Homework 2B

Qingyun Zeng
MATH 241-910 :Calculus IV

May 25, 2017

Problem 0. Reading: section 2.5.1-2.5.2, 3.1-3.2 in Haberman

Problem 1. (*Solving 1D heat equation with insulated boundaries*)
Haberman 2.4.1 (a)(b)(c)

Problem 2. (*Solving 1D heat equation with differential homogeneous BCs*)
Haberman 2.4.7 (b)(c)

Problem 3. (*2D Laplace equation inside a rectangle*)
Haberman 2.5.1

Problem 4. (*2D Laplace equation* **outside** *a circular disk*)
Haberman 2.5.3 (a)(b)

Optional exercise: Below are exercise proposed in class and some additional problems. These are for your own benefit and may be helpful for your understanding of the material It is not required to turn them in. It is suggested that you at least read those problems.

Problem A. (*Laplace equation inside the quarter-circle of radius 1*)
Haberman 2.5.5 (a)(b)

Problem B. (*Total thermal energy and steady state solution*) Haberman 1.4.11

Problem C. [Optional reading]

- Polar and cylindrical coordinates, spherical coordinates in Sec. 1.5
- Sec. 2.5.4: Qualitative properties of Laplace's equation

Due: May 30 (Tuesday), 2017, in class