Review Sheet for Final Exam

Times and places: The final exam will take place in Hayes-Healy 229 (our usual classroom) from 4:15-6:15 on Wednesday 5/9. There will be a review session devoted to this exam on Tuesday, May 5 from 6:30-7:30 PM in Hayes-Healy 117 (note that the room has changed from the earlier version of this sheet). I should be around my office generally all week before the final, and you're welcome to come by at other times. However, you might want to drop me an email beforehand to make sure I'm not giving another final or meeting with someone else or some such.

Format: similar to the midterm exams, though perhaps longer.

Content: The exam is comprehensive. Topics (subsequences, continuity, representation of real numbers, complex numbers) covered since the second midterm will receive a bit more attention.

Things to know: For the most part, you can get these from the review sheets for the two midterms. Here I will only list things beyond the material covered on midterm two and identify a couple of older topics that you can safely ignore.

definitions and statements. Continuity; intermediate value theorem; extreme value theorem; subsequence; Bolzano-Weierstrass theorem; Demoivre's Theorem.

You will not be asked any questions about the binomial theorem.

proofs of specific theorems. Know how to prove the Bolzano-Weierstrass Theorem. You will not be asked to prove the archimedean property or Theorem 5.5 from the notes.

proof skills and techniques. proofs about continuous functions; using the intermediate value theorem to establish existence of solutions to an equation; proofs about basic properties of complex numbers. I don't think I'll ask you *prove* anything about b-ary representation of real numbers.

You won't be asked to prove any of the basic arithmetic facts about integers (i.e. no problems like those on homework 1). Nor will I ask you to prove anything about rational numbers, except perhaps things like "there is no $x \in \mathbf{Q}$ such that $x^3 = 6$".

computational skills. finding a base b expansion for a rational number and vice versa. Arithmetic and algebra of complex numbers—e.g. converting between polar and rectangular form, finding nth roots.

standard disclaimer. I'm sure I've forgotten something in all this. However, I think I've got most things down.

Advice for studying: I'm sure you've had enough advice from me by now. Hopefully it's done no lasting harm.