

Math 125 Unit 3 Objectives

Chapter 9 Infinite Series

Section 9.1 Sequences

- List the terms of a sequence.
- Determine whether a sequence converges or diverges.
- Write a formula for the n th term of a sequence.
- Use properties of monotonic and bounded sequences.

Section 9.2 Series and Convergence

- Understand the definition of a convergent infinite series.
- Use properties of infinite geometric series.
- Use the n th-Term Test for Divergence of an infinite series.

Section 9.3 The Integral Test and p -Series

- Use the Integral Test to determine whether an infinite series converges or diverges.
- Use properties of p -series and harmonic series.

Section 9.4 Comparison of Series

- Use the Direct Comparison Test to determine whether a series converges or diverges.
- Use the Limit Comparison Test to determine whether a series converges or diverges.

Section 9.5 Alternating Series

- Use the Alternating Series Test to determine whether an infinite series converges.
- Classify a convergent series as absolutely or conditionally convergent.

Section 9.6 The Ratio and Root Test

- Use the Ratio Test to determine whether a series converges or diverges.
- Use the Root Test to determine whether a series converges or diverges.
- Review the tests for convergence and divergence of an infinite series.

Section 9.7 Taylor Polynomials and Approximations

- Find the polynomial approximations of elementary functions and compare them with the elementary functions.

- Find Taylor and Maclaurin polynomial approximations of elementary functions.

Section 9.8 Power Series

- Understand the definition of a power series.
- Find the radius and interval of convergence of a power series.
- Determine the endpoint convergence of a power series.
- Differentiate and integrate a power series.

Section 9.9 Representation of Functions by Power Series

- Find a geometric series that represents a function.
- Construct a power series using series operations.

Section 9.10 Taylor and Maclaurin Series

- Find a Taylor or Maclaurin series for a function.
- Find a binomial series.
- Use a basic list of Taylor series to find other Taylor series.