# Homework 14

Due: Friday, December 9

1. [F]4.2.2.

   The *inner area* of a bounded set $A \subset \mathbb{R}^2$ is (the lower estimate)

   $$\underline{I}_B(\chi_A),$$

   where $B$ is a box containing $A$.

2. [F] 4.2.3.

3. [F]4.2.6.

4. Use the following fact:

   **Theorem** If $Z$ is a set of zero content, and $B$ is a box in $\mathbb{R}^2$ containing $Z$, then $\iint_B \chi_Z = 0$.

   in the following:

   (a) Suppose $f$ is a bounded function on a set $Z$ of zero content. Then

   $$\iint_Z f = 0.$$

   (Recall that $\iint_Z f$ means $\iint_B f\chi_Z$.)

   (b) Suppose $f$ and $g$ are bounded and integrable on a box $B \subset \mathbb{R}^2$; and that there is a set $Z \subset B$ of zero content such that if $a \in B$ but $a \notin Z$ then $f(a) = g(a)$. Show that

   $$\iint_B f = \iint_B g.$$

*I realize that I have promised some review problems, too. Please keep your eye on the web page for more information and advice.*