Some Bilinear and Bilateral Hypergeometric Generating Relations

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Abstract: The present paper mainly concerns with three theorems involving generating functions expressed in terms of single and double Laplace and Beta integrals. These theorems have been applied to obtain bilinear and bilateral generating functions involving polynomials of Mittag- Leffler, Madhekar- Thakare, Gottlieb, Jacobi, Konhauser, Laguerre and other polynomials hypergeometric in nature. One variable special cases of the hypergeometric polynomials are important in several applied problems.
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1. Introduction

Hypergeometric Polynomials occupy the pride of place in the literature on special functions. One variable special functions namely Madhekar- Thakare polynomials, Mittag- Leffler polynomial, Konhauser polynomials, Gottlieb polynomials, Jacobi polynomials, Legendre polynomials, Ultraspherical polynomial and the polynomials hypergeometric in nature, are closely associated with problems of applied nature. For example, Ultraspherical polynomials are deeply connected with axially symmetric potential in n dimensions and contain Legendre and Chebyshev polynomials as special cases. Further Bessel functions used in our work are closely associated with problem possessing circular or cylindrical symmetry. For example,