Vocabulary: Polynomials and Linear Factors

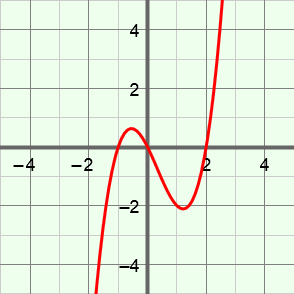
dictionary2

**Vocabulary**

* Degree – the greatest exponent of all terms of a polynomial.
  + When a polynomial is written in standard form, the degree is the exponent of the first term.
  + For example, the degree of the polynomial 4*x*3 – 5*x*2 + *x* – 3 is three.
* Linear factor – a first-degree factor of a polynomial.
  + For example, the polynomial *x*2 – 2*x* – 35 = (*x* + 5)(*x* – 7), so the linear factors of

*x*2 – 2*x* – 35 are (*x* + 5) and (*x* – 7).

* Multiplicity – the number of times the associated factor of a zero occurs in a polynomial.
  + For example, *x*3 + 16*x*2 + 64*x* = *x*(*x* + 8)(*x* + 8), so this polynomial has two zeros:
    - *x* = 0 is a zero with multiplicity 1, because *x* is a factor one time.
    - *x* = –8 is a zero with multiplicity 2, because (*x* + 8) is a factor twice.
* Polynomial – a monomial or sum of monomials.
  + Each monomial is called a *term* of the polynomial.
    - For example, 2*x*3 – 5*x*2 + 9*x* – 4 is a polynomial with four terms.



**zeros**

* Zero (of a polynomial) – an *x*-value for which the value of the polynomial is zero.
  + On a graph, each *x*-intercept represents a zero.
    - For example, the zeros of the polynomial

*y* = *x*3 – *x*2 – 2*x* = *x*(*x* + 1)(*x* – 2), shown to the right, are the values where the graph has an *x*-intercept: *x* = –1, 0, and 2.