

## A numerical method for the solution of an autonomous initial value problem

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### ABSTRACT.

Using a known interpolation formula we introduce a class of numerical methods for approximating the solutions of scalar initial value problems for first order differential equations, which can be identified as explicit Runge-Kutta methods. We determine bounds for the local truncation error and we also compare the convergence order and the stability region with those for explicit Runge-Kutta methods, which have convergence order equal with number of stages (i.e. with 2, 3 and 4 stages). The convergence order is only two, but our methods have a larger absolute stability region than the above mentioned methods. In the last section a numerical example is provided, and the obtained numerical approximation is compared with the corresponding exact solution.

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