PROBLEM N.7: QUADRATIC RESIDUE

ROSIE KEY

1. Number of Quadratic Residues of $\mathbb{Z}_p$

Let the natural number p be some prime number. The number of quadratic residues n for the set $\mathbb{Z}_p$ can be determined with the following equation:

$$n = \frac{p+1}{2}.$$

An exception to this equation is $p = 2$ where the number of quadratic residues is 2.

2. Determining if -1 is a Quadratic Residue

If n is an odd number, then -1 will be a quadratic residue of p. The only exception to this rule is $p = 2$ which has 2 quadratic residues.

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