

A New Evaluation of the Normal Distribution Function

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ABSTRACT

This article sets out a simple formula for theoretical evaluation of the normal distribution function ($F(z)$) with greatest absolute error less than 5×10^{-8} . The proposed formula is based on values of $z \in (-\infty, +\infty)$ and is generated by applying polar integral, theoretically. The existent formulas for theoretical and numerical evaluation of $F(z)$ are briefly presented. Most of them are based only on subset of the values of $z \in (0, +\infty)$ or $z \in (-9, +9)$, theoretically, and a few are based on the values $z \in (-\infty, +\infty)$ by using computer programming, numerically.

KEY WORDS: Polar Integral, Rectangular Integral

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