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SOME RESULTS INVOLVING THE ${}_pR_q(\alpha, \beta; z)$ FUNCTION

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Abstract. The main aim of this paper is to discuss some classical properties of the ${}_pR_q(\alpha, \beta; z)$ function such as integrals involving ${}_pR_q(\alpha, \beta; z)$ function and its product with some algebraic functions and higher Tanscendental function viz, Hermite polynomial, Legendre polynomial, Legendre function, Jacobi polynomial, Galue type Struve function, six summation formulas of ${}_pR_q(\alpha, \beta; z)$ function and relation between ${}_pR_q(\alpha, \beta; z)$ and ${}_pR_q(\alpha, \beta; -z)$ functions.

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1. Introduction

Desai and Shukla [2], [3] introduced the ${}_pR_q(\alpha, \beta; z)$ function as

$$
\begin{aligned}
{}_pR_q(\alpha, \beta; z) &= {}_pR_q\left(\begin{array}{c} \mathbf{a_p} \\ \mathbf{b_q} \end{array} \middle| \alpha, \beta; z \right) \\
&= {}_pR_q\left(\begin{array}{c} a_1, a_2, ..., a_p \\ b_1, b_2, ..., b_q \end{array} \middle| \alpha, \beta; z \right) \\
&= \sum_{k=0}^{\infty} \frac{1}{\Gamma(\alpha k + \beta)} \frac{\prod_{i=1}^{p} (a_i)_k}{\prod_{j=1}^{q} (b_j)_k} \frac{z^k}{k!} \\
&= \sum_{k=0}^{\infty} \frac{1}{\Gamma(\alpha k + \beta)} \frac{(\mathbf{a_p})_k}{(\mathbf{b_q})_k} \frac{z^k}{k!} \qquad (1.1)
\end{aligned}
$$

where $p, q \in Z^+ \cup \{0\}, \alpha, \beta \in C, Re(\alpha) > 0, Re(\beta) > 0, Re(\mathbf{a_p}) > 0$, $Re(\mathbf{b_q}) > 0$. Here $\mathbf{a_p}$ stands for the set of p parameters $a_1, a_2, ..., a_p$, $\mathbf{b_q}$ stands

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