

Algebra 1

Chapter 8
Section 8-1

Vocabulary

Monomial	A real number, a variable, or a product of a number and any number variables with whole number exponents
Polynomial	Monomial or the sum of monomials
Binomial	Polynomial with two terms, made up of two monomials
Trinomial	Polynomial with three terms, made up of three monomials

Degree of a Monomial

The **degree** of a monomial is the total sum of the exponents of the variables.

Find the degree of the following monomials:

x	mp	ab^2c^5	5	$7r^{11}s^2t^4$
1	2	8	0	17

Adding and Subtracting Monomials

When adding or subtracting monomials, you may only combine them if the variables and exponents are exactly the same (if they are *LIKE TERMS*)

$$\text{Example: } 7x^2 - 3x^2 = 4x^2$$

Simplifying

Can you simplify the following expressions? If so, simplify.

$$17ab^2 + 3ab^2$$

$$20ab^2$$

$$2c - 3c + 7c$$

$$6c$$

$$11sr^{46} + 7s^{4r}t^6$$

Can't Simplify
(s and r switched exponents)

$$13 - 7x^{19}y + x^{19}y$$

$$13 - 6x^{19}y$$

Polynomials

A polynomial is the sum of monomials. Write a polynomial of the monomials $3x$, $-7x^2$, -15 , and $2x^5$.

$$3x - 7x^2 - 15 + 2x^5$$

A polynomial in standard form lists the monomials in order of highest degree to lowest from left to right. Write the above polynomial in standard form.

$$2x^5 - 7x^2 + 3x - 15$$

Polynomials

A polynomial in standard form lists the monomials in order of highest degree to lowest from right to left. Write the above polynomial in standard form.

$$2x^5 - 7x^2 + 3x - 15$$

The degree of a polynomial in one variable is the degree of the monomial with the highest exponent. What is the degree of the above polynomial?

5

Describing Degree and Number of Terms in a Polynomial

Polynomial	Degree	Name for Degree	Number of Terms	Name for Num. of Terms
17	0	Constant	1	Monomial
$3x + 1$	1	Linear	2	Binomial
$x^2 + 2x - 5$	2	Quadratic	3	Trinomial
$19x^3 + 7x$	3	Cubic	2	Binomial
$x^4 - 7x - 1$	4	4th Degree	3	Trinomial

Describe the Following Polynomials

$$7x + 12 - 3x^2$$

Quadratic trinomial

$$100x + 14x^3$$

Cubic Binomial

Adding Polynomials (Vertical Method)

$$\begin{array}{r} 13x^2 + 2x - \\ 11 \\ \hline 14x^2 - 5x + 29 \end{array}$$

$$\begin{array}{r} 8x^3 - 3x^2 + 20x + 1 \\ - (5x^3 + 3x^2 - 7x - \\ 14) \\ \hline 8x^3 - 3x^2 + 20x + 1 \\ - 5x^3 - 3x^2 + 7x + 14 \\ \hline 3x^3 - 6x^2 + 27x + 15 \end{array}$$

Adding Polynomials (Horizontal Method)

Simplify:

$$(12x^4 + 5x^2 - 13) + (12x^3 - 9x^2 + 3x - 2) =$$

$$12x^4 + 12x^3 - 4x^2 + 3x - 15$$

$$(5x^5 - 7x + 12) - (3x^5 - 2x^3 + 11x) =$$

$$2x^5 + 2x^3 - 18x + 12$$