

Warm Up

► Find Domain and Range

$$y = \sqrt{x}$$

7.3 Graphing rational
functions
Finding the domain and
range

REFRESHER

Question

- ▶ WHAT IS THE MOST IMPORTANT THING TO REMEMBER WHEN YOU HAVE A SQUARE ROOT?

WE DO

- ▶ Find the domain and range

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

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

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

YOU DO

► Find the domain and range

1. $f(x) = \sqrt{x - 13}$

2. $y = \sqrt{x} + 8$

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

4. $y = \sqrt{x + 7} - 9$

Warm-Up

► Determine the Domain and Range

$$y = \sqrt{2x - 4} + 2$$

WE DO

► Find the domain and range

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

2. $y = \frac{1}{\sqrt{x}+1}$

3. $f(x) = \frac{1}{\sqrt{2x+6}}$

YOU DO

► Find the domain and range

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

2. $y = \frac{1}{\sqrt{x+8}}$

3. $f(x) = \frac{1}{\sqrt{3x-12}}$

4. $y = \frac{1}{\sqrt{6x+18}}$

Warm Up

► Find the domain and range.

◦ $f(x) = \sqrt{x}$

◦ $f(x) = \sqrt{x-3}$

◦ $f(x) = \sqrt{x} + 5$

Nonlinear Functions

Graphing & End Behavior
Square Root & Cube Root

Objective

- ▶ Students will be able to create graphs and determine end behavior of nonlinear functions.
 - Square Root
 - Cube Root
 - Absolute Value
 - Piecewise

Graphing Square Root Functions

▶ $f(x) = \sqrt{x}$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = \frac{1}{\sqrt{x}}$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = -\sqrt{x}$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = \frac{1}{-\sqrt{x}}$

End Behavior:

Warm-Up!

- Please have your graph paper ready from yesterday.

Graphing Square Root Functions

▸ $f(x) = \sqrt{x+4}$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = \frac{1}{\sqrt{x+4}}$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = \sqrt{x} - 6$

End Behavior:

Graphing Square Root Functions

▸ $f(x) = \frac{1}{\sqrt{x}-6}$

End Behavior:

Perfect Cubes

- We know about perfect squares, so let's talk about perfect cubes.

Closure

- What did we learn today?

Homework

- ▶ Create and graph your own square root function (different from the ones we did in class).
- ▶ Create and graph your own cube root function (different from the ones we did in class).

Warm Up

▸ Evaluate each of the following:

▸ $|17|$

▸ $|-8|$

▸ $-|4|$

▸ $-|-6|$

Nonlinear Functions

Graphing & End Behavior
Absolute Value & Piecewise

Objective

- ▶ Students will be able to create graphs and determine end behavior of nonlinear functions.
 - Absolute Value
 - Piecewise

Graphing Absolute Value Functions

▶ $f(x) = |x|$

End Behavior:

Graphing Absolute Value Functions

▸ $f(x) = |x + 1|$

End Behavior:

Graphing Absolute Value Functions

▸ $f(x) = |x - 6|$

End Behavior:

Graphing Absolute Value Functions

▸ $f(x) = |x| + 3$

End Behavior:



Graphing Absolute Value Functions

▸ $f(x) = |x| - 1$

End Behavior:



Graphing Absolute Value Functions

▸ $f(x) = |x + 3| - 4$

End Behavior:

Graphing Absolute Value Functions

▸ $f(x) = |x - 5| + 7$

End Behavior:

Graphing Piecewise Functions

$$\triangleright f(x) = \begin{cases} x & \text{if } x > 4 \\ -x & \text{if } x \leq 4 \end{cases}$$

End Behavior:

Graphing Piecewise Functions

$$\triangleright f(x) = \begin{cases} x + 3 & \text{if } x \leq 0 \\ x - 1 & \text{if } x > 0 \end{cases}$$

End Behavior:

Graphing Piecewise Functions

$$\triangleright f(x) = \begin{cases} -3x & \text{if } x < 1 \\ 2x & \text{if } x \geq 1 \end{cases}$$

End Behavior:

Graphing Piecewise Functions

$$\triangleright f(x) = \begin{cases} 2x - 1 & \text{if } x < 3 \\ -2x - 1 & \text{if } x \geq 3 \end{cases}$$

End Behavior:

Graphing Piecewise Functions

$$\triangleright f(x) = \begin{cases} 4 & \text{if } x < 2 \\ 7 & \text{if } x > 2 \end{cases}$$

End Behavior:

Homework

- Create and graph your own absolute value function (different from the ones we did in class).
- Create and graph your own piecewise function (different from the ones we did in class).