

A New Approach for Generalized First Derivative of Nonsmooth Functions Using Optimization

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Abstract : In this paper, we define an optimization problem corresponding to smooth and nonsmooth functions which its optimal solution is the first derivative of these functions in a domain. For this purpose, a linear programming problem corresponding to optimization problem is obtained. The optimal solution of this linear programming problem is the approximate generalized first derivative. In fact, we approximate generalized first derivative of nonsmooth functions as Taylor series. We show the efficiency of our approach by some smooth and nonsmooth functions in some examples.

Keywords : general derivative, linear programming, optimization problem, smooth and nonsmooth functions

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