

Math Virtual Learning

Algebra 2A Polynomial Parent Functions

May 19, 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

Match the equation to the correct graph

$$f(x) = x^2 - 4x + 7$$
 $g(x) = -x^2 - 10x - 19$

Warm Up Answers





Today, we are going to start looking at how to graph a polynomial when it is in intercept form. First we are going to look at how to get the x-intercepts (zeros), y-intercepts, and end behavior.

Find the x and y intercepts from a polynomial in factored form: <u>https://www.youtube.com/watch?v= 94pvZfBzAy0</u>

Ex 1: Find the Intercepts and the End Behavior of a Polynomial Function: https://www.youtube.com/watch?v=EwiQEO2T0rk

Practice

List the x-intercepts, y-intercepts, and end behavior and then graph each of the following

- 1. y = (x + 2)(x 1)
- 2. $y = (x + 2)^2(x 1)$
- 3. $y = (x + 2)^2(x 1)^2$
- 4. y = (x + 2)(x 1)(x + 3)(x 2)(x + 1)

1.
$$y = (x + 2)(x - 1)$$

- a. X-intercepts: (-2, 0) (1, 0)
- b. Y-intercepts: (0, -2)
- c. End behavior: degree of 2 a. $x \to \infty, f(x) \to \infty$ b. $x \to -\infty, f(x) \to \infty$
- 2. $y = (x+2)^2(x-1)$
 - a. X-intercepts: (-2, 0) (1, 0)
 - b. Y-intercepts: (0, -4)
 - c. End behavior: degree of 3

a.
$$x \to \infty, f(x) \to \infty$$

b. $x \to -\infty, f(x) \to -\infty$



3.
$$y = (x+2)^2(x-1)^2$$

- d. X-intercepts: (-2, 0) (1, 0)
- e. Y-intercepts: (0, 4)
- f. End behavior: degree of 4

a.
$$x \to \infty, f(x) \to \infty$$

b. $x \to -\infty, f(x) \to \infty$

4.
$$y = (x + 2)(x - 1)(x + 3)(x - 2)(x + 1)$$

- g. X-intercepts: (-2, 0) (1, 0) (-3, 0) (2, 0) (-1, 0)
- h. Y-intercepts: (0, 12)
- i. End behavior: degree of 5

a.
$$x \to \infty, f(x) \to \infty$$

b. $x \to -\infty, f(x) \to -\infty$

