Recent Developments in the Fundamental Theorem of Algebra

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Abstract

The algebraic proof of the fundamental theorem of algebra uses two facts about real numbers. First, every polynomial with odd degree and real coefficients has a real root. Second, every nonnegative real number has a square root. It is proved in characteristic zero that the assumption about odd degree polynomials is stronger than necessary; any field of characteristic zero in which polynomials of prime degree have roots is algebraically closed. In this talk, we show that this result is the case for all fields, regardless of their characteristics.

Keywords: polynomials, field characteristic, algebraically closed field.