SEA. Jour. Math. & Math.Sc.
Vol.1 No.1 (2002), pp.63-70

BILATERAL GENERATING RELATIONS FOR CERTAIN HYPERGEOMETRIC FUNCTIONS OF MORE THAN ONE VARIABLE

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(Received on November, 25, 2002)

Abstract : This paper establishes some bilateral generating relations for hypergeometric functions of two, three and four variables. Some particular cases have been explored.

1. Introduction. The hypergeometric functions of four variables namely $K_i\,(i = 9,10,11,12,13)$ were studied by Exton [2, p.78], while a study of hypergeometric functions of three variables can be found in Srivastava and Manocha [6, pp. 66-68]. Horn's functions, can be found in Erdélyi et al. [1, p.225]. In what follows, we mention following results, those are required in our investigation.

$$\sum_{n=0}^{\infty} \frac{(\lambda)_n}{n!} F_1[-n, \mu, \upsilon; \alpha; x, y] t^n = (1-t)^{-\lambda} F_1\left[\lambda, \mu, \upsilon; \alpha; \frac{xt}{t-1}, \frac{yt}{t-1}\right], \tag{1.1}$$

where $\max\left\{\left|\frac{xt}{t-1}\right|, \left|\frac{yt}{t-1}\right|, |t|\right\} < 1.$

[cf. Srivastava [5]].

$$\sum_{n=0}^{\infty} \frac{(\lambda)_n}{n!} F_2[-n, \mu, \upsilon; \alpha, \beta; x, y] t^n = (1-t)^{-\lambda} F_2\left[\lambda, \mu, \upsilon; \alpha, \beta; \frac{xt}{t-1}, \frac{yt}{t-1}\right], \tag{1.2}$$