Book Proofs: Aesthetic Mathematics
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Mondays, 7-8PM, H257.

Goals. Paul Erdös famously stated that you don't have to believe in God, but you do have to believe in The Book. The Book is the place where all the perfect proofs of the theorems in mathematics are found. The idea is not to find a brute force way of proving a theorem, but to find a simple, elegent, and often elementary way to prove things. While "beautiful proof" is a very subjective term, which we will probably disagree upon at times this semester, hopefully everyone here will see some more of the beauty of mathematics throughout the semester. So ultimately, the goals for this course are to learn some fun, interesting, and hopefully beautiful mathematics. However, as an almost equal goal, we aim to help everyone discuss mathematics and present mathematics in an effective manor.

Logistics. The course will be very informal. Each week one or two people will prepare material to present from the text, which we will give suggestions about what to cover. The presentation can be informal as well, but should include either blackboard writing or some other visual form of presentation. We are available to help you when you run stuck at points in the book. The presentation can include things that you don't quite understand, or questions to pose to the audience to make sure that we follow what you are doing. If you are very worried about your presentation, come talk to one of us and we'll help you out.

Book. The text used is called "Proofs from THE BOOK" by M. Aigner and G. Ziegler, 3rd edition. We have a copy on reserve in the mathematics library, which is located in the basement of Hayes-Healy. Some good chapters to look at for material without calculus or linear algebra are 1,2,10,22,23,26,30,31. Other possibilities include 6,7,8,9,21,27,28,29,33,34, which often require a bit more calculus, some linear algebra (such as diagonalization, eigenvalues, basis, etc), and possibly some probability. Other chapters are really good too, so find something that looks interesting to you. Come see us to help choose a topic, or have us assign you one.