NPTEL Video Course - Mathematics - NOC:Real Analysis - II

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Co-ordinating Institute - IIT - Palakkad

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

Lecture 30 - Examples of differentiation
Lecture 31 - Properties of the derivative map
Lecture 32 - The mean-value theorem
Lecture 33 - Differentiating under the integral sign
Lecture 34 - Higher-order derivatives
Lecture 35 - Symmetry of the second derivative
Lecture 36 - Taylor's theorem
Lecture 37 - Taylor's theorem with remainder
Lecture 38 - The Banach fixed point theorem
Lecture 39 - Newton's method
Lecture 40 - The inverse function theorem
Lecture 41 - Diffeomorphismsm and local diffeomorphisms
Lecture 42 - The implicit function theorem
Lecture 43 - Tangent space to a hypersurface
Lecture 44 - The definition of a manifold
Lecture 45 - Examples and non examples of manifolds
Lecture 46 - The tangent space to a manifold
Lecture 47 - Maxima and minima in several variables
Lecture 48 - The Hessian and extrema
Lecture 49 - Completing the squares
Lecture 50 - Constrained extrema and lagrange multipliers
Lecture 51 - Curves
Lecture 52 - Rectifiability and arc-length
Lecture 53 - The Riemann integral revisited
Lecture 54 - Monotone sequences of functions
Lecture 55 - Upper functions and their integrals
Lecture 56 - Riemann integrable functions as upper functions
Lecture 57 - Lebesgue integrable functions
Lecture 58 - Approximation of Lebesgure integrable functions
Lecture 59 - Levi monotone convergence theorem for step functions
Lecture 60 - Monotone convergence theorem for upper functions
Lecture 61 - Monotone convergence theorem for Lebesgue integrable functions
Lecture 62 - The Lebesgue dominated convergence theorem
Lecture 63 - Applications of the convergence theorems
Lecture 64 - The problem of measure
Lecture 65 - The Lebesgue integral on unbounded intervals
Lecture 66 - Measurable functions
Lecture 67 - Solution to the problem of measure
Lecture 68 - The Lebesgue integral on arbitrary subsets

Lecture 69 - Square integrable functions
Lecture 70 - Norms and inner-products on complex vector spaces
Lecture 71 - Convergence in L2
Lecture 72 - The Riesz-Fischer theorem
Lecture 73 - Multiple Riemann integration
Lecture 74 - Multiple Lebesgue integration