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A mathematics course for political and social research.

Princeton, NJ: Princeton University Press (ISBN 978-0-691-15917-1/pbk; 978-0-691-15995-9/hbk; 978-1-4008-4861-4 /ebook). xix, 430 p. (2013).

This book is intended primarily for political scientists, not mathematicians; if one needs to understand what mathematics is, what it can tell, and how it can be useful to read this book. The authors aim to provide a practical text that meets these intentions. The book is divided into five parts. The first part covers the preliminaries and topics which the reader should have learned in high school. In particular, the chapter introduces variables, sets, operators, relations, notations, and proofs. Other topics are basic algebra including equation solving as well as functions and relations. The second part covers calculus in one dimension including optimization. Further, this part offers differentiation rules and derivatives of both common and special functions. It introduces the indefinite and definite integral, provides techniques of integration, and discusses the fundamental theorem of calculus. At the end of this part, extreme values of functions are defined, higher-order derivatives are discussed, and concave and convex functions are considered. The third part tackles probability from its basics to discrete and continuous distributions. The fourth part is a primer on linear algebra. The fifth and final part is the most complex part of the book. It introduces selected topics in multivariate calculus including constrained and unconstrained optimization and implicit differentiation. In each chapter, the book gives reasons why a student should master particular areas of mathematics. In spite of the fact that in political social research game theory plays an important role, the subject is not treated separately because the other chapters already introduce the utility and the expected utility and discuss their maximization, which is the heart of game theory. These actions form part of equilibrium behavior, which means that each player is satisfied with his optimal action, given everyone else's optimal actions, and has no incentive to change it. Each chapter concludes with a set of exercises designed to develop mastery via practice. Detailed examples are included throughout the highlighting of important concepts or techniques, aiming at fostering a practical knowledge of mathematics that can be brought into coursework and research. At the end of the book, online resources are referenced. *Fatima T. Adylova (Tashkent)*

Classification: H15 I15 K15 M15
Keywords: conceptions; basic mathematics; linear algebra; multivariate calculus; optimization