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A Pick Function Related to an Inequality for the Entropy Function

Authors: Christian Berg,

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Abstract:

The function $\psi(z) = 2/(1+z) + 1/(\text{Log}\,(1-z)/2)$, holomorphic in the cut plane $\mathbb{C} \setminus [1, \infty[$, is shown to be a Pick function. This leads to an integral representation of the coefficients in the power series expansion $\psi(z) = \sum_{n=0}^{\infty} \beta_n z^n$, $|z| < 1$. The representation shows that (β_n) decreases to zero as conjectured by F. Topsøe. Furthermore, (β_n) is completely monotone.

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