

8-1 Adding + Subtracting Polynomials

Polynomial: a monomial or the sum of monomials called terms

Binomial: the sum of two monomials

Trinomial: the sum of three monomials

Monomial:	Binomial:	Trinomial:
$3x$	$2x+4$	x^2+2x+4
$2y$	$3x^2+x$	$2y^2+3y+1$
$4x^2$	$2y^3+2y$	$4y^3+2y+2$
7	$3z+4$	$2x^2+x+1$

The degree of a polynomial is the greatest degree (exponent) of any term in the polynomial.

ex) $2x^2+2x+1$ degree is 2

$3x^4+x+7$ degree is 4

$2y+7y^5+5$ degree is 5

Standard Form of a polynomial:
arranged so that the terms are
in order from greatest to least.
leading coefficient: The coefficient
of the first term when written in
standard form:

ex) write in standard form +
identify the leading coefficient.

$$3x^2 + 4x^5 - 7x$$

$$4x^5 + 3x^2 - 7x \quad (\text{standard form})$$

The leading coefficient is 4

You can add/subtract polynomials
by adding/subtracting the like
terms.

ex) $(3 - 2x + 2x^2) - (4x - 5 + 3x^2)$

$$3 - 2x + 2x^2 - 4x + 5 - 3x^2$$

$$2x^2 - 3x^2 - 2x - 4x + 3 + 5$$

$$\textcircled{-x^2 - 6x + 8}$$

eliminate
parenthesis
group
simplify

ex1 $(3y + y^3 - 5) + (4y^2 - 4y + 2y^3 + 8)$

$\triangle 3y + \circledast y^3 - 5 + \square 4y^2 - \triangle 4y + \circledast 2y^3 + 8$

$y^3 + 2y^3 + 4y^2 + 3y - 4y - 5 + 8$

$3y^3 + 4y^2 - y + 3$

8-1 Practice Problems

Name each polynomial by degree and number of terms. Rewrite in standard form if it is not already done so.

1) $-5 + 5n^2 - 5n$

2) $6x^5 + 2x^2 - 10x$

3) $-2x^4 - 8x^5 - 6x$

4) $-6m^3 + 8m - 8m^4$

5) $-4 + 8x - 5x^2$

6) $-7x^6$

7) $-9x^4 - 8x^5$

8) $1 - 8x + 4x^2$

Simplify each expression.

9) $(2 + 3a + 2a^4) - (2 - 6a + 3a^4)$

10) $(1 - 6x^3 - 7x^2) + (7x^3 - x + 8x^2)$

11) $(4m^2 + 3m^3 - 2) + (2m^2 + 5m^3 + 8)$

12) $(7 + 8n^2 - 3n^3) + (3n^4 + 5 - 6n^2)$

13) $(7n^2 - 8 + 4n^3) + (7n^3 - 5 - 7n^2)$

14) $(8a - 6a^3 - 8a^4) + (3a^3 - 3a + 8a^4)$

15) $(8 + a - 4a^2) - (a^3 - 7a^2 + 4a)$

16) $(6x^4 + 8x^3 - 2) + (8x - 5 + 7x^3)$

Answers to 8-1 Practice Problems

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|---|--|--|
| 1) Second degree trinomial
$5n^2 - 5n - 5$ | 2) Fifth degree trinomial | 3) Fifth degree trinomial
$-8x^5 - 2x^4 - 6x$ |
| 4) Fourth degree trinomial
$-8m^4 - 6m^3 + 8m$ | 5) Second degree trinomial
$-5x^2 + 8x - 4$ | 6) sixth degree monomial |
| 7) Fifth degree binomial
$-8x^5 - 9x^4$ | 8) Second degree trinomial
$4x^2 - 8x + 1$ | 9) $-a^4 + 9a$ |
| 10) $x^3 + x^2 - x + 1$ | 11) $8m^3 + 6m^2 + 6$ | 12) $3n^4 - 3n^3 + 2n^2 + 12$ |
| 13) $11n^3 - 13$ | 14) $-3a^3 + 5a$ | 15) $-a^3 + 3a^2 - 3a + 8$ |
| 16) $6x^4 + 15x^3 + 8x - 7$ | | |