

Rearrangement on Conditionally Convergent Integrals in Analogy to Series

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Abstract

Rearrangements on conditionally convergent series suggests the existence of a similar process for integrals, here also referred to as rearrangement. In this document, a general theorem concerning rearrangement for conditionally convergent integrals is presented, as well as supporting theorems and a corollary to the general theorem. The corollary reads: Let $f : \mathbb{R}^+ \rightarrow \mathbb{R}^+$ be a continuous function with an everywhere negative and monotone increasing derivative. If $\int_1^\infty (-1)^x f(x) dx$ is conditionally convergent, then $\forall z \in \mathbb{C}$, there exists an arrangement on $\int_1^\infty (-1)^x f(x) dx$ such that $z = \int_1^\infty (-1)^x f(x) dx$.