

D. School 51

Chapter 51 - No way to start

“You have two hours to answer the questions!”, The teaching assistant helped him to take the examination papers such as the answer sheet and the draft paper and put them on the table, and then he returned to the sofa and picked up a magazine to look.

It seems that Professor Nan is ruthless and does not intend to let himself pass this exam! Lv Qiujian did not intend to admit defeat. Starting from the first question, I saw that the title read: All non-deterministic problems of complete polynomials can be converted into a type of logical operation problems called satisfaction problems. Since all possible answers to such questions can be calculated in polynomial time, is there a deterministic algorithm for such questions that can be directly calculated or searched for the correct answer in polynomial time?

There are two ways to solve this problem. The first one is to find an algorithm for a specific complete polynomial non-deterministic problem. All such problems can be solved easily because they can be transformed into the same problem; the other one It is possible that such an algorithm does not exist. Then it is necessary to prove why it does not exist in mathematical theory.

But when current mathematicians encounter similar problems, they usually only use the exhaustive method to solve them. There is no way to solve this problem in a short time. Lu Qiujian intends to look at the following questions first.

The second question: Please prove that for the so-called projective algebraic cluster, a particularly perfect type of space, the component called the Hodge closed chain is actually a (rational linear) combination of geometric components called the algebraic closed chain.

This is a question of algebraic geometry, involving the algebraic topology of non-singular complex algebraic clusters and its geometrical relation expressed by polynomial equations that define subclusters.

No, no, this is not a problem that can be solved in a short time. Forget it, let 's continue to look down. Lv Qiujian smiled bitterly and turned his attention to the third question.

Problem 3: Any single connected, closed three-dimensional manifold must be homeomorphic to a three-dimensional sphere.

This is a topological problem. Lv Qiujian thought about it. A closed three-dimensional manifold is a three-dimensional space with no boundaries; a single connection is that each closed curve in this space can be continuously contracted into a point, or in A closed three-dimensional space, if each closed curve can shrink into a point, this space must be a three-dimensional sphere.

Look at the fourth question again: the frequency of prime numbers is closely related to the behavior of a carefully constructed zeta function $\zeta(s)$. All meaningful solutions to the equation $\zeta(s) = 0$ are on a straight line.

Prime numbers are 1, 3, 5 and other numbers that are not divisible by other positive integers except 1 and themselves. Their position in number theory is similar to the atoms used to construct everything in the physical world; the definition of prime numbers is simple, but their distribution But mysteriously abnormal.

God, can't you give me a question that can touch your head? Lv Qiujian wailed in his heart, for the first time in several months, he doubted his IQ.

The fifth question is even more exaggerated. The need to complete this proof requires not only advanced mathematics knowledge, but also exceptionally profound research in physics. Lv Qiujian has no systematic physics study at present, and it is impossible to solve this problem. When he even glanced at it, he decided to give up and study the next question.

The sixth question involves the use of differential equations to describe the motion of fluids. For Lu Qiujian, this question is not much different from the five questions above. Anyway, I have n't thought of any way to solve the problem.

Hey, do you want to turn it down this time? Such a ridiculous idea was born in Lu Qiujian's mind. Even if the master before this body went from elementary school to university, wasn't that exam handy? Is it really planting today?

With hope in case, Lv Qiujian wiped his sweat and turned to the last question: Given an Abelian cluster in a global domain, guess the rank of its Modal group is equal to the zero order of its L function at 1. Number, and the first coefficient of the Taylor expansion whose L function is at 1 has an exact equation relationship with the size of the finite part of the Modal group, the volume of the free part, the period of all primes, and the sand group.

Dead! ! ! After reading the last question, Lv Qiujian bowed his head in frustration. Even if he answered the right question, he could pass it, and he couldn't pass it this time! These seven questions either require extraordinary calculations or require sophisticated problem-solving ideas.

Why did Professor Nan think of taking such a question to test himself? Even he can't do any of them?

The assistant heard Lu Qiujian's distressed knocking on the desk, raised his head slightly, looked at him again and became addicted to the magazine again. This is a lot of students who couldn't get the test papers during the exam and could not get started. Well, I have long lost curiosity, anyway, I will collect the test papers when my time is up, let Professor Nan do other things!

I remember when I was in Beijing Normal University, some students in the mathematics department laughed and laughed at myself: I studied chaos, and then I learned ravioli. Lv Qiujian is now more than a wonton. He has five flavors in his heart. These seven questions pressed him into a round cake. Coupled with the five flavors in his heart, what a special adult is the Wuren moon cake that is too fast to be abandoned by dogs!

No no no, you can't admit defeat! Lv Qiujian was slightly frustrated and returned to reason. No matter how frustrated he was, he still had to solve these problems one by one. Even if he didn't want to participate in the NCAA competition, he had to verify his mathematics level again. Due to the plan to be completed by yourself, the difficulty of these questions is simply not worth mentioning!

At the same time, Professor Nan and Dyson had arrived in the cafe behind the Princeton Institute for Advanced Study. Two undressed guys were in stark contrast with the handsome Edward Witten.

The three people had a heated discussion on the topic in Professor Nan's office just now, perhaps because of the study of physics. Edward Witten stood on Dyson's side and tried to refute Professor Nan's various views. In the case of two, it quickly fell.

"So have the two of you found a way to solve this problem?" Seeing that the situation was not favorable, Professor Nan used a killer skill.

"Then did you find it?" Dyson retorted immediately after frustration.

"At least the research of Yau Sung-tong and Hamilton has broken through the restricted area of this problem, and now it's almost one foot away!" Even if he knew that this foot might be able to fly, Professor Nan said with a hard mouth.

Such a dispute will naturally not have a result. Professor Nan looks at the table and prepares to get up, “Well, I should go back to correct the test paper!”, I do n’t know how many questions Lu Qiujian has made now? He thought to himself.

Cough, it is difficult to describe these problems in words. You only need to know that these problems look very good!