NPTEL Video Course - Mathematics - An Introduction to Riemann Surfaces and Algebraic Curves: Complex 1-Tori and Elliptic Curves

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Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 28 - Quotients by Kleinian Subgroups give rise to Riemann Surfaces
Lecture 29 - The Unimodular Group is Kleinian
Lecture 30 - The Necessity of Elliptic Functions for the Classification of Complex Tori
Lecture 31 - The Uniqueness Property of the Weierstrass Phe-function associated to a Lattice in the Plane
Lecture 32 - The First Order Degree Two Cubic Ordinary Differential Equation satisfied by the Weierstrass Phe-function
Lecture 33 - The Values of the Weierstrass Phe-function at the Zeros of its Derivative are nonvanishing Analytic Functions on the Upper Half-Plane
Lecture 34 - The Construction of a Modular Form of Weight Two on the Upper Half-Plane
Lecture 35 - The Fundamental Functional Equations satisfied by the Modular Form of Weight Two on the Upper Half-Plane
Lecture 36 - The Weight Two Modular Form assumes Real Values on the Imaginary Axis in the Upper Half-plane
Lecture 37 - The Weight Two Modular Form Vanishes at Infinity
Lecture 38 - The Weight Two Modular Form Decays Exponentially in a Neighbourhood of Infinity
Lecture 39 - A Suitable Restriction of the Weight Two Modular Form is a Holomorphic Conformal Isomorphism onto the Upper Half-Plane
Lecture 40 - The J-Invariant of a Complex Torus (or) of an Algebraic Elliptic Curve
Lecture 41 - A Fundamental Region in the Upper Half-Plane for the Elliptic Modular J-Invariant
Lecture 42 - The Fundamental Region in the Upper Half-Plane for the Unimodular Group
Lecture 43 - A Region in the Upper Half-Plane Meeting Each Unimodular Orbit Exactly Once
Lecture 44 - Moduli of Elliptic Curves
Lecture 45 - Punctured Complex Tori are Elliptic Algebraic Affine Plane Cubic Curves in Complex 2-Space
Lecture 46 - The Natural Riemann Surface Structure on an Algebraic Affine Nonsingular Plane Curve
Lecture 47 - Complex Projective 2-Space as a Compact Complex Manifold of Dimension Two
Lecture 48 - Complex Tori are the same as Elliptic Algebraic Projective Curves