Polynomial Function:

The set of integers $n \geq 1$ such that $a_n, a_{n-1}, a_{n-2}, \ldots, a_0 \in \mathbb{R}$ and $a_n \neq 0$ is called the leading coefficient.

If the degree is 2 or more, these functions will have graphs that are smooth continuous curves.

The Leading Coefficient Test:

As $x$ increases or decreases without bound ($x \to \pm \infty$), the graph will either rise or fall.

* If $n$ is odd and $a_n > 0$, the graph falls to the left and rises to the right.
* If $n$ is odd and $a_n < 0$, the graph rises to the left and falls to the right.
* If $n$ is even and $a_n > 0$, the graph rises to $L$ and $R$.
* If $n$ is even and $a_n < 0$, the graph falls to $L$ and $R$.

A zero of a polynomial function, $f(x)$, is the value of $x$ that yields a zero for $f(x)$. These are also known as roots or solutions. Graphically?