Instructor: Eric Towne, etowne@fas.harvard.edu, (207) 345-3645.
Website: http://www.people.fas.harvard.edu/~etowne/mathe15fall2013.html
Meetings: Thursdays 4:30-5:30, Sever 302, starting the second week of the semester.
Topics: The notion of the limit is at the core of both of the main topics of calculus – differentiation and integration. However, most calculus courses give only a vague definition of what is meant by a limit. This is perhaps not surprising when one considers that calculus was practiced with great success for nearly two hundred years before mathematicians (Bolzano in 1816 and Cauchy in 1821, each independently) finally developed a satisfactory definition of the limit. In this seminar, we will take a close look at this definition and explore how it is used.
Goals: To learn about the theory behind limits so that you (as a current or future math teacher or interested calculus student) can answer the student who says, “But what does the limit really mean?”
To practice teaching and get constructive feedback.
To observe others’ teaching methods to see some new techniques and ideas.
Format: We will spend the first several weeks studying an intuitive and then a formal definition of the limit of a function. During this time, handouts will be provided to supplement the lessons.
The main focus of the seminar will be student presentations. Either individually or in pairs, you will design and present (to me and your classmates) one or two 45-minute lessons on a topic of limits we have not covered (see list of suggested topics). The number of lessons each person does will depend on the number of participants in the seminar.
Those not presenting the lesson on a given day will be the students of that day, actively participating in the lesson and providing constructive feedback afterward.
As time permits, we will have one or two workshop days between the initial lessons run by me and the lessons prepared by you; on these days, you will have free time to consult with me on the development of your lessons. You can also contact me via email at any time.
Grading: Attendance 25% Participation 25% Lesson Presentation(s) 50%
The attendance portion of the grade includes being on time each day; this serves as an incentive for you not to miss any necessary material and as a way of showing respect for the work of your classmates.
The participation portion of the grade includes participation in both the initial lessons led by the instructor and those led by your classmates.