Acknowledgments

Galois

Influence of Lagrange

Quadratic equations

1700 B.C. to A.D. 1500

Solution of cubic

Solution of quartic

Impossibility of quintic

Newton

Symmetric polynomials in roots

Fundamental theorem on symmetric polynomials

Proof

Newton's theorem

Discriminants

Solution of cubic

Lagrange and Vandermonde

Lagrange resolvents

Solution of quartic again

Attempt at quintic

Lagrange's Reflexions

Cyclotomic equations

The cases n = 3, 5
n = 7, 11

General case

Two lemmas

Gauss's method

p-gons by ruler and compass

Summary

Resolvents

Lagrange's theorem

Proof

Galois resolvents

Existence of Galois resolvents

Representation of the splitting field as K(t)

Simple algebraic extensions

Euclidean algorithm

Construction of simple algebraic extensions

Galois' method

Review

Finite permutation groups

Subgroups, normal subgroups
The Galois group of an equation
Examples
Solvability by radicals
Reduction of the Galois group by a cyclic extension
Solvable groups
Reduction to a normal subgroup of index p
Theorem on solution by radicals (assuming roots of unity)
Summary
Splitting fields
Fundamental theorem of algebra (so-called)
Construction of a splitting field
Need for a factorization method
Three theorems on factorization methods
Uniqueness of factorization of polynomials
Factorization over Z
Over Q
Gauss's lemma, factorization over Q
Over transcendental extensions
Of polynomials in two variables
Over algebraic extensions
Final remarks
Review of Galois theory
Fundamental theorem of Galois theory (so-called)
Galois group of $x^{p} - 1 = 0$ over Q
Solvability of the cyclotomic equation
Theorem on solution by radicals
Equations with literal coefficients
Equations of prime degree
Galois group of $x^{n} - 1 = 0$ over Q
Proof of the main proposition
Deduction of Lemma 2 of 24
Memoir on the Conditions for Solvability of Equations by Radicals, by Evariste Galois

Synopsis
Groups
Answers to Exercises
List of Exercises
References
Index

Table of Contents provided by Blackwell's Book Services and R.R. Bowker. Used with permission.