MAT1000HF Fall 2017
Assignment 4
Due Oct 11th

Solve problems 1 2 3 4 7 8 9 from Folland Chapter 2

Bonus problems on Cantor Sets (do not hand in):

Problem 1
Show that if $C \subset [0,1]$ denotes the middle-third Cantor set, then (in the notation of Chapter 1 Exercise 31) $C - C \supset [-1,1]$

Problem 2
A set A is said to be *nowhere dense* if its closure has no interior points (i.e. if int $\bar{A} = \emptyset$). A countable union of nowhere dense sets is said to be a *set of first category* or *meager*.

Show that any Cantor set (even those of positive measure) is nowhere dense. Find an example of a meager subset of $[0,1]$ of full Lebesgue measure.