SOME THOUGHTS ON THE ABSOLUTE CONVERGENCE OF A TRIGONOMETRIC SERIES

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Although a major portion of this article is devoted to the development of a trigonometric series that fails to converge absolutely on $[0, 2\pi]$ but nevertheless is the Fourier Series of a continuous function, for the benefit of those readers who might have lost touch with Fourier Series, I will provide some definitions and various facts related to convergence of Fourier Series without going into proofs. The study of Fourier Series is an area that often remains completely unfamiliar to many of our undergraduates unless they are in a program that requires courses such as PDE or applied mathematical analysis/advanced engineering mathematics, in order to graduate. It is my understanding that a large number of this publication's readers are students and instructors of undergraduate mathematics. Even though I am focusing on one aspect of the convergence of Fourier Series in this article, this project gave me the opportunity to learn many things about Fourier Series that I had not known or had forgotten. I hope the readers will benefit from the small exposure to Fourier Series which this article provides and the subsequent interest in learning more about Fourier Series which this might possibly evoke. Some definitions and related results: