

Name: _____

Sec. 9.1: Add and Subtract Polynomials

Monomial: a number, variable, or the product of a number and one or more variables with whole number exponents

Examples: -5 , y , $3x^2$, $-4x^3y^6$

Degree of a Monomial: sum of the _____ of the variables in the monomial

Monomial	-5	y	$3x^2$	$-4x^3y^6$
Degree				

Polynomial: a monomial or sum of monomials; each monomial is called a term

- Binomial: polynomial with _____ terms
- Trinomial: polynomial with _____ terms

Degree of a Polynomial: _____ degree of all the terms

Example: $x^2 + 7x + 10$: degree = 2

Convention for writing polynomials:

- Write terms in _____ order of degree.
- When written in decreasing order of degree, the coefficient of the _____ term is called the _____ coefficient.

Example: $7x^2 - 5 + 4x^3 - 12x =$

Adding or subtracting polynomials: Combine like terms—terms with the same variable(s) and the same exponents for that/those variable(s).

Examples

Simplify each sum.

1. $(3x - 8) + (5x + 2)$

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

3. $(9x^3 + 2x + 8) + (7x^4 - 3x - 2)$

Simplify each difference.

4. $(8x + 6x^2 - 5) - (4x^2 - 14)$

5. $(7x + 5) - (3y + 3)$

6. $(-3x^2y + 4xy + 8x + 2) - (-4x^2y^2 + 3xy + 7y - 6)$

Sec. 9.1 Practice Problems

Simplify each sum.

1) $(2 + 3n^4) + (2n^4 + 5)$

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

3) $(4b - 1) + (6 - 5b)$

4) $(3 + 3p^3) + (6p^3 - 1)$

5) $(8n + 3) + (n + 1)$

6) $(x - 2x^3) + (3x + 2x^3)$

7) $(4 - p^2) + (-4p^2 + 1)$

8) $(8x^3 + 3x) + (8x + 8x^3)$

9) $(6n^2 + 7n^4 + 6) + (5n^3 + 8n^4 + 7n^2)$

10) $(3x - 2 + 3x^4) + (3x^4 - 7x - 1)$

11) $(3b^2 + 1 + 5b^4) + (2 + 5b^2 - 7b^4)$

12) $(n^2 + 7n - 7n^3) + (7n^3 - 2n + 3n^2)$

13) $(1 - 8r^2 - 4r^4) + (r^4 + 4r^2 + 1) + (2r^2 - 2)$

14) $(5p - 6p^4 + 1) + (5 + p^3 - 7p^4) + (2p^4 + 2)$

Simplify each difference.

15) $(6p^2 + 1) - (1 - 5p^2)$

16) $(n + 5) - (3n - 5)$

17) $(7a^4 + 4) - (4 - 8a^4)$

18) $(5 + 5n^4) - (4n^4 - 2)$

19) $(x^2 + 5x) - (5x^2 + 2x)$

20) $(3x^3 - 1) - (2x^3 - 7)$

21) $(-2r^3 - 4 - 2r^2) - (6r^4 - 6r^2 + 2)$

22) $(4b^4 + b^3 + 8b) - (4b + 3 + 7b^4)$

23) $(1 - 3x + 4x^3) - (2x - 2x^3 + 3)$

24) $(-a^2 - 5a - 6a^4) - (-8a + 3a^4 - 8a^2)$

Answers to Sec. 9.1 Practice Problems

1) $5n^4 + 7$

5) $9n + 4$

9) $15n^4 + 5n^3 + 13n^2 + 6$

12) $4n^2 + 5n$

15) $11p^2$

19) $-4x^2 + 3x$

22) $-3b^4 + b^3 + 4b - 3$

2) $6m^4 + 6m^2$

6) $4x$

10) $6x^4 - 4x - 3$

13) $-3r^4 - 2r^2$

16) $-2n + 10$

20) $x^3 + 6$

23) $6x^3 - 5x - 2$

3) $-b + 5$

7) $-5p^2 + 5$

11) $-2b^4 + 8b^2 + 3$

14) $-11p^4 + p^3 + 5p + 8$

17) $15a^4$

21) $-6r^4 - 2r^3 + 4r^2 - 6$

24) $-9a^4 + 7a^2 + 3a$

4) $9p^3 + 2$

8) $16x^3 + 11x$

18) $n^4 + 7$