

Elementary Number Theory: The Quadratic Reciprocity Law

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1 Euler's Criterion

- Let p be an odd prime and $\gcd(a, p) = 1$. If the quadratic congruence $x^2 \equiv a \pmod{p}$ has a solution, then a is said to be a quadratic residue of p . Otherwise, a is a quadratic nonresidue of p .
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2 The Legendre Symbol and its Properties

3 Quadratic Reciprocity

4 Quadratic Congruences with Composite Moduli