

[SEC-5.3] Polynomials and Polynomial Functions

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1 Polynomial Vocabulary

- **Term** - A number or product of a number and variables raised to powers
EX: a^2a^4 etc...
- **Coefficient** - Numerical factor of a term
EX: 10 would be the coefficient of $10a$
- **Constant** - Term which is only a number
EX: 10, 5, 4, 100, etc
- **Polynomial** - A sum of terms involving variables raised to a whole number exponent with no variables appearing in any denominator

2 Polynomial breakdown example

Lets breakdown the polynomial $8x^5 + x^2y^2 - 4xy + 7$

We have four terms here:

1. $8x^5$
2. x^2y^2
3. $-4xy$
4. 7

Our coefficients are:

- 8 is the coefficient of $8x^5$
- 1 is the coefficient of x^2y^2
- -4 is the coefficient of $-4xy$

And we only have one constant term which in this case is 7

3 Types of polynomials

- Monomial: is a polynomial with exactly one term
- Binomial: is a polynomial with exactly two terms
- Trinomial: is a polynomial with exactly three terms

4 Degree of a term

To find the degree of a term let's use $5a^4b^3c$ we would add the exponents together which in this case would be 8. $4+3$ is 7 but we need to factor in that c although it doesn't show it is technically raised to the 1st power which would be $4+3+1$ which = 8

5 Degree of a polynomial

Find the degree of all of the terms within a polynomial and take the largest degree out of all of those terms. That is your degree of the polynomial.

6 Adding Polynomials

It's simply just as easy as combining like terms: $(8y^3 - 4y^2 + 5) + (5y^2 + 1)$

Combine $-4y^2$ and $5y^2$ to get y^2

Combine 5 and 1 to get 6

$8y^3$ doesn't combine with anything so it stays.

Our result is: $8y^3 + y^2 + 6$

7 Subtracting Polynomials

Take whatever the second polynomial is and just distribute a negative across all of the terms. We can then simply just add the two polynomials together.