

Homework 1

Due: Sept. 29 2025

1. Go over Sec. 1.1 to 1.4 of the textbook.
2. Do Exercise 1 on page 7.
3. Consider a boundary-value problem (i.e. strong-form problem) with the Dirichlet boundary conditions imposed on both ends, that is,

$$\begin{cases} u_{,xx} + f = 0, & \text{in } (0,1) \\ u(0) = g_0, \\ u(1) = g_1. \end{cases}$$

- (a) Give its corresponding weak-form problem.
- (b) Show the equivalence between the strong- and weak-form problems.