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Alcock, Lara
How to study as a mathematics major.
Oxford: Oxford University Press (ISBN 978-0-19-966131-2/pbk). xvi, 272 p. (2013).

In recent years, readers have learned what to expect from publications of authors working at "education centers" inside or outside of universities: the credo of these publications (in Germany, at least) is that for hundreds of years, teachers have been teaching the wrong material in the wrong way, that teaching mathematics beyond percentages is superfluous, as is being able to do basic computations by hand because of the availability of pocket calculators, and a host of other claims all backed up by citing their colleagues who, like themselves, haven't taught a single class during the last 20 years. It was thus a pleasant surprise for this reviewer to discover that Lara Alcock, a senior lecturer in the Mathematics Education Centre at Loughborough University, actually discusses how to teach and, in the present book, how to learn real honest traditional mathematics that is taught in the traditional way. And she does not mention PISA or Bologna even once! The individual chapters explain how to learn from examples, doing calucations, inventing exercises, how to understand abstract definitions, phrase theorems, understand and write proofs, how to use correct notation, read and write mathematics, and give tips for studying ranging from asking the professor over what to memorize and what not up to time management. All her suggestions are backed up by her own experience rather than by citing studies (although there are a number of them listed in the bibliography), which probably makes this book unscientific for most of her colleagues. I recommend this book to each student of mathematics (as well as to lecturers). The only minor complaint I have is that a few of the theorems, say in Section 6.2 or 8.3, should be stated more carefully. The statement "$(2,5)$ is an open set", for example, should rather read "$(2,5)$ is an open subset of the reals", and the theorem that the derivative of an even function is odd is true only under the condition that f be differentiable.

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