Name_____ GES 554 Quiz #3 13th Feb 2014

For the following wave equation, find and sketch the solution to the following ICs in the x-t plane. There are 6 regions of interest.

$$u_{tt} = u_{xx} \qquad -\infty < x < \infty$$
$$u(x,0) = 0$$
$$u_t(x,0) = \begin{cases} 1 & 0 < x < 1 \\ 0 & otherwise \end{cases}$$

D'Alembert's solution is

$$u(x,t) = \frac{1}{2} f(x+ct) + \frac{1}{2} f(x-ct) + \frac{1}{2c} \int_{x-ct}^{x+ct} g(\zeta)\,\mathrm{d}\zeta$$