Since $\rho = \rho(t_{ret}) = \rho\left(t - \frac{R}{c}\right)$ we can write:

$$\frac{\partial \rho}{\partial R} = \frac{\partial \rho}{\partial (t - R/c)} \frac{\partial (t - R/c)}{\partial R} = -\frac{1}{c} \frac{\partial \rho}{\partial (t - R/c)}$$

$$\frac{\partial^2 \rho}{\partial R^2} = \frac{\partial}{\partial R}\left(\frac{\partial \rho}{\partial R}\right) = \frac{\partial}{\partial R}\left(-\frac{1}{c}\frac{\partial \rho}{\partial (t - R/c)}\right)$$

$$= -\frac{1}{c} \frac{\partial^2 \rho}{\partial \left(t - \frac{R}{c}\right)^2} \frac{\partial (t - R/c)}{\partial R} = \frac{1}{c^2} \frac{\partial^2 \rho}{\partial (t - R/c)^2}$$

Similarly,

$$\frac{\partial^2 \rho}{\partial t^2} = \frac{\partial^2 \rho}{\partial (t - R/c)^2}$$

$\therefore$ ρ will be a solution to the 1-dimensional wave equation

$$\frac{1}{c^2}\frac{\partial^2 \rho}{\partial t^2} = \frac{\partial^2 \rho}{\partial R^2}$$

q.e.d.