ON THE FINAL — MATH 53H

The final is on June 5, Friday, from 7:00pm-9:00pm. Room 380-380F.

The final will be close book, close notes, close homework assignments and no electronic assistance. However, each is allowed and encouraged to bring one piece of paper (regular size) with information (possibly on both sides) useful for the final.

The materials to be tested in the final include those lectured in the weeks before and including May 30, or equivalently, those that are covered in the assignments of the course.

Almost all problems in the final will be on non-linear ODE, though techniques learned for linear ODE will be used to study the behavior of equilibrium points of autonomous systems.

As I mentioned in the class, some of the problems in the final will be on the understanding of the concepts, methods, techniques, and results learned in this quarter; the remainder will be on explicit problem solving.

Problem solving will resemble those assigned in the assignments.

For a brief account of the materials, please see those listed in *Preparing Midterm*. For the topics not included in the second midterm, I will add:

0.6. **Closed orbits and Poincare map** Grasp the strategy of the proof of Poincare-Bendixson theorem. Understand the notion of transversal line segment, and its basic properties and usage, especially in constructing the Poincare maps. Be able to use Poincare maps to study global behavior of non-linear system. I mostly followed [B], with one example drawn from [12.3, H].

Please take time to go over each topics, and review the techniques learned this quarter. Reiterate, a good understanding of the subject will be important as there will be word problems testing the mastering of the materials.