Our Math20D final exam is Thursday December 10 at 11:30-2:30pm in Center Hall 101.

The final exam will test material from sections 1.1-1.3, 2.1-2.6, 3.1-3.6, 7.1-7.6, 7.8-7.9, 5.1-5.2, 6.1-6.2 that was discussed in lecture or asked on a homework problem.

The 15 main ideas are listed below. After each topic is an example problem from the textbook. The answers are in the back of the textbook. This is just a summary; you still need to know all the ideas from the required material.

**First Order ODE**
1. Method of Integrating Factors 2.1.18
2. Separable Equations 2.2.8
3. Modeling with ODE (word problems) 3 cases 2.3.1
4. Autonomous Equations 2.5.12
5. Exact Equations 2.6.4

**Second Order ODE**
6. Characteristic Equation 3 cases 3.1.10, 3.3.18, 3.4.6
7. Reduction of Order 3.4.23
8. Method of Undetermined Coefficients 3.5.6
9. Variation of Parameter 3.6.14

**Systems of ODE**
10. Phase Portraits and Direction Fields 7.5.4b
11. Characteristic Equation 3 cases 7.5.4a, 7.6.1a, 7.8.1c
12. Method of Undetermined Coefficients 7.9.7 (solve with undetermined coefficients)
13. Diagonalization 7.9.7 (solve with diagonalization)

**Any Order ODE**
14. Power Series 5.2.12
15. Laplace Transform 6.2.21