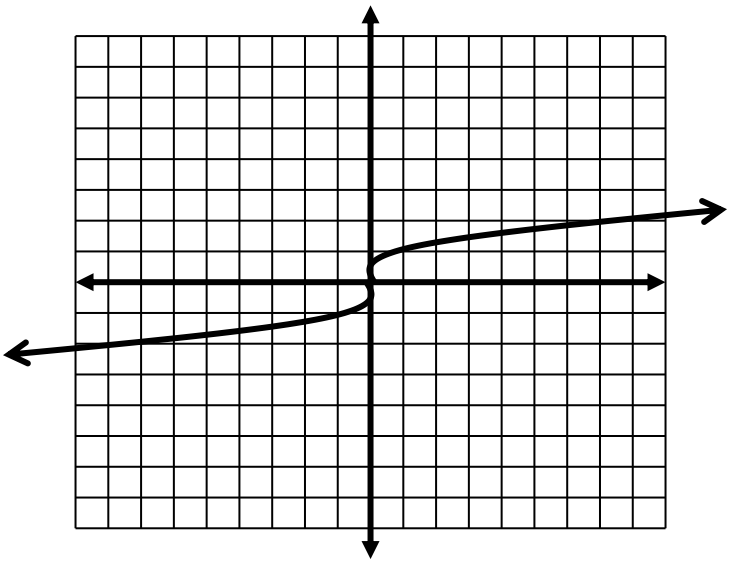
Reflect the function $f(x) = x^3$ over the line $y = x$.





Problems? _____

The result: $f(x) = \sqrt[3]{x}$



Characteristics of the graph

Vertex (anchor point)

End Behavior

Domain

Range

Symmetry

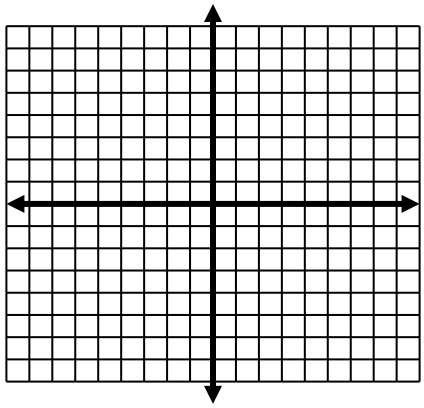
Graphing Form: $y = f(bx + c) + d$

Square Root Function ($y = \sqrt{x}$)

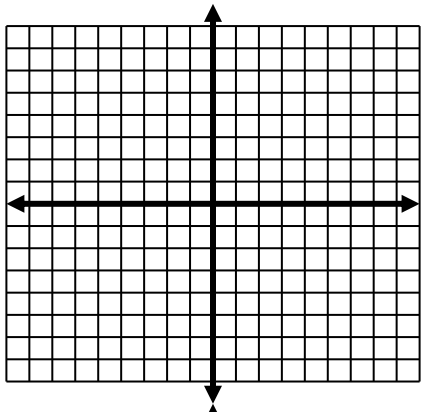
Cube Root Function ($y = \sqrt[3]{x}$)

Transforming the Graphs

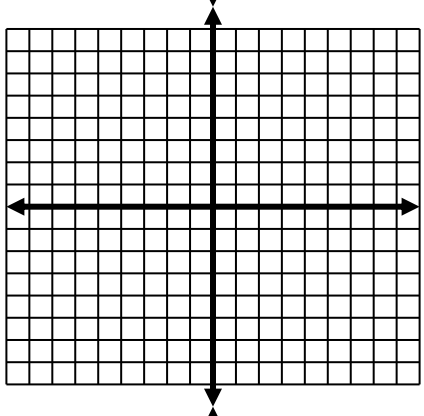
1) f(x) = $\sqrt{x-3}$



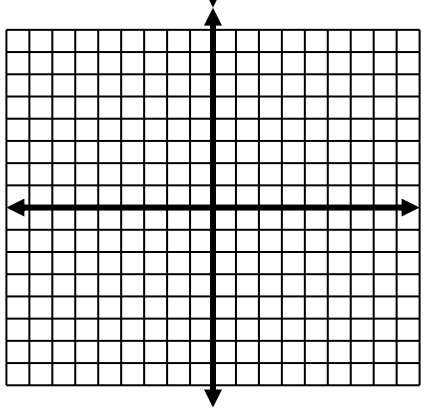
2) f(x) = $\sqrt[3]{x}+4$



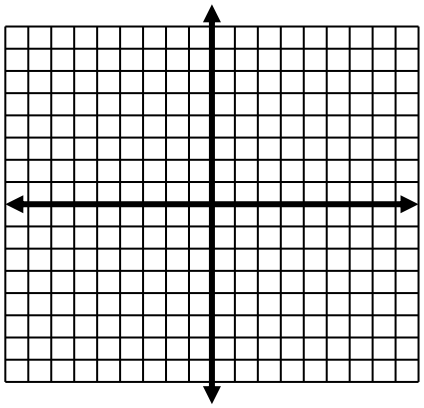
3) f(x) = $-\sqrt[3]{x}$



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



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



6) f(x) = $\frac{1}{2}\sqrt{x}$