

Approximation of the solutions of nonlinear matrix equations using the Newton–Kantorovich method

The study of nonlinear matrix equations, in particular, the algebraic matrix Riccati equation [1,2,3], is connected with numerous applications of such equations in solving the differential matrix Riccati equation [2,3], in the theory of nonlinear oscillations, in mechanics, biology, and radiotechnology, the theory of control and stability of motion, and others. We used the Newton-Kantorovich method [3] and the Adomian decomposition method to find approximations for the solutions of nonlinear matrix equations in the case of an unknown rectangular matrix [4,5].

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