

Graphing Cube Root Functions Key

The Cube Root Function

1. What is the parent equation for the Cube Root Function? $f(x) = \sqrt[3]{x}$

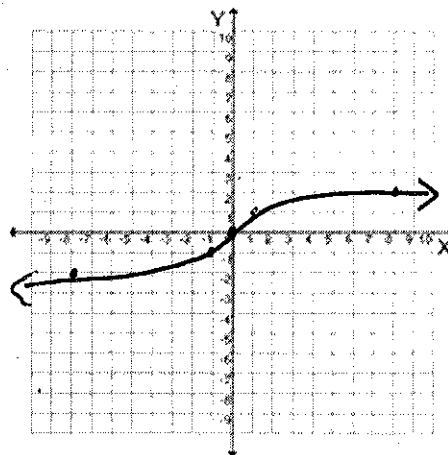
2. Graph the parent function for Cube Root.

3. Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

4. X-intercept: $(0, 0)$

y-intercept: $(0, 0)$



5. What are the coordinates for the 3 major

points: $(-1, -1)$, $(0, 0)$, $(1, 1)$ $(8, 2)$ $(-8, -2)$

6. Based on your knowledge of parameter changes, describe the roles a, h, and k play for the family of functions $y = a\sqrt[3]{x-h} + k$. (i.e what does a do, what does h do, what does k do, and so on.....)

a: vertical stretch/shrink; negative \rightarrow reflects over x-axis

h: horizontal shift

k: vertical shift

7. How would each of the following graphs change in relation to the parent graph?

a) $y = \sqrt[3]{x-3}$ shift right 3

b) $y = \sqrt[3]{x+4}$ shift left 4

c) $y = -3\sqrt[3]{x}$ reflect over x-axis + stretch (vertical)

d) $y = \sqrt[3]{x} + 5$ up 5

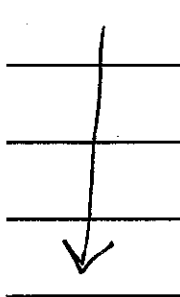
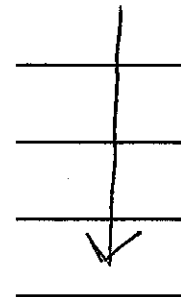
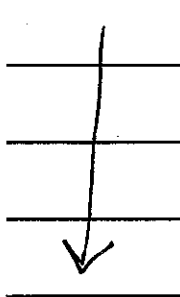
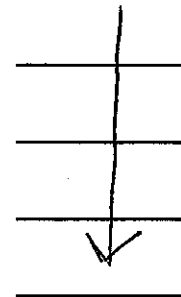
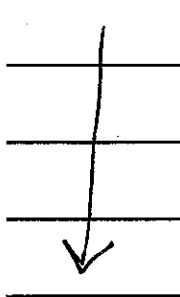
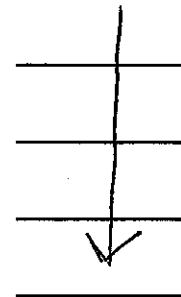
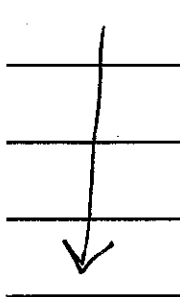
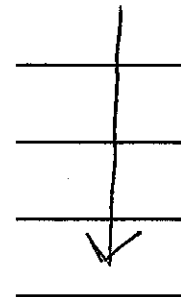
e) $y = \sqrt[3]{x} - 6$ down 6

f) $y = 3\sqrt[3]{x-2} + 7$ left 2, up 7, stretch (vertical)

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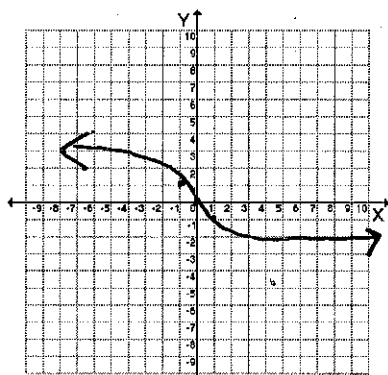
Key

8. State the Domain and Range of each function.

	Domain	Range
a) $y = 5\sqrt[3]{x}$	<u>$(-\infty, \infty)$</u>	<u>$(-\infty, \infty)$</u>
b) $y = \sqrt[3]{x+8}$		
c) $y = -\sqrt[3]{x-7}$		
d) $y = \sqrt[3]{x+2} - 3$		
e) $y = -\sqrt[3]{x-4} + 1$		

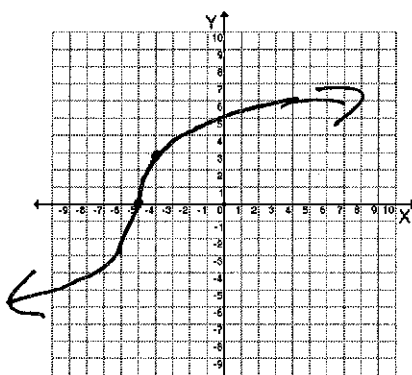
9. Graph the following cube root functions using parameter changes.

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



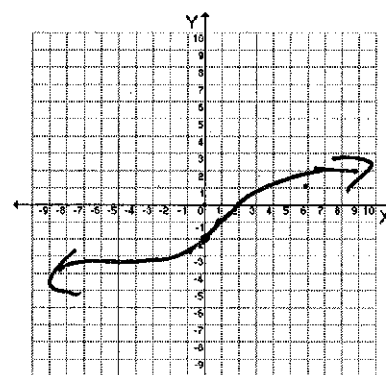
Domain: \mathbb{R}
Range: \mathbb{R}

b) $y = 3\sqrt[3]{x+5}$



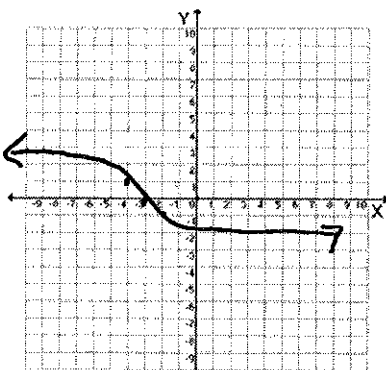
Domain: \mathbb{R}
Range: \mathbb{R}

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



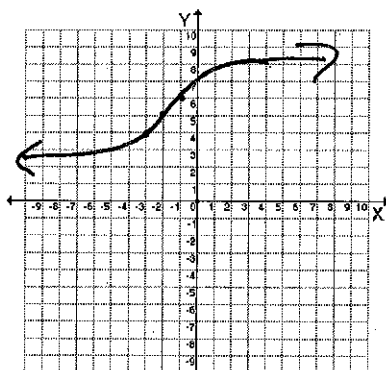
Domain: \mathbb{R}
Range: \mathbb{R}

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



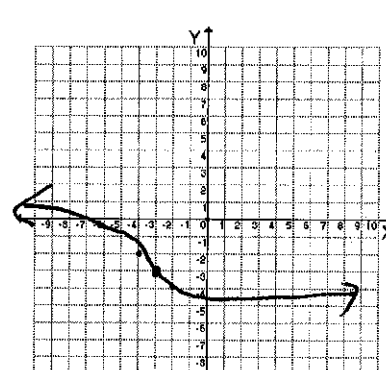
Domain: \mathbb{R}
Range: \mathbb{R}

e) $y = \sqrt[3]{x+2} + 5$



Domain: \mathbb{R}
Range: \mathbb{R}

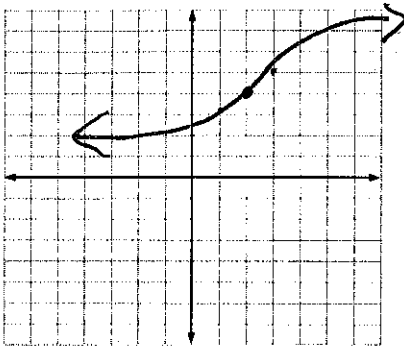
f) $y = -\sqrt[3]{x+3} - 3$



Domain: \mathbb{R}
Range: \mathbb{R}

Graph the following radical functions. List the Domain and Range in interval notation.

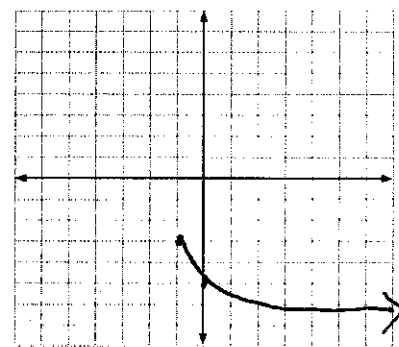
1. $f(x) = \sqrt[3]{x-2} + 4$



x	y
1	3
2	4
3	5

domain: \mathbb{R}
range: \mathbb{R}

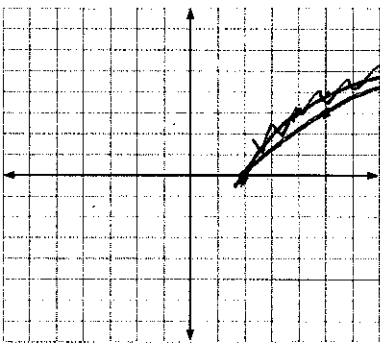
2. $f(x) = -2\sqrt{x+1} - 3$



x	y
-1	-3
0	-5
3	-7

domain: $[-1, \infty)$
range: $(-\infty, -3]$

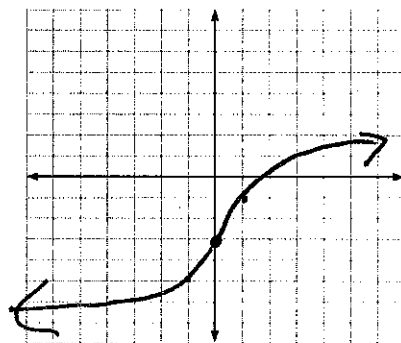
3. $f(x) = \sqrt{3x-6} = \sqrt{3(x-2)}$



x	y
2	0
3	1
5	2

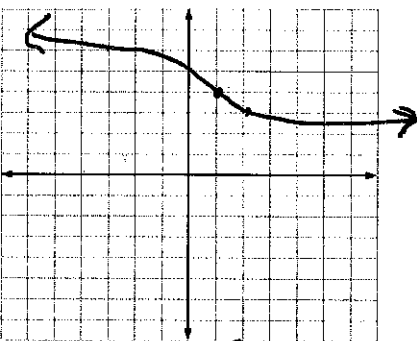
domain: _____
range: _____

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



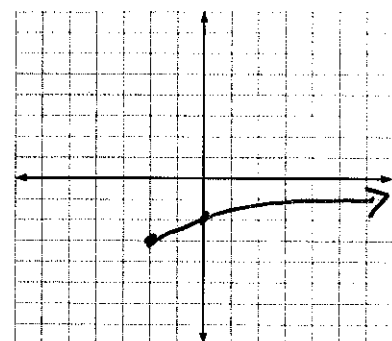
domain: \mathbb{R}
range: \mathbb{R}

5. $f(x) = -\sqrt[3]{x-1} + 4$



domain: \mathbb{R}
range: \mathbb{R}

6. $f(x) = \sqrt{\frac{1}{2}x+1} - 3 = \sqrt{\frac{1}{2}(x+2)} - 3$



x	y
-2	-3
0	-2.7
2	-2

domain: $[-2, \infty)$
range: $[-3, \infty)$