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On the analysis of indirect proofs: contradiction and contraposition.

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Summary: The paper explores and clarifies the similarities and differences that exist between proof by contradiction and proof by contraposition. The paper also focuses on the concept of contradiction, and a general model for this method of proof is offered. The introduction of mathematical proof in the classroom remains a formidable challenge to students given that, at this stage of their schooling, they are used to manipulating symbols through sequential steps. There is a consensus that learners do find indirect types of proof quite difficult and do struggle with the conceptual and technical aspects of indirect proofs. As Epp states, "Students find proof by contradiction considerably harder to master than direct proof". Indeed, learners may struggle with understanding the concept of indirect proofs in general and of proof by contradiction in particular. To address this issue further, and for learning purposes, proof by contradiction may be considered in conjunction with other methods and didactic tools, e.g., counterexamples or the pigeon-hole principle. But, that is a topic for another investigation. (ERIC)

Classification: E50

Keywords: indirect proofs; contradiction; contraposition; proving