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Michel Pierre Serfati* (serfati@math.jussieu.fr), IREM-Université Paris VII, Case courrier 7018, 2 place Jussieu, 75005 PARIS, France. *Descartes, Van Schooten, and algebraic extensions of fields.*

This talk is devoted to a few lines of a letter (dated 1649, April 9th) of Descartes, addressed to Van Schooten. It contains an early occurrence in the history of an algebraic extension of a field. One will make a reconstruction of the cartesian method, which makes an extensive use of the procedure of indeterminate coefficients introduced for the first time by Descartes in 1637 in book II of the Geometry (in the context of finding tangents to an algebraic curve). Descartes' letter directly involved some specific algebraic extension of degree 9 of the field \mathbb{Q} of the rational numbers. One will point out then the subsequent modern development of the structure of such field extensions, in particular in Dedekind's work (1871). (Received July 18, 2009)