ME777 Monte Carlo Methods

Homework Set 5 due: Mon. April 9, 2018

1. Problem 7-1

2. Problem 7-3

3. Problem 8-2

4. Reduce the 2-D walking-on-circles algorithm for the homogeneous Poisson equation to the equivalent problem in 1-D. Choose any boundary values and plot the analytic solution for these values. Then use your algorithm to determine $u(x)$ for different numbers of continuous random walks.

5. Add a constant internal source $q(x)$ to the above problem and repeat your analysis.

6. Consider a convex polyhedron region D with N vertices in 2-D. Devise an algorithm to find the maximal circle centered at any point (x_o, y_o) in D.