



# A Transition to Advanced Mathematics: A Survey Course

By William Johnston, Alex McAllister

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*A Transition to Advanced Mathematics: A Survey Course* promotes the goals of a "bridge" course in mathematics, helping to lead students from courses in the calculus sequence (and other courses where they solve problems that involve mathematical calculations) to theoretical upper-level mathematics courses (where they will have to prove theorems and grapple with mathematical abstractions). The text simultaneously promotes the goals of a ``survey" course, describing the intriguing questions and insights fundamental to many diverse areas of mathematics, including Logic, Abstract Algebra, Number Theory, Real Analysis, Statistics, Graph Theory, and Complex Analysis.

The main objective is "to bring about a deep change in the mathematical character of students -- how they think and their fundamental perspectives on the world of mathematics." This text promotes three major mathematical traits in a meaningful, transformative way: to develop an ability to communicate with precise language, to use mathematically sound reasoning, and to ask probing questions about mathematics. In short, we hope that working through *A Transition to Advanced Mathematics* encourages students to become mathematicians in the fullest sense of the word.

*A Transition to Advanced Mathematics* has a number of distinctive features that enable this transformational experience. Embedded Questions and Reading Questions illustrate and explain fundamental concepts, allowing students to test their understanding of ideas independent of the exercise sets. The text has extensive, diverse Exercises Sets; with an average of 70 exercises at the end of section, as well as almost 3,000 distinct exercises. In addition, every chapter includes a section that explores an application of the theoretical ideas being studied. We have also interwoven embedded reflections on the history, culture, and philosophy of mathematics throughout the text.



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#### Review

"A readable, comprehensive resource for transitioning to higher mathematical thinking. A valuable feature is the different types of questions and exercises. Professors will benefit from each chapter's optional application section, offering flexibility for teaching purposes."--*Choice*

#### About the Author

**William Johnston** is Professor of Mathematics at Butler University. He has been teaching mathematics to undergraduates since 1983.

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**Alex M. McAllister** is an Associate Professor of Mathematics at Centre College. Over the past fifteen years, Alex has taught mathematics to undergraduates at the University of Notre Dame, Dartmouth College, and Centre College.

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