Monomials and Polynomials

Monomials:

- The degree of a monomial ax^n is equal to the exponent n of the variable x.

Ex: $-3x^2$ ⟶ Degree: 2

- If there is more than 1 variable, add the exponents.

Ex: $-3x^2y^3$ ⟶ Degree: 5

Polynomials

- A polynomial is the sum of monomials
- The degree of a polynomial, once reduced, is equal to the degree of the monomial with the highest degree.

Ex. $P(x) = 3x^2 - 5x + 1$ Degree: 2

$P(x,y) = 3x^2y - 2xy + 5x - 2$ Degree: 3

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Evaluating Polynomials

Evaluate for x = -3

$P(x) = 2x^3 + x^2 - 8x - 4$

$P(-3) = 2(-3)^3 + (-3)^2 - 8(-3) - 4$

$= -25$

Division by a Monomial

Divide: $(12x^3 + 10x^2 - 2x) \div 2x$

Method: Divide each term of the polynomial by the monomial

$\frac{12x^3}{2x} + \frac{10x^2}{2x} - \frac{2x}{2x}$

$6x^2 + 5x - 1$

You may not always get a polynomial as an answer. Why?

Divide: $(12x^3 - 6x) \div 3x^2$

$\frac{12x^3}{3x^2} - \frac{6x}{3x^2}$

$4x - 2x^{-1}$

OR

$4x - \frac{2}{x}$

* monomial can only have positive integer exponents

Since x^{-1} this is not a polynomial

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