

ON THE P -ADIC LOG BETA FUNCTION

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Abstract

Let p be a fixed prime number. By \mathbb{Z}_p , \mathbb{Q}_p and \mathbb{C}_p we denote the ring of p -adic integers, the field of p -adic numbers and the completion of the algebraic closure of \mathbb{Q}_p , respectively.

J. Diamond (1977) gave a definition for the p -adic log gamma function $G_p : \mathbb{C}_p \setminus \mathbb{Z}_p \rightarrow \mathbb{C}_p$ by the Volkenborn integral

$$G_p(x) := \int_{\mathbb{Z}_p} ((x+u) \log_p(x+u) - (x+u)) du$$

where \log_p is the p -adic logarithm function.

In the present work we consider the p -adic log beta function and we obtain some its properties.

Keywords and phrases: p -adic number, p -adic logarithm function, p -adic log gamma function, p -adic log beta function

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