

Abstract

The thesis comprises of generalized inequalities for monotone functions from which we deduce important inequalities such as reversed Hardy type inequalities, generalized Hermite-Hadamard's inequalities etc by putting suitable functions. The present thesis is divided into three chapters.

The first chapter includes generalized inequalities given for C -monotone functions and multidimensional monotone functions. As a result of these inequalities, we deduce reversed Hardy inequalities for C -monotone functions and multidimensional reversed Hardy type inequalities with the optimal constant. Furthermore, we construct functionals from the differences of above inequalities and gives their n -exponential convexity and exponential convexity. By using log-convexity of these functionals we give refinements of these inequalities. Also we give mean-value theorems for these functionals and deduce Cauchy means for them.

The second chapter consists of inequalities valid for monotone functions of the form f/h and f'/h . These are also very interesting as by putting suitable functions we get one side of Hermite-Hadamard's inequality and generalized Hermite-Hadamard's inequality. Similarly as in the first chapter, we make functionals of these inequalities and gives results regarding n -exponential convexity and exponential convexity. Also we give mean value theorems of Lagrange and Cauchy type as well as we obtain non-symmetric Stolarsky means with and without parameter.

In the third and the last chapter we consider Petrović type functionals obtained from Petrović type inequalities and investigate their properties like superadditivity, sub-additivity, monotonicity and n -exponential convexity.

Also at the end of each chapter we discuss examples in which we construct further exponential convex functions and their relative properties.