Kurt Godel And The Foundations Of Mathematics

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Canadian Mathematical Bulletin 1972-06
Kurt Gödel Francisco Rodriguez-Consuegra 2011-09-27 Kurt Gödel, together with Bertrand Russell, is the most important name in logic, and in the foundations and philosophy of mathematics of this century. However, unlike Russel, Gödel the mathematician published very little apart from his well-known writings in logic, metamathematics and set theory. Fortunately, Gödel the philosopher, who devoted more years of his life to philosophy than to technical investigation, wrote hundreds of pages on the philosophy of mathematics, as well as on other fields of philosophy. It was only possible to learn more about his philosophical works after the opening of his literary estate at Princeton a decade ago. The goal of this book is to make available to the scholarly public solid reconstructions and editions of two of the most important essays which Gödel wrote on the philosophy of mathematics. The book is divided into two parts. The first provides the reader with an incisive historico-philosophical introduction to Gödel's technical results and philosophical ideas. Written by the Editor, this introductory apparatus is not only devoted to the manuscripts themselves but also to the philosophical context in which they were written. The second contains two of Gödel's most important and fascinating unpublished essays: 1) the Gibbs Lecture ("Some basic theorems on the foundations of mathematics and their philosophical implications", 1951); and 2) two of the six versions of the essay which Gödel wrote for the Carnap volume of the Schilpp series The Library of Living Philosophers ("Is mathematics syntax of language?", 1953-1959).
Gödel 96: Logical Foundations of Mathematics, Computer Science, and Physics Petr Hájek 2001-03-26 This volume contains the proceedings of the conference Logical Foundations of Mathematics, Computer Science, and Physics-Kurt Gödel's Legacy, held in Brno, Czech Republic on the 90th anniversary of his birth. The wide and continuing importance of Gödel s work in the logical foundations of mathematics, computer science, and physics is confirmed by the broad range of speakers who participated in making this gathering a scientific event.
Kurt Gödel: Collected Works: Volume III Kurt Gödel 1986 Kurt Gödel was the greatest logician of this century. This third volume of his collected works consists of previously unpublished material, both essays and lectures.
Gödel '96 Petr Hájek 2016 Proceedings of the conference 'Logical Foundations of Mathematics, Computer Science, and Physics - Kurt Gödel's Legacy', held in 1996
Godel's Proof James Newman 2018-10-17 From the Introduction. In 1931 there appeared in a German scientific periodical a relatively short paper with the forbidding title "Uber formal unentscheidbare Satze der Principia Mathematica und verwandter Systeme" ("On Formally Undecidable propositions of Principia Mathematica and Related Systems"). Its author was Kurt Gödel, then a young mathematician of 25 at the University of Vienna and since 1938 a permanent member of the Institute for Advanced Study at Princeton. The paper is a milestone in the history of logic and mathematics. When Harvard University awarded Gödel an honorary degree in 1952, the citation described the work as one of the most important advances in logic in modern times. At the time of its appearance, however, neither the title of Gödel's paper nor its content was intelligible to most mathematicians. The Principia Mathematica mentioned in the title is the monumental three-volume treatise by Alfred North Whitehead and Bertrand Russell on mathematical logic and the foundations of Gödel's Proof mathematics; and familiarity with that work is not a prerequisite to successful research in most branches of mathematics. Moreover, Gödel's paper deals with a set of questions that has never attracted more than a comparatively small group of students.

The reasoning of the proof was so novel at the time of its publication that only those intimately conversant with the technical literature of a highly specialized field could follow the argument with ready comprehension. Nevertheless, the conclusions Gödel established are now widely recognized as being revolutionary in their broad philosophical import. It is the aim of the present essay to make the substance of Gödel's findings and the general character of his proof accessible to the non-specialist.
Incompleteness: The Proof and Paradox of Kurt Gödel (Great Discoveries) Rebecca Goldstein 2006-02-17 A portrait of the eminent twentieth-century mathematician discusses his theorem of incompleteness, relationships with such contemporaries as Albert Einstein, and untimely death as a result of mental instability and self-starvation.
Issues in the Foundations of Mathematics Harvey M. Friedman 2018 I discuss my efforts concerning 3 crucial issues in the foundations of mathematics that are deeply connected with the great work of Kurt Gödel.
The Logical Foundations of Mathematics William S. Hatcher 2014-05-09 The Logical Foundations of Mathematics offers a study of the foundations of mathematics, stressing comparisons between and critical analyses of the major non-constructive foundational systems. The position of constructivism within the spectrum of foundational philosophies is discussed, along with the exact relationship between topos theory and set theory. Comprised of eight chapters, this book begins with an introduction to first-order logic. In particular, two complete systems of axioms and rules for the first-order predicate calculus are given, one for efficiency in proving metatheorems, and the other, in a "natural deduction" style, for presenting detailed formal proofs. A somewhat novel feature of this framework is a full semantic and syntactic treatment of variable-binding term operators as primitive symbols of logic. Subsequent chapters focus on the origin of modern foundational studies; Gottlob Frege's formal system intended to serve as a foundation for mathematics and its paradoxes; the theory of types; and the Zermelo-Fraenkel set theory. David Hilbert's program and Kurt Gödel's incompleteness theorems are also examined, along with the foundational systems of W. V. Quine and the relevance of categorical algebra for foundations. This monograph will be of interest to students, teachers, practitioners, and researchers in mathematics.
Memoirs of a Proof Theorist Mariko Yasugi 2003-02-10 This volume is a translation of the book Gödel, written in Japanese by Gaisi Takeuti, a distinguished proof theorist. The core of the book comprises a memoir of K Gödel, Takeuti's personal recollections, and his interpretation of Gödel's attitudes towards mathematical logic. It also contains Takeuti's recollection of association with some other famous logicians. Everything in the book is original, as the author adheres to his own experiences and interpretations. There is also an article on Hilbert's second problem as well as on the author's fundamental conjecture about second order logic. Contents:On GödelWork of Paul Bernays and Kurt GödelHilbert and GödelShort Biographies of LogiciansSet Theory and Related TopicsFrom Hilbert to GödelAxioms of Arithmetic and Consistency — The Second Problem of HilbertA Report from Gödel '96Having Read "Gödel Remembered"A Tribute to the Memory of Professor Gödel'Appendices:On Gödel's Continuum HypothesisBirth of Second Order Proof Theory by the Fundamental Conjecture on GLC Readership: Those interested in mathematics, especially logic or the history of mathematics. Keywords:Gödel;Logic;Set Theory
Godel's Theorems - Proceedings Of The First International Symposium Wolkowski Z W 1993-02-04 This volume is a compilation of the lectures at TASI 2012, held in Boulder, Colorado, June 2012. The program comprises two parallel lecture series on particle physics and on cosmology. The particle physics lectures covers LHC related experimental techniques,

phenomenology, as well as basics in physics beyond the standard model. The cosmology series give a general introduction to modern cosmology with special attention to the topics of dark matter, the microwave background and alternatives to the standard model of cosmology. The lectures are accessible to graduate students at the initial stages of their research careers.

Cambridge and Vienna Maria C. Galavotti 2006-07-10 The Institute Vienna Circle held a conference in Vienna in 2003, Cambridge and Vienna – Frank P. Ramsey and the Vienna Circle, to commemorate the philosophical and scientific work of Frank Plumpton Ramsey (1903–1930). This Ramsey conference provided not only historical and biographical perspectives on one of the most gifted thinkers of the Twentieth Century, but also new impulses for further research on at least some of the topics pioneered by Ramsey, whose interest and potential are greater than ever. Ramsey did pioneering work in several fields, practitioners of which rarely know of his important work in other fields: philosophy of logic and theory of language, foundations of mathematics, mathematics, probability theory, methodology of science, philosophy of psychology, and economics. There was a focus on the one topic which was of strongest mutual concern to Ramsey and the Vienna Circle, namely the question of foundations of mathematics, in particular the status of logicism. Although the major scientific connection linking Ramsey with Austria is his work on logic, to which the Vienna Circle dedicated several meetings, certainly the connection which is of greater general interest concerns Ramsey's visits and discussions with Wittgenstein. Ramsey was the only important thinker to actually visit Wittgenstein during his school-teaching career in Puchberg and Ottertal in the 1920s, in Lower Austria; and later, Ramsey was instrumental in getting Wittgenstein positions at Cambridge.

Kurt Gödel Francisco Rodriguez-Consuegra 1995-12-01 Kurt Gödel, together with Bertrand Russell, is the most important name in logic, and in the foundations and philosophy of mathematics of this century. However, unlike Russel, Gödel the mathematician published very little apart from his well-known writings in logic, metamathematics and set theory. Fortunately, Gödel the philosopher, who devoted more years of his life to philosophy than to technical investigation, wrote hundreds of pages on the philosophy of mathematics, as well as on other fields of philosophy. It was only possible to learn more about his philosophical works after the opening of his literary estate at Princeton a decade ago. The goal of this book is to make available to the scholarly public solid reconstructions and editions of two of the most important essays which Gödel wrote on the philosophy of mathematics. The book is divided into two parts. The first provides the reader with an incisive historico-philosophical introduction to Gödel's technical results and philosophical ideas. Written by the Editor, this introductory apparatus is not only devoted to the manuscripts themselves but also to the philosophical context in which they were written. The second contains two of Gödel's most important and fascinating unpublished essays: 1) the Gibbs Lecture ("Some basic theorems on the foundations of mathematics and their philosophical implications", 1951); and 2) two of the six versions of the essay which Gödel wrote for the Carnap volume of the Schilpp series The Library of Living Philosophers ("Is mathematics syntax of language?", 1953-1959).

Foundations of Mathematics Jack John Bulloff 2012-12-06 Dr. KURT GODEL'S sixtieth birthday (April 28, 1966) and the thirty fifth anniversary of the publication of his theorems on undecidability were celebrated during the 75th Anniversary Meeting of the Ohio Ac ademy of Science at The Ohio State University, Columbus, on April 22, 1966. The celebration took the form of a Festschrift Symposium on a theme supported by the late Director of The Institute for Advanced Study at Princeton, New Jersey, Dr. J. ROBERT OPPENHEIMER: "Logic, and Its Relations to Mathematics, Natural Science, and Philosophy." The symposium also celebrated the founding of Section L (Mathematical Sciences) of the Ohio Academy of Science. Salutations to Dr. GODEL were followed by the reading of papers by S. F. BARKER, H. B. CURRY, H. RUBIN, G. E. SACKS, and G. TAKEUTI, and by the announcement of in-absentia papers contributed in honor of Dr. GODEL by A. LEVY, B. MELTZER, R. M. SOLOVAY, and E. WETTE. A short discussion of "The II Beyond Godel's I" concluded the session.

In the Light of Logic Solomon Feferman 1998 In this collection of essays written over a period of twenty years, Solomon Feferman explains advanced results in modern logic and employs them to cast light on significant problems in the foundations of mathematics. Most troubling among these is the revolutionary way in which Georg Cantor elaborated the nature of the infinite, and in doing so helped transform the face of twentieth-century mathematics. Feferman details the development of Cantorian concepts and the foundational difficulties they engendered. He argues that the freedom provided by Cantorian set theory was purchased

at a heavy philosophical price, namely adherence to a form of mathematical platonism that is difficult to support. Beginning with a previously unpublished lecture for a general audience, Deciding the Undecidable, Feferman examines the famous list of twenty-three mathematical problems posed by David Hilbert, concentrating on three problems that have most to do with logic. Other chapters are devoted to the work and thought of Kurt Gödel, whose stunning results in the 1930s on the incompleteness of formal systems and the consistency of Cantors continuum hypothesis have been of utmost importance to all subsequent work in logic. Though Gödel has been identified as the leading defender of set-theoretical platonism, surprisingly even he at one point regarded it as unacceptable. In his concluding chapters, Feferman uses tools from the special part of logic called proof theory to explain how the vast part--if not all--of scientifically applicable mathematics can be justified on the basis of purely arithmetical principles. At least to that extent, the question raised in two of the essays of the volume, Is Cantor Necessary?, is answered with a resounding no. This volume of important and influential work by one of the leading figures in logic and the foundations of mathematics is essential reading for anyone interested in these subjects.

Reflections on Kurt Gödel Hao Wang 1990-03-14 Newton/Descartes. Einstein/Gödel. The seventeenth century had its scientific and philosophical geniuses. Why shouldn't ours have them as well? Kurt Gödel was indisputably one of the greatest thinkers of our time, and in this first extended treatment of his life and work, Hao Wang, who was in close contact with Gödel in his last years, brings out the full subtlety of Gödel's ideas and their connection with grand themes in the history of mathematics and philosophy. The subjects he covers include the completeness of elementary logic, the limits of formalization, the problem of evidence, the concept of set, the philosophy of mathematics, time, and relativity theory, metaphysics and religion, as well as general ideas on philosophy as a worldview. Wang, whose reflections on his colleague also serve to clarify his own philosophical thoughts, distinguishes his ideas from those of Gödel's and on points of agreement develops Gödel's views further. The book provides a generous array of information on and interpretation of the two main phases of Gödel's career - the years between 1924 and 1939 at the University of Vienna, which were marked by intense mathematical creativity, and the period from 1940 to his death in 1978, during which he was affiliated with the Institute for Advanced Studies in Princeton, a time in which Gödel's interests steadily shifted from questions of logic to metaphysics. And it also examines Gödel's relations with the Vienna Circle, his philosophical differences with Carnap and Wittgenstein, the intimate and mutually fruitful friendship with Einstein, and the periodic bouts of depression for which Gödel was hospitalized a number of times over the course of his life. A Bradford Book.

Foundations of Mathematics; Symposium Papers Commemorating the Sixtieth Birthday of Kurt Godel. Edited by Jack J. Bulloff, Thomas C. Holyoke (And) S.W. Hahn 1969

Journey to the Edge of Reason Stephen Budiansky 2021-05-11 A remarkable account of the brilliant, troubled mathematician and philosopher Kurt Gödel. From his famous Incompleteness Theorem, which shook the foundations of mathematical truth, to his perilous escape from Nazi Vienna, this book weaves together his creative genius, mental illness, and idealism in the face of adversity.

Kurt Gödel and the Foundations of Mathematics Matthias Baaz 2011 "This volume commemorates the life, work, and foundational views of Kurt Gödel (1906-1978), most famous for his hallmark works on the completeness of first-order logic, the incompleteness of number theory, and the consistency - with the other widely accepted axioms of set theory - of the axiom of choice and of the generalized continuum hypothesis. It explores current research, advances, and ideas for future directions not only in the foundations of mathematics and logic, but also in the fields of computer science, artificial intelligence, physics, cosmology, philosophy, theology, and the history of science. The discussion is supplemented by personal reflections from several scholars who knew Gödel personally, providing some interesting insights into his life. By putting his ideas and life's work into the context of current thinking and perceptions, this book will extend the impact of Gödel's fundamental work in mathematics, logic, philosophy, and other disciplines for future generations of researchers"--

Incompleteness: The Proof and Paradox of Kurt Gödel (Great Discoveries) Rebecca Goldstein 2006-02-17 "A gem…An unforgettable account of one of the great moments in the history of human thought." —Steven Pinker Probing the life and work of Kurt Gödel, Incompleteness indelibly portrays the tortured genius whose vision rocked the stability of mathematical reasoning—and brought him to the edge of madness.

Gödel '96 Petr Hájek 2017-03-02 Since their inception, the Perspectives in Logic and Lecture Notes in Logic series have published seminal works by leading logicians. Many of the original books in the series have been unavailable for years, but they are now in print once again. This volume, the sixth publication in the Lecture Notes in Logic series, collects the proceedings of the conference 'Logical Foundations of Mathematics, Computer Science, and Physics - Kurt Gödel's Legacy', held in Brno, Czech Republic, on the 90th anniversary of Gödel's birth. The broad range of speakers who participated in this event affirms the continuing importance of Gödel's work in logic, physics, and the philosophy and foundations of mathematics and computer science. The papers in this volume range over all these topics and contribute to our present understanding of them.

Kurt Gödel Solomon Feferman 2010-04-19 Kurt Gödel (1906–1978) did groundbreaking work that transformed logic and other important aspects of our understanding of mathematics, especially his proof of the incompleteness of formalized arithmetic. This book on different aspects of his work and on subjects in which his ideas have contemporary resonance includes papers from a May 2006 symposium celebrating Gödel's centennial as well as papers from a 2004 symposium. Proof theory, set theory, philosophy of mathematics, and the editing of Gödel's writings are among the topics covered. Several chapters discuss his intellectual development and his relation to predecessors and contemporaries such as Hilbert, Carnap, and Herbrand. Others consider his views on justification in set theory in light of more recent work and contemporary echoes of his incompleteness theorems and the concept of constructible sets.

After Gödel Richard Tieszen 2011-05-05 Richard Tieszen presents an analysis, development, and defense of a number of central ideas in Kurt Gödel's writings on the philosophy and foundations of mathematics and logic. Tieszen structures the argument around Gödel's three philosophical heroes - Plato, Leibniz, and Husserl - and his engagement with Kant, and supplements close readings of Gödel's texts on foundations with materials from Gödel's Nachlass and from Hao Wang's discussions with Gödel. As well as providing discussions of Gödel's views on the philosophical significance of his technical results on completeness, incompleteness, undecidability, consistency proofs, speed-up theorems, and independence proofs, Tieszen furnishes a detailed analysis of Gödel's critique of Hilbert and Carnap, and of his subsequent turn to Husserl's transcendental philosophy in 1959. On this basis, a new type of platonic rationalism that requires rational intuition, called 'constituted platonism', is developed and defended. Tieszen shows how constituted platonism addresses the problem of the objectivity of mathematics and of the knowledge of abstract mathematical objects. Finally, he considers the implications of this position for the claim that human minds ('monads') are machines, and discusses the issues of pragmatic holism and rationalism.

Logic, Logic, and Logic George Boolos 1999 George Boolos was one of the most prominent and influential logician-philosophers of recent times. This collection, nearly all chosen by Boolos himself shortly before his death, includes thirty papers on set theory, second-order logic, and plural quantifiers; on Frege, Dedekind, Cantor, and Russell; and on miscellaneous topics in logic and proof theory, including three papers on various aspects of the Gödel theorems. Boolos is universally recognized as the leader in the renewed interest in studies of Frege's work on logic and the philosophy of mathematics. John Burgess has provided introductions to each of the three parts of the volume, and also an afterword on Boolos's technical work in provability logic, which is beyond the scope of this volume.

Mathematical Logic and Its Applications Dimiter G. Skordev 2012-12-06 The Summer School and Conference on Mathematical Logic and its Applications, September 24 - October 4, 1986, Druzhba, Bulgaria, was honourably dedicated to the 80-th anniversary of Kurt Godel (1906 - 1978), one of the greatest scientists of this (and not only of this) century. The main topics of the Meeting were: Logic and the Foundation of Mathematics; Logic and Computer Science; Logic, Philosophy, and the Study of Language; Kurt Godel's life and deed. The scientific program comprised 5 kinds of activities, namely: a) a Godel Session with 3 invited lecturers b) a Summer School with 17 invited lecturers c) a Conference with 13 contributed talks d) Seminar talks (one invited and 12 with no preliminary selection) e) three discussions The present volume reflects an essential part of this program, namely 14 of the invited lectures and all of the contributed talks. Not presented in the volltme remai ned si x of the i nvi ted lecturers who di d not submi t texts: Yu. Ershov - The Language of!:-expressions and its Semantics; S. Goncharov - Mathematical Foundations of Semantic Programming; Y. Moschovakis - Foundations of the Theory of Algorithms; N. Nagornyj - Is Realizability of Propositional Formulae a GBdelean Property; N. Shanin - Some Approaches to

Finitization of Mathematical Analysis; V. Uspensky - Algorithms and Randomness - joint with A.N.

Kurt Gödel Philosopher-Scientist Collectif 2021-10-15 Most of the essays that are collected in this volume are the outcome of talks given at the international conference Kurt Gödel Philosopher: From Logic to Cosmology that was held in Aix-en-Provence (France) in summer 2013. In addition many of the authors belong to a group of scientists who have contributed to a project with the same title under the direction of Gabriella Crocco, to a larger or lesser degree.For this reason the volume represents more than just a collection of essays on Gödel. It is in fact the product of a long and enduring international collaboration. There was a group in France that worked on the transcriptions of the Max Phil and its interpretations. It consisted of: Mark van Atten, Eric Audureau, Julien Bertrand, Paola Cantù, Gabriella Crocco, Eva-Maria Engelen, Amélie Mertens and Robin Rollinger. And then there was a group of experts in Gödel studies and logic to whom the results of this ongoing research were presented and with whom they were discussed every now and then. This group consisted of: John W. Dawson Jr. and Cheryl Dawson, Akihiro Kanamori, Per Martin-Löf, Göran Sundholm and Richard Tieszen. For the conference the group of experts was enlarged by Eberhard Knobloch and Massimo Mugnai as authorities on Leibniz – to whom Gödel refers quite often – and by several Gödel-enthusiasts who gave us great pleasure by reacting to our call for papers. The transcriptions of notebooks IX, X, XI, and XII were only made accessible to the experts for their lectures at the conference even though not all of the transcriptions are yet ready for circulation or for publication.

Computability B. Jack Copeland 2015-01-30 Computer scientists, mathematicians, and philosophers discuss the conceptual foundations of the notion of computability as well as recent theoretical developments. In the 1930s a series of seminal works published by Alan Turing, Kurt Gödel, Alonzo Church, and others established the theoretical basis for computability. This work, advancing precise characterizations of effective, algorithmic computability, was the culmination of intensive investigations into the foundations of mathematics. In the decades since, the theory of computability has moved to the center of discussions in philosophy, computer science, and cognitive science. In this volume, distinguished computer scientists, mathematicians, logicians, and philosophers consider the conceptual foundations of computability in light of our modern understanding. Some chapters focus on the pioneering work by Turing, Gödel, and Church, including the Church-Turing thesis and Gödel's response to Church's and Turing's proposals. Other chapters cover more recent technical developments, including computability over the reals, Gödel's influence on mathematical logic and on recursion theory and the impact of work by Turing and Emil Post on our theoretical understanding of online and interactive computing; and others relate computability and complexity to issues in the philosophy of mind, the philosophy of science, and the philosophy of mathematics. Contributors Scott Aaronson, Dorit Aharonov, B. Jack Copeland, Martin Davis, Solomon Feferman, Saul Kripke, Carl J. Posy, Hilary Putnam, Oron Shagrir, Stewart Shapiro, Wilfried Sieg, Robert I. Soare, Umesh V. Vazirani

Kurt Gödel and the Foundations of Mathematics Matthias Baaz 2011-06-06 This volume commemorates the life, work and foundational views of Kurt Gödel (1906–78), most famous for his hallmark works on the completeness of first-order logic, the incompleteness of number theory, and the consistency - with the other widely accepted axioms of set theory - of the axiom of choice and of the generalized continuum hypothesis. It explores current research, advances and ideas for future directions not only in the foundations of mathematics and logic, but also in the fields of computer science, artificial intelligence, physics, cosmology, philosophy, theology and the history of science. The discussion is supplemented by personal reflections from several scholars who knew Gödel personally, providing some interesting insights into his life. By putting his ideas and life's work into the context of current thinking and perceptions, this book will extend the impact of Gödel's fundamental work in mathematics, logic, philosophy and other disciplines for future generations of researchers.

Foundations of mathematics. Symposium papers commemorating the sixtieth birthday of Kurt Gödel. Edited by Jack J. Bulloff, Thomas C. Holyoke, S.W. Hahn Kurt GOEDEL 1969

Foundations of Logic, 1903-05 Bertrand Russell 1994 This volume covers the period from the beginning of Whitehead and Russell's work on Volume 2 of the Principles of Mathematics to the critical discovery of the theory of descriptions in 1905. Contains many previously unpublished manuscripts.

Chapters from Gödel's Unfinished Book on Foundational Research in Mathematics Jan von Plato 2022-05-07 This volume contains English

translations of Gödel's chapters on logicism and the antinomies and on the calculi of pure logic, as well as outlines for a chapter on metamathematics. It also comprises most of his reading notes. This book is a testimony to Gödel's understanding of the situation of foundational research in mathematics after his great discovery, the incompleteness theorem of 1931. It is also a source for his views on his logical predecessors, from Leibniz, Frege, and Russell to his own times. Gödel's "own book on foundations," as he called it, is essential reading for logicians and philosophers interested in foundations. Furthermore, it opens a new chapter to the life and achievement of one of the icons of 20th century science and philosophy.

Kurt Gödel: Collected Works: Volume I Kurt Gödel 1986-05-22 Kurt Gödel (1906 - 1978) was the most outstanding logician of the twentieth century, famous for his hallmark works on the completeness of logic, the incompleteness of number theory, and the consistency of the axiom of choice and the continuum hypothesis. He is also noted for his work on constructivity, the decision problem, and the foundations of computability theory, as well as for the strong individuality of his writings on the philosophy of mathematics. He is less well known for his discovery of unusual cosmological models for Einstein's equations, in theory permitting time travel into the past. The Collected Works is a landmark resource that draws together a lifetime of creative thought and accomplishment. The first two volumes were devoted to Gödel's publications in full (both in original and translation), and the third volume featured a wide selection of unpublished articles and lecture texts found in Gödel's Nachlass. These long-awaited final two volumes contain Gödel's correspondence of logical, philosophical, and scientific interest. Volume IV covers A to G, with H to Z in volume V; in addition, Volume V contains a full inventory of Gödel's Nachlass. L All volumes include introductory notes that provide extensive explanatory and historical commentary on each body of work, English translations of material originally written in German (some transcribed from the Gabelsberger shorthand), and a complete bibliography of all works cited. Kurt Gödel: Collected Works is designed to be useful and accessible to as wide an audience as possible without sacrificing scientific or historical accuracy. The only comprehensive edition of Gödel's work available, it will be an essential part of the working library of professionals and students in logic, mathematics, philosophy, history of science, and computer science and all others who wish to be acquainted with one of the great minds of the twentieth century.

Kurt Godel and the Foundations of Mathematics Matthias Baaz 2011 This volume commemorates the life, work and foundational views of Kurt Gödel (1906-1978), most famous for his hallmark works on the completeness of first-order logic, the incompleteness of number theory, and the consistency - with the other widely accepted axioms of set theory - of the axiom of choice and of the generalized continuum hypothesis. It explores current research, advances and ideas for future directions not only in the foundations of mathematics and logic, but also in the fields of computer science, artificial intelligence, physics, cosmology, philosophy, theology and the history of science. The discussion is supplemented by personal reflections from several scholars who knew Gödel personally, providing some interesting insights into his life. By putting his ideas and life's work into the context of current thinking and perceptions, this book will extend the impact of Gödel's fundamental work in mathematics, logic, philosophy and other disciplines for future generations of researchers.

Interpreting Godel Juliette Kennedy 2014-08-21 In this groundbreaking volume, leading philosophers and mathematicians explore Kurt Gödel's work on the foundations and philosophy of mathematics.

Journey to the Edge of Reason: The Life of Kurt Gödel Stephen Budiansky 2021-05-11 A New York Times Critics' Top Book of 2021 • A Booklist Top Ten Biography of 2021 • A Kirkus Reviews Best Science Book of 2021 The first major biography written for a general audience of the logician and mathematician whose Incompleteness Theorems helped launch a modern scientific revolution. Nearly a hundred years after its publication, Kurt Gödel's famous proof that every mathematical system must contain propositions that are true—yet never provable—continues to unsettle mathematics, philosophy, and computer science. Yet unlike Einstein, with whom he formed a warm and abiding friendship, Gödel has long escaped all but the most casual scrutiny of his life. Stephen Budiansky's Journey to the Edge of Reason is the first biography to fully draw upon Gödel's voluminous letters and writings—including a never-before-transcribed shorthand diary of his most intimate thoughts—to explore Gödel's profound intellectual friendships, his moving relationship with his mother, his troubled yet devoted marriage, and the debilitating bouts of paranoia that ultimately took his life. It also offers an intimate portrait of the scientific and intellectual circles in prewar Vienna, a haunting account of Gödel's and Jewish intellectuals' flight from Austria and Germany at the start of the Second World War, and a vivid re-creation of the early days of the Institute for Advanced Study in Princeton, NJ, where Gödel and Einstein both worked. Eloquent and insightful, Journey to the Edge of Reason is a fully realized portrait of the odd, brilliant, and tormented man who has been called the greatest logician since Aristotle, and illuminates the far-reaching implications of Gödel's revolutionary ideas for philosophy, mathematics, artificial intelligence, and man's place in the cosmos.

Logical Dilemmas John Dawson 2005-06-06 This authoritative biography of Kurt Goedel relates the life of this most important logician of our time to the development of the field. Goedel's seminal achievements that changed the perception and foundations of mathematics are explained in the context of his life from the turn of the century Austria to the Institute for Advanced Study in Princeton.

Foundations of mathematics: symposium papers commemorating the sixtieth birthday of Kurt Godel, ed Jack J. Bulloff

Godel's Theorem in Focus S.G. Shanker 2012-08-21 A layman's guide to the mechanics of Gödel's proof together with a lucid discussion of the issues which it raises. Includes an essay discussing the significance of Gödel's work in the light of Wittgenstein's criticisms.

Gödel's Disjunction Leon Horsten 2016 The logician Kurt Godel in 1951 established a disjunctive thesis about the scope and limits of mathematical knowledge: either the mathematical mind is not equivalent to a Turing machine (i.e., a computer), or there are absolutely undecidable mathematical problems. In the second half of the twentieth century, attempts have been made to arrive at a stronger conclusion. In particular, arguments have been produced by the philosopher J.R. Lucas and by the physicist and mathematician Roger Penrose that intend to show that the mathematical mind is more powerful than any computer. These arguments, and counterarguments to them, have not convinced the logical and philosophical community. The reason for this is an insufficiency if rigour in the debate. The contributions in this volume move the debate forward by formulating rigorous frameworks and formally spelling out and evaluating arguments that bear on Godel's disjunction in these frameworks. The contributions in this volume have been written by world leading experts in the field.

Conversations with a Mathematician Gregory J. Chaitin 2012-12-06 The author, G. J. Chaitin, shows that God plays dice not only in quantum mechanics but also in the foundations of mathematics. According to Chaitin there exist mathematical facts that are true for no reason. This fascinating and provocative text contains a collection of his most wide-ranging and non-technical lectures and interviews. It will be of interest to anyone concerned with the philosophy of mathematics, the similarities and differences between physics and mathematics, and mathematics as art.