



By the Lagrange Inversion Theorem [4],  $w$  has the expansion

$$w = \sum_{m=1}^{\infty} \frac{m}{m!} \sum_{l=0}^{\infty} (l-1)^l \binom{l+m}{l+1} l^l \quad (2d)$$

One converts from  $L_1$  and  $L_2$  back to  $L_1$  and  $L_2$  to complete the theorem.  
 Since the domain of convergence of (2a) is described only as 'xxxxxxx'

the theorem follows.

4. Expansions using new variables. | Two further series developments can be obtained by introducing the variables  $L = \ln(1 - x)$  and  $v = (1 - x)^{-1}$ .

Theorem 4. | *With the preceding notation,  $W$  has the series development*

$$W(x) = L_1 - L_2 - L \sum_{n=1}^{\infty} (-x)^n \sum_{m=1}^n (-1)^{m+1} \left[ \begin{matrix} n \\ m+1 \end{matrix} \right] \frac{L^m}{m!} : \quad (4a)$$

*Proof.* | We set  $w = v - L$  in (2c)