Compute the solution of the convective wave equation

$$\frac{\partial u}{\partial t} + \frac{\partial u}{\partial x} = 0$$

on a uniform mesh with $\Delta x=1$ and the following initial condition,

t=0 , $u = [2 + \cos(\pi x)]\exp[-(\ln 2)(x/10)^2]$

Consider two cases

(i) $\alpha = 1.7$

(ii) $\alpha = 4.6$

Results to be reported are the spatial distributions of u at t=400 and t=800.

Note : If computation is done by methods other than finite difference, an equivalent mesh size of $\Delta x=1$ should be used.

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