

# The Degree of a Polynomial



# 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

$x^2$

$x$

$\frac{1}{2}x^2$

$4x$

$\frac{1}{2}x^2 + 4x - 3$

$4x - 3$

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

# 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

$6x^5 - 12x^4 + x^2 - 7$  has degree 5

$(x + 3)(x - 4)$  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.

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

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

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