

**VANDERBILT UNIVERSITY**  
**MAT 155B, FALL 12 — QUICK GUIDE TO THE FINAL EXAM.**

This is a quick guide to the Final Exam, stressing which contents of each chapter of the textbook are important. All references to pages, problems and examples are from the textbook.

**Chapter 6.** Focus on

- basic manipulations with  $e^x$ ,  $\ln x$ ;
- derivatives and integrals of  $e^x$ ,  $\ln x$ , and inverse trig functions;
- L'Hospital rule.

Practice problems: page 481: T-F quiz; page 482: problems 11-19 (odd), 21-51 (odd), 48, 63-77 (odd).

**Chapter 7.** Focus on

- basic techniques of integration;
- improper integrals.

Practice problems: page 554: T-F quiz; page 554: problems 1-49 (odd), 79.

**Chapter 8.** Focus on

- understanding how to derive the formulas for arc length and area of a surface of revolution.

Practice problems: derive formula 3 on page 563; derive formulas 5 and 6 on page 571; page 575: problems 29, 31, 33.

**Chapter 9.** Focus on

- understanding what a differential equation is;
- mixing problems (like example 6 on page 623).

Practice problems: page 625: problems 45-48.

**Chapter 10.** Focus on

- understanding what parametric curves and polar coordinates are;
- switch back and forth between Cartesian and polar coordinates;
- the use of the chain rule to derive formulas for arc length and areas in polar coordinates.

Practice problems: page 709: T-F quiz; page 710: problems 17, 18, 21, 23, 25, 29, 37-41 (odd).

**Chapter 11.** Focus on

- concepts: sequences, series, divergence vs. convergence;
- tests for convergence/divergence;
- understanding what power series are; radius and interval of convergence;
- Maclaurin and Taylor series;
- writing  $f(x)$  as a power series;
- integrals and derivatives of power series.

Practice problems: understand examples of page 764; page 764: problems 1-37 (odd); page 802: concept check problems and T-F quiz; page 803: problems 1-31 (odd), 39, 40-55 (odd).