

3450:335 Ordinary Differential Equations, Kreider
Exam 3 Preparation

The exam is scheduled for Thursday 1 August. There are 11 problems on the exam – 86 points on new material (6 problems on Laplace transforms) and 64 points on 5 problems from previous chapters. Bring a calculator, although you probably won't need one.

The topics covered on the exam are:

- Laplace Transforms

- Using the First Translation Theorem (17, 18, 19, 50)
- Using the Second Translation Theorem (51, 52, 57) (delayed delta and Heaviside functions)
- Using partial fractions on first or second order ODEs
- Completing the square on second order ODEs
- Solving 2x2 systems
- Solutions with duplication (22, 25)

- Earlier Material

- First order equations: focus on separable, integrating factor and Bernoulli
- Second order $Ly = 0$ – either constant coefficient (4.3) or Cauchy-Euler (4.7)
- Second order $Ly = f$ – either undetermined coefficients or variation of parameters (your choice)
- Modeling: one of these
 - * growth (be able to set up, know the formulas)
 - * Newton's Law of Cooling (formula would be given)
 - * Conservation Law (ie, pollution concentration, formula would be given)
 - * Projectile motion ($F=ma$), know the formula