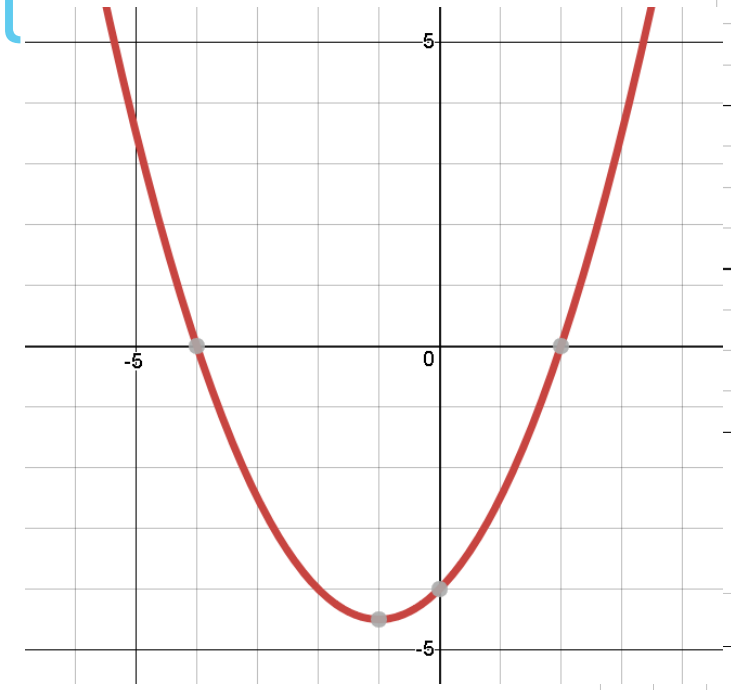
6.3 Graphs & Zeros

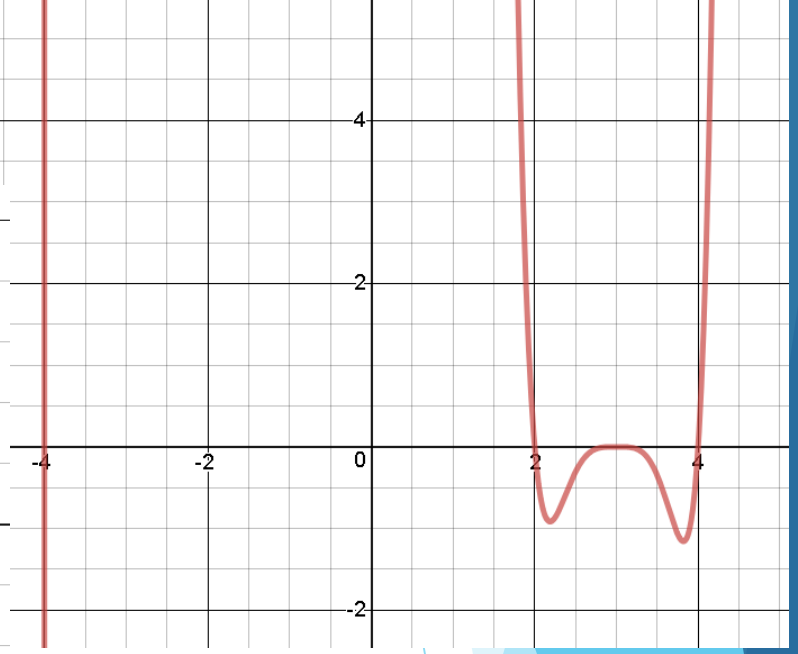
SWBAT identify zeros of polynomial functions from graphs or factored polynomial functions.

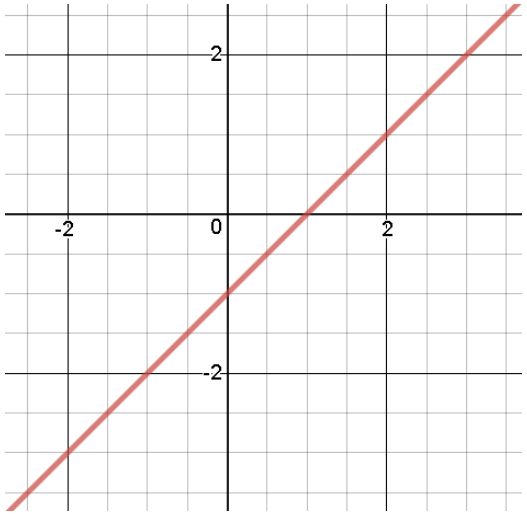
Assignments:
HW45

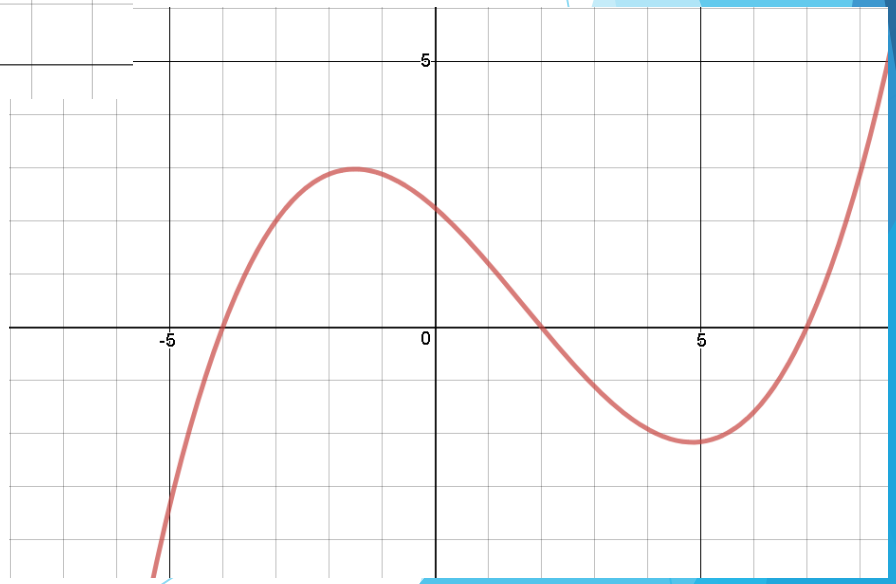
Graphs of Polynomial Functions

- Graphs behave differently based on the degree of the function
- Ends will shoot towards $\pm\infty$
  - Odd Degree: ends go different directions
  - Even Degree: ends go same direction
- Can be lots of curves in the middle





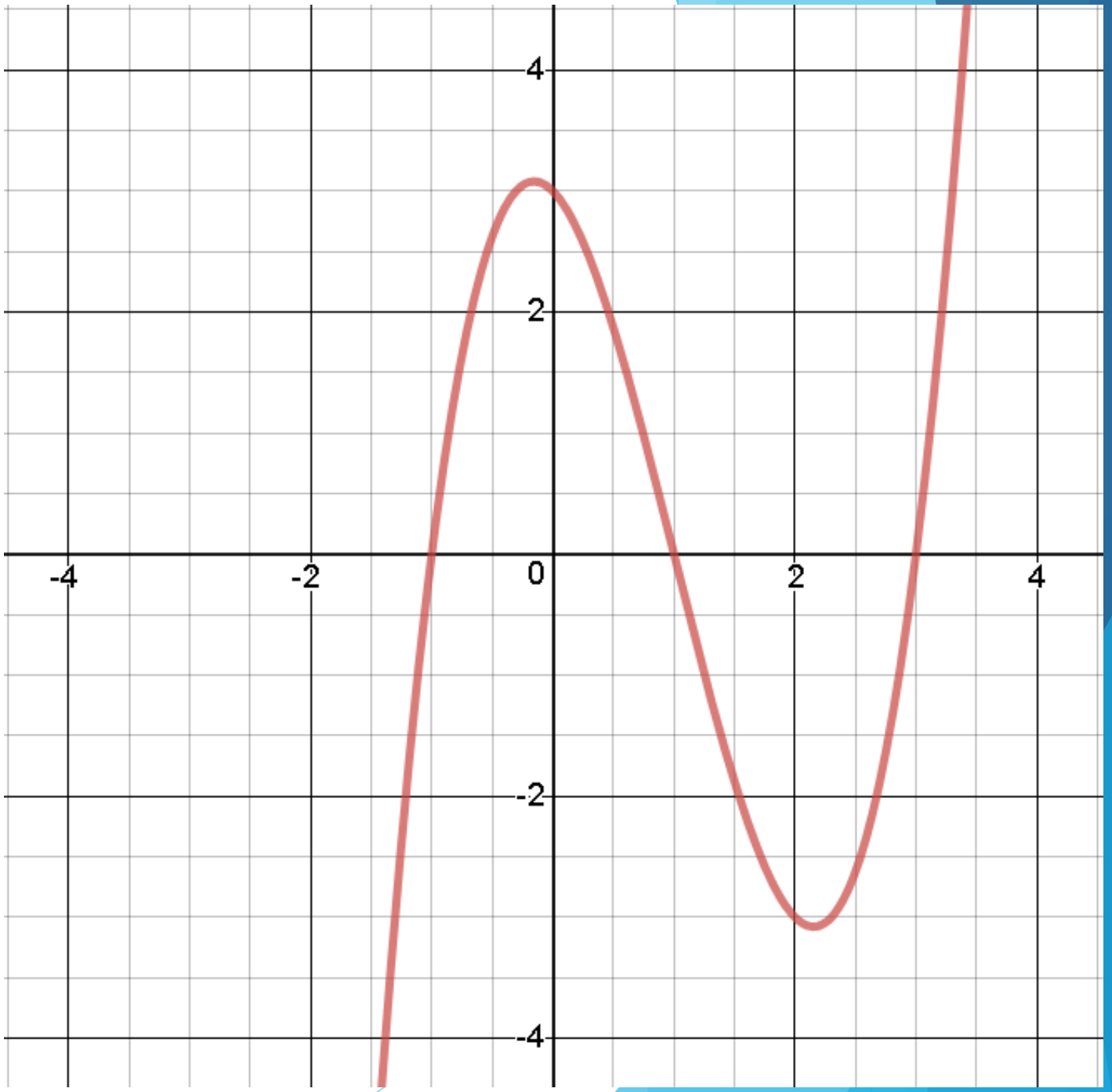




Zeros of Polynomial Functions

- Identify the x-intercepts of the polynomial function to the right

- x-intercepts of polynomial functions are also called **zeros** or **roots**
- What are the zeros of the polynomial function to the right?



Zeros of Polynomial Functions

- What if, instead of the graph, we have the function rule?
- $f(x) = (x - 2)(x + 4)(x - 1)$
- Hint: what do we know about the output value of the x-intercepts?
- Zero Product Property: If $ab = 0$, then $a = 0$ or $b = 0$
- When $f(x) = 0$, we are allowed to "split" the function up at multiplication signs – but *only* when $f(x) = 0$!

- In general, $(x - k)$ is the linear **factor** and k is the zero

Zeros of Polynomials

- Can we write a possible function for the graph?

1. Identify the zeros
2. Write the factors
3. Write the function definition!

(it doesn't matter what order the factors are in)

- There are some additional pieces to figuring out the exact function that we will not be covering in Algebra 1.