MATH 464, HW 5

Solve problems:

a) \[
\frac{\partial u}{\partial t} = \frac{\partial u}{\partial x} - \frac{\partial^3 u}{\partial x^3}; \quad u(x, 0) = \chi_{[0,1]}(x)
\]

b) \[-u''(x) + u(x) = \chi_{[-1/2\pi, 1/2\pi]}(x)\]