

What is a **monomial**? an expression that is either a real number, a variable, or a product with whole number exponents.

What is a **polynomial**? monomial or sum of monomials

Copy the definition of a Polynomial Function:

$$P(x) = ax^n + bx^{n-1} + \dots + a_0$$

What does "nonnegative integer" mean? (Hint: What does the prefix "non" mean?)

not negative  $\Rightarrow$  positive

How do you find the **degree** of a term of a polynomial?

exponent of the variable in the term

What is the "**Standard Form**" of a polynomial?

Terms in descending order by degree.

**Example** – Rewrite the following polynomial function in standard form, then identify the leading coefficient, cubic term, quadratic term, linear term, and constant term:

$P(x) = -2x + 3x^2 - 2x^3 + 5$

Diagram showing the polynomial  $P(x) = -2x + 3x^2 - 2x^3 + 5$  with terms identified:

- $-2x^3$  is circled in red and labeled "leading coeff." and "cubic term".
- $+3x^2$  is circled in green and labeled "quadratic term".
- $-2x$  is circled in blue and labeled "linear term".
- $+5$  is labeled "constant".

How do you find the degree of a polynomial?

Largest degree of any term

### Classifying Polynomials by Degree

What is the name for a polynomial with degree 0?

Constant

**Note** – In terms with more than 1 variable degree is the sum of the exponents  
Ex  $3x^2y^2z$  is degree 6  $(2+2+1)$

What is the name for a polynomial with degree 1? linear

What is the name for a polynomial with degree 2? quadratic

What is the name for a polynomial with degree 3? cubic

What is the name for a polynomial with degree 4? quartic

What is the name for a polynomial with degree 5? quintic

*Note: There are names for polynomials with degree higher than 5, but we do not use them. If you have a polynomial with degree higher than 5, simply call it "a polynomial of degree  $n$ ," where  $n$  is the degree of the polynomial.*

## Classifying Polynomials by Number of Terms

What is the name for a polynomial with one term? monomial

What is the name for a polynomial with two terms? binomial

What is the name for a polynomial with three terms? trinomial

How do you write the name of a polynomial with more than 3 terms? polynomial of " $n$ " terms