

Final Exam Review Problems

Below is a shortened list of homework, test prep and exam problems by topic (these were all assigned problems from this quarter). If you want to review a particular topic, you can go back and look at these problems for a some basic standard examples. And for more practice, try other problems in those homework sets. You can also look at old final exams for studying, but understand that our final exam will look a lot like homework problems we have done this quarter, so it is good to make sure you remember how to do all the homework problems.

In addition: There are posted review sheets for every topic this term. Most review sheets have additional examples and practice problems. If you are worried about a particular topic, check out the corresponding posted review materials as well.

1. Chapters 1 and 2: First order Equations

- Integrating Factor Method: 2.1/13, 15, 19; Midterm 1: 1(b)
- Separable Equations: 2.2/4, 6, 13; Midterm 1: 1(a)
- Applications: 1.1/21, 23; 2.3/4, 9, 16, 21; Midterm 1: 3(b), 5
- Existence and Uniqueness: Test Prep 2: 2, 3 on back, Midterm 1: Problem 2(b)
- Autonomous equations and Equilibrium Solutions: 2.5/3, 7, 19; Midterm 1: 3(a), 4(b)
- Exact equations: 2.6/1, 10, 13; Midterm 1: 2(a)
- Euler's method to approximate: 2.7/1, 11; Midterm 1: 4(a)

2. Ch. 3: Linear Second Order Equations

- Homogeneous Equations/Characteristic Equation: 3.1/2, 12, 16; 3.3/7, 11, 17; 3.4/2, 6, 11
- Linearity/Fundamental Sets of Solutions: 3.2/28; Test Prep 4: 1 on back
- Reduction of Order: 3.4/24, 25; 3.6/29; Midterm 2: 5
- Undetermined coefficients: 3.5/2, 6, 8, 16; Test Prep 4; Midterm 2: 4
- Variation of parameters: 3.6/5, 7;
- Unforced Mass-Spring: 3.7/2, 6, 11, 17; Midterm 2: 1, 2(a)
- Forced Mass-Spring: 3.8/7, 8; Midterm 2: 2(b), 3

3. Ch. 6: The Laplace Transform: Know all the homework and know it well! This should be fresh in your mind and you haven't been tested on it yet, so I am not going to point out particular homework example problems, know them all.