The Degree of a Polynomial

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Preliminaries and Objectives

Preliminaries
- Exponents
- Variables

Objectives
- Polynomials
- Degree of a polynomial

Ingredients

Materials
- Real Numbers
- A variable "x"

Operations
- Addition
- Subtraction
- Multiplication

What We Get

4 　　　　　 x^2

x 　　　　　 $\dfrac{1}{2}x^2$

$4x$ 　　　　 $\dfrac{1}{2}x^2 + 4x - 3$

$4x - 3$ 　　 $(x - 3)(x - 4) = x^2 - 7x + 12$

Terms

Term
1. The product of a real number and x raised to a positive integer power, OR
2. a lone real number (called the **constant**)

Polynomial

A polynomial is the sum of terms

Leading Term

The term of a polynomial with the largest power of x

Degree of a Polynomial

Degree of a Polynomial

The exponent of the leading term

Examples

$$6x^5 - 12x^4 + x^2 - 7 \text{ has degree 5}$$

$$(x+3)(x-4) \text{ has degree 2 since } (x+3)(x-4) = x^2 - 2x - 12$$

Further Examples

Determine whether or not the given expression is a polynomial. If it is, find the degree.

$$(3x^2 - 2)(4 - x) \qquad \frac{4}{3}$$

$$\frac{x^2 - x - 1}{x + 3} \qquad x + 3$$

$$x^2 + x^{-2} \qquad x^2 + x^4 - 3$$