

A polynomial is an expression that can be written as the sum (+) or difference (-) of terms in the form $(\text{number})x^{\text{any whole number}}$

$$2x^2 + x - 5 \text{ Polynomial } 4 - x^2, 10$$

$$2(x-10)(6x-4)$$

Examples of Non-Polynomials

$$y = \log(6x-1), y = 4^x - 3,$$

$$y = 2x + \frac{3}{x-1}, y = 5x^{\frac{1}{2}} - 3x + 1$$

Term: A single number, variable, or number times a variable, terms are separated by addition and subtraction

Degree: is the highest power of the variable in a polynomial

Coefficient: Number used to multiply a variable

Constant: Number w/out a variable

Standard Form \rightarrow powers biggest \rightarrow smallest

$$4x^6 - 3x^5 + 2x + 1$$

\downarrow constant
constant

Terms: 4

Coefficient

Degree: 6

Monomial: expression with 1 term

$$5x^2, 2xy^4, 3$$

Binomial: expression with 2 terms

$$2x + 5, 4x^3 - 11, 0 + 2x$$

Trinomial: expression with 3 terms

$$3x - y + 4z, 2 + 5x - 4xy^4$$

Operations

Combining Like Terms: adding or subtracting terms with the same variable raised to the same power

$$x^4 + 3x^3 - 2x + 10x^4 + 6x^2 - 9x^3$$

$$11x^4 - 6x^3 + 6x^2 - 2x$$

Multiply

$$(3x - 5)(2x^3 + 5x^2 - 2x + 8)$$

$$2x^3 \quad 5x^2 \quad -2x \quad 8$$

$3x$	$6x^4$	$15x^3$	$-6x^2$	$24x$
-5	$-10x^3$	$-25x^2$	$10x$	-40

$$6x^4 + 5x^3 - 31x^2 + 34x - 40$$

$$(x+1)(x+6)(3x^2 - 4yx + 8y)$$

1st

$$(x+1)(x+6)$$

	x	6
x	x^2	$6x$
1	$1x$	6

✓

2nd

$$(x^2 + 7x + 6)(3x^2 - 4yx + 8y)$$

	$3x^2$	$-4yx$	$8y$
x^2	$3x^4$	$-4yx^3$	$8yx^2$
$7x$	$21x^3$	$-28yx^2$	$56yx$
6	$18x^2$	$-24yx$	$48y$

$$3x^4 + 21x^3 + 18x^2 - 4y^3 - 20yx^2 + 24yx + 48y$$