Name:_____ Date:_____

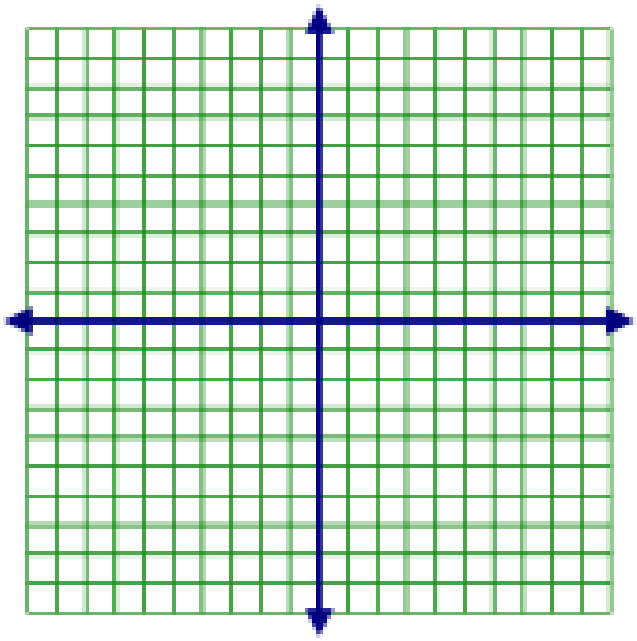
**UNIT 10** **LESSON 1**

## Aim: Identifying the characteristics of Cubic, Square Root, and Cube Root Functions

1) Given: $\boldsymbol{y = \sqrt{x}}$

**a) Type of Function:** _____

b) Graph $\boldsymbol{y = \sqrt{x}}$

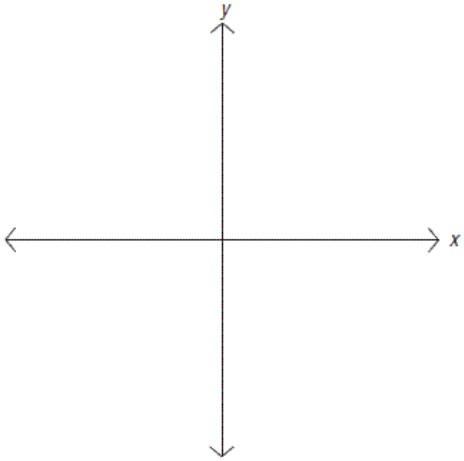


c) Notice, the function was only graphed for positive x values, explain why?

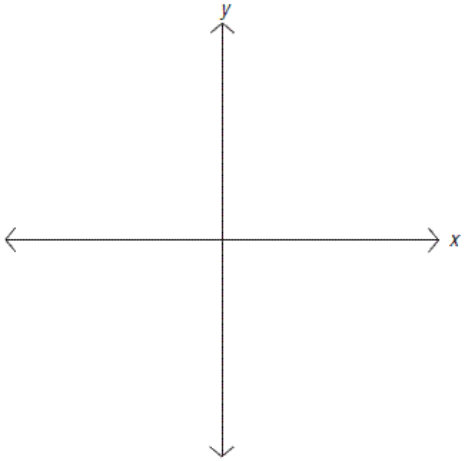
d) Identify the domain and range of this function?

e) Sketch the following graphs and identify the domain and range.

a. $y = \sqrt{x+2} - 3$



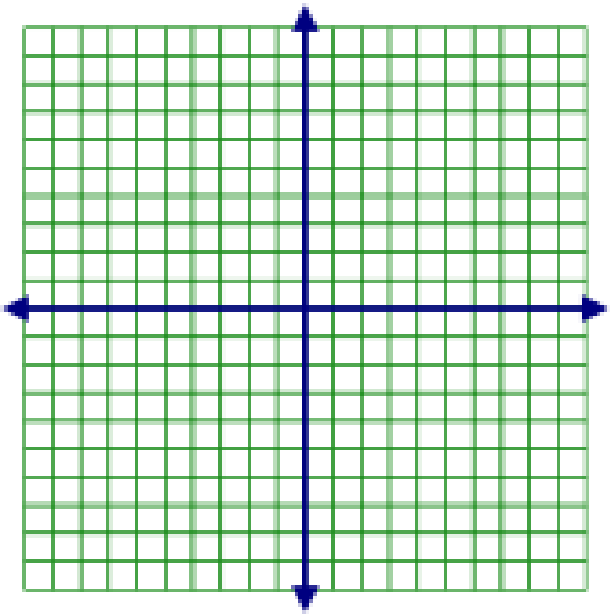

b. $y = \sqrt{x-1} - 1$



**2. Given:** **y=** $x^3$

**a) Type of Function:** _____

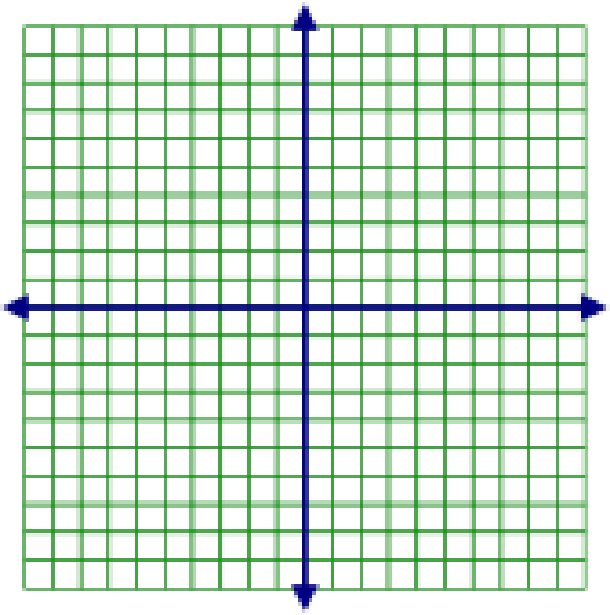
b) Graph $f(x) = x^3$



**3. Given:** **y=**$\sqrt[3]{x}$

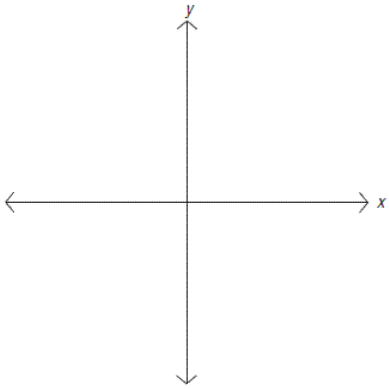
a) **Type of Function:** _____

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

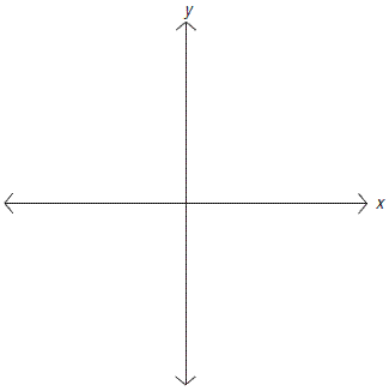


5. Sketch the graphs of each of the following and **determine the domain and range for both. Compare each to the parent graph of** $y = \sqrt[3]{x}$?

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

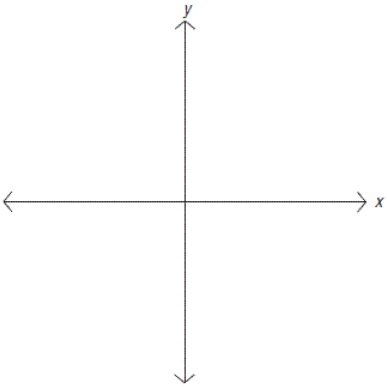



b. $y = \sqrt[3]{x} + 4$

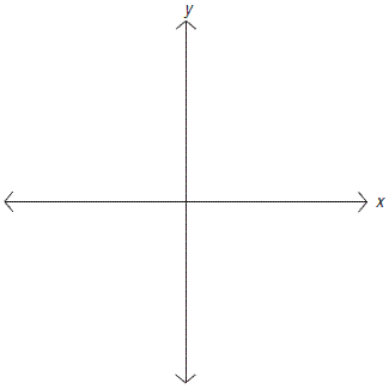



6. Graph each of the following and **determine the domain and range for both. Compare each to the parent graph** $\boldsymbol{f(x) = x^3}$

a. $y = x^3 + 2$




$\frac{1}{4}x^3 = f(x)$




7. Write a function with a graph that translates $y = \sqrt{x}$ in each way.

a. Shifted 9 units to the left

b. reflected in the x axis

b. Shifted down 5 units to the right and up 3 units

d. vertically

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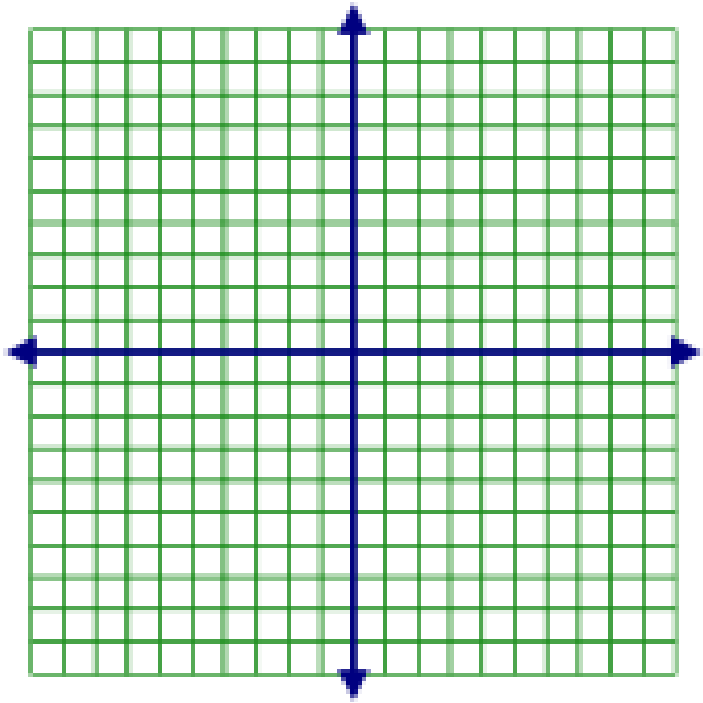
**UNIT 10** **LESSON 1**

**HW#_____**

1. Create the graphs of the functions $\boldsymbol{f(x) = x^2 + 2}$ and $\boldsymbol{g(x) = \sqrt{x} + 2}$ using the given values. Use a calculator to help with decimal approximations.



a) Describe the relationship between the graphs given by the equations $\boldsymbol{f(x) = x^2 + 2}$ and $\boldsymbol{g(x) = \sqrt{x} + 2}$. How are they alike? How are they different? (Hint: compare domain and range)

b) How are the parent graphs of $\boldsymbol{y = x^2}$ and $\boldsymbol{y = \sqrt{x}}$ transformed to generate the graphs of $\boldsymbol{f(x) = x^2 + 2}$ and $\boldsymbol{g(x) = \sqrt{x} + 2}$?

2. Identify the domain and range of each:

a. $y = \sqrt{x - 2} + 5$

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

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

**DON'T FORGET TEXTBOOK**