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On the regular elements in Z_n

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Abstract: All rings are assumed to be finite commutative with identity element. An element $a \in R$ is called a regular element if there exists $b \in R$ such that $a=ab$, the element b is called a von Neumann inverse for a . A characterization is given for regular elements and their inverses in Z_n , the ring of integers modulo n . The arithmetic function $V(n)$, which counts the regular elements in Z_n is studied. The relations between $V(n)$ and Euler's phi-function $\varphi(n)$ are explored.

Key Words: Regular elements, Euler's phi-function, von Neumann regular rings

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