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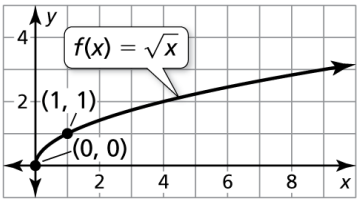
A **square root function** is a function that contains a square root with the independent variable (x) in the radicand. The parent function for the family of square root functions is f(x) = $\sqrt{x}$ .

The domain of *f* is {x |x is all real #s ≥ 0}
The range of *f* is {y |y is all real #s ≥ 0}




The graph of a square root function looks like half a parabola turned on its side.

Let's graph square root functions. Recognize the format? $y = a\sqrt{(x-h)} + k$

To graph:

- Determine the starting point (Use your knowledge of parent function transformations).
- Make a table of values for each function beginning with the starting point. You will notice quite a few decimal #s in your table. Try to choose points that you can plot without question.
- Use the table to sketch the graph of each function.
- Describe the domain of each function (this will depend on the starting point).
- Describe the range of each function (this will depend on the starting point).
- Label your graph.

Find the starting point, then complete the table with several points that you think make sense. Use set notation to describe the domain and range.

Example 1:

f(x) = $2\sqrt{x} + 4$ Starting Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

Example 2:

g(x) = $\sqrt{x-3} + 2$ Starting Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

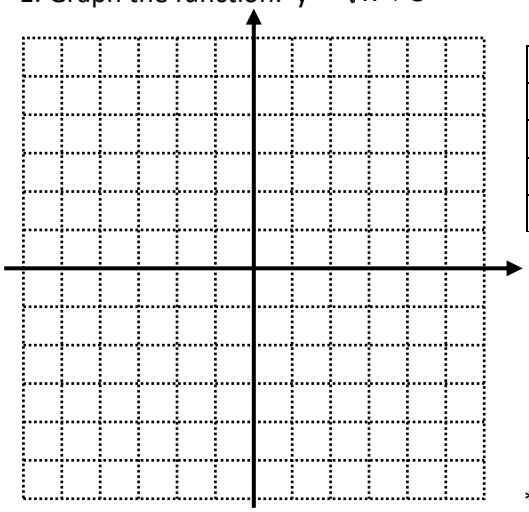
Example 3:

h(x) = $\sqrt{x+2} - 5$ Starting Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

1. Graph the function: y = $\sqrt{x} + 3$



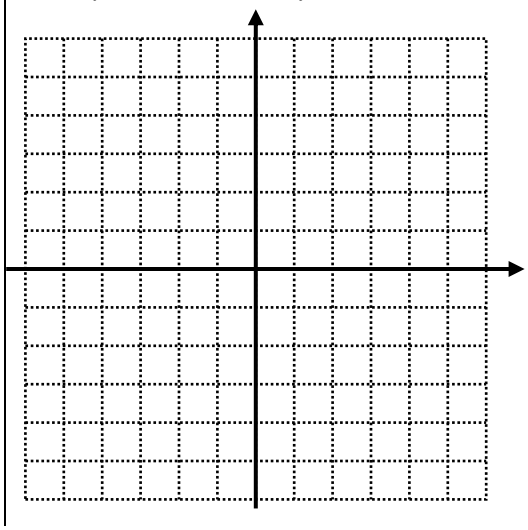
| x | y |
|---|---|
| | |
| | |
| | |
| | |

D: _____

R: _____

*Interval Notation

2. Graph the function: y = $\sqrt{x+4} - 2$



| x | y |
|---|---|
| | |
| | |
| | |
| | |

D: _____

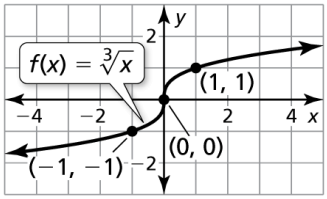
R: _____

*Interval Notation

A **cubed root function** is a radical function with an index of 3. The parent function for the family of cube root functions is $f(x) = \sqrt[3]{x}$ .

The domain of *f* is {x |x is all real #s}

The range of *f* is {y |y is all real #s}




The graph of a cubed root function looks like an "S" Curve.

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Let's graph cubed root functions. Familiar Format? $y = a\sqrt[3]{(x-h)} + k$

To graph:

- Determine the middle point (Use your knowledge of parent function transformations).
- Make a table of values for each function placing the middle point in the middle of the table. Choose points above **and** below your middle point. You will notice quite a few decimal #s in your table. Try to choose points that you can plot without question.
- Use the table to sketch the graph of each function.
- Describe the domain of each function (always all real #s).
- Describe the range of each function (always all real #s).
- Label your graph.

---

Find the middle point, then complete the table with several points that you think make sense. Use set notation to describe the domain and range.

Example 1:

$f(x) = \sqrt[3]{x-5} + 1$ Middle Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

Domain: _____

Range: _____

Example 2:

$g(x) = 2\sqrt[3]{x+1} - 3$ Middle Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

Domain: _____

Range: _____

Example 3:

$h(x) = \sqrt[3]{x+6} + 2$ Middle Point: ( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

Domain: _____

Range: _____

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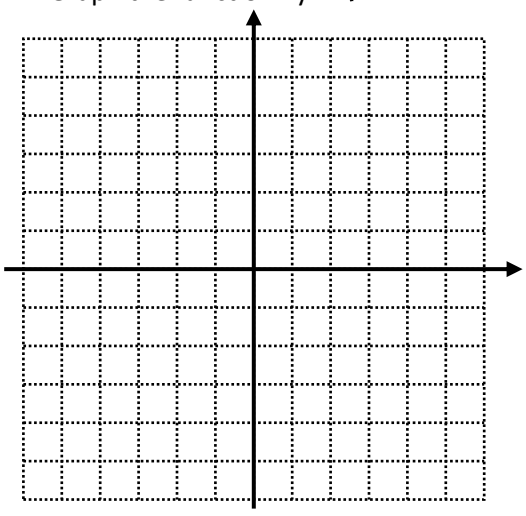
1. Graph the function: $y = \sqrt[3]{x+3} - 1$



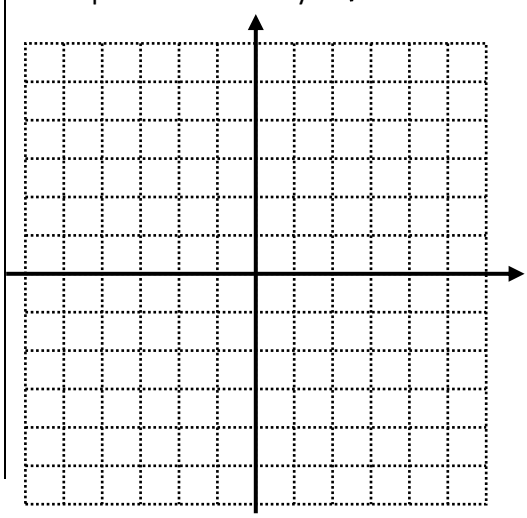
| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

D: _____

R: _____

*Interval Notation

2. Graph the function: $y = \sqrt[3]{x} - 2$



| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |

D: _____

R: _____

*Interval Notation

Name: Date: Period:

Graph each of the equations on a separate piece of graph paper. Indicate the domain and range using set notation.

1. $y = \sqrt{x+4}+4$

Starting Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

2. $y = -\sqrt{x+2}-2$

Starting Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

3. $y = \sqrt{x}-7$

Starting Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

4. $y = -\sqrt{x-5}+3$

Starting Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

5. $y = 2\sqrt[3]{x-4}+1$

Middle Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

6. $y = -\sqrt[3]{x+2}+5$

Middle Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

7. $y = -4\sqrt[3]{x}-4$

Middle Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____

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

Middle Point:

( , )

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Domain: _____
Range: _____