

## **Seminar in mathematics education Tuesday 4 May**

### **Using history of algebra as a tool for the analysis of mathematical thinking of secondary school students**

Zuzana Kimličková, Specialization: Theory of Mathematics Education, Faculty of Mathematics, Physics and Informatics, Comenius University in Bratislava, Department of Algebra, Geometry and Didactics of Mathematics, Mlynska dolina, 84248 Bratislava, Slovak Republic

My paper will deal with problems of exploiting history of algebra in teaching secondary school students. It tries to analyze how history of mathematics can help us to determine which areas of knowledge and which cognitive procedures are essential for teaching mathematics today.

First part of the paper is devoted to idea of identifying mechanism of cognitive processes in mathematics. It is based on the idea that the neglecting of history of mathematics in mathematics education is often linked to oversimplification of knowledge, which does not enhance students understanding, but is supporting only memory. *I will analyze texts of Cardano's Ars Magna, Viete's Analytic art, and, Euler's Algebra* and try to find some strategies of problem solving and of conceptualization, that could be used in the classroom.

If learners do not have internal connections between old and new knowledge, they are forgetting very fast what they are learning. History of mathematics can help us in building such connections.

Second part of the paper is devoted to methods of teaching algebra aimed above all at teaching to analyze and evaluate new information and, before all to teach to think logically by exploiting history of mathematics in teaching. Some good problems can be found in the history of mathematics which can be used in the classroom.

I will discuss the motivation of a teacher of mathematics and the possibility of using history of mathematics in the teaching at schools.