

TJ USAMO Practice 4 - Number Theory I

Varsity Math Team

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1. Determine all non-empty, finite sets S of real numbers such that $x \in S \implies x^2 + x \in S$.
2. Determine all integers $n > 1$ with the following property: For all pairs of positive integers x and y with $x + y = n$, the product xy is *not* divisible by n .
3. Determine all sets of four real numbers such that the sum of any one and the product of the other three is 2.