Stat 441 Winter 2009
Assignment #4

This assignment is due at the beginning of class on Wednesday, February 4, 2009.

**1.** The following exercises are from the printed lecture notes.

- Exercises 11.1, 11.5, and 11.6
- Exercises 12.2 and 12.4

**2.** Let $g : [0, 1] \to \mathbb{R}$ be the step function

$$g(t) = 2 \cdot \mathbb{1}_{[0,\frac{1}{4})}(t) - 3 \cdot \mathbb{1}_{[\frac{1}{4},\frac{5}{8})}(t) + 7 \cdot \mathbb{1}_{[\frac{5}{8},\frac{3}{4})}(t) + 6 \cdot \mathbb{1}_{[\frac{3}{4},1]}(t).$$

(a) Sketch the graph of $t$ vs. $g(t)$.

(b) Compute the Riemann integral $\displaystyle\int_0^1 g(t)\,\mathrm{d}t$.

(c) Let $\{B_t, t \geq 0\}$ be a standard Brownian motion. Determine the distribution of the Wiener integral $\displaystyle\int_0^1 g(t)\,\mathrm{d}B_t$.