

Brändén's Conjectures on the Boros-Moll Polynomials

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Abstract: We prove two conjectures of Brändén on the real-rootedness of polynomials $Q_n(x)$ and $R_n(x)$ which are related to the Boros-Moll polynomials $P_n(x)$. In fact, we show that both $Q_n(x)$ and $R_n(x)$ form Sturm sequences. The first conjecture implies the 2-log-concavity of $P_n(x)$, and the second conjecture implies the 3-log-concavity of $P_n(x)$.

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Keywords: Boros-Moll Polynomials, Real-rootedness, Sturm sequence, 3-log-concavity

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