Asymptotic behaviours and general recurrence relations

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Abstract

The study of the polynomials defined by the General recurrence relations of the form
\[ P_{-1}(z) \equiv 0, \quad P_0(z) \equiv 1 \text{ and} \]
\[ \forall k \geq 0 \quad P_{k+1}(z) = (z - a_k)P_k(z) - \sum_{i=\max(-1,k-q)}^{k-1} b_i^{[k]} P_i(z), \]

where \( a_k, b_i^{[k]} \) are complex numbers and \( q \) the order of the recurrence, is an important thing
for the applications - see already the wide literature on the subject when \( q = 1 \) (the Three-
term recurrence relation case); some authors have also obtained some interesting results
for \( q > 1 \).

The aim of this talk is the presentation of some asymptotic behaviours for the polynomials
generated by some higher recurrence relations (e.g. \( q > 1 \)). We have already given some
results in [1,2,3].

References