CICLO DE CONFERENCIAS

"Las Conjeturas del Milenio"

THE P VERSUS NP PROBLEM

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The P versus NP problem is the youngest of the Millennium prize problems and, eventually, the problem further away from the kernel of Mathematics. In these three lectures we start by formulating the problem in an accessible language that can be followed by an undergraduate student. In the first talk we present the concepts of P, NP and NP-complete languages together with some simple examples and results. The practical implications of the P versus NP problem are discussed, namely in the applied areas of Cryptography, Optimization, Formal Verification and Computational Biology. In the second talk we present one of the main results in detail - Cook's theorem. This result is a cornerstone of Complexity Theory, as it establishes that any NP problem can be reduced in polynomial-time to SAT, a simple-to-formulate NP problem in Logic. We also endow the talk with some interesting examples of NP problems from several areas of Mathematics. Finally, in the last talk, we present a detailed survey of the methods employed to handle this open problem and their bottlenecks. The goal is to give the intuitions why the community feels that these methods are insufficient to address the question and what are the directions that it is pursuing. It is a common belief that there is still a long path to walk before the proof is established.

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Horario: 14:00 a 15:00 horas.
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