Math Virtual Learning

Algebra 2A

Polynomial Parent Functions

May 13, 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

Example 1: If $f(x) = -4x + 9$ and $g(x) = 2x - 7$, find $(f \circ g)(x)$.

Example 2: If $f(x) = -4x + 9$ and $g(x) = 2x - 7$, find $(g \circ f)(x)$.

Warm Up Answers

Example 1: If $f(x) = -4x + 9$ and $g(x) = 2x - 7$, find $(f \circ g)(x)$.

$(f \circ g)(x) = f(g(x))$	Rewrite the composition in a different form.
$= -4(2x - 7) + 9$	Replace each occurrence of x in f(x) with $g(x) = 2x - 7$.
$= -8x + 28 + 7$	Simplify the answer by distributing and combining like terms.
$= -8x + 37$	

Thus, $(f \circ g)(x) = -8x + 37$.

Example 2: If $f(x) = -4x + 9$ and $g(x) = 2x - 7$, find $(g \circ f)(x)$.

$(g \circ f)(x) = g(f(x))$	Rewrite the composition in a different form.
$= 2(-4x + 9) - 7$	Replace each occurrence of x in g(x) with $f(x) = -4x + 9$.
$= -8x + 18 - 7$	Simplify the answer by distributing and combining like terms.
$= -8x + 11$	

Thus, $(g \circ f)(x) = -8x + 11$.

Lesson

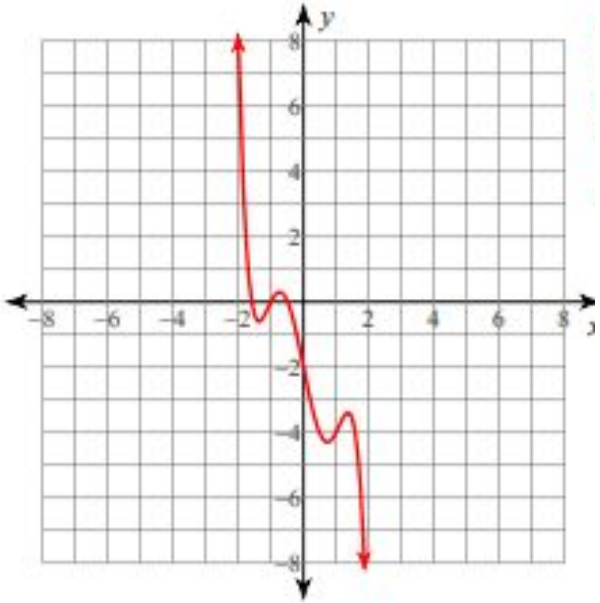
For today, we are going to be practicing looking at a graph and listing out its end behavior, zeros, multiplicity, minimums, and maximums.

If you need to, review the video lessons from previous lessons.

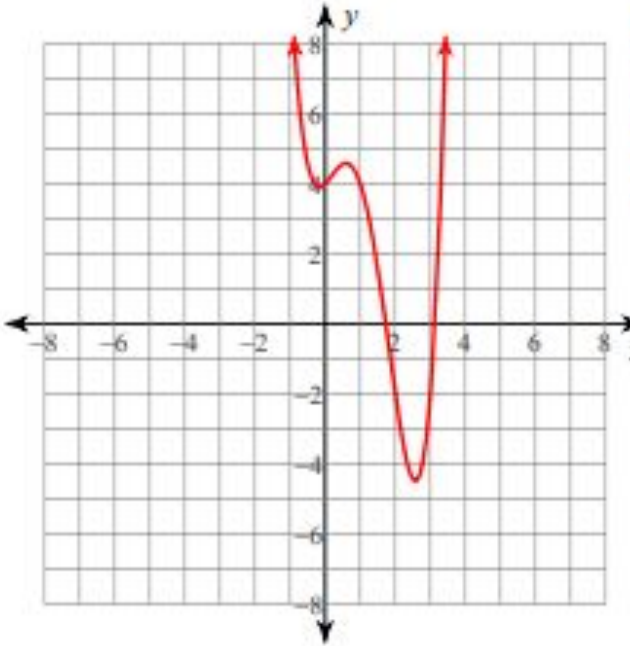
Practice

For the following equations, list the end behavior, zeros, minimums, and maximums.

1.

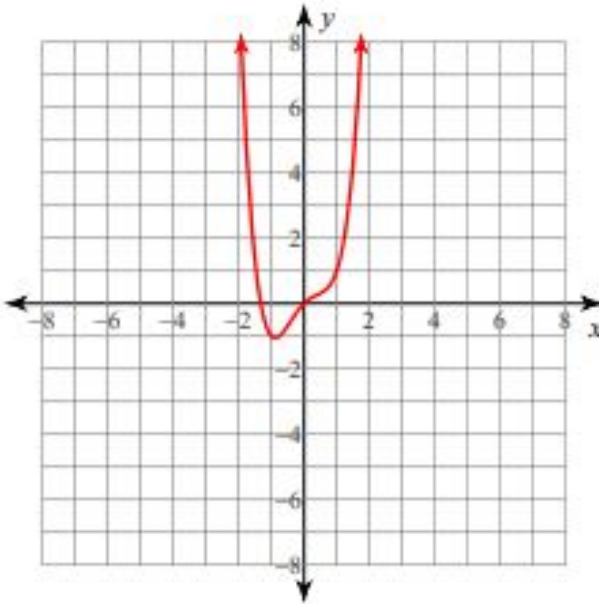


2.

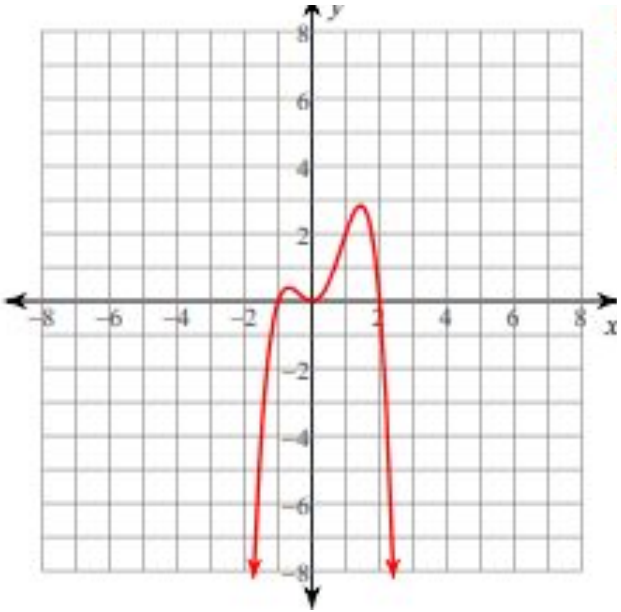


Practice

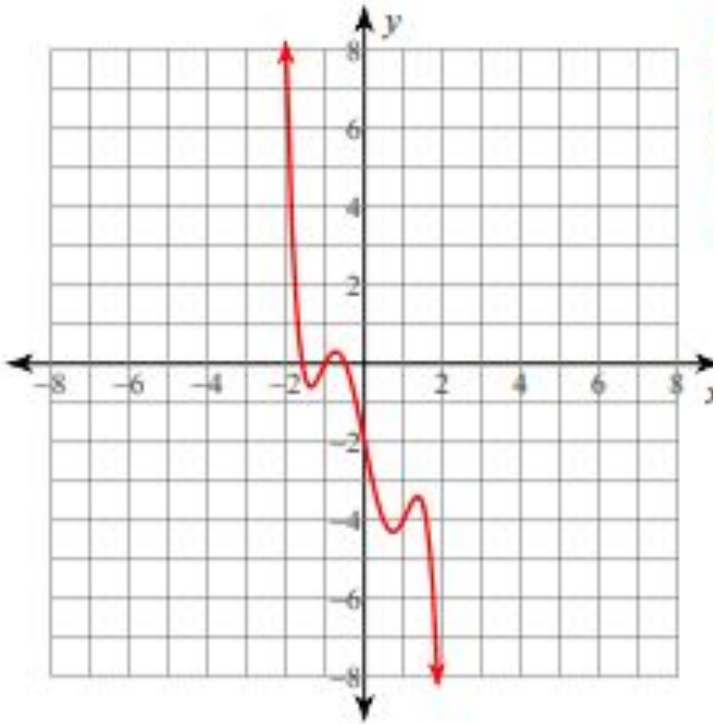
3.



4.



Solutions #1



End Behavior: As $x \to \infty$, $f(x) \to -\infty$

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

Zeros: (-1.6,0), (-1,0), (-.4,0)

Minimums: (-1.5, -.5), (.75, -4.25)

Maximums: (-.75, .25), (1.5, -3.5)

Solutions #2

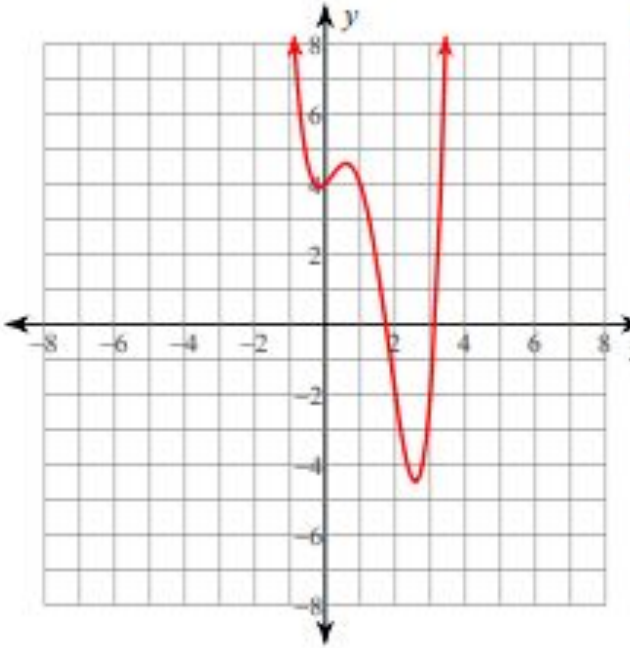
2. End Behavior: As $x \to \infty$, $f(x) \to \infty$

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

Zeros: (1.75, 0), (3, 0)

Minimums: (-.25, 4), (2.5, -4.5)

Maximums: (.5, 4.5)



Solutions #3

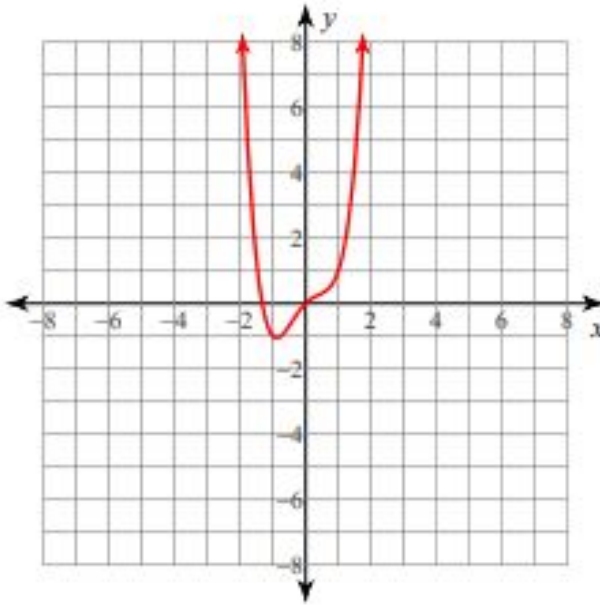
3. End Behavior: As $x \to \infty$, $f(x) \to \infty$

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

Zeros: (-1.75, 0), (0, 0)

Minimums: (-1, -1)

Maximums: none



Solutions #4

4. End Behavior: As $x \to \infty$, $f(x) \to -\infty$

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

Zeros: (-1, 0), (0, 0) (2, 0)

Minimums: (0, 0)

Maximums: (-.75, .4), (1.5, 3)