Assignment 1

Coverage: 15.1 in Text.

Exercises: 15.1. No 7, 9, 11, 16, 18, 20, 25, 27, 32, 34.

Submit no. 20, 32, and 34 by September 14.

Supplementary Problems

These problems are optional.

1. Consider the function H in $\mathbb{R}^2$ defined by $H(x, y) = 1$ whenever x, y are rational numbers and equals to 0 otherwise. Show that H is not integrable in any rectangle.

2. Give an example of a nonnegative, integrable function which does not vanish identically and yet
$$\iint_R f \, dA = 0 \, .$$

3. Let f be a nonnegative, continuous function on R. Show that
$$\iint_R f \, dA = 0 \, ,$$
implies that f vanishes identically.