Proper Polynomial Maps and the Fundamental Theorem of Algebra

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Abstract

Polynomials are, perhaps, one of the most useful and simple class of functions that appear in mathematics. Apart from their theoretical interest, they enjoy applications in diverse fields like computational algebra and geometry, computer science, engineering and many others. There are two basic reasons for that:

⋄ Most functions can be approximated by polynomials, and

⋄ they are rather easy to use in a computer code.

Thus, they serve as good substitutes for functions that are difficult to deal with. In this talk we will look at polynomials from the proper function point of view and will provide an **elementary** proof of the Fundamental Theorem of Algebra that is primarily based on the second derivative test of functions of two variables.