BROWNIAN MOTION HOMEWORK ASSIGNMENT 6

INSTRUCTOR: RON PELED, TEL AVIV UNIVERSITY

(i) Let $U \subset \mathbb{R}^d$ be a domain and $x \in U$. Suppose $u : U \setminus \{x\} \to \mathbb{R}$ is a bounded harmonic function.
  - (a) Show that if $d \geqslant 2$ there exists a unique harmonic function $\bar{u} : U \to \mathbb{R}$ such that $\bar{u}(y) = u(y)$ for all $y \in U \setminus \{x\}$.
  - (b) Give an example showing the assertion of the first part does not hold when $d = 1$.

(ii) Solve exercise 3.1 from the Brownian motion book.

(iii) Solve exercise 3.10 from the Brownian motion book.

The Brownian motion book is available at: http://research.microsoft.com/en-us/um/people/peres/brbook.pdf