Math Virtual Learning

College Prep Algebra

May 18, 2020

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Lesson: May 18, 2020

Objective/Learning Target:
I can determine domain of a parent function
when it has been shifted horizontally.

Lesson:
On May 14, you focused on determining the Domain and Range of each Parent Function.

Today, you will see how a Horizontal Transformation will affect the Domain of the function AND you will learn how to write the new Domain.

The next 3 slides are a repeat of May 14 on Domain—just to remind you of what we will be working with.
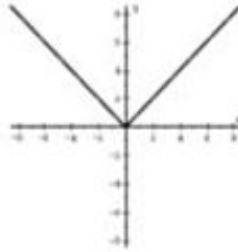
Each of these parent functions have a DOMAIN of "All Real Numbers"

What that means is that **you can use any number in the universe in these functions and you will always get an output or answer!**

Notice the graphs read all the way across, both left and right, and go on forever! That also means the
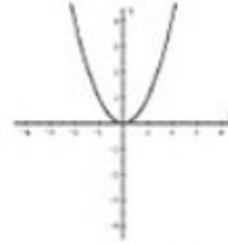
DOMAIN is
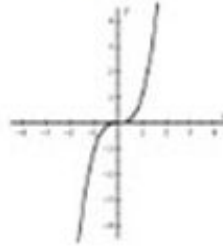**"All Real Numbers".**

Absolute Value

$f(x) = |x|$

Quadratic
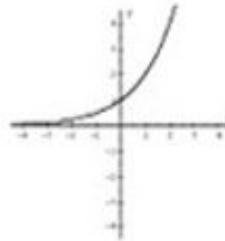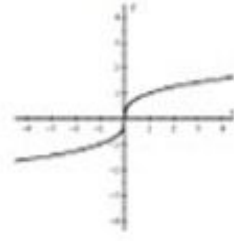
$f(x) = x^2$

Cubic

$f(x) = x^3$

Exponential

$f(x) = e^x$

Cube Root

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

Notice these graphs do NOT read continuously across?

- **Square Root**—starts when *x = 0*

- **Logarithmic**—no negative values for *x* and no value when *x = 0*

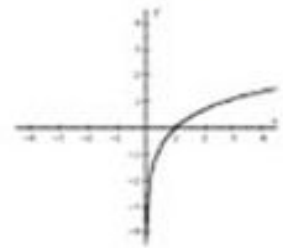- **Rationals**—do not show any graph when *x = 0*. It's all to the left and all to the right of *x = 0*

The next slide shows how you would write the DOMAIN for these functions
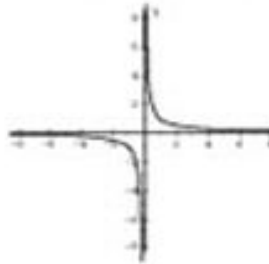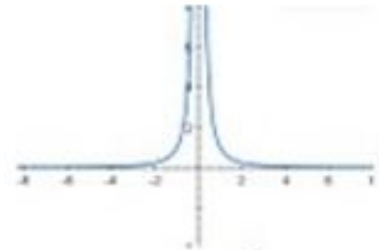
Square Root

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

Logarithmic

$f(x) = \ln(x)$
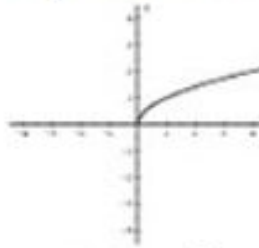
Reciprocal/Inverse/
Rational

$f(x) = \frac{1}{x}$

Rational

$f(x) = \frac{1}{x^2}$

DOMAIN
Verbal and symbolic

Square Root
- All real numbers equal to or greater than 0.
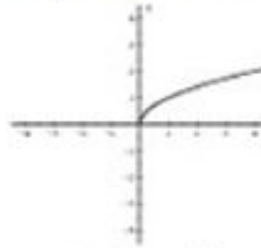- $x \geq 0$

Logarithmic
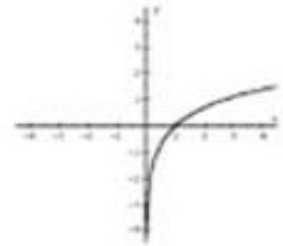- All real numbers greater than 0
- $x > 0$

Rationals
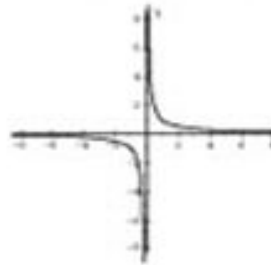- All real numbers except for 0
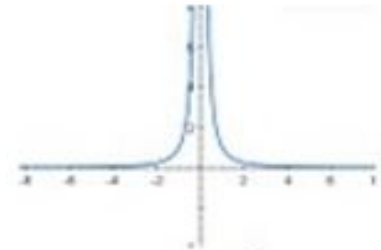- $x \neq 0$

Square Root

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

Logarithmic

$f(x) = \ln(x)$

Reciprocal/Inverse/
Rational

$f(x) = \frac{1}{x}$

Rational

$f(x) = \frac{1}{x^2}$

In Algebra 2, you learned how to use algebra to horizontally shift Parent Functions.

Refresh your memory with [this activity](#).

Practice:
Add to your Reference Sheet for Transformations that you started on May 15

❏ How the Function is changed

❏ Change to the equation of the Function

❏ Change to Domain of the Function, if any

❏ Change to Range of the Function, if any

(See the next slide for an example)

Do this on notebook paper for you to reference for the remainder of the lessons.

TRANSFORMATIONS

Graph Change	Rule Change	Domain	Range
move UP or DOWN	$f(x) + k$	NONE	the zero becomes "k"

Practice:
Here is a practice worksheet to check your understanding. Use your Parent Function Reference you made on May 14 and the Transformations Reference you added to today.

Practice Worksheet with Answers

Link to May 14 Lesson if you need help with domain and range of parent functions.

May 14 Lesson