

# Smooth Infinitesimal Analysis

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## **Abstract**

Non-standard analysis (NSA) is an attempt to found, on a rigorous basis, the notion of infinitesimal that was so influential in the development and early history of the calculus before it was supplanted in the 19th century by the limit concept. In generalizing the real line to richer structures, it is inevitable that certain properties are lost. I will be speaking about an alternative to NSA – a different approach to infinitesimals that boasts several of the more intuitive properties of infinitesimals that NSA does not have, and reduces much of elementary calculus to ordinary algebra. The price is that the development requires an adjustment in the underlying logic that is used, namely, a move from classical to intuitionistic logic. I will be including several examples from elementary calculus to illustrate the approach.