**Math 7280, Final Exam** (10:00-13:00, 12/12/2024) Instructor: Le Chen

Advanced theory of ODEs – I Auburn University, Auburn, AL

Please read carefully the following instructions:

1. The final exam will be in the *take-home format*.
2. **Duration:** The exam is 120 minutes long. An additional 60 minutes is allocated for administrative tasks including downloading, printing, and uploading solutions to Gradescope.
3. **Exam Schedule:** 10:00am — 13:00pm, on Dec. 12th, Thursday, 2024.
4. **Coverage:** We will cover:
   (a) Chapter 1: Existence and uniqueness of solutions; (All sections)
   (b) Chapter 3: Linear differential equations; (All sections)
   (c) Chapter 13: Asymptotic behavior of nonlinear system: stability;
   (d) Chapter 14: Perturbation of system having a periodic solution;
   (e) Chapter 15: Perturbation theory of two-dimensional autonomous systems
5. **Permitted Materials:** You may use textbooks, lecture notes, and software such as Mathematica during the exam.
6. **Answer Presentation:** Ensure that your answers are clear and legible. Provide detailed solutions to increase your chances of earning partial credit. Cross out any work you do not want to be considered for grading.
7. **Solution Submission Options:**
   (a) Digital Submission: You may write your solutions directly on the PDF using an electronic device such as an iPad.
   (b) Print and Scan: Print out the exam, write your answers on it, and scan the completed pages.
   (c) Separate Paper: Write your solutions on separate sheets of paper.
8. **Discussion Policy:** Discussions with peers are not prohibited; however, ensure that your submitted answers are based on your own understanding and critical thinking.
9. **Uploading Instructions:** When uploading your solutions to Gradescope, make sure to correctly associate each page with its corresponding solution.

Print Full Name: _____

Student ID: _____