

In the thesis, we describe in detail two methods of computing the approximation of the derivative of a function of a real variable, including the analysis of discretization, truncation and the total errors of individual methods. The first method is the standard method that uses finite differences. This method is based on the theory of Taylor expansion. The second and less known method, which can only be used if the function is analytic in a neighbourhood of a given point, uses complex arithmetic. We supplement the theory obtained by analyzing the methods with numerical experiments in the MATLAB environment, in which we verify the theoretical results and compare individual methods from different points of view.