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Relationship between students' understanding of functions in Cartesian and polar coordinate systems.

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Summary: The present study was implemented as a prelude to a study on the generalization of the single variable function concept to multivariate calculus. In the present study we analyze students' mental processes and adjustments, as they are being exposed to single variable calculus with polar coordinates. The results show that there appears to be a relation between students' definition of function and their success (or lack of it) in transferring this definition to the polar representation. This is seen, in particular, with the transference of misconceptions.

Classification: I20 C30

Keywords: research; function concept; student errors; modes of representation; definitions; Cartesian coordinates; polar coordinates; learning; transfer of training; knowledge