6.6)

* SOLVE PART ~~[illegible]~~ A & B ON PAPER ; PART "C" IN "MATLAB"

Suppose that we replace our Dirichlet boundary conditions with the following Neumann boundary conditions:

$$\left.\frac{\partial T}{\partial x}\right|_{x=-\frac{L}{2}} = \left.\frac{\partial T}{\partial x}\right|_{x=\frac{L}{2}} = 0$$

[A]. Using the method of images, find the solution $T(x,t)$ for the initial condition, $T(x,0) = \delta(x)$ (delta)

[PAPER]

[B]. Using the method of images, find the solution $T(x,t)$ for the initial condition, $T(x,0) = \delta\left(x - \frac{L}{4}\right)$

[PAPER]

[C]. Modify the attached program → "dftcs" to implement these boundary conditions by setting $T_1^n = T_2^n$ AND $T_N^n = T_{N-1}^n$.

Compare the programs output with the results from parts [A] & [B]. Explain why the spatial discretization is $x_i = \left(i - \frac{3}{2}\right)h - \frac{L}{2}$

with $h = \frac{L}{N-2}$ for these boundary conditions.

[MATLAB]