

**Cao, Lihua****Generalized Gaussian quadrature formulas.** (Chinese. English summary) Zbl 1164.65322  
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Summary: The purpose of this paper is to construct a generalized Gaussian quadrature rule based on divided differences of the integrand at the zeros of the  $n$ -th Chebyshev polynomial of the first kind. Another similar quadrature rule based on divided differences at the zeros of the  $n$ -th Chebyshev polynomial of the second kind is also considered. The obtained results include some existing results as special cases. The interesting thing here is that these new results are closely related to the so-called Gauss-Turán quadrature formulas.

**MSC:**

65D32 Numerical quadrature and cubature formulas

41A55 Approximate quadratures

**Keywords:**

generalized Gaussian quadrature rule; Gauss-Turán quadrature; orthogonal polynomial; Cotes number; highest algebraic degree of precision; Chebyshev polynomial