

Exercise 8

Solve the problem in Exercise 4 [TYPO: Use Exercise 7!] with the boundary conditions

$$\begin{aligned}u(x, 0) &= f(x), \quad u_t(x, 0) = g(x) \quad \text{for } 0 \leq x \leq \ell, \\u(0, t) &= 0 = u(\ell, t) \quad \text{for } t > 0, \\u_{xx}(0, t) &= 0 = u_{xx}(\ell, t) \quad \text{for } t > 0.\end{aligned}$$