A monomial is an expression that is either a real number, a variable, or a product of real numbers and variables with whole-number exponents. A **polynomial** is a monomial or the sum of monomials. For any polynomial, you can write the corresponding polynomial function, as shown below.

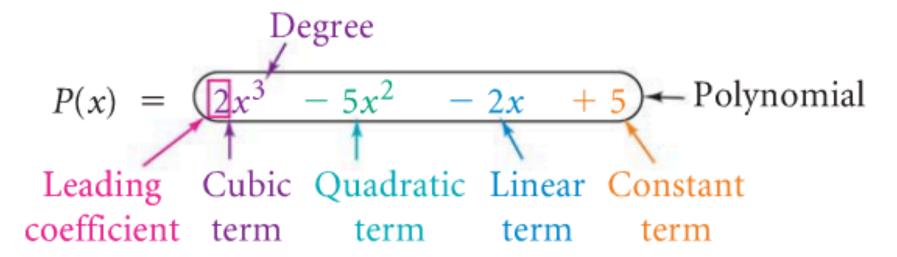
Definition

Polynomial Function

$$P(x) = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0$$
 where *n* is a nonnegative integer

where n is a nonnegative integer and the coefficients a_n, \ldots, a_0 are real numbers.

The exponent of the variable in a term determines the degree of that term. The terms in the polynomial shown below are in descending order by degree. This order demonstrates the standard form of a polynomial. A one-variable polynomial in standard form has no two terms with the same degree, since all like terms have been combined.



You can classify a polynomial by the number of terms it contains. A polynomial of more than three terms does not usually have a special name. You can also classify a polynomial by its degree. The degree of a polynomial is the largest degree of any term of the polynomial. The name assigned to each degree is listed below.

ان کری Degree	Name Using Degree	Polynomial Example	Number of Terms	Name Using Number of Terms
0	constant	6	1	monomial 🗙
1	linear	x + 3	2	binomial 😾
2	quadratic	$3x^{2}$	1	monomial
3	cubic	$2x^3 - 5x^2 - 2x$	3	trinomial 😾
4	quartic	$x^4 + 3x^2$	2	binomial
5	quintic	$-2x^5 + 3x^2 - x + 4$	4	polynomial of 4 terms

Write each polynomial in standard form. Then classify it by degree and by number of terms.

a.
$$-7x + 5x^4$$
 5 X - X

$$5x^4 - 7x$$

The term with the largest degree is $5x^4$, so the polynomial is degree 4. It has two terms. The polynomial is a quartic binomial.

$$3x^{3} + x^{2} - 4x + 3x^{3} + 2x$$

$$3x^{3} + x^{2} - 2x$$

$$3x^{3} + x^{2} - 2x$$

The term with the largest degree is $3x^3$, so the polynomial is degree 3. It has three terms. The polynomial is a cubic trinomial.

Write each polynomial in standard form. Then classify it by degree and by number of terms.

a.
$$4x - 6x + 5$$

$$-2x+5$$

b.
$$3x^3 + x^2 - 4x + 2x^3$$
 c. $6 - 2x^5$

$$5x^{3} + x^{2} - 4x - 2x^{5} + 6$$

c.
$$6 - 2x^5$$

What is a monomial?
What is a polynomial?
What is standard form of a polynomial?
What are two ways you can classify a polynomial?
What is a degree of a polynomial?