

Polynomial Expression

- a term or a **sum/difference** of terms involving variables raised to a whole number exponent
- no variables can appear in the denominator

Polynomials	Not Polynomials

Classifying Polynomials

	Definition	Example
Monomial		
Binomial		
Trinomial		
Polynomial		

Degree

Degree of a Monomial	Degree of a Polynomial in One Variable
a) $7x$ b) $7y^6$	a) $3x^2 + x^7$
c) $3x^4$ d) 7	b) $5x + 4x^3 + 9$

Standard Form of a Polynomial in One Variable

A polynomial written in standard form is written in descending order beginning with the highest degree monomial.

Write the following polynomial in standard form.

$$4a^4 - 5 + a^2 - 7a^3 + 2a^2 + 6a^5 + 8 + 12a^8$$

Leading term	Leading coefficient	Constant term

Polynomial Expression

- a term or a sum/difference of terms involving variables raised to a whole number exponent
- no variables can appear in the denominator

Polynomials		Not Polynomials	
$4x^2$	$3x^3 - 8$	$w^{-3} + 1$	$2x^3 - x^2 + \frac{1}{x}$
	$\frac{4}{5}x^2 - \frac{1}{2}x + \frac{2}{3}$	$6x^{2/3} + 5x - 8$	
	$5x^2 + 2x - 14$		

Classifying Polynomials

	Definition	Example
Monomial	a polynomial with exactly one term	$3x, x^2y^2$
Binomial	a polynomial with exactly two terms	$2x^2 + 4$
Trinomial	a polynomial with exactly three terms	$5x^3 - \frac{1}{2}x + 6$
Polynomial	one or more terms	$-x^3 + 3x^2 - 16x - 5$

Degree

Degree of a Monomial				Degree of a Polynomial in One Variable	
<ul style="list-style-type: none"> the sum of the exponents of the variables in the monomial 				<ul style="list-style-type: none"> the degree of the monomial term with the highest exponent Note: the polynomial must be simplified first 	
a) $7x$	1	b) $7y^6$	6	a) $3x^2 + x^6$	6
c) $3x^4$	9	d) 7	0	b) $5x + 4x^3 + 9$	3

Standard Form of a Polynomial in One Variable

A polynomial written in standard form must be simplified and written in descending order beginning with the highest degree monomial.

Example: Write the following polynomial in standard form.

$$4a^4 - 5 + a^2 - 7a^3 + 2a^2 + 6a^5 + 8 + 12a^8$$

$$12a^8 + 6a^5 + 4a^4 - 7a^3 + 3a^2 + 3$$

Leading term	Leading coefficient	Constant term
<ul style="list-style-type: none"> the term with the highest degree the first term of the polynomial when it is in standard form 	<ul style="list-style-type: none"> the coefficient of the leading term 	<ul style="list-style-type: none"> any term with no variables in a simplified polynomial
$12a^8$	12	3