

Exercise 20

“Descend” from two dimensions to one as follows. Let $u_{tt} = c^2 u_{xx}$ with initial data $\phi(x) \equiv 0$ and general $\psi(x)$. Imagine that we don’t know d’Alembert’s solution formula. Think of $u(x, t)$ as a solution of the two-dimensional equation that happens not to depend on y . Plug it into (19) and carry out the integration.