

# FREE READ FUNCTIONS OF ONE COMPLEX VARIABLE GRADUATE TEXTS IN MATHEMATICS VOL 11 v 1 (DOWNLOAD ONLY)

COMPLEX VARIABLES PROVIDE POWERFUL METHODS FOR ATTACKING MANY DIFFICULT PROBLEMS AND IT IS THE AIM OF THIS BOOK TO PROVIDE A THOROUGH GROUNDING IN THESE METHODS AND THEIR APPLICATION THIS NEW EDITION HAS BEEN IMPROVED THROUGHOUT AND IS IDEAL FOR USE IN UNDERGRADUATE AND INTRODUCTORY GRADUATE COURSES IN COMPLEX VARIABLES THE BOOK PROVIDES AN INTRODUCTION TO THE THEORY OF FUNCTIONS OF SEVERAL COMPLEX VARIABLES AND THEIR SINGULARITIES WITH SPECIAL EMPHASIS ON TOPOLOGICAL ASPECTS THE TOPICS INCLUDE RIEMANN SURFACES HOLOMORPHIC FUNCTIONS OF SEVERAL VARIABLES CLASSIFICATION AND DEFORMATION OF SINGULARITIES FUNDAMENTALS OF DIFFERENTIAL TOPOLOGY AND THE TOPOLOGY OF SINGULARITIES THE AIM OF THE BOOK IS TO GUIDE THE READER FROM THE FUNDAMENTALS TO MORE ADVANCED TOPICS OF RECENT RESEARCH ALL THE NECESSARY PREREQUISITES ARE SPECIFIED AND CAREFULLY EXPLAINED THE GENERAL THEORY IS ILLUSTRATED BY VARIOUS EXAMPLES AND APPLICATIONS FUNCTIONS OF A COMPLEX VARIABLE ARE USED TO SOLVE APPLICATIONS IN VARIOUS BRANCHES OF MATHEMATICS SCIENCE AND ENGINEERING FUNCTIONS OF A COMPLEX VARIABLE THEORY AND TECHNIQUE IS A BOOK IN A SPECIAL CATEGORY OF INFLUENTIAL CLASSICS BECAUSE IT IS BASED ON THE AUTHORS EXTENSIVE EXPERIENCE IN MODELING COMPLICATED SITUATIONS AND PROVIDING ANALYTIC SOLUTIONS THE BOOK MAKES AVAILABLE TO READERS A COMPREHENSIVE RANGE OF THESE ANALYTICAL TECHNIQUES BASED UPON COMPLEX VARIABLE THEORY ADVANCED TOPICS COVERED INCLUDE ASYMPTOTICS TRANSFORMS THE WIENER HOPF METHOD AND DUAL AND SINGULAR INTEGRAL EQUATIONS THE AUTHORS PROVIDE MANY EXERCISES INCORPORATING THEM INTO THE BODY OF THE TEXT AUDIENCE INTENDED FOR APPLIED MATHEMATICIANS SCIENTISTS ENGINEERS AND SENIOR OR GRADUATE LEVEL STUDENTS WHO HAVE ADVANCED KNOWLEDGE IN CALCULUS AND ARE INTERESTED IN SUCH SUBJECTS AS COMPLEX VARIABLE THEORY FUNCTION THEORY MATHEMATICAL METHODS ADVANCED ENGINEERING MATHEMATICS AND MATHEMATICAL PHYSICS COMPLEX ANALYSIS IS ONE OF THE MOST CENTRAL SUBJECTS IN MATHEMATICS IT IS COMPELLING AND RICH IN ITS OWN RIGHT BUT IT IS ALSO REMARKABLY USEFUL IN A WIDE VARIETY OF OTHER MATHEMATICAL SUBJECTS BOTH PURE AND APPLIED THIS BOOK IS DIFFERENT FROM OTHERS IN THAT IT TREATS COMPLEX VARIABLES AS A DIRECT DEVELOPMENT FROM MULTIVARIABLE REAL CALCULUS AS EACH NEW IDEA IS INTRODUCED IT IS RELATED TO THE CORRESPONDING IDEA FROM REAL ANALYSIS AND CALCULUS THE TEXT IS RICH WITH EXAMPLES AND EXERCISES THAT ILLUSTRATE THIS POINT THE AUTHORS HAVE SYSTEMATICALLY SEPARATED THE ANALYSIS FROM THE TOPOLOGY AS CAN BE SEEN IN THEIR PROOF OF THE CAUCHY THEOREM THE BOOK CONCLUDES WITH SEVERAL CHAPTERS ON SPECIAL TOPICS INCLUDING FULL TREATMENTS OF SPECIAL FUNCTIONS THE PRIME NUMBER THEOREM AND THE BERGMAN KERNEL THE AUTHORS ALSO TREAT HP SPACES AND PAINLEVE S THEOREM ON SMOOTHNESS TO THE BOUNDARY FOR CONFORMAL MAPS THIS BOOK IS A TEXT FOR A FIRST YEAR GRADUATE COURSE IN COMPLEX ANALYSIS IT IS AN ENGAGING AND MODERN INTRODUCTION TO THE SUBJECT REFLECTING THE AUTHORS EXPERTISE BOTH AS MATHEMATICIANS AND AS EXPOSITORS THIS BOOK DISCUSSES A VARIETY OF PROBLEMS WHICH ARE USUALLY TREATED IN A SECOND COURSE ON THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE LEVEL BEING GAUGED FOR GRADUATE STUDENTS IT TREATS SEVERAL TOPICS IN GEOMETRIC FUNCTION THEORY AS WELL AS POTENTIAL THEORY IN THE PLANE COVERING IN PARTICULAR CONFORMAL EQUIVALENCE FOR SIMPLY CONNECTED REGIONS CONFORMAL EQUIVALENCE FOR FINITELY CONNECTED REGIONS ANALYTIC COVERING MAPS DE BRANGES PROOF OF THE BIEBERBACH CONJECTURE HARMONIC FUNCTIONS HARDY SPACES ON THE DISK POTENTIAL THEORY IN THE PLANE A KNOWLEDGE OF INTEGRATION THEORY AND FUNCTIONAL ANALYSIS IS ASSUMED THIS BOOK PRESENTS A BASIC INTRODUCTION TO COMPLEX ANALYSIS IN BOTH AN INTERESTING AND A RIGOROUS MANNER IT CONTAINS ENOUGH MATERIAL FOR A FULL YEAR S COURSE AND THE CHOICE OF MATERIAL TREATED IS REASONABLY STANDARD AND SHOULD BE SATISFACTORY FOR MOST FIRST COURSES IN COMPLEX ANALYSIS THE APPROACH TO EACH TOPIC APPEARS TO BE CAREFULLY THOUGHT OUT BOTH AS TO MATHEMATICAL TREATMENT AND PEDAGOGICAL PRESENTATION AND THE END RESULT IS A VERY SATISFACTORY BOOK MATHSCINET FUNCTIONS OF A COMPLEX VARIABLE PROVIDES ALL THE MATERIAL FOR A COURSE ON THE THEORY OF FUNCTIONS OF A COMPLEX VARIABLE AT THE SENIOR UNDERGRADUATE AND BEGINNING GRADUATE LEVEL ALSO SUITABLE FOR SELF STUDY THE BOOK COVERS EVERY TOPIC ESSENTIAL TO TRAINING STUDENTS IN COMPLEX ANALYSIS IT ALSO INCORPORATES SPECIAL TOPICS TO ENHANCE STUDENTS UNDERSTANDING OF THE SUBJECT LAYING THE FOUNDATION FOR FUTURE STUDIES IN ANALYSIS LINEAR ALGEBRA NUMERICAL ANALYSIS GEOMETRY NUMBER THEORY PHYSICS THERMODYNAMICS OR ELECTRICAL ENGINEERING AFTER INTRODUCING THE BASIC CONCEPTS OF COMPLEX NUMBERS AND THEIR GEOMETRICAL REPRESENTATION THE TEXT DESCRIBES ANALYTIC FUNCTIONS POWER SERIES AND ELEMENTARY FUNCTIONS THE CONFORMAL REPRESENTATION OF AN ANALYTIC FUNCTION SPECIAL TRANSFORMATIONS AND COMPLEX INTEGRATION IT NEXT DISCUSSES ZEROS OF AN ANALYTIC FUNCTION CLASSIFICATION OF SINGULARITIES AND SINGULARITY AT THE POINT OF INFINITY RESIDUE THEORY PRINCIPLE OF ARGUMENT ROUCH S THEOREM AND THE LOCATION OF ZEROS OF COMPLEX POLYNOMIAL EQUATIONS AND CALCULUS OF RESIDUES EMPHASIZING THE TECHNIQUES OF DEFINITE INTEGRALS BY CONTOUR INTEGRATION THE AUTHORS THEN EXPLAIN UNIFORM CONVERGENCE OF SEQUENCES AND SERIES INVOLVING PARSEVAL SCHWARZ AND POISSON FORMULAS THEY ALSO PRESENT HARMONIC FUNCTIONS AND MAPPINGS INVERSE MAPPINGS AND UNIVALENT FUNCTIONS AS WELL AS ANALYTIC CONTINUATION THE PRESENT BOOK GREW OUT OF INTRODUCTORY LECTURES ON THE THEORY OF FUNCTIONS OF SEVERAL VARIABLES ITS INTENT IS TO MAKE THE READER FAMILIAR BY THE DISCUSSION OF EXAMPLES AND SPECIAL CASES WITH THE MOST IMPORTANT BRANCHES AND METHODS OF THIS THEORY AMONG THEM E G THE PROBLEMS OF HOLOMORPHIC CONTINUATION THE ALGEBRAIC TREATMENT

OF POWER SERIES SHEAF AND COHOMOLOGY THEORY AND THE REAL METHODS WHICH STEM FROM ELLIPTIC PARTIAL DIFFERENTIAL EQUATIONS IN THE FIRST CHAPTER WE BEGIN WITH THE DEFINITION OF HOLOMORPHIC FUNCTIONS OF SEVERAL VARIABLES THEIR REPRESENTATION BY THE CAUCHY INTEGRAL AND THEIR POWER SERIES EXPANSION ON REINHARDT DOMAINS IT TURNS OUT THAT IN CONTRAST TO THE THEORY OF A SINGLE VARIABLE FOR  $n > 1$  WITH  $G \subset \mathbb{C}^n$  AND  $G' \subset G$  SUCH THAT EACH FUNCTION HOLOMORPHIC IN  $G'$  HAS A CONTINUATION ON  $G$  DOMAINS  $G'$  FOR WHICH SUCH A  $G$  DOES NOT EXIST ARE CALLED DOMAINS OF HOLOMORPHY IN CHAPTER 2 WE GIVE SEVERAL CHARACTERIZATIONS OF THESE DOMAINS OF HOLOMORPHY THEOREM OF CARTAN THULLEN LEVI'S PROBLEM WE FINALLY CONSTRUCT THE HOLOMORPHIC HULL  $H(G)$  FOR EACH DOMAIN  $G$  THAT IS THE LARGEST NOT NECESSARILY SCHLICHT DOMAIN OVER  $\mathbb{C}^n$  INTO WHICH EACH FUNCTION HOLOMORPHIC ON  $G$  CAN BE CONTINUED THIS BOOK INCLUDES INFORMATION ON ELEMENTARY GENERAL TOPOLOGY THE CAUCHY INTEGRAL THEOREM AND CONCEPTS OF HOMOLOGY AND HOMOTOPY IN THEIR APPLICATION TO THE CAUCHY THEORY IT IS INTENDED FOR AN INTRODUCTORY COURSE IN COMPLEX ANALYSIS AT THE FIRST YEAR GRADUATE AND ADVANCED UNDERGRADUATE LEVEL COMPLEX VARIABLES PROVIDE POWERFUL METHODS FOR ATTACKING PROBLEMS THAT CAN BE VERY DIFFICULT TO SOLVE IN ANY OTHER WAY AND IT IS THE AIM OF THIS BOOK TO PROVIDE A THOROUGH GROUNDING IN THESE METHODS AND THEIR APPLICATION PART I OF THIS TEXT PROVIDES AN INTRODUCTION TO THE SUBJECT INCLUDING ANALYTIC FUNCTIONS INTEGRATION SERIES AND RESIDUE CALCULUS AND ALSO INCLUDES TRANSFORM METHODS ODES IN THE COMPLEX PLANE AND NUMERICAL METHODS PART II CONTAINS CONFORMAL MAPPINGS ASYMPTOTIC EXPANSIONS AND THE STUDY OF RIEMANN HILBERT PROBLEMS THE AUTHORS PROVIDE AN EXTENSIVE ARRAY OF APPLICATIONS ILLUSTRATIVE EXAMPLES AND HOMEWORK EXERCISES THIS 2003 EDITION WAS IMPROVED THROUGHOUT AND IS IDEAL FOR USE IN UNDERGRADUATE AND INTRODUCTORY GRADUATE LEVEL COURSES IN COMPLEX VARIABLES THE TEXT COVERS A BROAD SPECTRUM BETWEEN BASIC AND ADVANCED COMPLEX VARIABLES ON THE ONE HAND AND BETWEEN THEORETICAL AND APPLIED OR COMPUTATIONAL MATERIAL ON THE OTHER HAND WITH CAREFUL SELECTION OF THE EMPHASIS PUT ON THE VARIOUS SECTIONS EXAMPLES AND EXERCISES THE BOOK CAN BE USED IN A ONE OR TWO SEMESTER COURSE FOR UNDERGRADUATE MATHEMATICS MAJORS A ONE SEMESTER COURSE FOR ENGINEERING OR PHYSICS MAJORS OR A ONE SEMESTER COURSE FOR FIRST YEAR MATHEMATICS GRADUATE STUDENTS IT HAS BEEN TESTED IN ALL THREE SETTINGS AT THE UNIVERSITY OF UTAH THE EXPOSITION IS CLEAR CONCISE AND LIVELY THERE IS A CLEAN AND MODERN APPROACH TO CAUCHY'S THEOREMS AND TAYLOR SERIES EXPANSIONS WITH RIGOROUS PROOFS BUT NO LONG AND TEDIOUS ARGUMENTS THIS IS FOLLOWED BY THE RICH HARVEST OF EASY CONSEQUENCES OF THE EXISTENCE OF POWER SERIES EXPANSIONS THROUGH THE CENTRAL PORTION OF THE TEXT THERE IS A CAREFUL AND EXTENSIVE TREATMENT OF RESIDUE THEORY AND ITS APPLICATION TO COMPUTATION OF INTEGRALS CONFORMAL MAPPING AND ITS APPLICATIONS TO APPLIED PROBLEMS ANALYTIC CONTINUATION AND THE PROOFS OF THE PICARD THEOREMS CHAPTER 8 COVERS MATERIAL ON INFINITE PRODUCTS AND ZEROS OF ENTIRE FUNCTIONS THIS LEADS TO THE FINAL CHAPTER WHICH IS DEVOTED TO THE RIEMANN ZETA FUNCTION THE RIEMANN HYPOTHESIS AND A PROOF OF THE PRIME NUMBER THEOREM PUBLISHER THIS TEXT ON COMPLEX VARIABLES IS GEARED TOWARD GRADUATE STUDENTS AND UNDERGRADUATES WHO HAVE TAKEN AN INTRODUCTORY COURSE IN REAL ANALYSIS IT IS A SUBSTANTIALLY REVISED AND UPDATED EDITION OF THE POPULAR TEXT BY ROBERT B. ASH OFFERING A CONCISE TREATMENT THAT PROVIDES CAREFUL AND COMPLETE EXPLANATIONS AS WELL AS NUMEROUS PROBLEMS AND SOLUTIONS AN INTRODUCTION PRESENTS BASIC DEFINITIONS COVERING TOPOLOGY OF THE PLANE ANALYTIC FUNCTIONS REAL DIFFERENTIABILITY AND THE CAUCHY RIEMANN EQUATIONS AND EXPONENTIAL AND HARMONIC FUNCTIONS SUCCEEDING CHAPTERS EXAMINE THE ELEMENTARY THEORY AND THE GENERAL CAUCHY THEOREM AND ITS APPLICATIONS INCLUDING SINGULARITIES RESIDUE THEORY THE OPEN MAPPING THEOREM FOR ANALYTIC FUNCTIONS LINEAR FRACTIONAL TRANSFORMATIONS CONFORMAL MAPPING AND ANALYTIC MAPPINGS OF ONE DISK TO ANOTHER THE RIEMANN MAPPING THEOREM RECEIVES A THOROUGH TREATMENT ALONG WITH FACTORIZATION OF ANALYTIC FUNCTIONS AS AN APPLICATION OF MANY OF THE IDEAS AND RESULTS APPEARING IN EARLIER CHAPTERS THE TEXT ENDS WITH A PROOF OF THE PRIME NUMBER THEOREM TEXTBOOKS EVEN EXCELLENT ONES ARE A REFLECTION OF THEIR TIMES FORM AND CONTENT OF BOOKS DEPEND ON WHAT THE STUDENTS KNOW ALREADY WHAT THEY ARE EXPECTED TO LEARN HOW THE SUBJECT MATTER IS REGARDED IN RELATION TO OTHER DIVISIONS OF MATHEMATICS AND EVEN HOW FASHIONABLE THE SUBJECT MATTER IS IT IS THUS NOT SURPRISING THAT WE NO LONGER USE SUCH MASTERPIECES AS HURWITZ AND COURANT'S FUNKTIONENTHEORIE OR JORDAN'S COURSE D'ANALYSE IN OUR COURSES THE LAST TWO DECADES HAVE SEEN A SIGNIFICANT CHANGE IN THE TECHNIQUES USED IN THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE IMPORTANT ROLE PLAYED BY THE INHOMOGENEOUS CAUCHY RIEMANN EQUATION IN THE CURRENT RESEARCH HAS LED TO THE REUNIFICATION AT LEAST IN THEIR SPIRIT OF COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES WE SAY REUNIFICATION SINCE WE THINK THAT WEIERSTRASS POINCARÉ AND OTHERS IN CONTRAST TO MANY OF OUR STUDENTS DID NOT CONSIDER THEM TO BE ENTIRELY SEPARATE SUBJECTS INDEED NOT ONLY COMPLEX ANALYSIS IN SEVERAL VARIABLES BUT ALSO NUMBER THEORY HARMONIC ANALYSIS AND OTHER BRANCHES OF MATHEMATICS BOTH PURE AND APPLIED HAVE REQUIRED A RECONSIDERATION OF ANALYTIC CONTINUATION ORDINARY DIFFERENTIAL EQUATIONS IN THE COMPLEX DOMAIN ASYMPTOTIC ANALYSIS ITERATION OF HOLOMORPHIC FUNCTIONS AND MANY OTHER SUBJECTS FROM THE CLASSIC THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THIS ONGOING RECONSIDERATION LED US TO THINK THAT A TEXTBOOK INCORPORATING SOME OF THESE NEW PERSPECTIVES AND TECHNIQUES HAD TO BE WRITTEN THE PRESENT BOOK IS MEANT AS A TEXT FOR A COURSE ON COMPLEX ANALYSIS AT THE ADVANCED UNDERGRADUATE LEVEL OR FIRST YEAR GRADUATE LEVEL SOMEWHAT MORE MATERIAL HAS BEEN INCLUDED THAN CAN BE COVERED AT LEISURE IN ONE TERM TO GIVE OPPORTUNITIES FOR THE INSTRUCTOR TO EXERCISE HIS TASTE AND LEAD THE COURSE IN WHATEVER DIRECTION STRIKES HIS FANCY AT THE TIME A LARGE NUMBER OF ROUTINE EXERCISES ARE INCLUDED FOR THE MORE STANDARD PORTIONS AND A FEW HARDER EXERCISES OF STRIKING THEORETICAL INTEREST ARE ALSO INCLUDED BUT MAY BE OMITTED IN COURSES ADDRESSED TO LESS ADVANCED STUDENTS IN SOME SENSE I THINK THE CLASSICAL GERMAN PREWAR TEXTS WERE THE BEST HURWITZ COURANT KNOPP BIEBERBACH ETC AND I WOULD RECOMMEND TO ANYONE TO LOOK THROUGH THEM MORE RECENT TEXTS HAVE EMPHASIZED CONNECTIONS WITH REAL ANALYSIS WHICH IS IMPORTANT BUT AT THE COST OF EXHIBITING SUCCINCTLY AND CLEARLY WHAT IS PECULIAR ABOUT COMPLEX ANALYSIS THE POWER SERIES EXPANSION THE UNIQUENESS OF ANALYTIC CONTINUATION AND THE CALCULUS OF RESIDUES THE SYSTEMATIC ELEMENTARY DEVELOPMENT OF FORMAL AND CONVERGENT

POWER SERIES WAS STANDARD FARE IN THE GERMAN TEXTS BUT ONLY CARTAN IN THE MORE RECENT BOOKS INCLUDES THIS MATERIAL WHICH I THINK IS QUITE ESSENTIAL E G FOR DIFFERENTIAL EQUATIONS I HAVE WRITTEN A SHORT TEXT EXHIBITING THESE FEATURES MAKING IT APPLICABLE TO A WIDE VARIETY OF TASTES THE BOOK ESSENTIALLY DECOMPOSES INTO TWO PARTS KİYOSHI OKA AT THE BEGINNING OF HIS RESEARCH REGARDED THE COLLECTION OF PROBLEMS WHICH HE ENCOUNTERED IN THE STUDY OF DOMAINS OF HOLOMORPHY AS LARGE MOUNTAINS WHICH SEPARATE TODAY AND TOMORROW THUS HE BELIEVED THAT THERE COULD BE NO ESSENTIAL PROGRESS IN ANALYSIS WITHOUT CLIMBING OVER THESE MOUNTAINS THIS BOOK IS A WORTHWHILE INITIAL STEP FOR THE READER IN ORDER TO UNDERSTAND THE MATHEMATICAL WORLD WHICH WAS CREATED BY KİYOSHI OKA FROM THE PREFACE THIS BOOK EXPLAINS RESULTS IN THE THEORY OF FUNCTIONS OF SEVERAL COMPLEX VARIABLES WHICH WERE MOSTLY ESTABLISHED FROM THE LATE NINETEENTH CENTURY THROUGH TO THE MIDDLE OF THE TWENTIETH CENTURY IN THE WORK THE AUTHOR INTRODUCES THE MATHEMATICAL WORLD CREATED BY HIS ADVISOR KİYOSHI OKA IN THIS VOLUME OKA S WORK IS DIVIDED INTO TWO PARTS THE FIRST IS THE STUDY OF ANALYTIC FUNCTIONS IN UNIVALENT DOMAINS IN  $\mathbb{C}^n$  HERE OKA PROVED THAT THREE CONCEPTS ARE EQUIVALENT DOMAINS OF HOLOMORPHY HOLOMORPHICALLY CONVEX DOMAINS AND PSEUDOCONVEX DOMAINS AND MOREOVER THAT THE POINCARÉ PROBLEM THE COUSIN PROBLEMS AND THE RUNGE PROBLEM WHEN STATED PROPERLY CAN BE SOLVED IN DOMAINS OF HOLOMORPHY SATISFYING THE APPROPRIATE CONDITIONS THE SECOND PART OF OKA S WORK ESTABLISHED A METHOD FOR THE STUDY OF ANALYTIC FUNCTIONS DEFINED IN A RAMIFIED DOMAIN OVER  $\mathbb{C}^n$  IN WHICH THE BRANCH POINTS ARE CONSIDERED AS INTERIOR POINTS OF THE DOMAIN HERE ANALYTIC FUNCTIONS IN AN ANALYTIC SPACE ARE TREATED WHICH IS A SLIGHT GENERALIZATION OF A RAMIFIED DOMAIN OVER  $\mathbb{C}^n$  IN WRITING THE BOOK THE AUTHOR S GOAL WAS TO BRING TO READERS A REAL UNDERSTANDING OF OKA S ORIGINAL PAPERS THIS VOLUME IS AN ENGLISH TRANSLATION OF THE ORIGINAL JAPANESE EDITION PUBLISHED BY THE UNIVERSITY OF TOKYO PRESS JAPAN IT WOULD MAKE A SUITABLE COURSE TEXT FOR ADVANCED GRADUATE LEVEL INTRODUCTIONS TO SEVERAL COMPLEX VARIABLES A CONCISE HANDBOOK OF MATHEMATICS PHYSICS AND ENGINEERING SCIENCES TAKES A PRACTICAL APPROACH TO THE BASIC NOTIONS FORMULAS EQUATIONS PROBLEMS THEOREMS METHODS AND LAWS THAT MOST FREQUENTLY OCCUR IN SCIENTIFIC AND ENGINEERING APPLICATIONS AND UNIVERSITY EDUCATION THE AUTHORS PAY SPECIAL ATTENTION TO ISSUES THAT MANY ENGINEERS AND STUDENTS THIS BOOK PRESENTS A BASIC INTRODUCTION TO COMPLEX ANALYSIS IN BOTH AN INTERESTING AND A RIGOROUS MANNER IT CONTAINS ENOUGH MATERIAL FOR A FULL YEAR S COURSE AND THE CHOICE OF MATERIAL TREATED IS REASONABLY STANDARD AND SHOULD BE SATISFACTORY FOR MOST FIRST COURSES IN COMPLEX ANALYSIS THE APPROACH TO EACH TOPIC APPEARS TO BE CAREFULLY THOUGHT OUT BOTH AS TO MATHEMATICAL TREATMENT AND PEDAGOGICAL PRESENTATION AND THE END RESULT IS A VERY SATISFACTORY BOOK MATHSCINET IN ADDITION TO BEING MATHEMATICALLY ELEGANT COMPLEX VARIABLES PROVIDE A POWERFUL TOOL FOR SOLVING PROBLEMS THAT ARE EITHER VERY DIFFICULT OR VIRTUALLY IMPOSSIBLE TO SOLVE IN ANY OTHER WAY PART I OF THIS TEXT PROVIDES AN INTRODUCTION TO THE SUBJECT INCLUDING ANALYTIC FUNCTIONS INTEGRATION SERIES AND RESIDUE CALCULUS AND ALSO INCLUDES TRANSFORM METHODS ODES IN THE COMPLEX PLANE NUMERICAL METHODS AND MORE PART II CONTAINS CONFORMAL MAPPINGS ASYMPTOTIC EXPANSIONS AND THE STUDY OF RIEMANN HILBERT PROBLEMS THE AUTHORS ALSO PROVIDE AN EXTENSIVE ARRAY OF APPLICATIONS ILLUSTRATIVE EXAMPLES AND HOMEWORK EXERCISES THIS BOOK IS IDEAL FOR USE IN INTRODUCTORY UNDERGRADUATE AND GRADUATE LEVEL COURSES IN COMPLEX VARIABLES PRESENTS THE DIRICHLET PROBLEM FOR HARMONIC FUNCTIONS TWICE ONCE USING THE POISSON INTEGRAL FOR THE UNIT DISK AND AGAIN IN AN INFORMAL SECTION ON BROWNIAN MOTION WHERE THE READER CAN UNDERSTAND INTUITIVELY HOW THE DIRICHLET PROBLEM WORKS FOR GENERAL DOMAINS THIS BOOK IS SUITABLE FOR A FIRST YEAR COURSE IN COMPLEX ANALYSIS AN INTRODUCTION TO THE FIELD OF SEVERAL COMPLEX VARIABLES A COURSE FOR GRADUATE STUDENTS AFTER ONE SEMESTER OF STANDARD COMPLEX ANALYSIS IN ONE VARIABLE THIS BOOK IS A POLISHED VERSION OF MY COURSE NOTES FOR MATH 6283 SEVERAL COMPLEX VARIABLES GIVEN IN SPRING 2014 SPRING 2016 AND SPRING 2019 SEMESTERS AT OKLAHOMA STATE UNIVERSITY SEE JIRKA.ORG/SCV FOR MORE INFORMATION THE SUBJECT OF THIS BOOK IS COMPLEX ANALYSIS IN SEVERAL VARIABLES THIS TEXT BEGINS AT AN ELEMENTARY LEVEL WITH STANDARD LOCAL RESULTS FOLLOWED BY A THOROUGH DISCUSSION OF THE VARIOUS FUNDAMENTAL CONCEPTS OF COMPLEX CONVEXITY RELATED TO THE REMARKABLE EXTENSION PROPERTIES OF HOLOMORPHIC FUNCTIONS IN MORE THAN ONE VARIABLE IT THEN CONTINUES WITH A COMPREHENSIVE INTRODUCTION TO INTEGRAL REPRESENTATIONS AND CONCLUDES WITH COMPLETE PROOFS OF SUBSTANTIAL GLOBAL RESULTS ON DOMAINS OF HOLOMORPHY AND ON STRICTLY PSEUDOCONVEX DOMAINS INCLUDING FOR EXAMPLE CARATHÉODORY S FAMOUS MAPPING THEOREM THE MOST IMPORTANT NEW FEATURE OF THIS BOOK IS THE SYSTEMATIC INCLUSION OF MANY OF THE DEVELOPMENTS OF THE LAST 20 YEARS WHICH CENTERED AROUND INTEGRAL REPRESENTATIONS AND ESTIMATES FOR THE CAUCHY RIEMANN EQUATIONS IN PARTICULAR INTEGRAL REPRESENTATIONS ARE THE PRINCIPAL TOOL USED TO DEVELOP THE GLOBAL THEORY IN CONTRAST TO MANY EARLIER BOOKS ON THE SUBJECT WHICH INVOLVED METHODS FROM COMMUTATIVE ALGEBRA AND SHEAF THEORY AND OR PARTIAL DIFFERENTIAL EQUATIONS I BELIEVE THAT THIS APPROACH OFFERS SEVERAL ADVANTAGES 1 IT USES THE SEVERAL VARIABLE VERSION OF TOOLS FAMILIAR TO THE ANALYST IN ONE COMPLEX VARIABLE AND THEREFORE HELPS TO BRIDGE THE OFTEN PERCEIVED GAP BETWEEN COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES 2 IT LEADS QUITE DIRECTLY TO DEEP GLOBAL RESULTS WITHOUT INTRODUCING A LOT OF NEW MACHINERY AND 3 CONCRETE INTEGRAL REPRESENTATIONS LEND THEMSELVES TO ESTIMATIONS THEREFORE OPENING THE DOOR TO APPLICATIONS NOT ACCESSIBLE BY THE EARLIER METHODS THE CONTRIBUTIONS TO THIS VOLUME ARE DEVOTED TO A DISCUSSION OF STATE OF THE ART RESEARCH AND TREATMENT OF PROBLEMS OF A WIDE SPECTRUM OF AREAS IN COMPLEX ANALYSIS RANGING FROM PURE TO APPLIED AND INTERDISCIPLINARY MATHEMATICAL RESEARCH TOPICS COVERED INCLUDE HOLOMORPHIC APPROXIMATION HYPERCOMPLEX ANALYSIS SPECIAL FUNCTIONS OF COMPLEX VARIABLES AUTOMORPHIC GROUPS ZEROS OF THE RIEMANN ZETA FUNCTION GAUSSIAN MULTIPLICATIVE CHAOS NON CONSTANT FREQUENCY DECOMPOSITIONS MINIMAL KERNELS ONE COMPONENT INNER FUNCTIONS POWER MOMENT PROBLEMS COMPLEX DYNAMICS BIHOLOMORPHIC CRYPTOSYSTEMS FERMIONIC AND BOSONIC OPERATORS THE BOOK WILL APPEAL TO GRADUATE STUDENTS AND RESEARCH MATHEMATICIANS AS WELL AS TO PHYSICISTS ENGINEERS AND SCIENTISTS WHOSE WORK IS RELATED TO THE TOPICS COVERED THE PURPOSE OF THIS BOOK IS TO PRESENT THE CLASSICAL ANALYTIC FUNCTION THEORY OF SEVERAL VARIABLES AS A STANDARD SUBJECT IN A COURSE OF

MATHEMATICS AFTER LEARNING THE ELEMENTARY MATERIALS SETS GENERAL TOPOLOGY ALGEBRA ONE COMPLEX VARIABLE THIS INCLUDES THE ESSENTIAL PARTS OF GRAUERT REMMERT S TWO VOLUMES GL227 236 THEORY OF STEIN SPACES AND GL265 COHERENT ANALYTIC SHEAVES WITH A LOWERING OF THE LEVEL FOR NOVICE GRADUATE STUDENTS HERE GRAUERT S DIRECT IMAGE THEOREM IS LIMITED TO THE CASE OF FINITE MAPS THE CORE OF THE THEORY IS OKA S COHERENCE FOUND AND PROVED BY KIYOSHI OKA IT IS INDISPENSABLE NOT ONLY IN THE STUDY OF COMPLEX ANALYSIS AND COMPLEX GEOMETRY BUT ALSO IN A LARGE AREA OF MODERN MATHEMATICS IN THIS BOOK JUST AFTER AN INTRODUCTORY CHAPTER ON HOLOMORPHIC FUNCTIONS CHAP 1 WE PROVE OKA S FIRST COHERENCE THEOREM FOR HOLOMORPHIC FUNCTIONS IN CHAP 2 THIS DEFINES A UNIQUE CHARACTER OF THE BOOK COMPARED WITH OTHER BOOKS ON THIS SUBJECT IN WHICH THE NOTION OF COHERENCE APPEARS MUCH LATER THE PRESENT BOOK CONSISTING OF NINE CHAPTERS GIVES COMPLETE TREATMENTS OF THE FOLLOWING ITEMS COHERENCE OF SHEAVES OF HOLOMORPHIC FUNCTIONS CHAP 2 OKA CARTAN S FUNDAMENTAL THEOREM CHAP 4 COHERENCE OF IDEAL SHEAVES OF COMPLEX ANALYTIC SUBSETS CHAP 6 COHERENCE OF THE NORMALIZATION SHEAVES OF COMPLEX SPACES CHAP 6 GRAUERT S FINITENESS THEOREM CHAPS 7 8 OKA S THEOREM FOR RIEMANN DOMAINS CHAP 8 THE THEORIES OF SHEAF COHOMOLOGY AND DOMAINS OF HOLOMORPHY ARE ALSO PRESENTED CHAPS 3 5 CHAPTER 6 DEALS WITH THE THEORY OF COMPLEX ANALYTIC SUBSETS CHAPTER 8 IS DEVOTED TO THE APPLICATIONS OF FORMERLY OBTAINED RESULTS PROVING CARTAN SERRE S THEOREM AND KODAIRA S EMBEDDING THEOREM IN CHAP 9 WE DISCUSS THE HISTORICAL DEVELOPMENT OF COHERENCE IT IS DIFFICULT TO FIND A BOOK AT THIS LEVEL THAT TREATS ALL OF THE ABOVE SUBJECTS IN A COMPLETELY SELF CONTAINED MANNER IN THE PRESENT VOLUME A NUMBER OF CLASSICAL PROOFS ARE IMPROVED AND SIMPLIFIED SO THAT THE CONTENTS ARE EASILY ACCESSIBLE FOR BEGINNING GRADUATE STUDENTS THE PLANE STRAIN AND GENERALIZED PLANE STRESS BOUNDARY VALUE PROBLEMS OF LINEAR ELASTICITY ARE THE FOCUS OF THIS GRADUATE LEVEL TEXT WHICH FORMULATES AND SOLVES THESE PROBLEMS BY EMPLOYING COMPLEX VARIABLE THEORY THE TEXT PRESENTS DETAILED DESCRIPTIONS OF THE THREE BASIC METHODS THAT RELY ON SERIES REPRESENTATION CAUCHY INTEGRAL REPRESENTATION AND THE SOLUTION VIA CONTINUATION ITS FIVE PART TREATMENT COVERS FUNCTIONS OF A COMPLEX VARIABLE THE BASIC EQUATIONS OF TWO DIMENSIONAL ELASTICITY PLANE AND HALF PLANE PROBLEMS REGIONS WITH CIRCULAR BOUNDARIES AND REGIONS WITH CURVILINEAR BOUNDARIES WORKED EXAMPLES AND SETS OF PROBLEMS APPEAR THROUGHOUT THE TEXT 1971 EDITION 26 FIGURES AS WELL AS DESCRIBING THE EXTREMELY USEFUL APPLICATIONS OF THE CVBEM THE AUTHORS EXPLAIN ITS MATHEMATICAL BACKGROUND VITAL TO UNDERSTANDING THE SUBJECT AS A WHOLE THIS IS THE MOST COMPREHENSIVE BOOK ON THE SUBJECT BRINGING TOGETHER TEN YEARS OF WORK AND CAN BOAST THE LATEST NEWS IN CVBEM TECHNOLOGY IT IS THUS OF PARTICULAR INTEREST TO THOSE CONCERNED WITH SOLVING TECHNICAL ENGINEERING PROBLEMS WHILE SCIENTISTS GRADUATE STUDENTS COMPUTER PROGRAMMERS AND THOSE WORKING IN INDUSTRY WILL ALL FIND THE BOOK HELPFUL THIS VOLUME OF THE EMS CONTAINS FOUR SURVEY ARTICLES ON ANALYTIC SPACES THEY ARE EXCELLENT INTRODUCTIONS TO EACH RESPECTIVE AREA STARTING FROM BASIC PRINCIPLES IN SEVERAL COMPLEX VARIABLES EACH ARTICLE STRETCHES OUT TO CURRENT TRENDS IN RESEARCH GRADUATE STUDENTS AND RESEARCHERS WILL FIND A USEFUL ADDITION IN THE EXTENSIVE BIBLIOGRAPHY AT THE END OF EACH ARTICLE THIS VOLUME OF THE EMS CONTAINS FOUR SURVEY ARTICLES ON ANALYTIC SPACES THEY ARE EXCELLENT INTRODUCTIONS TO EACH RESPECTIVE AREA STARTING FROM BASIC PRINCIPLES IN SEVERAL COMPLEX VARIABLES EACH ARTICLE STRETCHES OUT TO CURRENT TRENDS IN RESEARCH GRADUATE STUDENTS AND RESEARCHERS WILL FIND A USEFUL ADDITION IN THE EXTENSIVE BIBLIOGRAPHY AT THE END OF EACH ARTICLE THE SUBJECT OF THIS BOOK IS COMPLEX ANALYSIS IN SEVERAL VARIABLES THIS TEXT BEGINS AT AN ELEMENTARY LEVEL WITH STANDARD LOCAL RESULTS FOLLOWED BY A THOROUGH DISCUSSION OF THE VARIOUS FUNDAMENTAL CONCEPTS OF COMPLEX CONVEXITY RELATED TO THE REMARKABLE EXTENSION PROPERTIES OF HOLOMORPHIC FUNCTIONS IN MORE THAN ONE VARIABLE IT THEN CONTINUES WITH A COMPREHENSIVE INTRODUCTION TO INTEGRAL REPRESENTATIONS AND CONCLUDES WITH COMPLETE PROOFS OF SUBSTANTIAL GLOBAL RESULTS ON DOMAINS OF HOLOMORPHY AND ON STRICTLY PSEUDOCONVEX DOMAINS INC INCLUDING FOR EXAMPLE C FEFFERMAN S FAMOUS MAPPING THEOREM THE MOST IMPORTANT NEW FEATURE OF THIS BOOK IS THE SYSTEMATIC INCLUSION OF MANY OF THE DEVELOPMENTS OF THE LAST 20 YEARS WHICH CENTERED AROUND INTEGRAL REPRESENTATIONS AND ESTIMATES FOR THE CAUCHY RIEMANN EQUATIONS IN PARTICULAR INTEGRAL REPRESENTATIONS ARE THE PRINCIPAL TOOL USED TO DEVELOP THE GLOBAL THEORY IN CONTRAST TO MANY EARLIER BOOKS ON THE SUBJECT WHICH INVOLVED METHODS FROM COMMUTATIVE ALGEBRA AND SHEAF THEORY AND OR PARTIAL DIFFERENTIAL EQUATIONS I BELIEVE THAT THIS APPROACH OFFERS SEVERAL ADVANTAGES 1 IT USES THE SEVERAL VARIABLE VERSION OF TOOLS FAMILIAR TO THE ANALYST IN ONE COMPLEX VARIABLE AND THEREFORE HELPS TO BRIDGE THE OFTEN PERCEIVED GAP BETWEEN COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES 2 IT LEADS QUITE DIRECTLY TO DEEP GLOBAL RESULTS WITHOUT INTRODUCING A LOT OF NEW MACHINERY AND 3 CONCRETE INTEGRAL REPRESENTATIONS LEND THEMSELVES TO ESTIMATIONS THEREFORE OPENING THE DOOR TO APPLICATIONS NOT ACCESSIBLE BY THE EARLIER METHODS PRESENTS CURRENT RESEARCH AND FUTURE TRENDS IN THE THEORY OF SEVERAL COMPLEX VARIABLES AND PDE OF NOTE ARE TWO SURVEY ARTICLES THE FIRST PRESENTING RECENT RESULTS ON THE SOLVABILITY OF COMPLEX VECTOR FIELDS WITH CRITICAL POINTS WHILE THE SECOND CONCERNS THE LIE GROUP STRUCTURE OF THE AUTOMORPHISM GROUPS OF CR MANIFOLDS THIS CAREFULLY WRITTEN TEXTBOOK IS AN INTRODUCTION TO THE BEAUTIFUL CONCEPTS AND RESULTS OF COMPLEX ANALYSIS IT IS INTENDED FOR INTERNATIONAL BACHELOR AND MASTER PROGRAMMES IN GERMANY AND THROUGHOUT EUROPE IN THE ANGLO AMERICAN SYSTEM OF UNIVERSITY EDUCATION THE CONTENT CORRESPONDS TO A BEGINNING GRADUATE COURSE THE BOOK PRESENTS THE FUNDAMENTAL RESULTS AND METHODS OF COMPLEX ANALYSIS AND APPLIES THEM TO A STUDY OF ELEMENTARY AND NON ELEMENTARY FUNCTIONS ELLIPTIC FUNCTIONS GAMMA AND ZETA FUNCTION INCLUDING A PROOF OF THE PRIME NUMBER THEOREM AND A NEW FEATURE IN THIS CONTEXT TO EXHIBITING BASIC FACTS IN THE THEORY OF SEVERAL COMPLEX VARIABLES PART OF THE BOOK IS A TRANSLATION OF THE AUTHORS GERMAN TEXT EINFÜHRUNG IN DIE KOMPLEXE ANALYSIS SOME MATERIAL WAS ADDED FROM THE BY NOW ALMOST CLASSICAL TEXT FUNKTIONENTHEORIE WRITTEN BY THE AUTHORS AND A FEW PARAGRAPHS WERE NEWLY WRITTEN FOR SPECIAL USE IN A MASTER S PROGRAMME THIS BOOK DISCUSSES A VARIETY OF PROBLEMS WHICH ARE USUALLY TREATED IN A SECOND COURSE ON THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE LEVEL BEING GAUGED FOR GRADUATE STUDENTS IT TREATS SEVERAL TOPICS IN GEOMETRIC FUNCTION THEORY AS WELL AS POTENTIAL THEORY IN THE PLANE

COVERING IN PARTICULAR CONFORMAL EQUIVALENCE FOR SIMPLY CONNECTED REGIONS CONFORMAL EQUIVALENCE FOR FINITELY CONNECTED REGIONS ANALYTIC COVERING MAPS DE BRANGES PROOF OF THE BIEBERBACH CONJECTURE HARMONIC FUNCTIONS HARDY SPACES ON THE DISK POTENTIAL THEORY IN THE PLANE A KNOWLEDGE OF INTEGRATION THEORY AND FUNCTIONAL ANALYSIS IS ASSUMED THE FIRST SURVEY OF ITS KIND WRITTEN BY INTERNATIONALLY KNOWN OUTSTANDING EXPERTS WHO DEVELOPED SUBSTANTIAL PARTS OF THE FIELD THE BOOK CONTAINS AN INTRODUCTION WRITTEN BY REMMERT DESCRIBING THE HISTORY OF THE SUBJECT AND IS VERY USEFUL TO GRADUATE STUDENTS AND RESEARCHERS IN COMPLEX ANALYSIS ALGEBRAIC GEOMETRY AND DIFFERENTIAL GEOMETRY THE AUTHORS AIM HERE IS TO PRESENT A PRECISE AND CONCISE TREATMENT OF THOSE PARTS OF COMPLEX ANALYSIS THAT SHOULD BE FAMILIAR TO EVERY RESEARCH MATHEMATICIAN THEY FOLLOW A PATH IN THE TRADITION OF AHLFORS AND BERS BY DEDICATING THE BOOK TO A VERY PRECISE GOAL THE STATEMENT AND PROOF OF THE FUNDAMENTAL THEOREM FOR FUNCTIONS OF ONE COMPLEX VARIABLE THEY DISCUSS THE MANY EQUIVALENT WAYS OF UNDERSTANDING THE CONCEPT OF ANALYTICITY AND OFFER A LEISURE EXPLORATION OF INTERESTING CONSEQUENCES AND APPLICATIONS READERS SHOULD HAVE HAD UNDERGRADUATE COURSES IN ADVANCED CALCULUS LINEAR ALGEBRA AND SOME ABSTRACT ALGEBRA NO BACKGROUND IN COMPLEX ANALYSIS IS REQUIRED AUTHORED BY A RANKING AUTHORITY IN HARMONIC ANALYSIS OF SEVERAL COMPLEX VARIABLES THIS BOOK EMBODIES A STATE OF THE ART ENTR[?] E AT THE INTERSECTION OF TWO IMPORTANT FIELDS OF RESEARCH COMPLEX ANALYSIS AND HARMONIC ANALYSIS WRITTEN WITH THE GRADUATE STUDENT IN MIND IT IS ASSUMED THAT THE READER HAS FAMILIARITY WITH THE BASICS OF COMPLEX ANALYSIS OF ONE AND SEVERAL COMPLEX VARIABLES AS WELL AS WITH REAL AND FUNCTIONAL ANALYSIS THE MONOGRAPH IS LARGELY SELF CONTAINED AND DEVELOPS THE HARMONIC ANALYSIS OF SEVERAL COMPLEX VARIABLES FROM THE FIRST PRINCIPLES THE TEXT INCLUDES COPIOUS EXAMPLES EXPLANATIONS AN EXHAUSTIVE BIBLIOGRAPHY FOR FURTHER READING AND FIGURES THAT ILLUSTRATE THE GEOMETRIC NATURE OF THE SUBJECT EACH CHAPTER ENDS WITH AN EXERCISE SET ADDITIONALLY EACH CHAPTER BEGINS WITH A PROLOGUE INTRODUCING THE READER TO THE SUBJECT MATTER THAT FOLLOWS CAPSULES PRESENTED IN EACH SECTION GIVE PERSPECTIVE AND A SPIRITED LAUNCH TO THE SEGMENT PRELUDES HELP PUT IDEAS INTO CONTEXT MATHEMATICIANS AND RESEARCHERS IN SEVERAL APPLIED DISCIPLINES WILL FIND THE BREADTH AND DEPTH OF THE TREATMENT OF THE SUBJECT HIGHLY USEFUL SEVERAL COMPLEX VARIABLES AND THE GEOMETRY OF REAL HYPERSURFACES COVERS A WIDE RANGE OF INFORMATION FROM BASIC FACTS ABOUT HOLOMORPHIC FUNCTIONS OF SEVERAL COMPLEX VARIABLES THROUGH DEEP RESULTS SUCH AS SUBELLIPTIC ESTIMATES FOR THE NEUMANN PROBLEM ON PSEUDOCONVEX DOMAINS WITH A REAL ANALYTIC BOUNDARY THE BOOK FOCUSES ON DESCRIBING THE GEOMETRY OF A REAL HYPERSURFACE IN A COMPLEX VECTOR SPACE BY UNDERSTANDING ITS RELATIONSHIP WITH AMBIENT COMPLEX ANALYTIC VARIETIES YOU WILL LEARN HOW TO DECIDE WHETHER A REAL HYPERSURFACE CONTAINS COMPLEX VARIETIES HOW CLOSELY SUCH VARIETIES CAN CONTACT THE HYPERSURFACE AND WHY IT S IMPORTANT THE BOOK CONCLUDES WITH TWO SETS OF PROBLEMS ROUTINE PROBLEMS AND DIFFICULT PROBLEMS MANY OF WHICH ARE UNSOLVED PRINCIPAL PREREQUISITES FOR USING THIS BOOK INCLUDE A THOROUGH UNDERSTANDING OF ADVANCED CALCULUS AND STANDARD KNOWLEDGE OF COMPLEX ANALYSIS IN ONE VARIABLE SEVERAL COMPLEX VARIABLES AND THE GEOMETRY OF REAL HYPERSURFACES WILL BE A USEFUL TEXT FOR ADVANCED GRADUATE STUDENTS AND PROFESSIONALS WORKING IN COMPLEX ANALYSIS THE THEORY OF SEVERAL COMPLEX VARIABLES CAN BE STUDIED FROM SEVERAL DIFFERENT PERSPECTIVES IN THIS BOOK STEVEN KRANTZ APPROACHES THE SUBJECT FROM THE POINT OF VIEW OF A CLASSICAL ANALYST EMPHASIZING ITS FUNCTION THEORETIC ASPECTS HE HAS TAKEN PARTICULAR CARE TO WRITE THE BOOK WITH THE STUDENT IN MIND WITH UNIFORMLY EXTENSIVE AND HELPFUL EXPLANATIONS NUMEROUS EXAMPLES AND PLENTIFUL EXERCISES OF VARYING DIFFICULTY IN THE SPIRIT OF A STUDENT ORIENTED TEXT KRANTZ BEGINS WITH AN INTRODUCTION TO THE SUBJECT INCLUDING AN INSIGHTFUL COMPARISON OF ANALYSIS OF SEVERAL COMPLEX VARIABLES WITH TH

## COMPLEX VARIABLES 2003

COMPLEX VARIABLES PROVIDE POWERFUL METHODS FOR ATTACKING MANY DIFFICULT PROBLEMS AND IT IS THE AIM OF THIS BOOK TO PROVIDE A THOROUGH GROUNDING IN THESE METHODS AND THEIR APPLICATION THIS NEW EDITION HAS BEEN IMPROVED THROUGHOUT AND IS IDEAL FOR USE IN UNDERGRADUATE AND INTRODUCTORY GRADUATE COURSES IN COMPLEX VARIABLES

## FUNCTIONS OF SEVERAL COMPLEX VARIABLES AND THEIR SINGULARITIES 2007

THE BOOK PROVIDES AN INTRODUCTION TO THE THEORY OF FUNCTIONS OF SEVERAL COMPLEX VARIABLES AND THEIR SINGULARITIES WITH SPECIAL EMPHASIS ON TOPOLOGICAL ASPECTS THE TOPICS INCLUDE RIEMANN SURFACES HOLOMORPHIC FUNCTIONS OF SEVERAL VARIABLES CLASSIFICATION AND DEFORMATION OF SINGULARITIES FUNDAMENTALS OF DIFFERENTIAL TOPOLOGY AND THE TOPOLOGY OF SINGULARITIES THE AIM OF THE BOOK IS TO GUIDE THE READER FROM THE FUNDAMENTALS TO MORE ADVANCED TOPICS OF RECENT RESEARCH ALL THE NECESSARY PREREQUISITES ARE SPECIFIED AND CAREFULLY EXPLAINED THE GENERAL THEORY IS ILLUSTRATED BY VARIOUS EXAMPLES AND APPLICATIONS

## FUNCTIONS OF A COMPLEX VARIABLE 2005-01-01

FUNCTIONS OF A COMPLEX VARIABLE ARE USED TO SOLVE APPLICATIONS IN VARIOUS BRANCHES OF MATHEMATICS SCIENCE AND ENGINEERING FUNCTIONS OF A COMPLEX VARIABLE THEORY AND TECHNIQUE IS A BOOK IN A SPECIAL CATEGORY OF INFLUENTIAL CLASSICS BECAUSE IT IS BASED ON THE AUTHORS EXTENSIVE EXPERIENCE IN MODELING COMPLICATED SITUATIONS AND PROVIDING ANALYTIC SOLUTIONS THE BOOK MAKES AVAILABLE TO READERS A COMPREHENSIVE RANGE OF THESE ANALYTICAL TECHNIQUES BASED UPON COMPLEX VARIABLE THEORY ADVANCED TOPICS COVERED INCLUDE ASYMPTOTICS TRANSFORMS THE WIENER HOPF METHOD AND DUAL AND SINGULAR INTEGRAL EQUATIONS THE AUTHORS PROVIDE MANY EXERCISES INCORPORATING THEM INTO THE BODY OF THE TEXT AUDIENCE INTENDED FOR APPLIED MATHEMATICIANS SCIENTISTS ENGINEERS AND SENIOR OR GRADUATE LEVEL STUDENTS WHO HAVE ADVANCED KNOWLEDGE IN CALCULUS AND ARE INTERESTED IN SUCH SUBJECTS AS COMPLEX VARIABLE THEORY FUNCTION THEORY MATHEMATICAL METHODS ADVANCED ENGINEERING MATHEMATICS AND MATHEMATICAL PHYSICS

## COMPLEX ANALYSIS IN ONE VARIABLE 1985-01-01

COMPLEX ANALYSIS IS ONE OF THE MOST CENTRAL SUBJECTS IN MATHEMATICS IT IS COMPELLING AND RICH IN ITS OWN RIGHT BUT IT IS ALSO REMARKABLY USEFUL IN A WIDE VARIETY OF OTHER MATHEMATICAL SUBJECTS BOTH PURE AND APPLIED THIS BOOK IS DIFFERENT FROM OTHERS IN THAT IT TREATS COMPLEX VARIABLES AS A DIRECT DEVELOPMENT FROM MULTIVARIABLE REAL CALCULUS AS EACH NEW IDEA IS INTRODUCED IT IS RELATED TO THE CORRESPONDING IDEA FROM REAL ANALYSIS AND CALCULUS THE TEXT IS RICH WITH EXAMPLES AND EXERCISES THAT ILLUSTRATE THIS POINT THE AUTHORS HAVE SYSTEMATICALLY SEPARATED THE ANALYSIS FROM THE TOPOLOGY AS CAN BE SEEN IN THEIR PROOF OF THE CAUCHY THEOREM THE BOOK CONCLUDES WITH SEVERAL CHAPTERS ON SPECIAL TOPICS INCLUDING FULL TREATMENTS OF SPECIAL FUNCTIONS THE PRIME NUMBER THEOREM AND THE BERGMAN KERNEL THE AUTHORS ALSO TREAT HP SPACES AND PAINLEVE'S THEOREM ON SMOOTHNESS TO THE BOUNDARY FOR CONFORMAL MAPS THIS BOOK IS A TEXT FOR A FIRST YEAR GRADUATE COURSE IN COMPLEX ANALYSIS IT IS AN ENGAGING AND MODERN INTRODUCTION TO THE SUBJECT REFLECTING THE AUTHORS EXPERTISE BOTH AS MATHEMATICIANS AND AS EXPOSITORS

## FUNCTION THEORY OF ONE COMPLEX VARIABLE 2006

THIS BOOK DISCUSSES A VARIETY OF PROBLEMS WHICH ARE USUALLY TREATED IN A SECOND COURSE ON THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE LEVEL BEING GAUGED FOR GRADUATE STUDENTS IT TREATS SEVERAL TOPICS IN GEOMETRIC FUNCTION THEORY AS WELL AS POTENTIAL THEORY IN THE PLANE COVERING IN PARTICULAR CONFORMAL EQUIVALENCE FOR SIMPLY CONNECTED REGIONS CONFORMAL

EQUIVALENCE FOR FINITELY CONNECTED REGIONS ANALYTIC COVERING MAPS DE BRANGES PROOF OF THE BIEBERBACH CONJECTURE HARMONIC FUNCTIONS HARDY SPACES ON THE DISK POTENTIAL THEORY IN THE PLANE  
A KNOWLEDGE OF INTEGRATION THEORY AND FUNCTIONAL ANALYSIS IS ASSUMED

## **COMPLEX VARIABLES 1991-01**

THIS BOOK PRESENTS A BASIC INTRODUCTION TO COMPLEX ANALYSIS IN BOTH AN INTERESTING AND A RIGOROUS MANNER IT CONTAINS ENOUGH MATERIAL FOR A FULL YEAR S COURSE AND THE CHOICE OF MATERIAL TREATED IS REASONABLY STANDARD AND SHOULD BE SATISFACTORY FOR MOST FIRST COURSES IN COMPLEX ANALYSIS THE APPROACH TO EACH TOPIC APPEARS TO BE CAREFULLY THOUGHT OUT BOTH AS TO MATHEMATICAL TREATMENT AND PEDAGOGICAL PRESENTATION AND THE END RESULT IS A VERY SATISFACTORY BOOK MATHSCINET

## **FUNCTIONS OF ONE COMPLEX VARIABLE II 2012-12-06**

FUNCTIONS OF A COMPLEX VARIABLE PROVIDES ALL THE MATERIAL FOR A COURSE ON THE THEORY OF FUNCTIONS OF A COMPLEX VARIABLE AT THE SENIOR UNDERGRADUATE AND BEGINNING GRADUATE LEVEL ALSO SUITABLE FOR SELF STUDY THE BOOK COVERS EVERY TOPIC ESSENTIAL TO TRAINING STUDENTS IN COMPLEX ANALYSIS IT ALSO INCORPORATES SPECIAL TOPICS TO ENHANCE STUDENTS UNDERSTANDING OF THE SUBJECT LAYING THE FOUNDATION FOR FUTURE STUDIES IN ANALYSIS LINEAR ALGEBRA NUMERICAL ANALYSIS GEOMETRY NUMBER THEORY PHYSICS THERMODYNAMICS OR ELECTRICAL ENGINEERING AFTER INTRODUCING THE BASIC CONCEPTS OF COMPLEX NUMBERS AND THEIR GEOMETRICAL REPRESENTATION THE TEXT DESCRIBES ANALYTIC FUNCTIONS POWER SERIES AND ELEMENTARY FUNCTIONS THE CONFORMAL REPRESENTATION OF AN ANALYTIC FUNCTION SPECIAL TRANSFORMATIONS AND COMPLEX INTEGRATION IT NEXT DISCUSSES ZEROS OF AN ANALYTIC FUNCTION CLASSIFICATION OF SINGULARITIES AND SINGULARITY AT THE POINT OF INFINITY RESIDUE THEORY PRINCIPLE OF ARGUMENT ROUCHÉ'S THEOREM AND THE LOCATION OF ZEROS OF COMPLEX POLYNOMIAL EQUATIONS AND CALCULUS OF RESIDUES EMPHASIZING THE TECHNIQUES OF DEFINITE INTEGRALS BY CONTOUR INTEGRATION THE AUTHORS THEN EXPLAIN UNIFORM CONVERGENCE OF SEQUENCES AND SERIES INVOLVING PARSEVAL SCHWARZ AND POISSON FORMULAS THEY ALSO PRESENT HARMONIC FUNCTIONS AND MAPPINGS INVERSE MAPPINGS AND UNIVALENT FUNCTIONS AS WELL AS ANALYTIC CONTINUATION

## **FUNCTIONS OF ONE COMPLEX VARIABLE I 2012-12-06**

THE PRESENT BOOK GREW OUT OF INTRODUCTORY LECTURES ON THE THEORY OF FUNCTIONS OF SEVERAL VARIABLES ITS INTENT IS TO MAKE THE READER FAMILIAR BY THE DISCUSSION OF EXAMPLES AND SPECIAL CASES WITH THE MOST IMPORTANT BRANCHES AND METHODS OF THIS THEORY AMONG THEM E G THE PROBLEMS OF HOLOMORPHIC CONTINUATION THE ALGEBRAIC TREATMENT OF POWER SERIES SHEAF AND COHOMOLOGY THEORY AND THE REAL METHODS WHICH STEM FROM ELLIPTIC PARTIAL DIFFERENTIAL EQUATIONS IN THE FIRST CHAPTER WE BEGIN WITH THE DEFINITION OF HOLOMORPHIC FUNCTIONS OF SEVERAL VARIABLES THEIR REPRESENTATION BY THE CAUCHY INTEGRAL AND THEIR POWER SERIES EXPANSION ON REINHARDT DOMAINS IT TURNS OUT THAT IN CONTRAST 2 THERE EXIST DOMAINS  $G \subset \mathbb{C}^n$  TO THE THEORY OF A SINGLE VARIABLE FOR  $n \geq 2$  WITH  $G \subset \mathbb{C}^n$  AND  $G \subset \mathbb{C}^n$  SUCH THAT EACH FUNCTION HOLOMORPHIC IN  $G$  HAS A CONTINUATION ON  $G$  DOMAINS  $G$  FOR WHICH SUCH A  $G$  DOES NOT EXIST ARE CALLED DOMAINS OF HOLOMORPHY IN CHAPTER 2 WE GIVE SEVERAL CHARACTERIZATIONS OF THESE DOMAINS OF HOLOMORPHY THEOREM OF CARTAN THULLEN LEVI'S PROBLEM WE FINALLY CONSTRUCT THE HOLOMORPHIC HULL  $H(G)$  FOR EACH DOMAIN  $G$  THAT IS THE LARGEST NOT NECESSARILY SCHLICHT DOMAIN OVER  $\mathbb{C}^n$  INTO WHICH EACH FUNCTION HOLOMORPHIC ON  $G$  CAN BE CONTINUED

## **FUNCTIONS OF A COMPLEX VARIABLE 2015-10-14**

THIS BOOK INCLUDES INFORMATION ON ELEMENTARY GENERAL TOPOLOGY THE CAUCHY INTEGRAL THEOREM AND CONCEPTS OF HOMOLOGY AND HOMOTOPY IN THEIR APPLICATION TO THE CAUCHY THEORY IT IS INTENDED FOR AN INTRODUCTORY COURSE IN COMPLEX ANALYSIS AT THE FIRST YEAR GRADUATE AND ADVANCED UNDERGRADUATE LEVEL

## COMPLEX ANALYSIS IN ONE VARIABLE *1985*

COMPLEX VARIABLES PROVIDE POWERFUL METHODS FOR ATTACKING PROBLEMS THAT CAN BE VERY DIFFICULT TO SOLVE IN ANY OTHER WAY AND IT IS THE AIM OF THIS BOOK TO PROVIDE A THOROUGH GROUNDING IN THESE METHODS AND THEIR APPLICATION PART I OF THIS TEXT PROVIDES AN INTRODUCTION TO THE SUBJECT INCLUDING ANALYTIC FUNCTIONS INTEGRATION SERIES AND RESIDUE CALCULUS AND ALSO INCLUDES TRANSFORM METHODS ODES IN THE COMPLEX PLANE AND NUMERICAL METHODS PART II CONTAINS CONFORMAL MAPPINGS ASYMPTOTIC EXPANSIONS AND THE STUDY OF RIEMANN HILBERT PROBLEMS THE AUTHORS PROVIDE AN EXTENSIVE ARRAY OF APPLICATIONS ILLUSTRATIVE EXAMPLES AND HOMEWORK EXERCISES THIS 2003 EDITION WAS IMPROVED THROUGHOUT AND IS IDEAL FOR USE IN UNDERGRADUATE AND INTRODUCTORY GRADUATE LEVEL COURSES IN COMPLEX VARIABLES

## *SEVERAL COMPLEX VARIABLES 2012-12-06*

THE TEXT COVERS A BROAD SPECTRUM BETWEEN BASIC AND ADVANCED COMPLEX VARIABLES ON THE ONE HAND AND BETWEEN THEORETICAL AND APPLIED OR COMPUTATIONAL MATERIAL ON THE OTHER HAND WITH CAREFUL SELECTION OF THE EMPHASIS PUT ON THE VARIOUS SECTIONS EXAMPLES AND EXERCISES THE BOOK CAN BE USED IN A ONE OR TWO SEMESTER COURSE FOR UNDERGRADUATE MATHEMATICS MAJORS A ONE SEMESTER COURSE FOR ENGINEERING OR PHYSICS MAJORS OR A ONE SEMESTER COURSE FOR FIRST YEAR MATHEMATICS GRADUATE STUDENTS IT HAS BEEN TESTED IN ALL THREE SETTINGS AT THE UNIVERSITY OF UTAH THE EXPOSITION IS CLEAR CONCISE AND LIVELY THERE IS A CLEAN AND MODERN APPROACH TO CAUCHY S THEOREMS AND TAYLOR SERIES EXPANSIONS WITH RIGOROUS PROOFS BUT NO LONG AND TEDIOUS ARGUMENTS THIS IS FOLLOWED BY THE RICH HARVEST OF EASY CONSEQUENCES OF THE EXISTENCE OF POWER SERIES EXPANSIONS THROUGH THE CENTRAL PORTION OF THE TEXT THERE IS A CAREFUL AND EXTENSIVE TREATMENT OF RESIDUE THEORY AND ITS APPLICATION TO COMPUTATION OF INTEGRALS CONFORMAL MAPPING AND ITS APPLICATIONS TO APPLIED PROBLEMS ANALYTIC CONTINUATION AND THE PROOFS OF THE PICARD THEOREMS CHAPTER 8 COVERS MATERIAL ON INFINITE PRODUCTS AND ZEROES OF ENTIRE FUNCTIONS THIS LEADS TO THE FINAL CHAPTER WHICH IS DEVOTED TO THE RIEMANN ZETA FUNCTION THE RIEMANN HYPOTHESIS AND A PROOF OF THE PRIME NUMBER THEOREM PUBLISHER

## *INTRODUCTION TO FUNCTIONS OF A COMPLEX VARIABLE 2021-07-29*

THIS TEXT ON COMPLEX VARIABLES IS GEARED TOWARD GRADUATE STUDENTS AND UNDERGRADUATES WHO HAVE TAKEN AN INTRODUCTORY COURSE IN REAL ANALYSIS IT IS A SUBSTANTIALLY REVISED AND UPDATED EDITION OF THE POPULAR TEXT BY ROBERT B ASH OFFERING A CONCISE TREATMENT THAT PROVIDES CAREFUL AND COMPLETE EXPLANATIONS AS WELL AS NUMEROUS PROBLEMS AND SOLUTIONS AN INTRODUCTION PRESENTS BASIC DEFINITIONS COVERING TOPOLOGY OF THE PLANE ANALYTIC FUNCTIONS REAL DIFFERENTIABILITY AND THE CAUCHY RIEMANN EQUATIONS AND EXPONENTIAL AND HARMONIC FUNCTIONS SUCCEEDING CHAPTERS EXAMINE THE ELEMENTARY THEORY AND THE GENERAL CAUCHY THEOREM AND ITS APPLICATIONS INCLUDING SINGULARITIES RESIDUE THEORY THE OPEN MAPPING THEOREM FOR ANALYTIC FUNCTIONS LINEAR FRACTIONAL TRANSFORMATIONS CONFORMAL MAPPING AND ANALYTIC MAPPINGS OF ONE DISK TO ANOTHER THE RIEMANN MAPPING THEOREM RECEIVES A THOROUGH TREATMENT ALONG WITH FACTORIZATION OF ANALYTIC FUNCTIONS AS AN APPLICATION OF MANY OF THE IDEAS AND RESULTS APPEARING IN EARLIER CHAPTERS THE TEXT ENDS WITH A PROOF OF THE PRIME NUMBER THEOREM

## COMPLEX VARIABLES *2003-04-28*

TEXTBOOKS EVEN EXCELLENT ONES ARE A REFLECTION OF THEIR TIMES FORM AND CONTENT OF BOOKS DEPEND ON WHAT THE STUDENTS KNOW ALREADY WHAT THEY ARE EXPECTED TO LEARN HOW THE SUBJECT MATTER IS REGARDED IN RELATION TO OTHER DIVISIONS OF MATHEMATICS AND EVEN HOW FASHIONABLE THE SUBJECT MATTER IS IT IS THUS NOT SURPRISING THAT WE NO LONGER USE SUCH MASTERPIECES AS HURWITZ AND COURANT S FUNKTIONENTHEORIE OR JORDAN S COURSD ANALYSE IN OUR COURSES THE LAST TWO DECADES HAVE SEEN A SIGNIFICANT CHANGE IN THE TECHNIQUES USED IN THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE IMPORTANT ROLE PLAYED BY THE INHOMOGENEOUS CAUCHY RIEMANN EQUATION IN THE CURRENT RESEARCH HAS LED TO THE REUNIFICATION AT LEAST IN THEIR SPIRIT OF COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES WE SAY REUNIFICATION SINCE WE THINK THAT WEIERSTRASS POINCARÉ AND OTHERS IN CONTRAST TO MANY OF OUR STUDENTS DID NOT CONSIDER THEM TO BE ENTIRELY SEPARATE SUBJECTS INDEED NOT ONLY COMPLEX ANALYSIS IN SEVERAL VARIABLES BUT ALSO NUMBER THEORY HARMONIC ANALYSIS AND OTHER BRANCHES OF MATHEMATICS BOTH PURE AND APPLIED HAVE REQUIRED



A RECONSIDERATION OF ANALYTIC CONTINUATION ORDINARY DIFFERENTIAL EQUATIONS IN THE COMPLEX DOMAIN ASYMPTOTIC ANALYSIS ITERATION OF HOLOMORPHIC FUNCTIONS AND MANY OTHER SUBJECTS FROM THE CLASSIC THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THIS ONGOING RECONSIDERATION LED US TO THINK THAT A TEXTBOOK INCORPORATING SOME OF THESE NEW PERSPECTIVES AND TECHNIQUES HAD TO BE WRITTEN

## COMPLEX VARIABLES 2011

THE PRESENT BOOK IS MEANT AS A TEXT FOR A COURSE ON COMPLEX ANALYSIS AT THE ADVANCED UNDERGRADUATE LEVEL OR FIRST YEAR GRADUATE LEVEL SOMEWHAT MORE MATERIAL HAS BEEN INCLUDED THAN CAN BE COVERED AT LEISURE IN ONE TERM TO GIVE OPPORTUNITIES FOR THE INSTRUCTOR TO EXERCISE HIS TASTE AND LEAD THE COURSE IN WHATEVER DIRECTION STRIKES HIS FANCY AT THE TIME A LARGE NUMBER OF ROUTINE EXERCISES ARE INCLUDED FOR THE MORE STANDARD PORTIONS AND A FEW HARDER EXERCISES OF STRIKING THEORETICAL INTEREST ARE ALSO INCLUDED BUT MAY BE OMITTED IN COURSES ADDRESSED TO LESS ADVANCED STUDENTS IN SOME SENSE I THINK THE CLASSICAL GERMAN PREWAR TEXTS WERE THE BEST HURWITZ COURANT KNOPP BIEBERBACH ETC AND I WOULD RECOMMEND TO ANYONE TO LOOK THROUGH THEM MORE RECENT TEXTS HAVE EMPHASIZED CONNECTIONS WITH REAL ANALYSIS WHICH IS IMPORTANT BUT AT THE COST OF EXHIBITING SUCCINCTLY AND CLEARLY WHAT IS PECULIAR ABOUT COMPLEX ANALYSIS THE POWER SERIES EXPANSION THE UNIQUENESS OF ANALYTIC CONTINUATION AND THE CALCULUS OF RESIDUES THE SYSTEMATIC ELEMENTARY DEVELOPMENT OF FORMAL AND CONVERGENT POWER SERIES WAS STANDARD FARE IN THE GERMAN TEXTS BUT ONLY CARTAN IN THE MORE RECENT BOOKS INCLUDES THIS MATERIAL WHICH I THINK IS QUITE ESSENTIAL E.G. FOR DIFFERENTIAL EQUATIONS I HAVE WRITTEN A SHORT TEXT EXHIBITING THESE FEATURES MAKING IT APPLICABLE TO A WIDE VARIETY OF TASTES THE BOOK ESSENTIALLY DECOMPOSES INTO TWO PARTS

## COMPLEX VARIABLES 2007-01-01

KIYOSHI OKA AT THE BEGINNING OF HIS RESEARCH REGARDED THE COLLECTION OF PROBLEMS WHICH HE ENCOUNTERED IN THE STUDY OF DOMAINS OF HOLOMORPHY AS LARGE MOUNTAINS WHICH SEPARATE TODAY AND TOMORROW THUS HE BELIEVED THAT THERE COULD BE NO ESSENTIAL PROGRESS IN ANALYSIS WITHOUT CLIMBING OVER THESE MOUNTAINS THIS BOOK IS A WORTHWHILE INITIAL STEP FOR THE READER IN ORDER TO UNDERSTAND THE MATHEMATICAL WORLD WHICH WAS CREATED BY KIYOSHI OKA FROM THE PREFACE THIS BOOK EXPLAINS RESULTS IN THE THEORY OF FUNCTIONS OF SEVERAL COMPLEX VARIABLES WHICH WERE MOSTLY ESTABLISHED FROM THE LATE NINETEENTH CENTURY THROUGH TO THE MIDDLE OF THE TWENTIETH CENTURY IN THE WORK THE AUTHOR INTRODUCES THE MATHEMATICAL WORLD CREATED BY HIS ADVISOR KIYOSHI OKA IN THIS VOLUME OKA'S WORK IS DIVIDED INTO TWO PARTS THE FIRST IS THE STUDY OF ANALYTIC FUNCTIONS IN UNIVALENT DOMAINS IN  $\mathbb{C}^n$  HERE OKA PROVED THAT THREE CONCEPTS ARE EQUIVALENT DOMAINS OF HOLOMORPHY HOLOMORPHICALLY CONVEX DOMAINS AND PSEUDOCONVEX DOMAINS AND MOREOVER THAT THE POINCARÉ PROBLEM THE COUSIN PROBLEMS AND THE RUNGE PROBLEM WHEN STATED PROPERLY CAN BE SOLVED IN DOMAINS OF HOLOMORPHY SATISFYING THE APPROPRIATE CONDITIONS THE SECOND PART OF OKA'S WORK ESTABLISHED A METHOD FOR THE STUDY OF ANALYTIC FUNCTIONS DEFINED IN A RAMIFIED DOMAIN OVER  $\mathbb{C}^n$  IN WHICH THE BRANCH POINTS ARE CONSIDERED AS INTERIOR POINTS OF THE DOMAIN HERE ANALYTIC FUNCTIONS IN AN ANALYTIC SPACE ARE TREATED WHICH IS A SLIGHT GENERALIZATION OF A RAMIFIED DOMAIN OVER  $\mathbb{C}^n$  IN WRITING THE BOOK THE AUTHOR'S GOAL WAS TO BRING TO READERS A REAL UNDERSTANDING OF OKA'S ORIGINAL PAPERS THIS VOLUME IS AN ENGLISH TRANSLATION OF THE ORIGINAL JAPANESE EDITION PUBLISHED BY THE UNIVERSITY OF TOKYO PRESS JAPAN IT WOULD MAKE A SUITABLE COURSE TEXT FOR ADVANCED GRADUATE LEVEL INTRODUCTIONS TO SEVERAL COMPLEX VARIABLES

## COMPLEX VARIABLES 2012-12-06

A CONCISE HANDBOOK OF MATHEMATICS PHYSICS AND ENGINEERING SCIENCES TAKES A PRACTICAL APPROACH TO THE BASIC NOTIONS FORMULAS EQUATIONS PROBLEMS THEOREMS METHODS AND LAWS THAT MOST FREQUENTLY OCCUR IN SCIENTIFIC AND ENGINEERING APPLICATIONS AND UNIVERSITY EDUCATION THE AUTHORS PAY SPECIAL ATTENTION TO ISSUES THAT MANY ENGINEERS AND STUDENTS

## COMPLEX ANALYSIS *2013-06-29*

THIS BOOK PRESENTS A BASIC INTRODUCTION TO COMPLEX ANALYSIS IN BOTH AN INTERESTING AND A RIGOROUS MANNER IT CONTAINS ENOUGH MATERIAL FOR A FULL YEAR S COURSE AND THE CHOICE OF MATERIAL TREATED IS REASONABLY STANDARD AND SHOULD BE SATISFACTORY FOR MOST FIRST COURSES IN COMPLEX ANALYSIS THE APPROACH TO EACH TOPIC APPEARS TO BE CAREFULLY THOUGHT OUT BOTH AS TO MATHEMATICAL TREATMENT AND PEDAGOGICAL PRESENTATION AND THE END RESULT IS A VERY SATISFACTORY BOOK MATHSCINET

## FUNCTION THEORY IN SEVERAL COMPLEX VARIABLES *2001*

IN ADDITION TO BEING MATHEMATICALLY ELEGANT COMPLEX VARIABLES PROVIDE A POWERFUL TOOL FOR SOLVING PROBLEMS THAT ARE EITHER VERY DIFFICULT OR VIRTUALLY IMPOSSIBLE TO SOLVE IN ANY OTHER WAY PART I OF THIS TEXT PROVIDES AN INTRODUCTION TO THE SUBJECT INCLUDING ANALYTIC FUNCTIONS INTEGRATION SERIES AND RESIDUE CALCULUS AND ALSO INCLUDES TRANSFORM METHODS ODES IN THE COMPLEX PLANE NUMERICAL METHODS AND MORE PART II CONTAINS CONFORMAL MAPPINGS ASYMPTOTIC EXPANSIONS AND THE STUDY OF RIEMANN HILBERT PROBLEMS THE AUTHORS ALSO PROVIDE AN EXTENSIVE ARRAY OF APPLICATIONS ILLUSTRATIVE EXAMPLES AND HOMEWORK EXERCISES THIS BOOK IS IDEAL FOR USE IN INTRODUCTORY UNDERGRADUATE AND GRADUATE LEVEL COURSES IN COMPLEX VARIABLES

## A CONCISE HANDBOOK OF MATHEMATICS, PHYSICS, AND ENGINEERING SCIENCES *2010-10-18*

PRESENTS THE DIRICHLET PROBLEM FOR HARMONIC FUNCTIONS TWICE ONCE USING THE POISSON INTEGRAL FOR THE UNIT DISK AND AGAIN IN AN INFORMAL SECTION ON BROWNIAN MOTION WHERE THE READER CAN UNDERSTAND INTUITIVELY HOW THE DIRICHLET PROBLEM WORKS FOR GENERAL DOMAINS THIS BOOK IS SUITABLE FOR A FIRST YEAR COURSE IN COMPLEX ANALYSIS

## FUNCTIONS OF ONE COMPLEX VARIABLE I *1978-08-24*

AN INTRODUCTION TO THE FIELD OF SEVERAL COMPLEX VARIABLES A COURSE FOR GRADUATE STUDENTS AFTER ONE SEMESTER OF STANDARD COMPLEX ANALYSIS IN ONE VARIABLE THIS BOOK IS A POLISHED VERSION OF MY COURSE NOTES FOR MATH 6283 SEVERAL COMPLEX VARIABLES GIVEN IN SPRING 2014 SPRING 2016 AND SPRING 2019 SEMESTERS AT OKLAHOMA STATE UNIVERSITY SEE JIRKA.ORG/SCV FOR MORE INFORMATION

## COMPLEX VARIABLES *1997-02-13*

THE SUBJECT OF THIS BOOK IS COMPLEX ANALYSIS IN SEVERAL VARIABLES THIS TEXT BEGINS AT AN ELEMENTARY LEVEL WITH STANDARD LOCAL RESULTS FOLLOWED BY A THOROUGH DISCUSSION OF THE VARIOUS FUNDAMENTAL CONCEPTS OF COMPLEX CONVEXITY RELATED TO THE REMARKABLE EXTENSION PROPERTIES OF HOLOMORPHIC FUNCTIONS IN MORE THAN ONE VARIABLE IT THEN CONTINUES WITH A COMPREHENSIVE INTRODUCTION TO INTEGRAL REPRESENTATIONS AND CONCLUDES WITH COMPLETE PROOFS OF SUBSTANTIAL GLOBAL RESULTS ON DOMAINS OF HOLOMORPHY AND ON STRICTLY PSEUDOCONVEX DOMAINS INCLUDING FOR EXAMPLE CARATHÉODORY'S FAMOUS MAPPING THEOREM THE MOST IMPORTANT NEW FEATURE OF THIS BOOK IS THE SYSTEMATIC INCLUSION OF MANY OF THE DEVELOPMENTS OF THE LAST 20 YEARS WHICH CENTERED AROUND INTEGRAL REPRESENTATIONS AND ESTIMATES FOR THE CAUCHY RIEMANN EQUATIONS IN PARTICULAR INTEGRAL REPRESENTATIONS ARE THE PRINCIPAL TOOL USED TO DEVELOP THE GLOBAL THEORY IN CONTRAST TO MANY EARLIER BOOKS ON THE SUBJECT WHICH INVOLVED METHODS FROM COMMUTATIVE ALGEBRA AND SHEAF THEORY AND OR PARTIAL DIFFERENTIAL EQUATIONS I BELIEVE THAT THIS APPROACH OFFERS SEVERAL ADVANTAGES 1 IT USES THE SEVERAL VARIABLE VERSION OF TOOLS FAMILIAR TO THE ANALYST IN ONE COMPLEX VARIABLE AND THEREFORE HELPS TO BRIDGE THE OFTEN PERCEIVED GAP BETWEEN COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES 2 IT LEADS QUITE DIRECTLY TO DEEP GLOBAL RESULTS WITHOUT INTRODUCING A LOT OF NEW MACHINERY AND 3 CONCRETE INTEGRAL REPRESENTATIONS LEND THEMSELVES TO ESTIMATIONS THEREFORE OPENING THE DOOR TO APPLICATIONS NOT ACCESSIBLE BY THE EARLIER METHODS

## ***COMPLEX MADE SIMPLE 2008***

THE CONTRIBUTIONS TO THIS VOLUME ARE DEVOTED TO A DISCUSSION OF STATE OF THE ART RESEARCH AND TREATMENT OF PROBLEMS OF A WIDE SPECTRUM OF AREAS IN COMPLEX ANALYSIS RANGING FROM PURE TO APPLIED AND INTERDISCIPLINARY MATHEMATICAL RESEARCH TOPICS COVERED INCLUDE HOLOMORPHIC APPROXIMATION HYPERCOMPLEX ANALYSIS SPECIAL FUNCTIONS OF COMPLEX VARIABLES AUTOMORPHIC GROUPS ZEROS OF THE RIEMANN ZETA FUNCTION GAUSSIAN MULTIPLICATIVE CHAOS NON CONSTANT FREQUENCY DECOMPOSITIONS MINIMAL KERNELS ONE COMPONENT INNER FUNCTIONS POWER MOMENT PROBLEMS COMPLEX DYNAMICS BIHOLOMORPHIC CRYPTOSYSTEMS FERMIONIC AND BOSONIC OPERATORS THE BOOK WILL APPEAL TO GRADUATE STUDENTS AND RESEARCH MATHEMATICIANS AS WELL AS TO PHYSICISTS ENGINEERS AND SCIENTISTS WHOSE WORK IS RELATED TO THE TOPICS COVERED

## ***TASTY BITS OF SEVERAL COMPLEX VARIABLES 2019-05-06***

THE PURPOSE OF THIS BOOK IS TO PRESENT THE CLASSICAL ANALYTIC FUNCTION THEORY OF SEVERAL VARIABLES AS A STANDARD SUBJECT IN A COURSE OF MATHEMATICS AFTER LEARNING THE ELEMENTARY MATERIALS SETS GENERAL TOPOLOGY ALGEBRA ONE COMPLEX VARIABLE THIS INCLUDES THE ESSENTIAL PARTS OF GRAUERT REMMERT S TWO VOLUMES GL227 236 THEORY OF STEIN SPACES AND GL265 COHERENT ANALYTIC SHEAVES WITH A LOWERING OF THE LEVEL FOR NOVICE GRADUATE STUDENTS HERE GRAUERT S DIRECT IMAGE THEOREM IS LIMITED TO THE CASE OF FINITE MAPS THE CORE OF THE THEORY IS OKA S COHERENCE FOUND AND PROVED BY KIYOSHI OKA IT IS INDISPENSABLE NOT ONLY IN THE STUDY OF COMPLEX ANALYSIS AND COMPLEX GEOMETRY BUT ALSO IN A LARGE AREA OF MODERN MATHEMATICS IN THIS BOOK JUST AFTER AN INTRODUCTORY CHAPTER ON HOLOMORPHIC FUNCTIONS CHAP 1 WE PROVE OKA S FIRST COHERENCE THEOREM FOR HOLOMORPHIC FUNCTIONS IN CHAP 2 THIS DEFINES A UNIQUE CHARACTER OF THE BOOK COMPARED WITH OTHER BOOKS ON THIS SUBJECT IN WHICH THE NOTION OF COHERENCE APPEARS MUCH LATER THE PRESENT BOOK CONSISTING OF NINE CHAPTERS GIVES COMPLETE TREATMENTS OF THE FOLLOWING ITEMS COHERENCE OF SHEAVES OF HOLOMORPHIC FUNCTIONS CHAP 2 OKA CARTAN S FUNDAMENTAL THEOREM CHAP 4 COHERENCE OF IDEAL SHEAVES OF COMPLEX ANALYTIC SUBSETS CHAP 6 COHERENCE OF THE NORMALIZATION SHEAVES OF COMPLEX SPACES CHAP 6 GRAUERT S FINITENESS THEOREM CHAPS 7 8 OKA S THEOREM FOR RIEMANN DOMAINS CHAP 8 THE THEORIES OF SHEAF COHOMOLOGY AND DOMAINS OF HOLOMORPHY ARE ALSO PRESENTED CHAPS 3 5 CHAPTER 6 DEALS WITH THE THEORY OF COMPLEX ANALYTIC SUBSETS CHAPTER 8 IS DEVOTED TO THE APPLICATIONS OF FORMERLY OBTAINED RESULTS PROVING CARTAN SERRE S THEOREM AND KODAIRA S EMBEDDING THEOREM IN CHAP 9 WE DISCUSS THE HISTORICAL DEVELOPMENT OF COHERENCE IT IS DIFFICULT TO FIND A BOOK AT THIS LEVEL THAT TREATS ALL OF THE ABOVE SUBJECTS IN A COMPLETELY SELF CONTAINED MANNER IN THE PRESENT VOLUME A NUMBER OF CLASSICAL PROOFS ARE IMPROVED AND SIMPLIFIED SO THAT THE CONTENTS ARE EASILY ACCESSIBLE FOR BEGINNING GRADUATE STUDENTS

## ***HOLOMORPHIC FUNCTIONS AND INTEGRAL REPRESENTATIONS IN SEVERAL COMPLEX VARIABLES 2013-03-09***

THE PLANE STRAIN AND GENERALIZED PLANE STRESS BOUNDARY VALUE PROBLEMS OF LINEAR ELASTICITY ARE THE FOCUS OF THIS GRADUATE LEVEL TEXT WHICH FORMULATES AND SOLVES THESE PROBLEMS BY EMPLOYING COMPLEX VARIABLE THEORY THE TEXT PRESENTS DETAILED DESCRIPTIONS OF THE THREE BASIC METHODS THAT RELY ON SERIES REPRESENTATION CAUCHY INTEGRAL REPRESENTATION AND THE SOLUTION VIA CONTINUATION ITS FIVE PART TREATMENT COVERS FUNCTIONS OF A COMPLEX VARIABLE THE BASIC EQUATIONS OF TWO DIMENSIONAL ELASTICITY PLANE AND HALF PLANE PROBLEMS REGIONS WITH CIRCULAR BOUNDARIES AND REGIONS WITH CURVILINEAR BOUNDARIES WORKED EXAMPLES AND SETS OF PROBLEMS APPEAR THROUGHOUT THE TEXT 1971 EDITION 26 FIGURES

## ***ADVANCEMENTS IN COMPLEX ANALYSIS 2020-05-12***

AS WELL AS DESCRIBING THE EXTREMELY USEFUL APPLICATIONS OF THE CVBEM THE AUTHORS EXPLAIN ITS MATHEMATICAL BACKGROUND VITAL TO UNDERSTANDING THE SUBJECT AS A WHOLE THIS IS THE MOST COMPREHENSIVE BOOK ON THE SUBJECT BRINGING TOGETHER TEN YEARS OF WORK AND CAN BOAST THE LATEST NEWS IN CVBEM TECHNOLOGY IT IS THUS OF PARTICULAR INTEREST TO THOSE CONCERNED WITH SOLVING TECHNICAL ENGINEERING PROBLEMS WHILE SCIENTISTS GRADUATE STUDENTS COMPUTER PROGRAMMERS AND THOSE WORKING IN INDUSTRY WILL ALL FIND THE BOOK HELPFUL

## **ANALYTIC FUNCTION THEORY OF SEVERAL VARIABLES 2016-08-16**

THIS VOLUME OF THE EMS CONTAINS FOUR SURVEY ARTICLES ON ANALYTIC SPACES THEY ARE EXCELLENT INTRODUCTIONS TO EACH RESPECTIVE AREA STARTING FROM BASIC PRINCIPLES IN SEVERAL COMPLEX VARIABLES EACH ARTICLE STRETCHES OUT TO CURRENT TRENDS IN RESEARCH GRADUATE STUDENTS AND RESEARCHERS WILL FIND A USEFUL ADDITION IN THE EXTENSIVE BIBLIOGRAPHY AT THE END OF EACH ARTICLE

## **COMPLEX VARIABLE METHODS IN ELASTICITY 2003-01-01**

THIS VOLUME OF THE EMS CONTAINS FOUR SURVEY ARTICLES ON ANALYTIC SPACES THEY ARE EXCELLENT INTRODUCTIONS TO EACH RESPECTIVE AREA STARTING FROM BASIC PRINCIPLES IN SEVERAL COMPLEX VARIABLES EACH ARTICLE STRETCHES OUT TO CURRENT TRENDS IN RESEARCH GRADUATE STUDENTS AND RESEARCHERS WILL FIND A USEFUL ADDITION IN THE EXTENSIVE BIBLIOGRAPHY AT THE END OF EACH ARTICLE

## **ADVANCES IN THE COMPLEX VARIABLE BOUNDARY ELEMENT METHOD 2013-03-14**

THE SUBJECT OF THIS BOOK IS COMPLEX ANALYSIS IN SEVERAL VARIABLES THIS TEXT BEGINS AT AN ELEMENTARY LEVEL WITH STANDARD LOCAL RESULTS FOLLOWED BY A THOROUGH DISCUSSION OF THE VARIOUS FUNDAMENTAL CONCEPTS OF COMPLEX CONVEXITY RELATED TO THE REMARKABLE EXTENSION PROPERTIES OF HOLOMORPHIC FUNCTIONS IN MORE THAN ONE VARIABLE IT THEN CONTINUES WITH A COMPREHENSIVE INTRODUCTION TO INTEGRAL REPRESENTATIONS AND CONCLUDES WITH COMPLETE PROOFS OF SUBSTANTIAL GLOBAL RESULTS ON DOMAINS OF HOLOMORPHY AND ON STRICTLY PSEUDOCONVEX DOMAINS INCLUDING FOR EXAMPLE CARLEMAN'S FAMOUS MAPPING THEOREM THE MOST IMPORTANT NEW FEATURE OF THIS BOOK IS THE SYSTEMATIC INCLUSION OF MANY OF THE DEVELOPMENTS OF THE LAST 20 YEARS WHICH CENTERED AROUND INTEGRAL REPRESENTATIONS AND ESTIMATES FOR THE CAUCHY RIEMANN EQUATIONS IN PARTICULAR INTEGRAL REPRESENTATIONS ARE THE PRINCIPAL TOOL USED TO DEVELOP THE GLOBAL THEORY IN CONTRAST TO MANY EARLIER BOOKS ON THE SUBJECT WHICH INVOLVED METHODS FROM COMMUTATIVE ALGEBRA AND SHEAF THEORY AND OR PARTIAL DIFFERENTIAL EQUATIONS I BELIEVE THAT THIS APPROACH OFFERS SEVERAL ADVANTAGES 1 IT USES THE SEVERAL VARIABLE VERSION OF TOOLS FAMILIAR TO THE ANALYST IN ONE COMPLEX VARIABLE AND THEREFORE HELPS TO BRIDGE THE OFTEN PERCEIVED GAP BETWEEN COMPLEX ANALYSIS IN ONE AND IN SEVERAL VARIABLES 2 IT LEADS QUITE DIRECTLY TO DEEP GLOBAL RESULTS WITHOUT INTRODUCING A LOT OF NEW MACHINERY AND 3 CONCRETE INTEGRAL REPRESENTATIONS LEND THEMSELVES TO ESTIMATIONS THEREFORE OPENING THE DOOR TO APPLICATIONS NOT ACCESSIBLE BY THE EARLIER METHODS

## **SEVERAL COMPLEX VARIABLES IV 2012-12-06**

PRESENTS CURRENT RESEARCH AND FUTURE TRENDS IN THE THEORY OF SEVERAL COMPLEX VARIABLES AND PDE OF NOTE ARE TWO SURVEY ARTICLES THE FIRST PRESENTING RECENT RESULTS ON THE SOLVABILITY OF COMPLEX VECTOR FIELDS WITH CRITICAL POINTS WHILE THE SECOND CONCERNS THE LIE GROUP STRUCTURE OF THE AUTOMORPHISM GROUPS OF CR MANIFOLDS

## **SEVERAL COMPLEX VARIABLES IV 2011-11-01**

THIS CAREFULLY WRITTEN TEXTBOOK IS AN INTRODUCTION TO THE BEAUTIFUL CONCEPTS AND RESULTS OF COMPLEX ANALYSIS IT IS INTENDED FOR INTERNATIONAL BACHELOR AND MASTER PROGRAMMES IN GERMANY AND THROUGHOUT EUROPE IN THE ANGLO AMERICAN SYSTEM OF UNIVERSITY EDUCATION THE CONTENT CORRESPONDS TO A BEGINNING GRADUATE COURSE THE BOOK PRESENTS THE FUNDAMENTAL RESULTS AND METHODS OF COMPLEX ANALYSIS AND APPLIES THEM TO A STUDY OF ELEMENTARY AND NON ELEMENTARY FUNCTIONS ELLIPTIC FUNCTIONS GAMMA AND ZETA FUNCTION INCLUDING A PROOF OF THE PRIME NUMBER THEOREM AND A NEW FEATURE IN THIS CONTEXT TO EXHIBITING BASIC FACTS IN THE THEORY OF SEVERAL COMPLEX VARIABLES PART OF THE BOOK IS A TRANSLATION OF THE AUTHORS GERMAN TEXT EINFÜHRUNG IN DIE KOMPLEXE ANALYSIS SOME MATERIAL WAS ADDED FROM THE BY NOW ALMOST CLASSICAL TEXT FUNKTIONENTHEORIE WRITTEN BY THE AUTHORS AND A FEW PARAGRAPHS WERE NEWLY WRITTEN FOR SPECIAL USE IN A MASTER'S PROGRAMME

## HOLOMORPHIC FUNCTIONS AND INTEGRAL REPRESENTATIONS IN SEVERAL COMPLEX VARIABLES *1998-06-26*

THIS BOOK DISCUSSES A VARIETY OF PROBLEMS WHICH ARE USUALLY TREATED IN A SECOND COURSE ON THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE THE LEVEL BEING GAUGED FOR GRADUATE STUDENTS IT TREATS SEVERAL TOPICS IN GEOMETRIC FUNCTION THEORY AS WELL AS POTENTIAL THEORY IN THE PLANE COVERING IN PARTICULAR CONFORMAL EQUIVALENCE FOR SIMPLY CONNECTED REGIONS CONFORMAL EQUIVALENCE FOR FINITELY CONNECTED REGIONS ANALYTIC COVERING MAPS DE BRANGES PROOF OF THE BIEBERBACH CONJECTURE HARMONIC FUNCTIONS HARDY SPACES ON THE DISK POTENTIAL THEORY IN THE PLANE A KNOWLEDGE OF INTEGRATION THEORY AND FUNCTIONAL ANALYSIS IS ASSUMED

## GEOMETRIC ANALYSIS OF SEVERAL COMPLEX VARIABLES AND RELATED TOPICS *2011*

THE FIRST SURVEY OF ITS KIND WRITTEN BY INTERNATIONALLY KNOWN OUTSTANDING EXPERTS WHO DEVELOPED SUBSTANTIAL PARTS OF THE FIELD THE BOOK CONTAINS AN INTRODUCTION WRITTEN BY REMMERT DESCRIBING THE HISTORY OF THE SUBJECT AND IS VERY USEFUL TO GRADUATE STUDENTS AND RESEARCHERS IN COMPLEX ANALYSIS ALGEBRAIC GEOMETRY AND DIFFERENTIAL GEOMETRY

## A COURSE IN COMPLEX ANALYSIS *2011-10-21*

THE AUTHORS AIM HERE IS TO PRESENT A PRECISE AND CONCISE TREATMENT OF THOSE PARTS OF COMPLEX ANALYSIS THAT SHOULD BE FAMILIAR TO EVERY RESEARCH MATHEMATICIAN THEY FOLLOW A PATH IN THE TRADITION OF AHLFORS AND BERS BY DEDICATING THE BOOK TO A VERY PRECISE GOAL THE STATEMENT AND PROOF OF THE FUNDAMENTAL THEOREM FOR FUNCTIONS OF ONE COMPLEX VARIABLE THEY DISCUSS THE MANY EQUIVALENT WAYS OF UNDERSTANDING THE CONCEPT OF ANALYTICITY AND OFFER A LEISURE EXPLORATION OF INTERESTING CONSEQUENCES AND APPLICATIONS READERS SHOULD HAVE HAD UNDERGRADUATE COURSES IN ADVANCED CALCULUS LINEAR ALGEBRA AND SOME ABSTRACT ALGEBRA NO BACKGROUND IN COMPLEX ANALYSIS IS REQUIRED

## FUNCTIONS OF ONE COMPLEX VARIABLE II *1996-06-13*

AUTHORED BY A RANKING AUTHORITY IN HARMONIC ANALYSIS OF SEVERAL COMPLEX VARIABLES THIS BOOK EMBODIES A STATE OF THE ART ENTR[?] E AT THE INTERSECTION OF TWO IMPORTANT FIELDS OF RESEARCH COMPLEX ANALYSIS AND HARMONIC ANALYSIS WRITTEN WITH THE GRADUATE STUDENT IN MIND IT IS ASSUMED THAT THE READER HAS FAMILIARITY WITH THE BASICS OF COMPLEX ANALYSIS OF ONE AND SEVERAL COMPLEX VARIABLES AS WELL AS WITH REAL AND FUNCTIONAL ANALYSIS THE MONOGRAPH IS LARGELY SELF CONTAINED AND DEVELOPS THE HARMONIC ANALYSIS OF SEVERAL COMPLEX VARIABLES FROM THE FIRST PRINCIPLES THE TEXT INCLUDES COPIOUS EXAMPLES EXPLANATIONS AN EXHAUSTIVE BIBLIOGRAPHY FOR FURTHER READING AND FIGURES THAT ILLUSTRATE THE GEOMETRIC NATURE OF THE SUBJECT EACH CHAPTER ENDS WITH AN EXERCISE SET ADDITIONALLY EACH CHAPTER BEGINS WITH A PROLOGUE INTRODUCING THE READER TO THE SUBJECT MATTER THAT FOLLOWS CAPSULES PRESENTED IN EACH SECTION GIVE PERSPECTIVE AND A SPIRITED LAUNCH TO THE SEGMENT PRELUDES HELP PUT IDEAS INTO CONTEXT MATHEMATICIANS AND RESEARCHERS IN SEVERAL APPLIED DISCIPLINES WILL FIND THE BREADTH AND DEPTH OF THE TREATMENT OF THE SUBJECT HIGHLY USEFUL

## SEVERAL COMPLEX VARIABLES VII *1994-07-12*

SEVERAL COMPLEX VARIABLES AND THE GEOMETRY OF REAL HYPERSURFACES COVERS A WIDE RANGE OF INFORMATION FROM BASIC FACTS ABOUT HOLOMORPHIC FUNCTIONS OF SEVERAL COMPLEX VARIABLES THROUGH DEEP RESULTS SUCH AS SUBELLIPTIC ESTIMATES FOR THE NEUMANN PROBLEM ON PSEUDOCONVEX DOMAINS WITH A REAL ANALYTIC BOUNDARY THE BOOK FOCUSES ON DESCRIBING THE GEOMETRY OF A REAL HYPERSURFACE IN A COMPLEX VECTOR SPACE BY UNDERSTANDING ITS RELATIONSHIP WITH AMBIENT COMPLEX ANALYTIC VARIETIES YOU WILL LEARN HOW TO DECIDE WHETHER A REAL HYPERSURFACE CONTAINS COMPLEX VARIETIES HOW CLOSELY SUCH VARIETIES CAN CONTACT THE HYPERSURFACE AND WHY IT S IMPORTANT THE BOOK CONCLUDES WITH TWO SETS OF PROBLEMS ROUTINE PROBLEMS AND

DIFFICULT PROBLEMS MANY OF WHICH ARE UNSOLVED PRINCIPAL PREREQUISITES FOR USING THIS BOOK INCLUDE A THOROUGH UNDERSTANDING OF ADVANCED CALCULUS AND STANDARD KNOWLEDGE OF COMPLEX ANALYSIS IN ONE VARIABLE SEVERAL COMPLEX VARIABLES AND THE GEOMETRY OF REAL HYPERSURFACES WILL BE A USEFUL TEXT FOR ADVANCED GRADUATE STUDENTS AND PROFESSIONALS WORKING IN COMPLEX ANALYSIS

## **COMPLEX ANALYSIS *2012-11-28***

THE THEORY OF SEVERAL COMPLEX VARIABLES CAN BE STUDIED FROM SEVERAL DIFFERENT PERSPECTIVES IN THIS BOOK STEVEN KRANTZ APPROACHES THE SUBJECT FROM THE POINT OF VIEW OF A CLASSICAL ANALYST EMPHASIZING ITS FUNCTION THEORETIC ASPECTS HE HAS TAKEN PARTICULAR CARE TO WRITE THE BOOK WITH THE STUDENT IN MIND WITH UNIFORMLY EXTENSIVE AND HELPFUL EXPLANATIONS NUMEROUS EXAMPLES AND PLENTIFUL EXERCISES OF VARYING DIFFICULTY IN THE SPIRIT OF A STUDENT ORIENTED TEXT KRANTZ BEGINS WITH AN INTRODUCTION TO THE SUBJECT INCLUDING AN INSIGHTFUL COMPARISON OF ANALYSIS OF SEVERAL COMPLEX VARIABLES WITH TH

## **HARMONIC AND COMPLEX ANALYSIS IN SEVERAL VARIABLES *2017-09-20***

## **SEVERAL COMPLEX VARIABLES AND THE GEOMETRY OF REAL HYPERSURFACES *1993-01-06***

## **FUNCTION THEORY OF SEVERAL COMPLEX VARIABLES *2001***

## **COMPLEX ANALYSIS *1984-05-02***

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