

ZMATH 2015f.00537

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Developing essential understanding of proof and proving for teaching mathematics in grades 9–12.

Reston, VA: National Council of Teachers of Mathematics (NCTM) (ISBN 978-0-87353-675-2/pbk). 102 p. (2012).

Publisher's description: What is the difference between “proof” in mathematics and “proof” in science or a court of law? In mathematics, how does proof differ from other types of arguments? What forms can proof take besides the traditional two-column style? What activities constitute the process of proving? What roles do examples play in proving? Can examples ever prove a conjecture? Why does a single counterexample refute a conjecture? How much do you know . . . and how much do you need to know? Helping your students develop a robust understanding of mathematical proof and proving requires that you understand this aspect of mathematics deeply. But what does that mean? This book focuses on essential knowledge for teachers about proof and the process of proving. It is organized around five big ideas, supported by multiple smaller, interconnected ideas – essential understandings. Taking you beyond a simple introduction to proof and the activities involved in proving, the book will broaden and deepen your mathematical understanding of one of the most challenging topics for students . . . and teachers. It will help you engage your students, anticipate their perplexities, avoid pitfalls, and dispel misconceptions. You will also learn to develop appropriate tasks, techniques, and tools for assessing students' understanding of the topic. Focus on the ideas that you need to understand thoroughly to teach confidently.

Classification: E53 E54