Chapter 10

Polynomials and Factoring

Section 10.1 Adding and Subtracting Polynomials

polynomial — An expression which is the sum of the terms of the form ax^k, where k is an integer

monomial — 1 term polynomial

binomial	2 term polynomial
trinomial	3 term polynomial
standard form	written by largest exponents to smallest
degree of a term	in each term, it is the exponent of the variable.
degree of a polynomial	the largest exponent in the polynomial
leading coefficient	the number in front of the variable with the highest exponent.

Examples

1. Identify the coefficients of: $4 - x + 2x^3$

$2x^2 - x + 4$ All coef.: 2, -1, 4

2. State the leading coefficient and degree of each polynomial. Then classify the polynomial by th number of terms.

Polynomial	Leading Coefficient	Classified by Degree	Classified by Number of Terms
a. -5 $-5x^0$	-5	0-constant	1-monomial
b. $\frac{1}{4}x^1$	$\frac{1}{4}$	1-linear	1-monomial
c. $-9x + 2$	-9	1-linear	2-Binomial
d. $x^2 - 6$	1	2-quadratic	2-bino.
e. $-x^3 + 2x + 1$	-1	3-cubic	3-trinomial
f. $3x^4 + 2x^3 - x^2 - 8$	3	4-Quartic	4-term poly

3. Find the sum. Write the answer in standard form.

a. $(-8x^3 + x - 9x^2 + 2) + (8x^2 - 2x + 4) + (4x^2 - 1 - 3x^3)$

horizontal

$(-8x^3 + -3x^3) + (-9x^2 + 8x^2 + 4x^2) + (x - 2x) + (2 + 4 - 1)$

$-11x^3 + 3x^2 - x + 5$

Vertical

b. $(6x^2 - x + 3) + (-2x + x^2 - 7)$

$6x^2 - x + 3$

$+ \quad x^2 - 2x - 7$

$7x^2 - 3x - 4$

4. Find the difference. Write the answer in standard form.

Vertical

a. $(-6x^3 + 5x - 3) + (2x^3 - 4x^2 + 3x + 1)$

$-6x^3 + 0x^2 + 5x - 3$

$+ \; -2x^3 - 4x^2 + 3x - 1$

$-8x^2 - 4x^2 + 8x - 4$

horizontal

b. $(4x^2 - 1) + (3x + 2x^2)$

$(4x^2 + 2x^2) + (-3x) + (-1)$

$6x^2 - 3x - 1$

5. From 1890 through 1990, the number of men M and women W in the United States labor force can be modeled by the following equations, where t is the number of years since 1890.

Number of men (in millions): $M = 0.0016t^2 + 0.315t + 19.467$

Number of women (in millions): $W = 0.007t^2 - 0.228t + 5.908$

Find a model for the total number S of men and women in the U.S. labor force.

$S = 0.0086t^2 + 0.087t + 25.375$

Section 10.2 Multiplying Polynomials

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Examples