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Periods of (q, r) -Fibonacci sequences and elliptic curves,
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Abstract

The periods of the Fibonacci Sequence modulo m have long been studied and remain intriguing. Generalizations of the sequence suitable for application to elliptic curve groups are investigated. This leads to the study of general initial conditions including the establishment of a criterion for periods to be possible. A class equation for the set of all initial conditions is given. There is a close relationship between the order of elements in the elliptic curve group and the lengths of the periods of the Fibonacci sequences and most of the properties of generalized Fibonacci sequences extend to elliptic curve groups. However, Fibonacci sequences on elliptic curve groups do exhibit some periodicity not seen modulo m .