**3.1 – CHARACTERISTICS OF POLYNOMIAL FUNCTIONS**

Example of a polynomial function: $f\left(x\right)=2x^{4}-5x^{2}+7$

* Degree: 4
* # terms: 3
* Constant term: 7
* Leading coefficient (LC): 2

Graphs of polynomial functions have specific characteristics depending on their degree and on the sign of their leading coefficient.

The number of “legs” tells us the degree.

For all of them: the *y*-intercept is the constant term, and the domain is all real numbers.

|  |  |
| --- | --- |
| **Even Degree Polynomials** | **Odd Degree Polynomials** |
| **Positive LC** | **Negative LC** | **Positive LC** | **Negative LC** |
| Degree 0 | Degree 0 | Degree 1 | Degree 1 |
| Degree 2 | Degree 2 | Degree 3 | Degree 3 |
| Degree 4 | Degree 4 | Degree 5 | Degree 5 |
| Gal direction: MIN | Gal direction: MAX | Gal direction: NO MIN NO MAX | Gal direction: NO MIN NO MAX |
| # possible zeros: | # possible zeros: |

**Hwk: p 114 # 1 – 6, 9, 10**