# A note on Professor Jan Grzegorz Krzyż

Professor Jan G. Krzyż was born on May 23, 1923 in Lublin. He was a son of a colonel of the Polish army and his wife Taisja, who, being a member of a Russian noble family, survived the Bolshevik Revolution with a bit of luck only.

As a teenager, Jan suffered from a spine disease and spent a few years in an orthopedic clinic confined to bed. Here he completed the grammar school education and, in addition, he mastered languages: German and Latin. His dream, at that time, was to study either philosophy or physics.

During World War II, he stayed with his mother in Lublin. His father, at the very beginning of the war, was arrested by the Russian NKVD and together with other Polish army officers, murdered in an unknown place in the Soviet Union.

During the Nazi occupation of Poland, all schools above the primary level were suspended. Jan had to continue his education by self study. By chance, he got in touch with Mieczysław Biernacki, a professor of mathematics, who was removed from the University of Poznań and stayed with his relatives in Lublin. Biernacki became a tutor to the young boy and under his influence Jan became interested in higher mathematics.

In the summer of 1944, the eastern part of Poland was liberated from the Nazi occupation and the Maria Curie-Skłodowska University (UMCS) in Lublin was founded. Jan passed all necessary examinations to get the secondary education diploma and entered the University to study mathematics. After receiving BA in mathematics he moved to the University of Poznań, where he got the MS degree. Then, he came back to UMCS and started working, as a TA for the Department of Mathematics. Here, in 1954, Jan Krzyż obtained PhD in mathematics. His supervisor was M. Biernacki.

In the academic year 1960–1961 Jan worked as a research assistant of Professor Walter Hayman, at the Imperial College in London. Returning to Poland, he habilitated at the Jagiellonian University of Kraków and after

that he was offered a professorship at UMCS. Jan held this position till his retirement in the mid-nineties.

While at UMCS, he held the following administrative positions: the dean of the Faculty of Mathematics, Physics and Chemistry – two terms, the chairman of the Department of Mathematics – four terms. He was a supervisor of seven PhD theses.

Professor Krzyż was a distinguished academic teacher, showing warm personality and being always ready to help. For his work he got several prizes and President of Poland bestowed a special Cross of Merit upon him.

Jan Krzyż also held the position of a visiting professor, or a visiting scientist at the University of Michigan, University of Montreal, University of Maryland, University of Delaware, Bowling Green State University, and Matscience in Madras (India). As a colloquium speaker he lectured at various universities in the USA, Canada, Germany, Finland, India, and Poland. He actively participated in many Conferences on Analytic Functions Theory and International Mathematical Congresses.

The main area of interest of Professor Krzyż was the geometric function theory. He published over 70 scientific papers, books and expository articles.

He studied changes of the Green's function and harmonic measure under circular symmetrization of the domain, he developed a genuine variational technique for bounded convex functions and solved several extremal problems concerning such functions. In a series of papers he studied covering properties of univalent functions and developed a new method for finding Koebe sets for functions with two preassigned values. He also studied explicit quasiconformal extensions and Fredholm eigenvalues of a Jordan curve.

In 1967, at a conference in Kraków, Professor Krzyż expressed the following conjecture: the Taylor coefficients of analytic functions of the form $f(z) = a_0 + a_1 z + \ldots$, $|z| < 1$, and such that $f(z) \neq 0$, $|f(z)| < 1$, satisfy the inequality $|a_n| \leq 2e^{-1}$.

This easy to understand problem attracted attention of many scientists, but it proved to be difficult to answer and remained open for over 40 years. It is nice to ask a question which a sophomore can understand, but experienced scientists have difficulties to answer!

Being a Professor Emeritus he was still active in research, participated in seminars at the Department of Mathematics, prepared a new edition of his *Collection of Problems in Analytic Functions*. All of us enjoyed discussions with him on mathematics and other subjects. Unfortunately, in the last few years of his life he was severely ill and confined to his apartment.

Professor Krzyż died on December 6, 2009 in Lublin.

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