THE CONVEXITY AND THE CONCAVITY
DERIVED FROM NEWTON’S INEQUALITY

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Abstract. By Newton’s inequality, a sequence \( \{a_i\}_{i=0}^{n} \) of nonnegative real numbers is unimodal if its generating function \( \sum_{i=0}^{n} a_i x^i \) has only real zeros. This paper is devoted to show that there exist two indices \( s \) and \( t \) with \( s \leq t \), such that \( a_0, a_1, \ldots, a_{s-1}, a_s \) and \( a_t, a_{t+1}, \ldots, a_n \) are convex, while \( a_{s-1}, a_s, \ldots, a_t, a_{t+1} \) is concave.


Keywords and phrases: convexity, concavity, strict log-concavity, Newton’s inequality.

REFERENCES