**Code Example 1: 1D Convective heat equation (Fourier’s law)**

**Code:** Fouriers\_law\_1D.py

**Code description:**

A white sheet of paper with black text

Description automatically generated

**Plots Interpretation:**

* **Initial Temperature Distribution**: The plot shows the initial temperature profile of the rod, which is a Gaussian pulse centered in the middle of the rod.
* **Heat Transfer Over Time**: The temperature profile evolves over time, with the heat spreading from the center to the edges. The temperature becomes more uniform as time progresses due to the diffusion process.

**Code Example 2: 2D Convective heat equation (Fourier’s law)**

**Code:** Fouriers\_law\_2D.py

**Code description:**

A screenshot of a paper

Description automatically generated

**Plots Interpretation:**

1. **Initial Temperature Distribution**: The initial condition shows a Gaussian-shaped temperature distribution centered at the middle of the plate.
2. **Heat Propagation Over Time**: As time progresses, the heat spreads outward from the center, with the temperature becoming more uniform across the plate. The outer regions eventually reach the ambient temperature (zero in this case).