Washington, Lawrence C.
Class numbers of the simplest cubic fields. (English) Zbl 0613.12002
Math. Comput. 48, 371-384 (1987).

The "simplest" cubic fields were defined by *D. Shanks* [ibid. 28, 1137–1152 (1974; Zbl 0307.12005)] as those generated by equations $x^3 + mx^2 - (m + 3)x + 1 = 0$. In the present paper it is shown how such fields can be used to construct cyclic cubic fields with class number divisible by n, for any given n. *K. Uchida* [J. Math. Soc. Japan 26, 447–453 (1974; Zbl 0281.12007)] had already shown, using a special case of the present work, that there are infinitely many such fields.)

A connection is shown between the 2-part of the class group of the simplest cubic fields and elliptic curves, and these curves are used to construct the quartic fields associated with the cubic field, whose existence *H. Heilbronn* [Stud. pure Math., Papers presented to Richard Rado on the Occasion of his sixty-fifth Birthday, 117–119 (1971; Zbl 0249.12012)] had proved.

Reviewer: H.J.Godwin

MSC:

11R29	Class numbers, class groups, discriminants
11R16	Cubic and quartic extensions
11G05	Elliptic curves over global fields
11R20	Other abelian and metabelian extensions

Keywords:

2-Sylow subgroups; cyclic cubic fields; class number; elliptic curves; quartic fields

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