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| 1. Holomorphic functions, Cauchy-Riemann equations.  2. Cauchy Theorem and Applications.  3. Power series expansions of holomorphic functions. Equivalent conditions of holomorphicity.  4. Extended complex plan, elementary functions, and conformal mappings.  5. Elementary properties of holomorphic functions: smoothness, maximum principle, Liouville Theorem, Weierstrass Theorem, Uniqueness Theorem.  6. Isolated zeroes and singularities of holomorphic functions. Meromorphic functions. Laurent series, Residue Theorem and Applications.  7. Argument Principle, Rouche Theorem, Openness Principle, and Applications.  8. Schwarz Lemma. Automorphism groups of model domains. Riemann-Schwarz Reflection Principle.  9. Multiple-valued analytic functions. Monodromy Theorem. Modular function, Picard Theorems. Branch points of analytic functions.  10. Compactness Principle. The Riemann Mapping Theorem. Caratheodory Theorem.  11. Runge Approximation Theorem. Weierstrass Factorization Theorem and applications. |