Name: _____KEY_____

Topic: 7.5 Graphing Square Root and Cube Root Functions

Summary:

<u>Review</u>

Domain: The set of all x-values.

Range: The set of all y-values.

<u>The Square Root Function:</u>

$y = \sqrt{x}$ ** This is called the Parent Function.
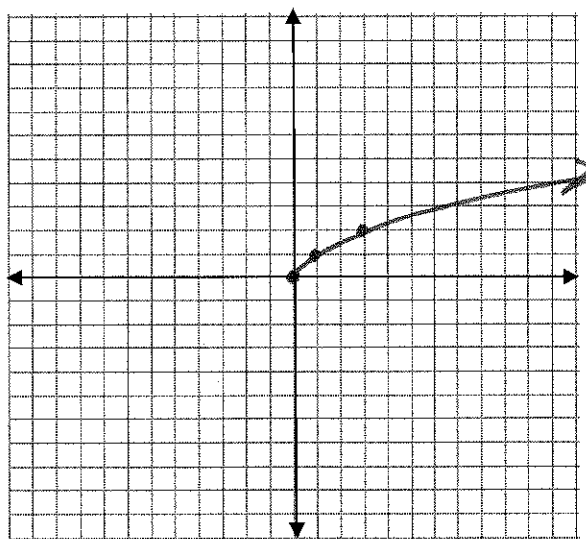
Let's look at the graph of the parent function first!

$y = \sqrt{x}$

Coordinate Point (x, y)	
(0, 0)	$y = \sqrt{0}$
(1, 1)	$y = \sqrt{1}$
(4, 2)	$y = \sqrt{4}$

Domain: $x \geq 0$

Range: $y \geq 0$

Standard Form of Square Root Function:

*<u>Vertex</u>: (h, K) $y = a\sqrt{x - h} + k$

* If "a" is positive, the graph curves up; if it's negative, the graph curves down.

(a) SLOPE	(h) moves the	(k) moves the
- Changes how wide or narrow the curve is.	curve left or right.	curve up or down.

* Look at opposite since "h" is negative.

EX1: Graph $y = -3\sqrt{x - 2} + 1$
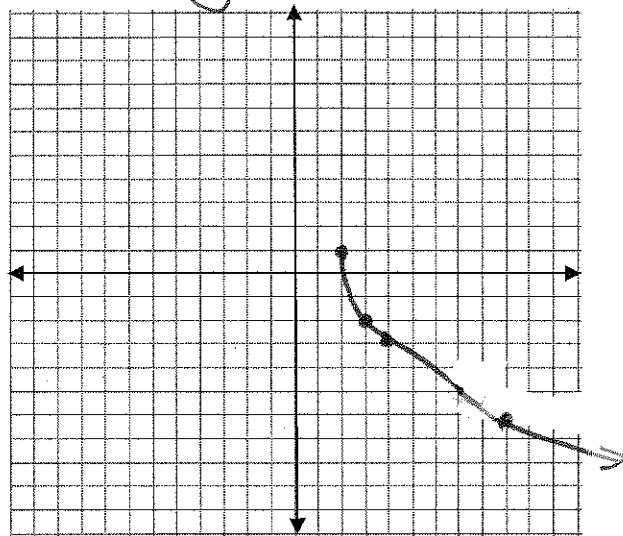
	a = -3
a/1	$-3/1 = -3$
a/3	$-3/3 = -1$
a/5	$-3/5$

Vertex = (h, K) =
$(2, 1)$

Domain: $x \geq 2$

Range: $y \leq 1$

Use as three different slopes
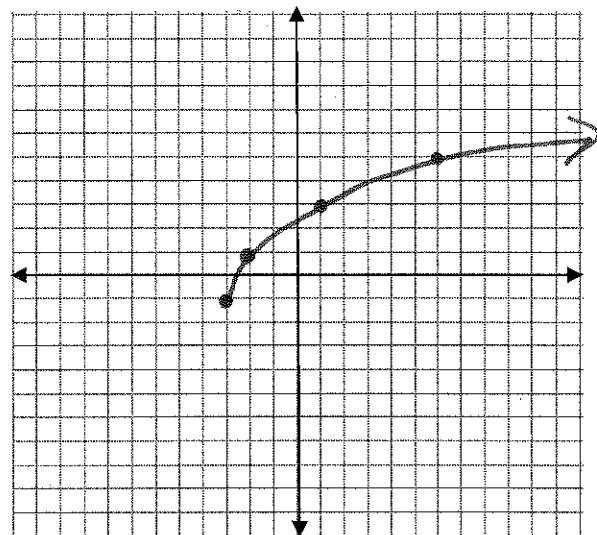

EX2: $y = 2\sqrt{x + 3} - 1$

	a = 2
a/1	$2/1 = 2$
a/3	$2/3$
a/5	$2/5$

Vertex = (h, K) =
$(-3, -1)$

Domain: $x \geq -3$

Range: $y \geq -1$

Use as three different slopes

The Cube Root Function:
$y = \sqrt[3]{x}$ **This is called the Parent Function
Let's look at the graph of the parent function first!

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

Coordinate Point
(-8, -2)
(-1, -1)
(0, 0)
(1, 1)
(8, 2)

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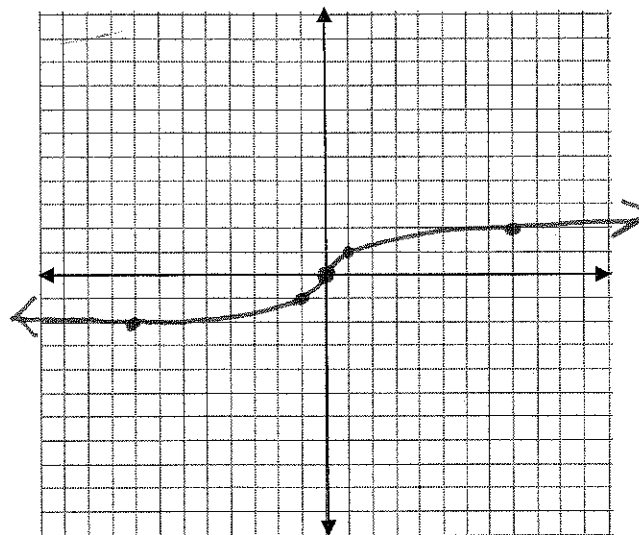$y = \sqrt[3]{-1}$
$y = \sqrt[3]{0}$
$y = \sqrt[3]{1}$
$y = \sqrt[3]{8}$

Vertex = (h, k) = (0, 0)

Domain: all real numbers

Range: all real numbers

Standard Form of Cube Root Function

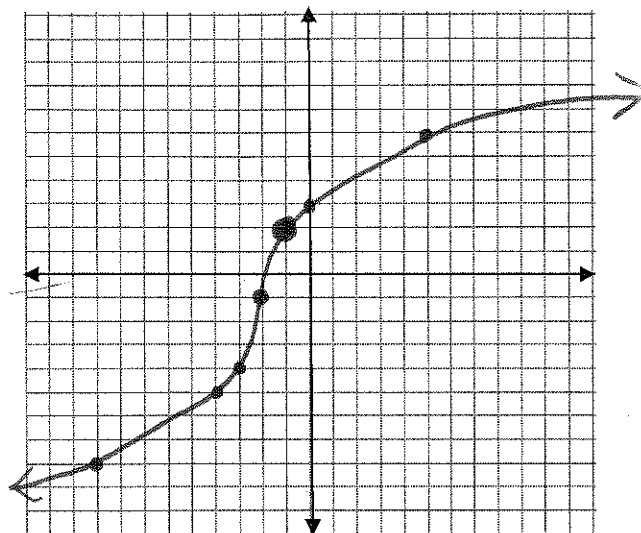$$y = a\sqrt[3]{x-h} + k$$

(a) SLOPE: (width)

(h) left/right

(k) up/down

EX3: Graph $y = 3\sqrt[3]{x+2} - 1$

	a = 3
a/1	$3/1 = 3$
a/3	$3/3 = 1$
a/5	$3/5$

Vertex =
$(h, K) = (-2, -1)$

Use as three different slopes, but go in BOTH directions

Domain: all real numbers

Range: all real numbers

EX4: Graph $y = -3\sqrt[3]{x-7} - 4$

	a = -3
a/1	$-3/1 = -3$
a/3	$-3/3 = -1$
a/5	$-3/5$

Vertex =
$(h, K) = (7, -4)$

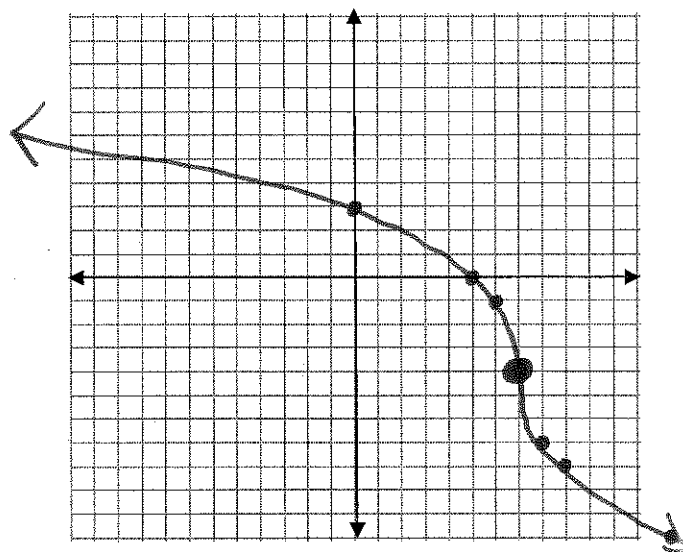Use as three different slopes, but go in BOTH directions

Domain: all real numbers
Range: all real numbers