

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC: Transform Calculus and its applications in Differential Equations

Subject Co-ordinator - Prof. A. Goswami

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Integral Transform and Laplace Transform
- Lecture 2 - Existence of Laplace Transform
- Lecture 3 - Shifting Properties of Laplace Transform
- Lecture 4 - Laplace Transform of Derivatives and Integration of a Function - I
- Lecture 5 - Laplace Transform of Derivatives and Integration of a Function - II
- Lecture 6 - Explanation of properties of Laplace Transform using Examples
- Lecture 7 - Laplace Transform of Periodic Function
- Lecture 8 - Laplace Transform of some special Functions
- Lecture 9 - Error Function, Dirac Delta Function and their Laplace Transform
- Lecture 10 - Bessel Function and its Laplace Transform
- Lecture 11 - Introduction to Inverse Laplace Transform
- Lecture 12 - Properties of Inverse Laplace Transform
- Lecture 13 - Convolution and its Applications
- Lecture 14 - Evaluation of Integrals using Laplace Transform
- Lecture 15 - Solution of Ordinary Differential Equations with constant coefficients using Laplace Transform
- Lecture 16 - Solution of Ordinary Differential Equations with variable coefficients using Laplace Transform
- Lecture 17 - Solution of Simultaneous Ordinary Differential Equations using Laplace Transform
- Lecture 18 - Introduction to Integral Equation and its Solution Process
- Lecture 19 - Introduction to Fourier Series
- Lecture 20 - Fourier Series for Even and Odd Functions
- Lecture 21 - Fourier Series of Functions having arbitrary period - I
- Lecture 22 - Fourier Series of Functions having arbitrary period - II
- Lecture 23 - Half Range Fourier Series
- Lecture 24 - Parseval's Theorem and its Applications
- Lecture 25 - Complex form of Fourier Series
- Lecture 26 - Fourier Integral Representation
- Lecture 27 - Introduction to Fourier Transform
- Lecture 28 - Derivation of Fourier Cosine Transform and Fourier Sine Transform of Functions
- Lecture 29 - Evaluation of Fourier Transform of various functions

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- Lecture 30 - Linearity Property and Shifting Properties of Fourier Transform
- Lecture 31 - Change of Scale and Modulation Properties of Fourier Transform
- Lecture 32 - Fourier Transform of Derivative and Integral of a Function
- Lecture 33 - Applications of Properties of Fourier Transform - I
- Lecture 34 - Applications of Properties of Fourier Transform - II
- Lecture 35 - Fourier Transform of Convolution of two functions
- Lecture 36 - Parseval's Identity and its Application
- Lecture 37 - Evaluation of Definite Integrals using Properties of Fourier Transform
- Lecture 38 - Fourier Transform of Dirac Delta Function
- Lecture 39 - Representation of a function as Fourier Integral
- Lecture 40 - Applications of Fourier Transform to Ordinary Differential Equations - I
- Lecture 41 - Applications of Fourier Transform to Ordinary Differential Equations - II
- Lecture 42 - Solution of Integral Equations using Fourier Transform
- Lecture 43 - Introduction to Partial Differential Equations
- Lecture 44 - Solution of Partial Differential Equations using Laplace Transform
- Lecture 45 - Solution of Heat Equation and Wave Equation using Laplace Transform
- Lecture 46 - Criteria for choosing Fourier Transform, Fourier Sine Transform, Fourier Cosine Transform in solving problems
- Lecture 47 - Solution of Partial Differential Equations using Fourier Cosine Transform and Fourier Sine Transform
- Lecture 48 - Solution of Partial Differential Equations using Fourier Transform - I
- Lecture 49 - Solution of Partial Differential Equations using Fourier Transform - II
- Lecture 50 - Solving problems on Partial Differential Equations using Transform Techniques
- Lecture 51 - Introduction to Finite Fourier Transform
- Lecture 52 - Solution of Boundary Value Problems using Finite Fourier Transform - I
- Lecture 53 - Solution of Boundary Value Problems using Finite Fourier Transform - II
- Lecture 54 - Introduction to Mellin Transform
- Lecture 55 - Properties of Mellin Transform
- Lecture 56 - Examples of Mellin Transform - I
- Lecture 57 - Examples of Mellin Transform - II
- Lecture 58 - Introduction to Z-Transform
- Lecture 59 - Properties of Z-Transform
- Lecture 60 - Evaluation of Z-Transform of some functions