Exam III Study Guide
Elementary Differential Equations
(MATH 266), Fall 2025

Location: Witmer 114

Date: Wednesday, December 17, 2025 from 10:15 AM - 12:15 PM

Scope of the Exam

The exam will consist of problems concerning the material from Sections 7.1-7.4 and 8.1-8.2. No problems solely from the previous material will be be included in this exam. The focus of your study should be given to topics that correspond to problems assigned in the homework. As a good rule of thumb, if a topic appears in the text and does not correspond to some generally analogous problem assigned in the homework, you can safely neglect it.

Selected Exercises from Homework Assignments

The following problems from the homework assignments are an excellent study resource for this exam:

Homework 7.1 : 2 – 4
Homework 7.2 : 1 – 8
Homework 7.3 : 1 – 6
Homework 7.4 : 2 – 4, 8
Homework 8.1 : 1 – 3, 6
Homework 8.2 : 1 – 3

In some sections above, nearly all of the homework problems are listed. These are primarily the sections about the properties of the Laplace transform and involve computing the Laplace transform of various functions. The reason for this is primarily because you will need to do this at some point in many of the problems on the exam. To be clear though, there will be very few problems that are directly about computing Laplace transforms and nothing else. Instead, most problems will involve *using* the Laplace transform to solve initial value problems.

Selected Exercises from the Textbook

Considering exercises from the textbook may be a useful resource in preparing for the exam. In particular, you may find it helpful to review the following exercises:

Section 7.1 : 19 – 32
Section 7.2 : 1 – 30, 35 – 42
Section 7.3 : 1 – 20, 25 – 34
Section 7.4 : 1 – 12, 17 – 20
Section 8.1 : 1 – 12, 17 – 26
Section 8.2 : 1 – 12, 21 – 30

You certainly do not *need* to do all of the above problems to be adequately prepared for the exam (there are far too many problems here for that). Instead, it is recommended that you just look over some of the problems on this list from sections you feel less confident about and practice by attempting whatever ones seem challenging to you. In some sections above, there are a large number of suggested problems listed. This is primarily because there are quite a few problems in the textbook which are virtually identical, so please do not take it as an indication that these sections are somehow more important.