

## Basic Mathematics By Serge Lang

For many years, Serge Lang has given talks on selected items in mathematics which could be extracted at a level understandable by those who have had calculus. Written in a conversational tone, Lang now presents a collection of those talks as a book covering such topics as: prime numbers, the abc conjecture, approximation theorems of analysis, Bruhat-Tits spaces, and harmonic and symmetric polynomials. Each talk is written in a lively and informal style meant to engage any reader looking for further insight into mathematics.

This new, revised edition covers all of the basic topics in calculus of several variables, including vectors, curves, functions of several variables, gradient, tangent plane, maxima and minima, potential functions, curve integrals, Green's theorem, multiple integrals, surface integrals, Stokes' theorem, and the inverse mapping theorem and its consequences. It includes many completely worked-out problems.

This volume is a welcome resource for teachers seeking an undergraduate text on advanced trigonometry. Ideal for self-study, this book offers a variety of topics with problems and answers. 1930 edition. Includes 79 figures.

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.

Recent work in quantum information science has produced a revolution in our understanding of quantum entanglement. Scientists now view entanglement as a physical resource with many important applications. These range from quantum computers, which would be able to compute exponentially faster than classical computers, to quantum cryptographic techniques, which could provide unbreakable codes for the transfer of secret information over public channels. These important advances in the study of quantum entanglement and information touch on deep foundational issues in both physics and philosophy. This interdisciplinary volume brings together fourteen of the world's leading physicists and philosophers of physics to address the most important developments and debates in this exciting area of research. It offers a broad spectrum of approaches to resolving deep foundational challenges - philosophical, mathematical, and physical - raised by quantum information, quantum processing, and entanglement. This book is ideal for historians, philosophers of science and physicists.

Two-part treatment begins with discussions of coordinates of points on a line, coordinates of points in a plane, and coordinates of points in space. Part two examines geometry as an aid to calculation and peculiarities of four-dimensional space. Abundance of ingenious problems — includes solutions, answers, and hints. 1967 edition.

This text in basic mathematics is ideal for high school or college students. It provides a firm foundation in basic principles of mathematics and thereby acts as a springboard into calculus, linear algebra and other more advanced topics. The information is clearly presented, and the author develops concepts in such a manner to show how one subject matter can relate and evolve into another.

Accessible to all students with a sound background in high school mathematics, *A Concise Introduction to Pure Mathematics*, Fourth Edition presents some of the most fundamental and beautiful ideas in pure mathematics. It covers not only standard material but also many interesting topics not usually encountered at this level, such as the theory of solving cubic equations; Euler's formula for the numbers of corners, edges, and faces of a solid object and the five Platonic solids; the use of prime numbers to encode and decode secret information; the theory of how to compare the sizes of two infinite sets; and the rigorous theory of limits and continuous functions. New to the Fourth Edition Two new chapters that serve as an introduction to abstract algebra via the theory of groups, covering abstract reasoning as well as many examples and applications New material on inequalities, counting methods, the inclusion-exclusion principle, and Euler's phi function Numerous new exercises, with solutions to the odd-numbered ones Through careful explanations and examples, this popular textbook illustrates the power and beauty of basic mathematical concepts in number theory, discrete mathematics, analysis, and abstract algebra. Written in a rigorous yet accessible style, it continues to provide a robust bridge between high school and higher-level mathematics, enabling students to study more advanced courses in abstract algebra and analysis.

In a sense, trigonometry sits at the center of high school mathematics. It originates in the study of geometry when we investigate the ratios of sides in similar right triangles, or when we look at the relationship between a chord of a circle and its arc. It leads to a much deeper study of periodic functions, and of the so-called transcendental functions, which cannot be described using finite algebraic processes. It also has many applications to physics, astronomy, and other branches of science. It is a very old subject. Many of the geometric results that we now state in trigonometric terms were given a purely geometric exposition by Euclid. Ptolemy, an early astronomer, began to go beyond Euclid, using the geometry of the time to construct what we now call tables of values of trigonometric functions. Trigonometry is an important

introduction to calculus, where one studies what mathematicians call analytic properties of functions. One of the goals of this book is to prepare you for a course in calculus by directing your attention away from particular values of a function to a study of the function as an object in itself. This way of thinking is useful not just in calculus, but in many mathematical situations. So trigonometry is a part of pre-calculus, and is related to other pre-calculus topics, such as exponential and logarithmic functions, and complex numbers.

At last: geometry in an exemplary, accessible and attractive form! The authors emphasise both the intellectually stimulating parts of geometry and routine arguments or computations in concrete or classical cases, as well as practical and physical applications. They also show students the fundamental concepts and the difference between important results and minor technical routines. Altogether, the text presents a coherent high school curriculum for the geometry course, naturally backed by numerous examples and exercises.

A beautiful and relatively elementary account of a part of mathematics where three main fields - algebra, analysis and geometry - meet. The book provides a broad view of these subjects at the level of calculus, without being a calculus book. Its roots are in arithmetic and geometry, the two opposite poles of mathematics, and the source of historic conceptual conflict. The resolution of this conflict, and its role in the development of mathematics, is one of the main stories in the book. Stillwell has chosen an array of exciting and worthwhile topics and elegantly combines mathematical history with mathematics. He covers the main ideas of Euclid, but with 2000 years of extra insights attached.

Presupposing only high school algebra, it can be read by any well prepared student entering university. Moreover, this book will be popular with graduate students and researchers in mathematics due to its attractive and unusual treatment of fundamental topics. A set of well-written exercises at the end of each section allows new ideas to be instantly tested and reinforced.

### Basic Mathematics Springer

This logically self-contained introduction to analysis centers around those properties that have to do with uniform convergence and uniform limits in the context of differentiation and integration. From the reviews: "This material can be gone over quickly by the really well-prepared reader, for it is one of the book's pedagogical strengths that the pattern of development later recapitulates this material as it deepens and generalizes it." --AMERICAN MATHEMATICAL SOCIETY

For courses in Basic Mathematics. The Martin-Gay principle: Every student can succeed. Elayn Martin-Gay's student-centric approach is woven seamlessly throughout her texts and MyLab(tm) courses, giving students the optimal amount of support through effective video resources, an accessible writing style, and study skills support built into the program. Elayn's legacy of innovations that support student success include Chapter Test Prep videos and a Video Organizer note-taking guide. Expanded resources in the latest revision bring even more updates to her program, all shaped by her focus on the student - a perspective that has made her course materials beloved by students and instructors alike. The Martin-Gay series offers market-leading content written by a preeminent author-educator, tightly integrated with the #1 choice in digital learning: MyLab Math. Also available with MyLab Math. By combining trusted author content with digital tools and a flexible platform, MyLab personalizes the learning experience and improves results for each student. Bringing Elayn Martin-Gay's voice and approach into the MyLab course - through video resources, study skills support, and exercises refined with each edition - gives students the support to be successful in math. Note: You are purchasing a standalone product; MyLab Math does not come packaged with this content. Students, if interested in purchasing this title with MyLab Math, ask your instructor to confirm the correct package ISBN and Course ID. Instructors, contact your Pearson representative for more information. If you would like to purchase both the physical text and MyLab Math, search for: 0135307880 / 9780135307885 Basic College Mathematics with Early Integers Plus MyLab Math with Pearson eText - Access Card Package, 4e Package consists of: 013517693X / 9780135176931 Basic College Mathematics with Early Integers 0135190320 / 9780135190326 MyLab Math with Pearson eText - Standalone Access Card - for Basic College Mathematics with Early Integers

This fifth edition of Lang's book covers all the topics traditionally taught in the first-year calculus sequence. Divided into five parts, each section of A FIRST COURSE IN CALCULUS contains examples and applications relating to the topic covered. In addition, the rear of the book contains detailed solutions to a large number of the exercises, allowing them to be used as worked-out examples -- one of the main improvements over previous editions.

Introduction to Algebraic and Abelian Functions is a self-contained presentation of a fundamental subject in algebraic geometry and number theory. For this revised edition, the material on theta functions has been expanded, and the example of the Fermat curves is carried throughout the text. This volume is geared toward a second-year graduate course, but it leads naturally to the study of more advanced books listed in the bibliography.

Analytic number theory and part of the spectral theory of operators (differential, pseudo-differential, elliptic, etc.) are being merged under a more general analytic theory of regularized products of certain sequences satisfying a few basic axioms. The most basic examples consist of the sequence of natural numbers, the sequence of zeros with positive imaginary part of the Riemann zeta function, and the sequence of eigenvalues, say of a positive Laplacian on a compact or certain cases of non-compact manifolds. The resulting theory is applicable to ergodic theory and dynamical systems; to the zeta and L-functions of number theory or representation theory and modular forms; to Selberg-like zeta functions; and to the theory of regularized determinants familiar in physics and other parts of mathematics. Aside from presenting a systematic account of widely scattered results, the theory also provides new results. One part of the theory deals with complex analytic properties, and another part deals with Fourier analysis. Typical examples are given. This LNM provides basic results which are and will be used in further papers, starting with a general formulation of Cramér's theorem and explicit formulas. The exposition is self-contained (except for far-reaching examples), requiring only standard knowledge of analysis.

Rapid, concise, self-contained introduction assumes only familiarity with elementary algebra. Subjects include algebraic varieties; products, projections, and correspondences; normal varieties; differential forms; theory of simple points; algebraic groups; more. 1958 edition.

If someone told you that mathematics is quite beautiful, you might be surprised. But you should know that some people do mathematics all their lives, and create mathematics, just as a composer creates music. Usually, every time a mathematician solves a problem, this gives rise to many others, new and just as beautiful as the one which was solved. Of course, often these problems are quite difficult, and as in other disciplines can be understood only by those who have studied the subject with some depth, and know the subject well. In 1981, Jean Brette, who is responsible for the Mathematics Section of the Palais de la Decouverte (Science Museum) in Paris, invited me to give a conference at the Palais. I had never given such a conference before, to a non-mathematical public. Here was a challenge: could I communicate to such a Saturday afternoon audience what it means to do mathematics, and why one does mathematics?



By "mathematics" I mean pure mathematics. This doesn't mean that pure math is better than other types of math, but I and a number of others do pure mathematics, and it's about them that I am now concerned. Math has a bad reputation, stemming from the most elementary levels. The word is in fact used in many different contexts. First, I had to explain briefly these possible contexts, and the one with which I wanted to deal.

The companion title, Linear Algebra, has sold over 8,000 copies The writing style is very accessible The material can be covered easily in a one-year or one-term course Includes Noah Snyder's proof of the Mason-Stothers polynomial abc theorem New material included on product structure for matrices including descriptions of the conjugation representation of the diagonal group

A book that explains the fundamentals of geometry, algebra, and trigonometry with as fewest words as the author deems it possible.

This book is the second part of the new edition of Advanced Modern Algebra (the first part published as Graduate Studies in Mathematics, Volume 165). Compared to the previous edition, the material has been significantly reorganized and many sections have been rewritten. The book presents many topics mentioned in the first part in greater depth and in more detail. The five chapters of the book are devoted to group theory, representation theory, homological algebra, categories, and commutative algebra, respectively. The book can be used as a text for a second abstract algebra graduate course, as a source of additional material to a first abstract algebra graduate course, or for self-study.

Author is well-known and established book author (all Serge Lang books are now published by Springer); Presents a brief introduction to the subject; All manifolds are assumed finite dimensional in order not to frighten some readers; Complete proofs are given; Use of manifolds cuts across disciplines and includes physics, engineering and economics This book is meant as a text for a first-year graduate course in analysis. In a sense, it covers the same topics as elementary calculus but treats them in a manner suitable for people who will be using it in further mathematical investigations. The organization avoids long chains of logical interdependence, so that chapters are mostly independent. This allows a course to omit material from some chapters without compromising the exposition of material from later chapters.

Maths does not have to be difficult. This book, complete with exercises and answers, forms a course which will take you from beginner or intermediate level to being a confident mathematician. This book includes: simple step-by-step explanations, to help you grasp new topics or those that have previously confused you; practice questions throughout, to help you embed your learning and improve your confidence; and end of chapter summaries, to help you remember the key points you've learned - all in one great-value book, so you don't need any separate workbooks or coursebooks.

Chapters include: number; angles; fractions; two-dimensional shapes; decimals; statistics| directed numbers; graphs; measurement; perimeter and area; algebraic expressions; approximations; equations; percentages; formulae; circles; probability; three-dimensional shapes; ratio and proportion; pythagoras' theorem and trigonometry; indices and standard form. ABOUT THE SERIES The Complete Introduction series from Teach Yourself is the ultimate one-stop guide for anyone wanting a comprehensive and accessible entry point into subjects as diverse as philosophy, mathematics, psychology, Shakespeare and practical electronics. Loved by students and perfect for general readers who simply want to learn more about the world around them, these books are your first choice for discovering something new.

This is a short text in linear algebra, intended for a one-term course. In the first chapter, Lang discusses the relation between the geometry and the algebra underlying the subject, and gives concrete examples of the notions which appear later in the book. He then starts with a discussion of linear equations, matrices and Gaussian elimination, and proceeds to discuss vector spaces, linear maps, scalar products, determinants, and eigenvalues. The book contains a large number of exercises, some of the routine computational type, while others are conceptual.

This book is about algebra. This is a very old science and its gems have lost their charm for us through everyday use. We have tried in this book to refresh them for you. The main part of the book is made up of problems. The best way to deal with them is: Solve the problem by yourself - compare your solution with the solution in the book (if it exists) - go to the next problem. However, if you have difficulties solving a problem (and some of them are quite difficult), you may read the hint or start to read the solution. If there is no solution in the book for some problem, you may skip it (it is not heavily used in the sequel) and return to it later. The book is divided into sections devoted to different topics. Some of them are very short, others are rather long. Of course, you know arithmetic pretty well. However, we shall go through it once more, starting with easy things. 2 Exchange of terms in addition Let's add 3 and 5:  $3+5=8$ . And now change the order:  $5+3=8$ . We get the same result. Adding three apples to five apples is the same as adding five apples to three - apples do not disappear and we get eight of them in both cases. 3 Exchange of terms in multiplication Multiplication has a similar property. But let us first agree on notation.

This book provides an introduction to the basic concepts in differential topology, differential geometry, and differential equations, and some of the main basic theorems in all three areas. This new edition includes new chapters, sections, examples, and exercises. From the reviews: "There are many books on the fundamentals of differential geometry, but this one is quite exceptional; this is not surprising for those who know Serge Lang's books." --EMS NEWSLETTER

[Copyright: 95e7a7c06bbf69b5a6e2b4513fe94075](#)