1. Frame S' moves at v relative to the inertial frame S along the x-direction, as shown in the figure below. The wave equation for a traveling wave observed in S' is given by

$$\frac{\partial^2 \psi}{\partial x'^2} - \frac{1}{u'^2} \frac{\partial^2 \psi}{\partial t'^2} = 0,$$

where u' is the velocity of the propagating wave. What is the wave equation in frame S under Galilean transformation?

