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Research field: Topology, Differential Geometry

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Current research

I am interested in geometry related to both infinite dimensional space and finite dimensional space. It is now well known that we can construct invariants of 4-manifolds using partial differential equation which originally came from gauge theory in particle physics. One of my interests is to understand these invariants from a geometrical viewpoint.

Prerequisites

In the following web page, I have listed the things that I think is important for you to acquire before starting your master' s course.

<http://www.ms.u-tokyo.ac.jp/~furuta/open/advice.pdf>

I will list the things that are not mentioned in the above list:

1. To know and to distinguish clearly what you do understand and what you don' t understand.
2. If you are confused, go back to the "definition" and think again.
3. Distinguish the trivial parts and the nontrivial parts of a discussion or a claim.
4. Provide an example every time you encounter a new definition or a theorem.
5. Take many notes, not on a computer, but on a notebook, using a pen or a pencil.
6. Always try to capture the entire picture.
7. Start from small concrete problems.

NOTE: Trying to master existing theories and familiarizing yourself with objects or phenomena are two important things you should do. And it is important to keep a balance between these two. When they are unbalanced, it will make it difficult to develop your mathematical ability.

You won' t be able to write a master' s thesis just by studying hard.

What is it, then, that you need for completing a master' s thesis?

Well, this is what you have to search for during your master' s course.

If you can find the answer, I believe that you will be able to acquire confidence, not only in mathematics, but in anything you do in life.

If you want to have me as an advisor, I would greatly appreciate it if you could contact me ahead of time. I am looking forward to working with you.