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Title: Two estimates concerning classical diophantine approximation constants

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In this paper we aim to prove two inequalities involving the classical approximation constants $\lambda_n(\zeta), \widehat{\lambda}_n(\zeta)$ that stem from the simultaneous approximation problem $|\zeta^j x - y_j|, 1 \leq j \leq n$, on the one side and the constants $w_n^*(\zeta), \widehat{w}_n^*(\zeta)$ connected to approximation with algebraic numbers of degree $\leq n$ on the other side. We concretely prove $w_n^*(\zeta)\widehat{\lambda}_n(\zeta) \geq 1$ and $\widehat{w}_n^*(\zeta)\lambda_n(\zeta) \geq 1$. The first result is due to H. Davenport and W. Schmidt, however our method of proving it allows to derive the other inequality as a dual result.

Finally we will discuss estimates of $w_n^*(\zeta), \widehat{w}_n^*(\zeta)$ uniformly in ζ depending on $w_n(\zeta), \widehat{w}_n(\zeta)$ or only on n as an application.

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