On the efficiencies of the IMSS1 method for bounding polynomial zeros simultaneously

ABSTRACT

This paper presents an improvement of the existing interval symmetric single-step method ISS1 which will be called the interval midpoint symmetric single-step method IMSS1. The term 'midpoint' is referred to the updated midpoints used in every step in the method. The idea of midpoint will potentially reduce the time and improve the effectiveness of the method. This method is tested numerically in terms of CPU times and number of iterations of which comparison for both methods will be presented. This procedure is verified on five test polynomials and the results were obtained using MATLAB in association with Intlab toolbox. Based on the numerical results, the IMSS1 method shows a better performance than does the ISS1 method.