

Answer on Question #64366 – Math – Abstract Algebra

Question

There exists a field with 99 element. True or False. Prove.

Solution

It is known that a finite field of order m exists if and only if $m = p^n$ for some prime p and some $n \in \mathbb{N}$.

The prime factorization of $m = 99$ is $99 = 3 \cdot 3 \cdot 11$, so we conclude that a field with 99 element does not exist.

Answer: False.