Math 326, Worksheet 7

Find a harmonic function $u(x, y)$ on the upper half plane for each of the following boundary conditions:

1. $u(x, 0) = x^2$ for $-1 < x < 1$,
   $u(x, 0) = 1$ otherwise.

2. $u(x, 0) = \frac{1}{1 + x^2}$ for all $x$.

3. $u(x, 0) = \sin x$ for all $x$. 