August 21, 2018

1-1 Radical Functions and Attributes

Objectives:

- I can identify the shape and attributes of the following parent functions:

- Linear
- Absolute Value
- Exponential
- Quadratic
- Square Root
- Cubic
- Cube Root

Domain and Range

Domain: Set of all input values

Domain restrictions come from input values that result in:

- the square root of a negative number
- dividing by zero
- the log of a non positive number

Range: Set of all output values

Increasing, Decreasing and Constant

- Increasing: as you move from left to right the y-values increase
- Decreasing: as you move from left to right the y-values decrease
- Constant: as you move from left to right the y-values do not change

this behavior is reported using interval notation for the **X-VALUES** where the graph has a certain behavior

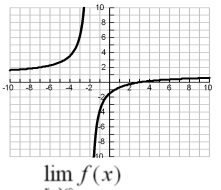
Limits

as x approaches _____, y approaches _____

Describe end behavior using limit notation:

$\lim_{x \to \infty} f(x)$ this means the right

$\lim_{x \to -\infty} f(x)$ this means the left end



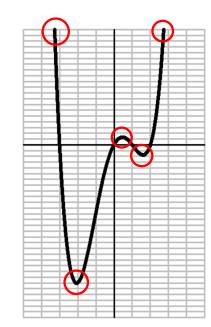
$\lim_{x \to \infty} f(x)$

$\lim_{x \to -\infty} f(x)$

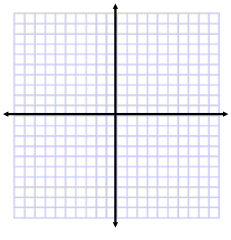
Label Extrema & End Behavior

maximums
- local (relative)
- absolute (global)

minimums
- local (relative)
- absolute (global)



Sq Root



Equation:

Domain
(Restrictions)
Range
Increasing
Decreasing
Left End Behavior

Right End Behavior

x-intercept(s)
y-intercept(s)
Maximum
Minimum

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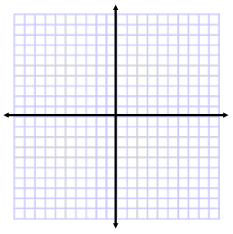
Cube Root



Equation:

Domain
(Restrictions)
Range
Increasing
Decreasing
Left End Behavior

Right End Behavior

x-intercept(s)
y-intercept(s)
Maximum
Minimum

$y=\pm af(\pm b(x\pm h))\pm k$

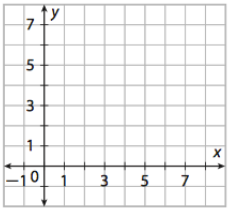
Domain changes
Range changes

$$y=\pm a\sqrt{\pm b(x\pm h)}\pm k$$

	Vertical	Horizontal
Shift	$f(x)\pm k$	$f(x\pm h)$
Stretch/Compress	$af(x)$	$f(bx)$
Reflection	$-f(x)$	$f(-x)$

Graph the following using transformations, then state where the graph is increasing, decreasing, and end behavior

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



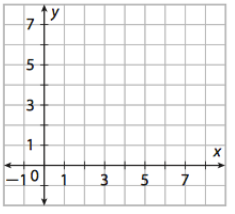
Increasing:

Decreasing:

End Behavior:

Graph the following by transformations, then state where the graph is increasing, decreasing, and end behavior

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



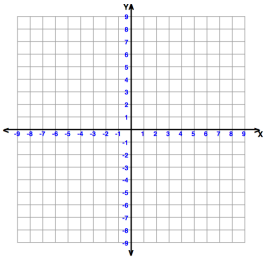
Increasing:

Decreasing:

End Behavior:

Graph the following by transformations, then state where the graph is increasing, decreasing, and end behavior

$$g(x)=2\sqrt[3]{x-3}+5$$



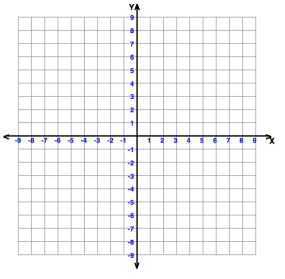
Increasing:

Decreasing:

End Behavior:

Graph the following by transformations, then state where the graph is increasing, decreasing, and end behavior

$$f(x)=\sqrt[3]{\frac{1}{2}x-5}+4$$



Increasing:

Decreasing:

End Behavior:

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Write a function to represent the following