An Application of Fourier Transforms to Partial Differential Equations-
HW Problems

1. Solve the following partial differential equation using Fourier
transforms to obtain the Green's function.

$$i\frac{\partial u}{\partial t} + \frac{\partial^2 u}{\partial x^2} = 0\,; \quad \text{with } u(x,0) = f(x).$$

Your answer can be expressed in terms of an integral.