Math 3413.001: Physical Mathematics I

Homework 11, due April 16 (Thursday)

Lecture 23 (Apr 7) Due date 04/16/2020 : Section 9.5

1. Solve the following boundary value problem

$$u_t = 5u_{xx}, \qquad u_x(0,t) = u_x(2,t) = 0, \qquad u(x,0) = f(x) = \begin{cases} 1 & \text{if } 0 < x < 1; \\ 0 & \text{if } 1 \le x < 2. \end{cases}$$

2. Solve the following boundary value problem

$$u_t = 2u_{xx}, \qquad u_x(0,t) = u_x(\pi, t) = 0, \qquad u(x,0) = f(x) = 1 - 2\cos(x) + 2\cos^2(x).$$

Suggested problems from the book (DO NOT SUBMIT): Pg 608-610, $\#5, 11, 14$