The content of this work is a presentation of algorithms solving optimization problems with a max-separable objective function of the form $f(x) = \max_{jJ} f_j (x_j)$, where f_j are continuous unimodal functions. The optimization problems are solved under constraints, which are described by a system of (max,+)-linear equations and inequalities with variables occurring on both sides of the constraints. In Chapter 6, a modification of this problem with different variables on each side of the constraints is studied. Chapter 7 deals with problems, in which the constraint coefficients may be infinite. The work is based on results contained in previous publications, in which was shown that if the set of feasible solutions of the optimization problems considered here is nonempty, it has always the greatest element. The algorithms suggested in this work begin with this greatest element and decrease step by step the objective function without leaving the feasible set. The method proceeds in a certain sense by analogy with the method of feasible directions. Proofs of correctness of the algorithms and some results concerning computational complexity, as well as a computer implementation are included in the concluding part of the work.