Exercises online: http://pauli.uni-muenster.de/tp/

Exercise 1: Burgers equation and the pseudospectral method

Solve the one dimensional Burgers equations

$$\frac{\partial u(x,t)}{\partial t} + u(x,t)\,\frac{\partial u(x,t)}{\partial x} = \nu\,\frac{\partial^2 u(x,t)}{\partial x^2}$$

using the pseudospectral method on the domain $x \in [0,\, 2\pi]$ and starting with the initial condition $u(x,0) = \sin(u)$. Use a Runge-Kutta algorithm of fourth order for the time stepping. How does ν influence the steepness of the appearing *shocks*?