

This thesis addresses the topic of unconstrained optimization. It describes seven derivative-free optimization methods for objective functions of multiple variables. Three groups of methods are distinguished. The Alternating Variable method and the method of Hooke and Jeeves represent the pattern search methods. Then there are two simplex algorithms: one by Spendley, Hext and Himsworth and the amoeba algorithm of Nelder and Mead. The family of methods with adaptive sets of search directions consists of Rosenbrock's method, the method of Davies, Swann and Campey, and Powell's method. All algorithms are implemented in MATLAB and tested on three functions of two variables. Their progression is illustrated by multiple figures and their comparative analysis is given.