Math 322 Homework 11

Due Wednesday Dec. 14, 2016

1. (a) Use the method of images to solve

\[ \nabla^2 u(x) = f(x) \]  \hspace{1cm} (1a)

in a semi-infinite 2D domain with boundary condition \( u(x, 0) = h(x) \).

(b) Use the method of images to solve

\[ \nabla^2 u(x) = f(x) \]  \hspace{1cm} (1b)

in a semi-infinite 2D domain with boundary condition \( \partial u(x, 0)/\partial y = h(x) \).

(c) (a) Use the method of images to solve

\[ \nabla^2 u(x) = f(x) \]  \hspace{1cm} (1c)

in a semi-infinite 3D domain with boundary condition \( \partial u(x, 0, z)/\partial y = h(x, z) \).

2. Using the method of images, solve

\[ \nabla^2 u(x) = f(x) \]  \hspace{1cm} (2)

in the 2D domain \( x \geq 0, y \geq 0 \) with boundary conditions \( u(0, y) = g(y) \) and \( u(x, 0) = h(x) \).