Marceli Stark

September 19, 1908 — May 4, 1974

Marceli Stark was born on 19 September 1908 in Lwów. He completed his secondary education in 1926 and the same year entered the Jan Kazimierz University in Lwów. He graduated from the Faculty of Mathematics and Natural Sciences in 1933. However already in 1929 he had become assistant to the chair of mathematics occupied by S. Banach, and held that position until 1941, with an interruption in the years 1935 — 1939.

During the war he had been confined first in the Warsaw Ghetto and then in concentration camps at Majdanek, Płaszów, Ravensbrück and Sachsenhausen. He returned to Poland in 1945 and in 1946 became a teaching associate at the University of Wrocław. He held that position until 1950, since 1949 concurrently with the position of a research associate at the State Institute of Mathematics. He retained the latter position until 1954, when he was awarded the title of Docent and the corresponding position of an assistant professor. (The Institute in the meantime changed its name to the Mathematics Institute of the Polish Academy of Sciences.) He held that post until his sudden death on 4 May 1974. Within the period of his work in the Institute he held several other positions: he was head of the publishing department of the Polish Mathematical Society, Secretary of the Committee for Mathematics of the Polish Academy of Sciences, and in years 1962–1967 a deputy director of the Institute. He was also the Managing Editor and later the Secretary of Studia Mathematica, the Secretary of Acta Arithmetica since 1958 and the Editor of Wiadomości Matematyczne since 1968. He had great knowledge and experience in publishing matters and his editorial services were seeked also by other journals (Colloquium Mathematicum, Dissertationes Mathematicae). During the last years of his life when his forces were scarce, because of a painful heart disease, they were all used in editorial work. Acta Arithmetica owe to him a great debt of gratitute.

Publications of Marceli Stark

1. *Algebra* (in Polish), Wrocław 1948 (lecture notes, mimeographed).
2. *On a functional equations*, Colloq. Math. 1 (1948), pp. 230–231.
3. *On a ratio test of Frink*, Colloq. Math. 2 (1951), pp. 46–47.

4. *Geometria analityczna* (Analytic geometry), 1st ed. Warszawa—Wrocław 1951; 2nd ed. Warszawa 1958; 3rd ed. Warszawa 1967; 4th ed. (enlarged), Warszawa 1970; 5th ed. Warszawa 1972; 6 th ed. Warszawa 1974.
5. (with A. Mostowski) *Algebra wyższa* (Higher algebra), Part I, Warszawa 1953; Part II, Warszawa 1954; Part III, 1st ed. Warszawa 1954; 2nd ed. Warszawa 1959, 3rd ed. Warszawa 1967.
6. (with A. Mostowski) *Algebra liniowa* (Linear algebra), 1st ed. Warszawa 1958; 2nd ed. Warszawa 1966; 3rd ed. Warszawa 1968; 4th ed. Warszawa 1973.
7. (with A. Mostowski) *Elementy algebry wyższej* (Introduction to higher algebra), 1st ed. Warszawa 1958; 2nd ed. Warszawa 1963; 3rd ed. Warszawa 1965; 4th ed. Warszawa 1968; 5th ed. Warszawa 1970; 6th ed. Warszawa 1972. English translation, Warszawa 1964.
8. *Hugo Steinhaus jako nauczyciel w okresie lwowskim* (Hugo Steinhaus as teacher in the Lwów period), Wiadom. Mat. 17 (1974), pp. 77–84.

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Forms representable by integral binary quadratic forms

by

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In memory of the late Professor L. J. Mordell

1. Introduction. By a *form* we shall mean an integral binary quadratic form in the indeterminates X and Y. This paper concerns the representability of a given form by forms of discriminant D, where D is the discriminant of a quadratic field (in fact, of the field $Q(\sqrt{D})$, where Q denotes the field of rationals).

If $f(X, Y)$ is a given form, and $g(X, Y)$ is a form of discriminant D, we say that $f(X, Y)$ *is representable by* $g(X, Y)$ if there exist rational integers p, q, r, s with $ps-qr \neq 0$ such that

$$f(X, Y) = g(pX+qY, rX+sY). \tag{1.1}$$

If such integers exist, we call (p, q, r, s) a *representation* of f by g.

From (1.1), a necessary condition for the representability of f by some g of discriminant D is

$$\begin{aligned}\operatorname{discrim}(f(X, Y)) &= \operatorname{discrim}(g(pX+qY, rX+sY))\\ &= (ps-qr)^2\operatorname{discrim}(g(X, Y)) = Dk^2.\end{aligned}$$

From now on, we fix D and assume that $f(X, Y) = aX^2+bXY+cY^2$ is a given form of discriminant Dk^2, where k is a positive integer. (Note that a and c must be non-zero.)

For those discriminants D given by

$$-D = 3, 4, 7, 8, 11, 19, 43, 67, 163 \tag{1.2}$$

one of us [5], extending results of Mordell [2] (see also [3]) and Pall [4] (see also [6]), has determined necessary and sufficient conditions for a positive-definite form of discriminant Dk^2 to be representable by a positive-definite form of discriminant D, as well as the number of such representations. We extend these results to all field discriminants D, replacing the use of unique factorization in the ring of integers of $Q(\sqrt{D})$ by a rela-

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