1. **Sequences**

Assignment: pg 602, #1, 3, 12, 13, 31, 32, 47, 48, 51, 54, 55, 57, 59, 61, 67, 68, 78, 81, 82, 87.

**9.2. Series and Convergence -**

Assignment: pg 612, 1, 3, 7, 9, 10, 17, 21, 23, 25, 33, 34, 37, 42, 51, 53, 57, 62, 87.

**9.3. The Integral Test and p-Series -**

Assignment: pg 620, #1, 2, 3, 7, 13, 15, 16, 17, 31, 33, 35, 37.

**9.4. Comparisons of Series-**

Assignment: pg 628, #3, 4, 5, 7, 9, 15, 16, 19, 29, 31.

**9.5. Alternating Series -**

Assignment: pg 636, #9, 10, 13, 16, 21, 25, 29, 41, 43, 44, 48, 69, 70, 71.

Evaluation: Test covering sections 9.1 – 9.5.

**9.6. The Ratio and Root Tests -**

Assignment: pg 645, #5-10, 13, 15, 19, 23, 25, 33, 35, 43, 45, 47, 51, 61.

**Taylor Series**

**9.7 Taylor Polynomials and Approximations -**

Assignment: pg 656, #1-4, 5, 7, 13, 15, 18, 25, 26, 27, 30, 31.

**9.8. Power Series-**

Assignment: pg 666, #1, 3, 5, 6, 7, 11, 13, 16, 19, 28, 35, 37.

**9.9. Representation of functions by Power Series -**

Assignment: pg 674, #1, 2, 5, 6, 9, 15, 17.

**9.10. Taylor and Maclaurin Series-**

Assignment: pg 685, # 1, 3, 11, 13, 19, 21, 25, 29, 33, 41, 43.

Evaluation: Test covering sections 9.6 – 9.10

**March/April/May**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| 24  9.1 | **25**  9.1 | **26**  **9.2** | **27**  9.3 | **28**  9.3 |
| **31**  9.4 | **1**  9.4 | **2**  9.5 | **3**  9.5 | **4 ER**  Review |
| **7**  9.1 – 9.5 Test | **8**  9.6  AIMS | **9**  9.6  AIMS | **10**  9.7 | **11**  9.7 |
| **14**  9.8 | **15**  9.8 | **16**  9.9 | **17**  9.9 | **18**  No School |
| **21**  9.10 | **22**  9.10 | **23**  Review | **24**  Review | **25**  Test 9.6 – 9.10 |
| **28**  **AP Review** | **29** | **30** | **1** | **2** |
| **5** | **6** | **7 AP Test** |  |  |

**V. Unit 5: Polynomial Approximations and Series**

**A. Series of Constants**

Here we focus on the concept of infinite series, and their divergence/convergence. Students are encouraged to use a graphing calculator as a tool for discovery and problem solving while computing limits and comparing graphs of various sequences and series. The text is used to aid in graphical, analytical, numerical, and verbal understanding.

Topic Outline:

**9.1. Sequences -**

Concepts: Define a sequence of terms, and determine the convergence/divergence. Utilize properties of monotonic sequences and bounded sequences.

**9.2. Series and Convergence -**

Concepts: Define the convergence of an infinite series, and use its properties.

**9.3. The Integral Test and p-Series -**

Concepts: Determine whether an infinite series converges or diverges.

**9.4. Comparisons of Series-**

Concepts: Use the direct and limit comparison tests to determine whether a series converges or diverges.

**9.5. Alternating Series -**

Concepts: Determine infinite series convergence using the alternating series test. Classify a convergent series as absolutely or conditional convergent.

**9.6. The Ratio and Root Tests -**

Concepts: Use the ratio and root tests to determine whether a series converges or diverges.

**B. Taylor Series**

This section builds upon the previous concept of convergent/divergent series, with emphasis on the power series. Students are encouraged to use a graphing calculator as a tool for discovery and problem solving while interpreting the graphs of the series, and comparing the various series. The text is used to aid in graphical, analytical, numerical, and verbal understanding.

**9.7. Taylor Polynomials and Approximations -**

Concepts: Find polynomials approximations of elementary functions and compare them with the elementary function; specifically find Taylor and Maclaurin polynomial approximations. Utilize the remainder of a Taylor polynomial.

**9.8. Power Series-**

Concepts: Define a power series, and find the radius and interval of convergence of a power series. Perform differentiation and integration of a power series.

**9.9. Representation of functions by Power Series -**

Concepts: Using series operations construct a power series. Find a geometric power series that represents a function.

**9.11. Taylor and Maclaurin Series-**

Concepts: Define a Taylor and Maclaurin Series for a function. Use a basic Taylor series to derive other Taylor series.