

MT-228 Complex Variable & Fourier Transforms

Infinite Series:

Application of convergence tests such as comparison, Root, Ratio, Raabe's and Gauss tests on the behavior of series.

Complex Variable

Limit, continuity, zeros and poles of a complex function. Cauchy-Reimann equations, conformal transformation, contour integration.

Fourier series

Introduction to Fourier series. Euler Fourier formulae, even and odd functions, application of Fourier series. Fourier transform and fast Fourier transform and properties with applications.

Series Solutions of Differential Equation

Series Solution, General Method, Forms of Series Solutions, Bessel's equation, Expansions for J_0 and J_1 , value of $J_{1/2}$, Generating function for $J_n(x)$, Orthogonality of Bessel function, Fourier-Bessel expansion of $f(x)$.

Recommended Books

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| 1. Advance Engineering Mathematics | Erwin Kreyszig | Seven Edition |
| 2. Differential Equation | G. Zill | |
| 3. Complex Analysis for Mathematics
and Engineering | John H. Mathews | 2001 |
| 4. Calculus & Analysis Geometry | Howard Anton | Fifth |
| 5. Mathematical Physics | Bruce Kusse and Erik | 2006 |