Name:	Date:
Topic:	Class:

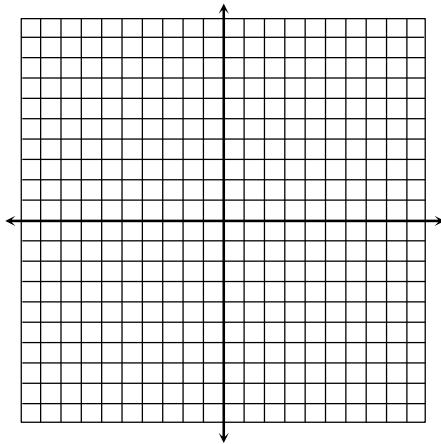| Main Ideas/Questions	Notes/Examples

SQUARE ROOT
Function

Parent Function:

A **radical function** is a function of the form $f(x) = \sqrt[n]{x}$.

The **square root function** is a type of radical function.

Graph the parent function of the square root function below and identify the key characteristics.

D: _____ R: _____

Endpoint: _____

End Behavior:

As $x \to$ _____ , $f(x) \to$ _____

As $x \to$ _____ , $f(x) \to$ _____

Increasing Interval(s): _____

Decreasing Interval(s): _____

TRANFORMATIONS

$f(x) = a\sqrt{x-h} + k$

- h is the _____ shift.   (**+** shifts _____, **−** shifts _____)
- k is the _____ shift.   (**+** shifts _____, **−** shifts _____)
- Endpoint: _____
- If a is negative, the function is _____ across the ___-_____
- $|a| > 1$ represents a vertical _____.
- $0 < |a| < 1$ represents a vertical _____.

Describe the transformations of each function compared to the parent function.

1. $f(x) = \sqrt{x-7} + 2$

2. $f(x) = 4\sqrt{x} - 1$

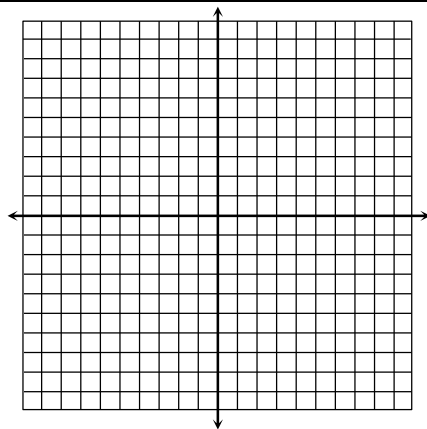**3.** $f(x) = -\sqrt{x+3}$

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

5. The square root parent function is reflected across the x-axis, then shifted 7 units left and 1 unit down. Write an equation that represents this function.

GRAPHING SQUARE ROOT FUNCTIONS   Graph each function. Identify the key characteristics.

6. $f(x) = \sqrt{x} + 5$

D: _____   R: _____
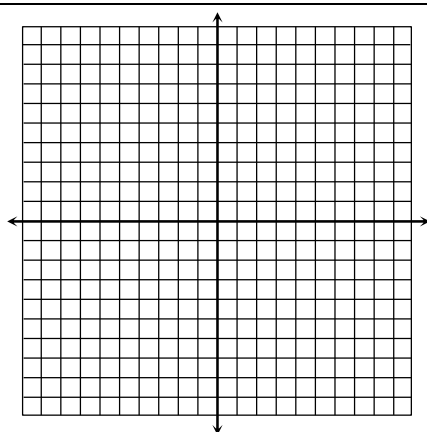
Endpoint: _____

End Behavior:

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

Increasing Interval(s): _____

Decreasing Interval(s): _____

7. $f(x) = \sqrt{x-1} - 4$

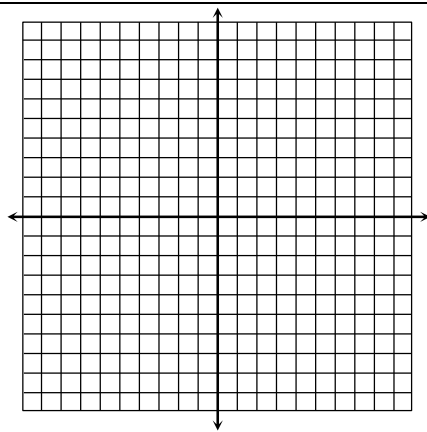D: _____   R: _____

Endpoint: _____

End Behavior:

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

Increasing Interval(s): _____

Decreasing Interval(s): _____

8. $f(x) = 3\sqrt{x+1}$
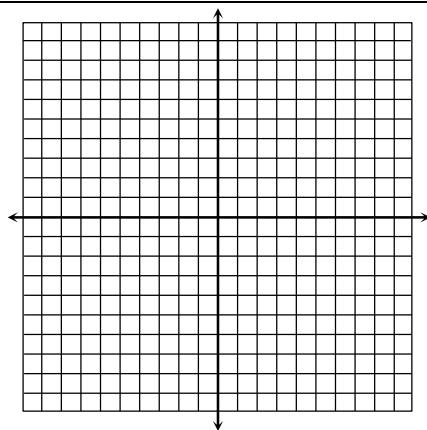
D: _____   R: _____

Endpoint: _____

End Behavior:

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

Increasing Interval(s): _____

Decreasing Interval(s): _____

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

D: _____   R: _____

Endpoint: _____

End Behavior:

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

As $x \rightarrow$ _____ , $f(x) \rightarrow$ _____

Increasing Interval(s): _____

Decreasing Interval(s): _____