



Redheffer Type Inequality for Bessel Functions

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Abstract: In this short note, by using mathematical induction and infinite product representations of the functions $\mathcal{J}_p : \mathbb{R} \rightarrow (-\infty, 1]$ and

$\mathcal{I}_p : \mathbb{R} \rightarrow [1, \infty)$, defined by

$$\mathcal{J}_p(x) = 2^p \Gamma(p+1) x^{-p} J_p(x) \quad \text{and} \quad \mathcal{I}_p(x) = 2^p \Gamma(p+1) x^{-p} I_p(x),$$

an extension of Redheffer's inequality for the function \mathcal{J}_p and a Redheffer-type inequality for the function \mathcal{I}_p are established. Here J_p and I_p ,

denotes the Bessel function and modified Bessel function, while Γ stands for the Euler gamma function. At the end of this work a lower bound for the Γ function is deduced, using Euler's infinite product formula. Our main motivation to write this note is the publication of C.P. Chen, J.W. Zhao and F. Qi [2], which we wish to complement.



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