

561B Exam 1 Review Sheet

Newberger Fall 2007

This exam covers sections 4.2, 4.3 (up to the end of Egorov's Theorem), 4.4, and 10.1.

1. (20% of your grade) You will be asked to state some of the definitions and theorems listed here.
 - $\limsup a_n$ and $\liminf a_n$ where a_n is a sequence of numbers.
 - $\limsup E_n$ and $\liminf E_n$ where E_n is a sequence of sets.
 - $E_k \nearrow E$ and $E_k \searrow E$ where $\{E_k\}$ is a sequence of sets.
 - Upper semicontinuous and lower semicontinuous functions.
 - Relatively open and relatively closed.
 - Borel measurable functions
 - Egorov's Theorem
 - Convergence in measure
 - σ -algebra
 - Additive set function
 - Measure
 - μ -measurable
 - Upper, lower and total variation
 - Jordan Decomposition Theorem
2. (10% of your grade) You will be asked to provide a proof of one of the following two theorems (the statement will be given): 10.1, 10.4.
3. (70% of your grade) You will be asked to prove statements, give counterexamples and answer questions about the material from these sections. The topics that will probably be addressed include:
 - (a) $\limsup E_k$ and $\limsup a_k$ for sequences of numbers and sequences of sets
 - (b) Upper variation of an additive set function
 - (c) σ -algebras