Volume 4, **Issue 1**, **Article 12**

The Analytic Domain in the Implicit Function Theorem

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Abstract:

The Implicit Function Theorem asserts that there exists a ball of nonzero radius within which one can express a certain subset of variables, in a system of analytic equations, as analytic functions of the remaining variables. We derive a nontrivial lower bound on the radius of such a ball. To the best of our knowledge, our result is the first bound on the domain of validity of the Implicit Function Theorem.

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