

Section 9.5 The Binomial Theorem

Objective: In this lesson you learned how to use the Binomial Theorem and Pascal's Triangle to calculate binomial coefficients and binomial expansions.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

Binomial coefficients

Pascal's Triangle

I. Binomial Coefficients (Pages 728–729)

List four general observations about the expansion of $(x + y)^n$ for various values of n .

1)

2)

3)

4)

The **Binomial Theorem** states that in the expansion of $(x + y)^n = x^n + nx^{n-1}y + \dots + {}_nC_r x^{n-r}y^r + \dots + nxy^{n-1} + y^n$, the coefficient of $x^{n-r}y^r$ is _____.

Example 1: Find the binomial coefficient ${}_{12}C_5$.

What you should learn

How to use the Binomial Theorem to calculate binomial coefficients

II. Pascal's Triangle (Page 730)

Construct rows 0 through 6 of Pascal's Triangle.

What you should learn

How to use Pascal's Triangle to calculate binomial coefficients

III. Binomial Expansions (Pages 731–732)

Writing out the coefficients for a binomial that is raised to a power is called _____.

What you should learn

How to use binomial coefficients to write binomial expansions

Example 2: Use the binomial coefficients from the appropriate row of Pascal's Triangle to expand $(x + 2)^5$

Additional notes**Homework Assignment**

Page(s)

Exercises