Algebra RH
Unit 16 Check-In (Other Functions)

Types of "Other" Functions

Cubic $f(x) = x^3$ **Cube Root** $f(x) = \sqrt[3]{x}$

Absolute Value $f(x) = |x|$ **Square Root** $f(x) = \sqrt{x}$

"The Big 3"

Linear: $y = mx + b$

Exponential: $y = ab^x$

Quadratic: $y = ax^2 + bx + c$

Practice Problem Set

1. Determine if the following tables represent linear, quadratic or exponential functions. Justify using differences or ratios.

A.

x	$f(x)$
-1	$\frac{2}{3}$
0	2
1	6
2	18

B.

x	$f(x)$
-3	37
-2	21
-1	9
0	1

2. The following data was recorded for NY Coronavirus Hospitalizations.

Day	10	15	18	23	28	35	40	45	51
Cases	489	1265	1925	3181	2945	2156	1408	1076	789

a. Enter the data into your calculator, look at the scatter plot and give a quick sketch for the data

b. Write a regression model that best fits the data. Round all values to the nearest tenth.

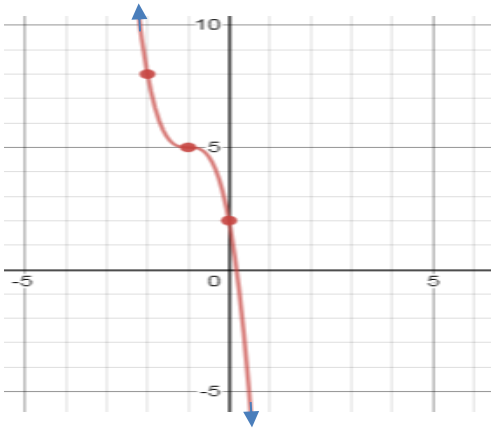
3. Solve each equation for x

a. $|4x - 1| = x - 7$ b. $3\sqrt{x+7} + 2 = 17$ c. $(x-7)^2 + 1 = 10$ d. $\sqrt[3]{x+1} = 2$

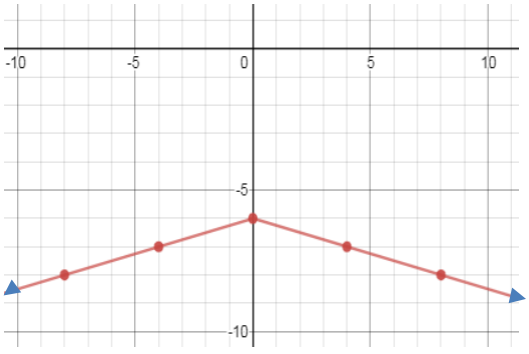
4. State the domain of the function $f(x) = \sqrt{10 - x}$

5. Given the parent function $f(x) = |x|$, describe the transformation to the new equation $g(x) = -\frac{3}{2}|x + 9| - 5$

6. Write an equation for each graph below.



Equation:



Equation:

7. Determine the average rate of change for the function $f(x)=\sqrt[3]{x+8}$ over the interval $-7 \le x \le 0$.

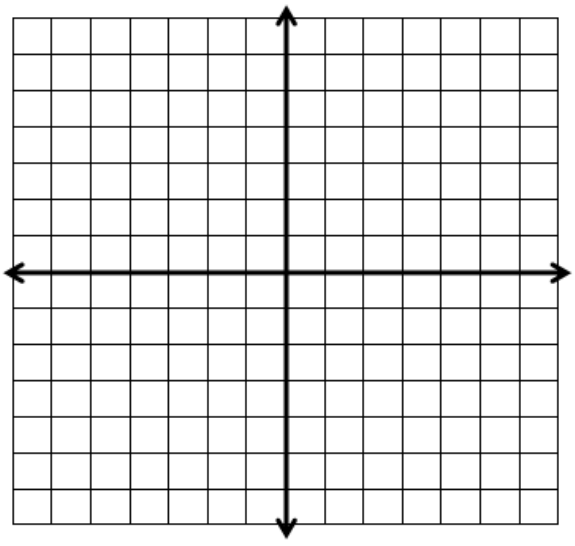
8. Write the equation of a square root function that has been vertically stretched by a factor of 7 and translated 9 units down and 14 units right.

9. Given the following quadratic function, $g(x) = -3x^2 - 24x + 5$, determine the transformations that were applied to the parent function $f(x) = x^2$

10. Graph *g*(*x*) and *h*(*x*) on each coordinate plane below. State the domain and range of *g*(*x*). Describe the transformation of *g*(*x*) as compared to the parent function *h*(*x*).

$h(x) = \sqrt{x}$

$g(x) = -2\sqrt{x+1}$



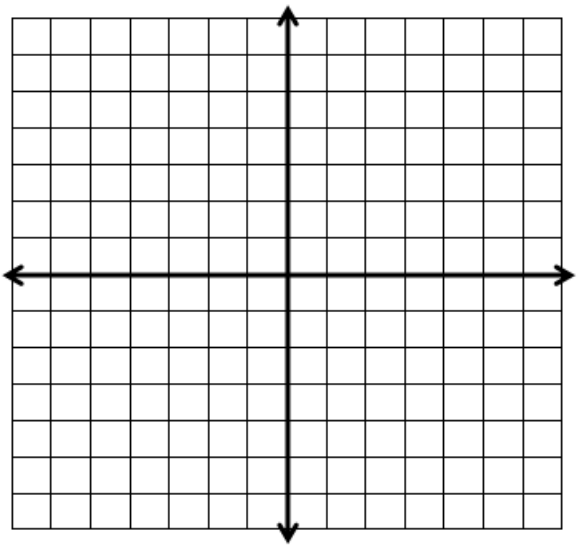
domain: _____ _____

range: _____ _____

transformation _____

$h(x) = \sqrt[3]{x}$

$g(x) = \sqrt[3]{x-2}+3$



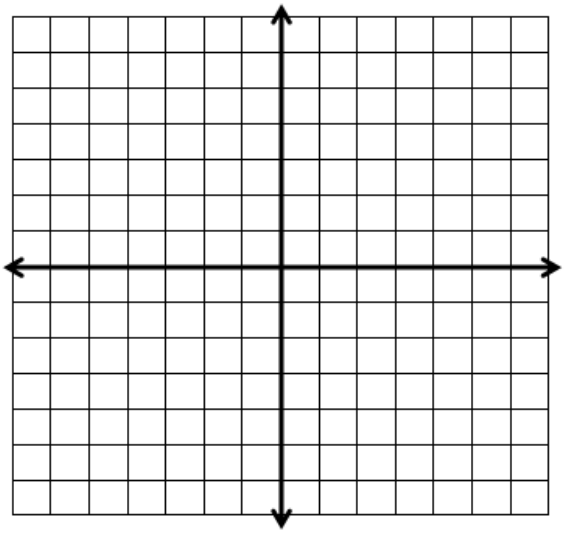
domain: _____ _____

range: _____ _____

transformation: _____

11. Algebraically determine the transformation from $f(x) = x^2 - 10x + 2$ to $g(x) = -x^2 + 4x - 7$

12. a. Graph the function $f(x) = \frac{1}{2}|x-3|$.



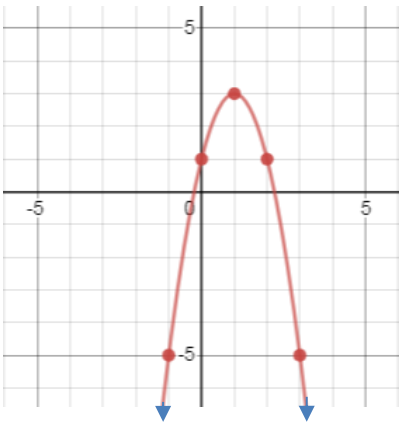
b. State the domain and range of *f*(*x*).

domain: _____ range: _____

c. State the interval over which the function is *increasing*. State the interval over which the function is *decreasing*.

increasing: _____ decreasing: _____

13. The graph of a transformation of the function *f*(x) = x^2 is shown. The transformation shown can be expressed in the form ***y* = *p*[*f*(*x* + *r*)] + *n***, where ***p***, ***r*** and ***n*** are constants. Determine the values of each:



p =

r =

n =