LINEAR DIFFERENCE EQUATIONS WITH ARBITRARY REAL SPANS.

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I. Introduction.

The object of many investigations has been the study of difference equations of the forms

$$(1.1) \qquad \sum_{s=0}^{m} c_s(x) F(x+s) = G(x)$$

and

$$(1.2) \qquad F_j(x+1) = \sum_{k=1}^{p} c_{jk}(x) F_k(x) + G_j(x), \qquad j = 1, \ldots, p,$$

in which the coefficients are functions of the real variable x asymptotically constant,

$$(1.3) \qquad \lim_{x=+\infty} c_s(x) = c_s, \qquad s = 0, 1, \ldots, m,$$

and

$$(1.4) \qquad \lim_{x=+\infty} c_{jk}(x) = c_{jk}, \qquad j, k = 1, \ldots, p.$$

Bochner[2] has considered the more general equations

$$(1.5) \qquad \sum_{s=0}^{m} c_s(x) F(x+\delta_s) = G(x)$$