Homework 7

Partial Differential Equations, Spring 2023 David Yang

Chapter 2.6, Problem 7

Solve $u_t = u_{xx}$ on $x, t > 0$ with $u(0, t) = a$, $t > 0$ and $u(x, 0) = b$, where a and b are constants.

Chapter 2.7, Problem 15

Solve the Cauchy problem for the advection-diffusion equation using Fourier transforms:

$$u_t = Du_{xx} - cu_x, \;\; x \in \mathbb{R}, \, t > 0; \;\; u(x, 0) = \phi(x), x \in \mathbb{R}.$$