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The practical complexity of arbitrary-precision functions by Fredrik Johansson

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Abstract. Most familiar operations on N-digit real numbers (sum, product, square root, exponential, logarithm, etc.) can be computed in time quasilinear in N. However, this kind of asymptotic statement hides details which can add up to huge differences in practical running times. We will discuss how to think about optimizing arbitrary-precision algorithms, with a detailed look at state-of-the-art methods for transcendental functions.