1. Heat Equation and Insulated Ends

Objectives

After this section and some practice, you should be able to:

- Apply **superposition** and **separation of variables** to find a general solution to the 1-dimensional heat equation with **homogeneous boundary conditions.**
- Set $t = 0$ in the general solution to obtain a **Fourier series** solution describing the **initial condition.** Apply the initial condtion to determine the **Fourier coefficients** of that series.
- Find a **particular solution** to the 1-dimensional heat equation with **inhomogeneous boundary conditions.**
- Recognize the **diffusion equation** as analogous to the heat equation, and solve using Fourier methods with different boundary conditions.

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