
The first approach to the interval generalized finite differences

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The paper concerns the first approach to interval generalized finite differences. The conventional generalized finite differences are of special interest due to the fact that they can be applied to irregular grids (clouds) of points. Based on these finite differences we can compute approximate values of some derivatives (ordinary or partial). Furthermore, one can formulate the generalized finite difference method for solving some boundary value problems with a complicated boundary of a domain that can be easily taken into account. The aim of this paper is to propose the interval counterparts of some generalized finite differences such that the exact values of the derivatives are included in the appropriate interval values.

Keywords: conventional and interval generalized finite differences, interval arithmetic, interval enclosure of derivatives.