

## On Computing Green's Functions with *Mathematica*

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The work is devoted to the description of the algorithm for computing Green's functions for boundary value problems of linear ODE of the second order using computer technical system *Mathematica* (developed by Wolfram Research, Inc., USA).

As is known, to investigate a boundary value problems both for ordinary and partial differential equations it is often useful to have at disposal the Green's function of this problem. Thus, for example, using Green's function one can immediately write down the integral expression for the solution of boundary value problem [1] or estimate an error of its approximate solution [2].

Computer algebra systems (*Mathematica*, Maple and others) have at present no built-in facilities to find the Green's functions. However *Mathematica's* capabilities allow to automate this process for some classes of ODE.

1. G.F.Roach, Green's functions, Cambridge University Press, 1982.
2. N.J. Lehmann, Fehlerschranken für Näherungslösungen bei Differentialgleichungen. Numerische Mathematik, 10:261-288, 1967.