Appendix No. 1

TOPIC FOR COMPETITION OF STUDENT INVOLVEMENT IN SCIENTIFIC ACTIVITIES

Title of the topic: Philosophical questions in the foundations of mathematics
Aim of research activities: Collecting and analysing research in the philosophy of mathematics
Short description of the topic (up to 2000 characters): The computer has a significant place in today's society: automation, artificial intelligence, etc. The theoretical foundations for this are concepts linking communication, information, mathematics and other sciences. The core concept is computation. Or, more generally (and more fundamentally), number, computation, computability. Problems in the philosophy of mathematics are usually linked to problems of the foundations of logic, or philosophy. For example, the *Entscheidungsproblem*, formulated by at least as early as G. W. F. Leibniz and later re-raised by D. Hilbert, is connected with the construction of formal language. The question of mathematics and logic is therefore also linked to the question of the philosophy of language. The student should collect and analyse (summarise) scientific publications on the philosophy of mathematics. More specifically, the topic is related to the abstractionist tendency (abstract structures) in modern mathematics and its critique ("classic example": the debate between R. Dedekind and L. Kronecker). One of the issues that might be raised is whether it makes sense to say that abstract structures calculate? The student's independence, initiative and creativity are an advantage. It is an advantage if the student knows at least two widely spoken foreign languages.
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