Review Sheet for 50780 final

Standard disclaimer: The following represents a sincere effort to help you prepare for our exam. It is not guaranteed to be perfect. There might well be minor errors or (especially) omissions. These will not, however, absolve you of the responsibility to be fully prepared for the exam. If you suspect a problem with this review sheet, please bring it to my attention.

Format: The exam will take place Monday 5/5 from 4:15-6:15 in HH 125 (our usual classroom). The exam will be comprehensive, covering the entire semester, and there will be no take home portion this time. I will ask you to state various defns/thms, give some (counter)examples, and to solve a few longer partial credit problems (proof or computation-based). There will be a review session, also in HH 125, Friday 5/2 from 5-6(ish) PM.

Some terms and theorems that might come up (in addition to those listed on the midterm review): Fourier coefficients/approximations of an L^1 function; Fourier and Fejér approximations; Riemann-Lebesgue lemma; Dirichlet, Fejér, and Riesz-Fischer Theorems; Parseval's Identity, Weyl's Equidistribution Theorem.

Computational skills. You should be able to compute and derive basic formulas concerning Fourier coefficients/approximations. If I ask you to do something with Fourier transform on the real line, I'll try to give you the relevant definitions and formulas.

Things you can ignore: I will not ask about Fatou's Lemma, egorov's theorem, or the Cantor set. You do not have to remember the formulas for the Dirichlet or Fejér kernels. I will not ask about Gibb's phenomenon, the isoperimetric inequality, the wave/heat equations or nowhere differentiable functions.

Further advice: Probably the best things you can do to prepare are to memorize those definitons and theorems I ask you to know and to go back over and make sure you understand solutions of all old homework problems.