MATH 603 - Final Assignment

Aiden Taylor

University of Calgary
Department of Mathematics & Statistics
Calgary, AB, Canada

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The Problems

1. Write a computer program to implement the Fast Fourier Transform (FFT).
2. Using the FFT, write a computer program to solve numerically the initial-value problem (IVP) for the heat equation,

$$\begin{cases} u_t = u_{xx} & (t, x) \in [0, T] \times [0, 1] \\ u(0, x) = u_0(x) & x \in [0, 1] \\ u(t, 0) = u(t, 1) = 0 & t \in [0, T] \end{cases}.$$

Outline

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Thank you!