

1. Record Nr.	UNISA996499864603316
Autore	Ryzhov Vladimir
Titolo	Modern methods in mathematical physics : integral equations in Wolfram Mathematica / / Vladimir Ryzhov [and four others]
Pubbl/distr/stampa	Gateway East, Singapore : , : Springer, , [2022] ©2022
ISBN	981-19-4915-8
Descrizione fisica	1 online resource (201 pages) : illustrations
Disciplina	510.285536
Soggetti	Wolfram language (Computer program language) Mathematical physics Integral equations
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- References -- Contents -- 1 Fundamentals. Classification of Integral Equations -- 1.1 Basic Types of Integral Equations: A Solution of Integral Equation -- 1.1.1 Fredholm Equation of the Second Kind -- 1.1.2 Fredholm Equation of the First Kind -- 1.1.3 Volterra Equation of the Second Kind -- 1.1.4 Volterra Equation of the First Kind -- 1.2 Equations with a Weak Singularity -- 1.3 Abel Problem: Abel Integral Equation -- 1.4 Solution of Integral Equations by the Differentiation Method -- References -- 2 Integral Equations with Difference Kernels -- 2.1 Difference Kernel Concept. Solution of Integral Equations with Difference Kernels by the Method of Differentiation -- 2.2 Solution of Integral Equations and Systems of Volterra Integral Equations with Difference Kernels Using the Laplace Transform -- 2.2.1 Solving Volterra Integral Equations with Difference Kernels Using the Laplace Transform -- 2.2.2 Solving Systems of Volterra Integral Equations with Difference Kernels Using the Laplace Transform -- 2.2.3 Solving Integro-Differential Equations with Difference Kernels Using the Laplace Transform -- 2.3 Solving Fredholm Integral Equations with Difference Kernels Using the Fourier Transform -- References -- 3 Fredholm Theory -- 3.1 Solution of Fredholm Integral Equations by the Resolvent Method: Method of Fredholm Determinants -- 3.2 Iterated Kernels Method -- 3.3

Characteristic Numbers and Eigenfunctions. Solution of Homogeneous Fredholm Integral Equations with Degenerate Kernel -- 3.4 Solution of Fredholm Inhomogeneous Integral Equations with a Degenerate Kernel. Fredholm's Theorems -- References -- 4 Symmetric Integral Equations -- 4.1 Construction of an Orthonormal System of Eigenfunctions of a Symmetric Kernel -- 4.2 Representation of the Solution as Expansion in Terms of Orthonormal Eigenfunctions of a Symmetric Kernel  
References -- 5 Approximate Methods for Solving Integral Equations -- 5.1 Approximate Solution of the Fredholm Equation by Replacing the Integral by a Finite Sum -- 5.2 Successive Approximation Method -- 5.3 Bubnov-Galerkin Method -- 5.3.1 Method of Replacing a Kernel with a Degenerate One -- References -- 6 Individual Tasks. Passing the Final Test After Completing the Course -- References.

---