

# Approximating Solutions to the Heat Equation

## 1 Introduction

In this exercise we will consider the two-dimensional heat equation and solve it with an implicit scheme. We will show that this implicit scheme is first-order accurate in space, and second-order accurate in time. We then consider the internal temperature of a potato along a two-dimensional plane. We will approximate the potato's dimensions as a rectangle and simulate the potato's temperature as it boils in a pot of water. Finally, we will use the data from our MATLAB simulation of the potato to plot its internal temperature distribution and determine when the potato has fully cooked.