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$\overline{q}$-GAMMA-BETA FUNCTIONS ON QUANTUM INTEGRAL

Necmettin Alp[1] and M. Zeki Sarıkaya[2]

[1]Department of Mathematics, Faculty of Science and Arts,
Düzce University, Duzce, Turkey

[2]Department of Mathematics, Faculty of Science and Arts,
Düzce University, Duzce, Turkey

Abstract. In this paper, we present the definitions $\overline{q}$-gamma function and $\overline{q}$-beta function with their properties on $\overline{q}$-integral.

Keywords. $\overline{q}$-integral, q-Derivative, q-Calculus, Gamma function, Beta function.

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1 Introduction

Quantum calculus is the modern name for the investigation of calculus without limits.The quantum calculus or q-calculus began with FH Jackson in the early twentieth century, but this kind of calculus had already been worked out by Euler and Jacobi. Recently it arose interest due to high demand of mathematics that models quantum computing. q-calculus appeared as a connection between mathematics and physics. It has a lot of applications in different mathematical areas such as number theory, combinatorics, orthogonal polynomials, basic hyper-geometric functions and other sciences quantum theory, mechanics and the theory of relativity.

Many of the fundamental aspects of quantum calculus. It has been shown that quantum calculus is a subfield of the more general mathematical field of time scales calculus.

Recently, there have been many studies on q-calculus . In particular, studies on inequalities and transformations have come to the fore (see [1, 3, 4, 5, 6]).

In this paper we present the definitions $\overline{q}$-gamma and $\overline{q}$-beta functions with their properties on $\overline{q}$-integral. In second section we give notations and preliminaries for q-analogue. In third section we give definition of $\overline{q}$-gamma and $\overline{q}$-beta functions on q-integral and obtain some auxiliary results.