
EXAM

Practice Questions for the Final Exam

Math 3350, Spring 2004

May 3, 2004

- Write all of your answers on separate sheets of paper. You can keep the exam questions when you leave. You may leave when finished.
- You **must** show enough work to justify your answers. Unless otherwise instructed, give exact answers, not approximations (e.g., $\sqrt{2}$, not 1.414).
- You may use the book, your notes, and the handouts given in class
- This exam has 3 problems.

Good luck!

These are some practice problems from Chapter 10, Sections 1–4. See previous practice problem sets for the material before Chapter 10.

Problem 1. Let $f(x)$ be the function of period $2L = 4$ which is given on the interval $(-2, 2)$ by

$$f(x) = \begin{cases} 0, & -2 < x < 0 \\ 2 - x, & 0 < x < 2. \end{cases}$$

Find the Fourier Series of $f(x)$.

Problem 2. Let $f(x)$ be the function of period $2L = 2$ which is given on the interval $(-1, 1)$ by $f(x) = 1 - x^2$.

Find the Fourier Series of $f(x)$.

Problem 3. Consider the function

$$f(x) = 2x, \quad 0 < x < 1.$$

- A. Find the Fourier cosine series of $f(x)$ Hint: you're using the even half-range expansion.
 - B. Find the Fourier sine series of $f(x)$. Hint: you're using the odd half-range expansion.
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