MULLIKIN, Anna M. March 7, 1893–August 24, 1975.
Goucher College (BA 1915), University of Pennsylvania (MA 1919, PhD 1922).

Anna Margaret Mullikin was born in Baltimore, Maryland, the youngest of four children of Sophia Ridgely (Battee) (1854–1921) and William Lawrence Mullikin (1846–1915), both natives of Maryland. William Mullikin's occupation was listed as leather hider in 1900, and at that time the household consisted of his wife, his mother-in-law, his sister-in-law, the four children, and a cook. In 1910 William Mullikin's occupation was listed as leather dealer. The Mullikin children were Mary Hester (b. 1884), Richard Nicholas (b. 1888), Caroline Battee (1890–1969), and Anna, who later used the name Anne. All of the Mullikin daughters graduated from Goucher College and became public high school teachers. The son earned a PhD in chemistry and worked in industry.

After graduating from Goucher College in 1915, Mullikin taught in private schools for three years. She was at Science Hill School in Shelbyville, Kentucky, 1915–17 and was an instructor at Mary Baldwin Seminary in Staunton, Virginia, 1917–18. She entered the University of Pennsylvania with a university scholarship in mathematics for 1918–19 and received her master's degree at the end of the academic year. The next year she continued her work at the University of Pennsylvania, and at the same time she taught at the Stevens School in the Germantown neighborhood of Philadelphia.

Mullikin worked in topology with R. L. Moore, who had been at Pennsylvania since 1911. Having done his undergraduate work at the University of Texas, Moore returned to Texas in the fall of 1920. He was clearly interested in having Mullikin at Texas, and in the spring of 1920, during negotiations with the department there, Moore wrote that he hoped Texas would offer her an instructorship. In an earlier letter, he had described her as "one of the best students I ever had" (Lewis, "The Building of the University of Texas Mathematics Faculty," 228). Thus, Mullikin spent the year 1920–21 as instructor at Texas. The following year she returned to study at the University of Pennsylvania and simultaneously taught at the Oak Lane Country Day School. Even though Moore remained at Texas, he was advisor for Mullikin's dissertation culminating in her doctorate from Pennsylvania in 1922.

Mullikin's dissertation was an important work in topology, and her main result was often referred to as "Miss Mullikin's theorem." In a 1924 paper in the Polish journal *Fundamenta Mathematicae*, R. L. Moore noted that "a proposition which is a logical consequence of ... theorems of Janiszewski's has been recently established by Miss Anna M. Mullikin in her Doctor's dissertation, which will appear soon in the Transactions of the American Mathematical Society. This paper had gone to the printers before either Miss Mullikin or I was aware that the proposition had already been proved. Apparently Janiszewski's paper is printed in Polish" (6:190fn). Zygmunt Janiszewski's paper appeared in 1913 and he died in early 1920. Mullikin's paper appeared in 1922, and Moore learned of Janiszewski's results from a 1923 paper by Stefan Straszewicz. By 1928, American mathematicians had begun to call the result the "Janiszewski-Mullikin theorem"; in the many citations to her work that have appeared through at least the 1980s, both names of the theorem appear. Thomas Bartlow and David Zitarelli discuss the mathematics in great detail in "Who Was Miss Mullikin?" in the *American Mathematical Monthly* (forthcoming). In 1988 Mary Ellen Rudin, one of Moore's most well-known students, described

Mullikin's thesis as "fantastic" (Albers, Reid, and Rudin, "An Interview with Mary Ellen Rudin," 123).

After receiving her PhD, Mullikin became a high school teacher. She taught at William Penn High School in Philadelphia the academic year 1922–23 and moved to Germantown High School, also in Philadelphia, in 1923. She was a teacher at Germantown High School and became head of the mathematics department in 1952. She remained there until her retirement in 1959. In 1954 Goucher College honored Mullikin with an alumnae achievement citation. During the late 1950s and early 1960s she coauthored textbooks with Ethel L. Grove, who had been at Cuyahoga Heights High School in Cleveland, and Ewart L. Grove of the University of Alabama.

While at Germantown High School, Mullikin taught a future (1952) R. L. Moore student, Mary-Elizabeth Hamstrom. In 1998 Hamstrom wrote to one of the authors that Mullikin's "interest in me was very important." The two became friends, and Mullikin gave Hamstrom her "first dog as a high school graduation present." Mullikin told her that she had chosen high school teaching because research was harder and the money was not as good. In 1930 Mullikin is listed as a Republican and an Episcopalian. In 1956 she endowed the Julia Morgan Fund at the First United Methodist Church of Germantown. Mullikin and Morgan had become friends when both were studying at the University of Pennsylvania. Julia Morgan became a Methodist medical missionary in China before returning to the United States and subsequently teaching medicine at the University of Pennsylvania in Philadelphia.

Anna Mullikin was residing in Philadelphia at the time of her death at age eighty-two in 1975. She was survived by two nieces and a nephew and was interred in Mt. Olivet Cemetery in Baltimore, Maryland.

Organizational affiliations: AMS, MAA, Phi Beta Kappa, Sigma Xi.

Dissertation:

1922 Certain theorems relating to plane connected point sets. PhD dissertation, University of Pennsylvania, directed by Robert Lee Moore. Printed version, 1923, Philadelphia, reprinted from *Trans. Amer. Math. Soc.* 24:144-62.

Publications:

1922 Certain theorems relating to plane connected point sets. *Trans. Amer. Math. Soc.* 24:144-62. Published version of PhD dissertation. Reviews: *JFM* 49.0143.02 (H. Tietze); *Rev. semestr. publ. math.* 31, pt. 2:15 (P. Mulder). Presented by R. L. Moore to the AMS, New York City: as "A countable collection of mutually exclusive closed point sets with connected sum," 25 Oct 1919; by title as "Certain theorems concerning connected set points," 28 Dec 1920; and by title as "A necessary and sufficient condition that the sum of two bounded, closed and connected point sets should disconnect the plane," 26 Feb 1921; abstracts: *Bull. Amer. Math. Soc.* 26:147 #2; 27:248–49 #13; and 27:349 #15.

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