

Title : The inverse of primitive root of kp

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ABSTRACT

In 2023, V.P. Ramesh and R. Gotham published a research proving that *let p be an odd prime, if $a \in \mathbb{Z}_p^2$ is a bad primitive root, i.e., $ord_p(a) = ord_{2p}(a) = \phi(p) = p - 1$, then $a^{-1} \in \mathbb{Z}_p^*$ dose not need to be a bad primitive root.* In this independent study, we use the same argument to study the behavior of the inverse of a in \mathbb{Z}_{2p}^* . We prove that *let p be an odd prime, and a be a primitive root of p in \mathbb{Z}_p^* . Suppose $ord_p(a) = ord_{2p}(a) = \phi(p) = p - 1$, if a^{-1} be the inverse of a in \mathbb{Z}_p^* , where $ord_p(a^{-1}) = p - 1$ then $ord_{2p}(a^{-1})$ dose not to be $p - 1$.*

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