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)

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