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Mathematical problems designed with the use of functional equations as theoretical tools for examining subject matter knowledge of functions.

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From the introduction: Assessing the mathematics teachers' subject matter knowledge (SMK) is a currently important problem of research. Mathematics teachers should have profound and thorough SMK, understood as skills and knowledge of mathematics, its methods and history, which are indispensable for teaching. There is a need to find appropriate tools for continuous assessment of that competence of mathematics teachers. However, literature review reveals that functional equations have not been used yet as diagnostic tools. The author claims that specially designed tasks related to functional equations can very effectively reveal teachers' SMK of functions. As such, this dissertation is a new contribution to the research on possibilities of using the mathematical discipline of functional equations in the field of didactics of mathematics.

Classification: I79 B50 C49

Keywords: subject matter knowledge; functional equations; teacher education; functions; representation; diagnostic tools