

PROBLEM N.7 - QUADRATIC RESIDUES

Allison Davis

April 3, 2019

1. State any patterns you notice relating the number of quadratic residues in \mathbb{Z}_p to the value of p .

The number of quadratic residues for $p > 2$ is equal to $\frac{p+1}{2}$. For $p = 2$, the number of quadratic residues is 2.

2. State any patterns you notice relating whether -1 in \mathbb{Z}_p is a quadratic residue to the value of p .

For every three primes p , there is at least one \mathbb{Z}_p with -1 as a quadratic residue. However, there does not seem to be three consecutive \mathbb{Z}_p that all have -1 as a quadratic residue.