

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

I. Binomial Coefficients (Pages 644–645)

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 : 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 646)

Pascal's Triangle is a triangular pattern, named for French mathematician Blaise Pascal, in which the first and last numbers in each row are 1 and every other number in each row is formed by ...

The numbers in Pascal's triangle are precisely the same numbers that are the _____.

What you should learn

How to use Pascal's Triangle to calculate binomial coefficients

Construct rows 0 through 6 of Pascal’s Triangle.

III. Binomial Expansions (Pages 647–648)

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

Additional notes

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| Homework Assignment |
| Page(s) |
| Exercises |