Algebra RH

Essential Question: How do we graph cubic and cube root functions?

Do Now: Solve for *x* in each equation

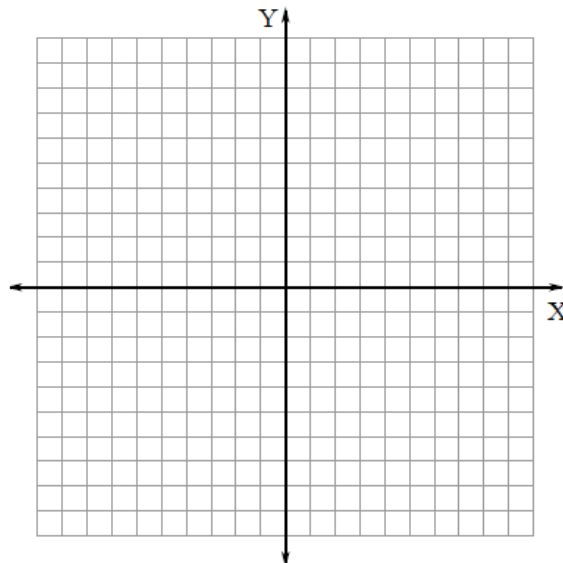   **1.** $\sqrt[3]{x} = 3$ **2.** $2\sqrt[3]{x+1} = 6$ **3.** $x^3 = -125$ **4.** $(x-2)^3 + 1 = 9$

A **cubic function** is any function whose rule involves x^3. (degree of 3)

Complete the table of values for the cubic function, $f(x) = x^3$. Use the table of values to complete the graph.

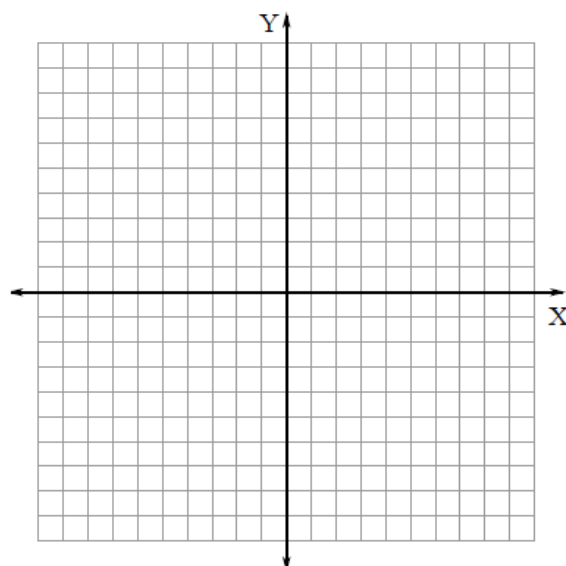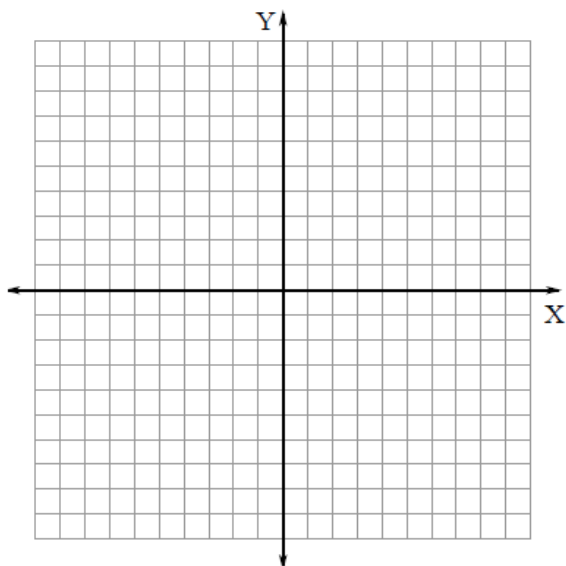| x	$f(x) = x^3$
-2	
-1	
0	
1	
2	

Domain:

Range:

We call this the PARENT FUNCTION

Examples: Graph each cubic function and state the domain/range.
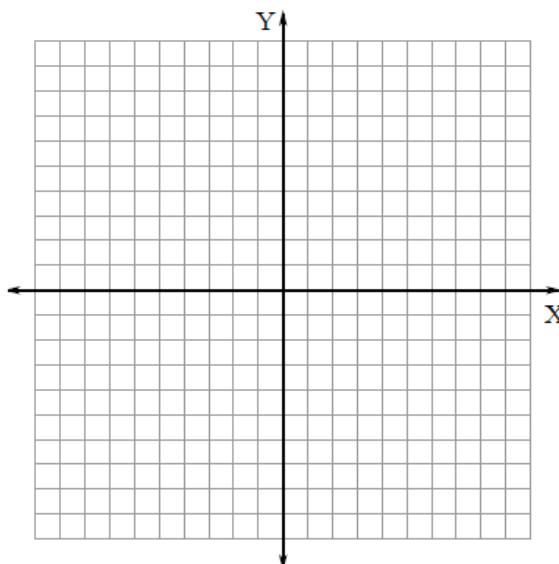
1. $y = (x - 1)^3 + 2$

2. $y = -3x^3 - 5$

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A **cube root function** is a function whose rule involves $\sqrt[3]{x}$

Complete the table of values for the parent cube root function, $g(x) = \sqrt[3]{x}$. Use the table of values to complete the graph.

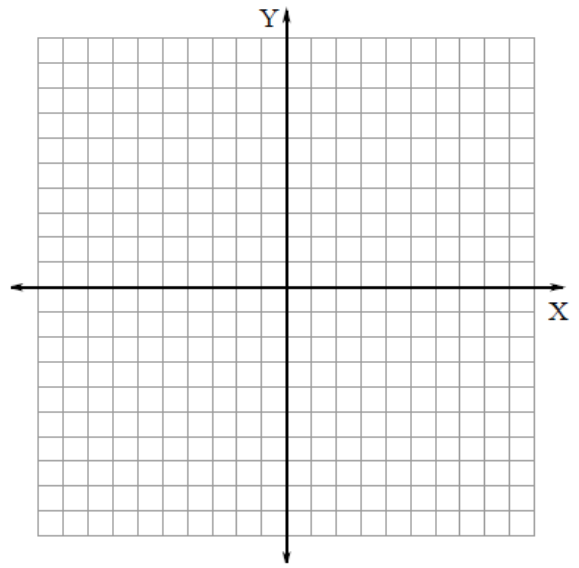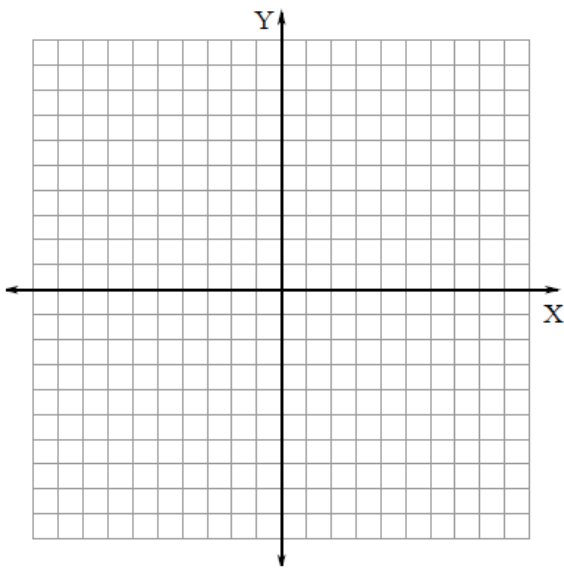| x	$g(x)$
-8	
-1	
0	
1	
8	

Domain:

Range:

We call this the __PARENT FUNCTION__

Examples: Graph each cube root function and state the domain/range.

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

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

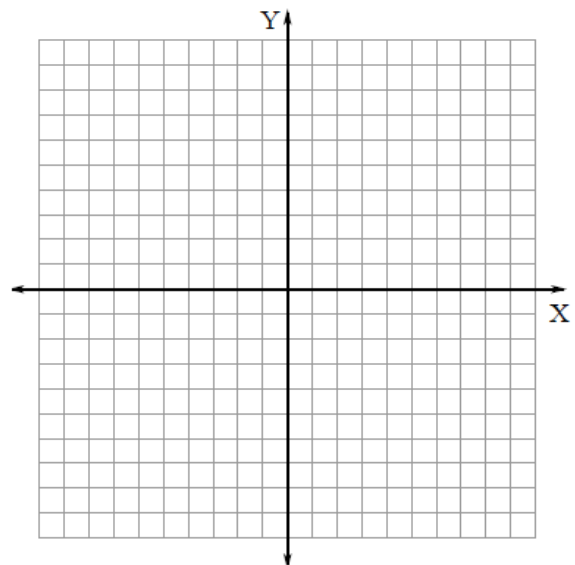**RELATIONSHIP BETWEEN CUBIC AND CUBE ROOT FUNCTIONS**

Make a table of values and graph each function.

$f(x) = \dfrac{1}{2}x^3$ $g(x) = \sqrt[3]{2x}$

x	f(x)
-2	
-1	
0	
1	
2	

x	g(x)
-4	
-1	
0	
1	
4	

Do you notice a relationship between these functions?