

Memoir on the Conditions of Solvability of Equations by Radicals

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The attached memoir is extracted from a work that I had the honor of presenting to the Academy a year ago. That work not having been understood, the propositions it contained having been called into question, I have had to content myself with giving, in a synthesized way, the general principles and a *single* application of my theory. I beg my judges to read at least these few pages carefully.

One will find herein a general *condition* which *each equation solvable by radicals satisfies*, and which reciprocally assures their solvability. We apply this only to equations for which the degree is a prime number. Here is the theorem given by our analysis:

So that an equation of prime degree, which does not have commensurable divisors, should be solvable by radicals, it is necessary and sufficient that all the roots be rational functions of any two among them.

The other applications of the theory are special theories in their own right. They require, however, the use of number theory and a special algorithm: we reserve them for another occasion. They are in part related to modular equations from the theory of elliptic functions, which we show not able to be solved by radicals.

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