

# A2: Distinct Riemann Integral Having Solutions Forming Abelian Group

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## Abstract

One of the distinct ideas behind first defining group by Galois in 1830 is to challenge mathematical intuition rather than verifying it, that is, to predict solutions of differential equations. In this research work, we produce Riemann Definite Integrals having solutions forming abelian group. It was discovered that;  $\int_a^b (n \pm x^{k-1})dx$  where  $b - a = k$  and  $n \in \mathbb{Z} \forall k > 0$  upon integration with continuous substitution of  $n \in \mathbb{Z}$  produced a multiple of  $\mathbb{Z}$  following the condition that  $b > a$  and  $b - a = k$ . This Riemann Definite Integral satisfies the properties of group as a normal set of integers that satisfies the property of group and also abelian.

**Keywords & Phrases:** Group, Idempotent, Riemann Integral, Abelian

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