Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Algebra 2A

Polynomial Parent Functions

May 14, 2020

Lesson:

Sketching Polynomial Parent Functions

Learning Target:

LT C2 I can identify key features (zeros, multiplicity, end behavior, y-intercept, local minimums and maximums, turning points, transformations).

Objective:

Students will be able to identify parts of a graph.

Warm Up

Given the following functions:

$f(x) = x + 2$ $g(x) = x^2 - 1$ $h(x) = 2x - 3$

Compose:

1. $(f \circ g)(x)$
2. $(g \circ f)(x)$
3. $(h \circ f)(x)$
4. $g(h(f(x)))$

Warm Up Answers

1. x^2+1
2. $x^2 + 4x + 3$
3. $2x + 1$
4. $4x^2 + 4x$

Lesson

For today, you are going to be given the end behavior, zero, minimums, and maximums and from these create a graph.

Practice - Sketch a graph for each of the following:

1. As $x \to \infty$, $f(x) \to \infty$

   As $x \to -\infty$, $f(x) \to \infty$

   Zeros: (-2, 0), (2, 0)

   Minimum: (0,-3)

2. As $x \to \infty$, $f(x) \to \infty$

   As $x \to -\infty$, $f(x) \to -\infty$

   Zeros: (-3, 0), (-1, 0), (1, 0)

   Minimum: (0, -3)

   Maximum: (-2, 3)

3. As $x \to \infty$, $f(x) \to \infty$

   As $x \to -\infty$, $f(x) \to -\infty$

   Zeros: (0,-1)

   Minimum: (2, 2)

   Maximum: (0, 5)

4. As $x \to \infty$, $f(x) \to \infty$

   As $x \to -\infty$, $f(x) \to \infty$

   Zeros: (-4, 0), (0, 0), (4, 0)

   Minimum: (-2, -3), (2, 3)

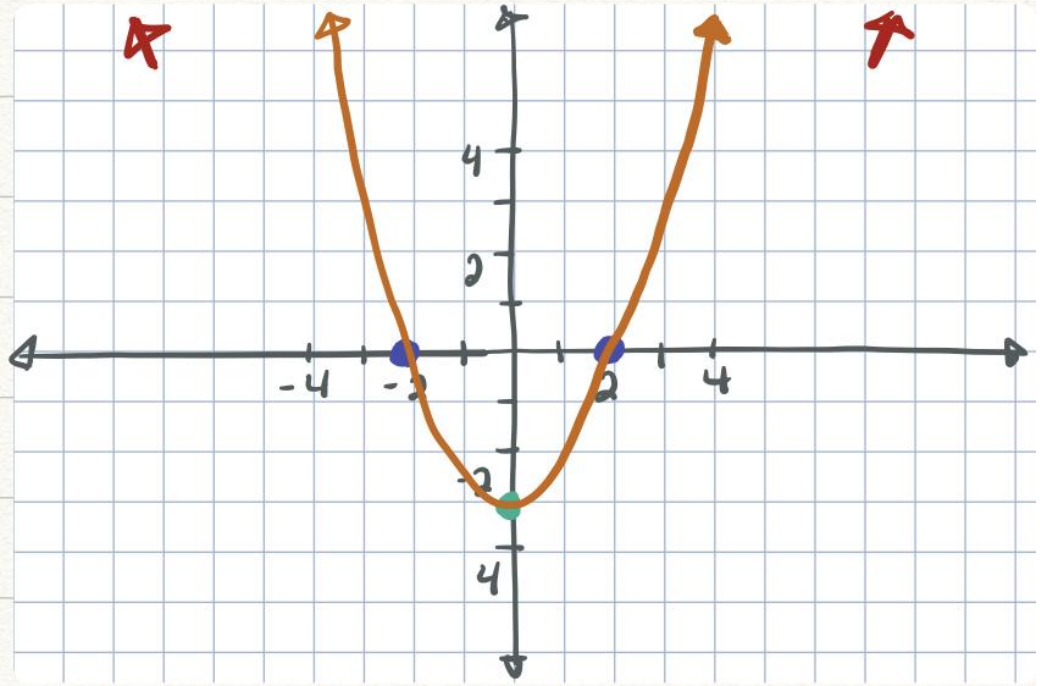
   Maximum: (0, 0)

1. As $x \to \infty$, $f(x) \to \infty$ up

   As $x \to -\infty$, $f(x) \to \infty$ up

   Zeros: (-2, 0), (2, 0)

   Minimum: (0,-3)



1. Draw in end behavior
2. Find zeros
3. Plot min.
4. Connect Dots

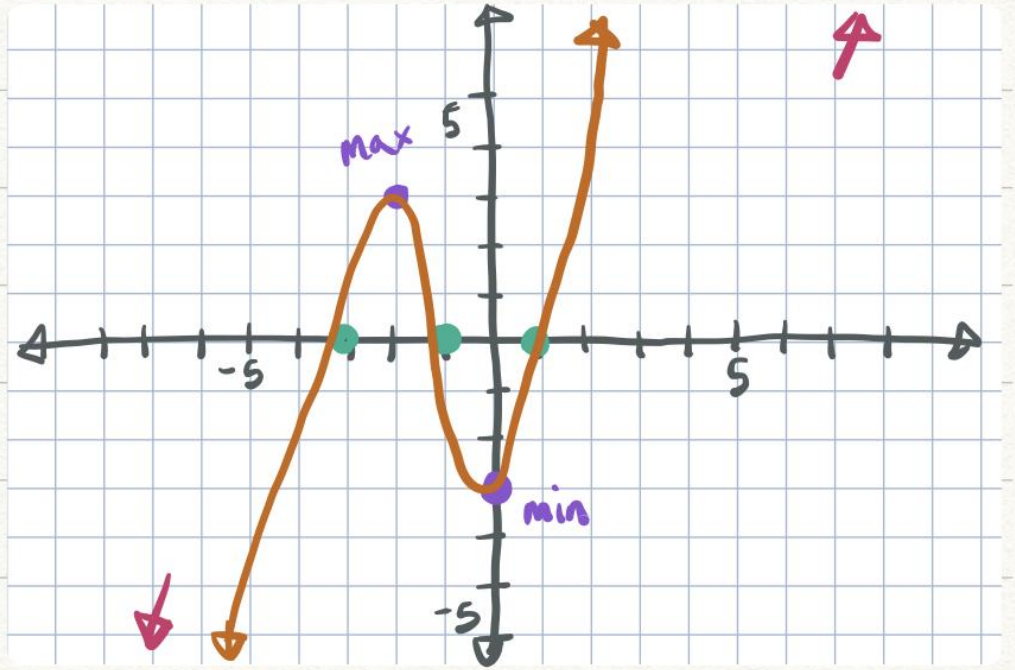
2. As $x \to \infty$, $f(x) \to \infty$ up

As $x \to -\infty$, $f(x) \to -\infty$ down

Zeros: (-3, 0), (-1, 0), (1, 0)

Minimum: (0, -3)

Maximum: (-2, 3)



1. Draw in end behavior
2. Find zeros
3. Plot min and max points
4. Connect the dots, make sure to turn at every max/min.

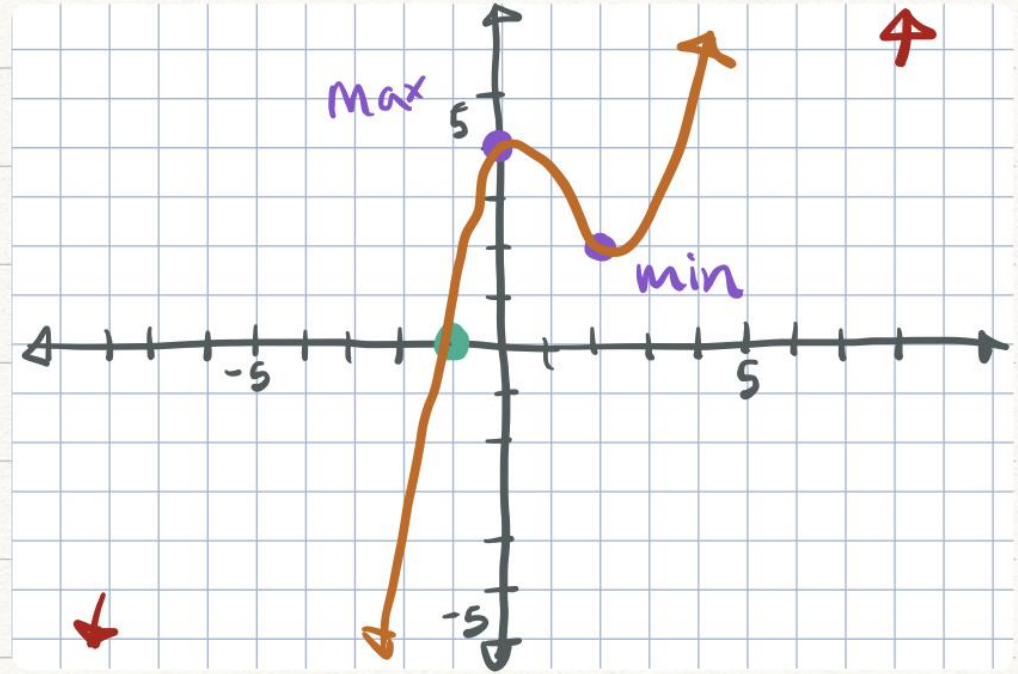
3. As $x \to \infty$, $f(x) \to \infty$ up

As $x \to -\infty$, $f(x) \to -\infty$ down

Zeros: (0,-1)

Minimum: (2, 2)

Maximum: (0, 5)



1. Draw in end behavior
2. Find zeros.
3. Plot min & max
4. Connect the dots. Start at the bottom left, making sure to turn when you touch a max / min.

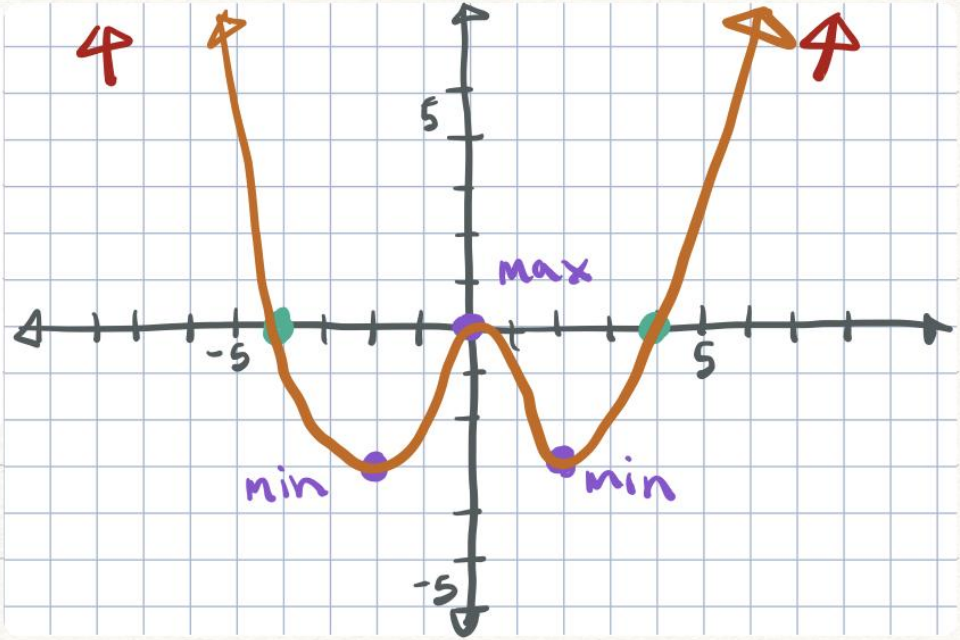
4. As $x \to \infty$, $f(x) \to \infty$ up

As $x \to -\infty$, $f(x) \to \infty$ up

Zeros: (-4, 0), (0, 0), (4, 0)

Minimum: (-2, -3), (2, -3)

Maximum: (0, 0)



1. Draw in end behavior
2. Find zeros.
3. Plot min & max
4. Connect the dots. Start at the bottom left, making sure to turn when you touch a max / min.