

Structure of the multiplicative group of the field of p -adic numbers

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It is always in the interest of Mathematicians to develop different objects which do not necessarily have the same elements but with the same structure. By taking \mathbb{Q}_p , \mathbb{Z}_p , \mathbb{Z} , and p to be the field of p -adic numbers, the ring of p -adic integers, the set of integers and a prime number respectively, we show that the group of units of \mathbb{Q}_p ; \mathbb{Q}_p^* is isomorphic to $\mathbb{Z} \times \mathbb{Z}_p \times \mathbb{Z}/(p-1)$ if $p \neq 2$ and to $\mathbb{Z} \times \mathbb{Z}_2 \times \mathbb{Z}/2\mathbb{Z}$ if $p = 2$.

References

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