

Intro to Polynomials

Goals:

1. To identify the degree, leading term, and leading coefficient of a polynomial.
2. To add and subtract polynomials

Definition:

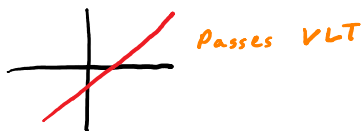
1. A **monomial** is a constant or a product of a constant and variables raised to whole numbered exponents.
2. A **polynomial** is the sum or difference of monomials.

ex monomial
 $x^2 y^3 z$

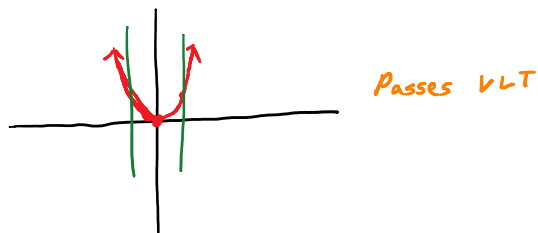
ex $x^2 y^3 z + 5xy + 6$

Note: A polynomial is a function!

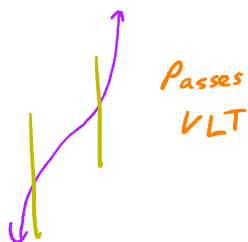
$P(x) = mx + b$
linear polynomial



$P(x) = x^2$
 $y = x^2$



$f(x) = x^3$



ex

Determine the degree of each term and the degree of the polynomial.

$$5c^{11} + 12c^{12}t^9 + 5c^5t^5 + 7c^5 - 9$$

$$5c^{11}, \quad 12 \underbrace{c^{12}t^9}, \quad 5 \underbrace{c^5t^5}, \quad \underbrace{7c^5}, \quad \underbrace{-9}$$

deg: 11 21 10 5 0

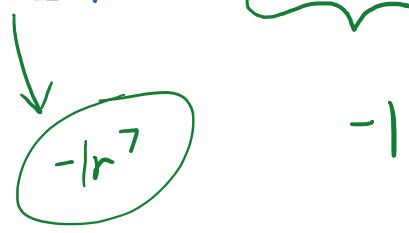
degree of the entire poly: 21

ex

Arrange in descending order. ^{of exponent} Then find the leading term and the leading coefficient.

$$r + 6r^4 - r^7 - 26r^3 + 3r^5$$

$$-r^7 + 3r^5 + 6r^4 - 26r^3 + r$$



ex

Add the polynomials

$$\underbrace{(\cancel{x^2} + \cancel{4x} - \cancel{5xy} - \cancel{8})}_{\text{poly}} + \underbrace{(\cancel{-4x^2} - \cancel{x} + 2y^2 + \cancel{7})}_{\text{poly}}$$

$$-3x^2 + 3x - 5xy - 1 + 2y^2$$

(ex)

Subtract the polynomials.

$$(7ad - 7a^2d + 15ad^2) - (10ad^2 - 3ad - 15a^2d)$$

~~7ad~~ - ~~7a²d~~ + ~~15ad²~~ - ~~10ad²~~ + ~~3ad~~ + ~~15a²d~~

$$10ad + 8a^2d + 5ad^2$$