Undergraduate Math Club
Winter 2007
2nd floor Nesbitt Common Room
Thursday, February 15, 4:10-5:00pm
(free pizza and pop, as always)

Counting "things" with "spaces of spaces"

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Abstract

Since ancient times, mathematically-oriented people have liked to count. And the geometers among these people have asked themselves questions about how many "shapes" satisfy certain properties. Sometimes these questions have somewhat disappointing answers. For example:

Q: How many lines do we have in the plane?
A: Way too many to count.

or

Q: How many lines in the plane pass through three random points?
A: None.

But sometimes these questions give nice answers. For example:

Q: How many lines in the plane pass through two random points?
A: Exactly one.

While the above example may seem trivial, you may like to know that there are, for example, **12** plane curves of degree **3** with **1** node passing through **8** points in the plane. Or, that there are exactly **2** lines meeting **4** randomly chosen lines in three-dimensional space.

We will discuss some of these questions and show how they naturally instigate the study of some beautiful mathematical objects, which are, in some sense, "spaces of spaces" (moduli spaces).