Name_____ Student number_____

Home assignment 3

A bar is free to move in the horizontal direction as shown. At $t = 0$, displacement of the free end is U and velocity vanishes. Use the Finite Element Method on a regular spatial grid with $i \in \{0,1\}$ and the Discontinuous-Galerkin method with step size Δt to find the displacement and velocity of the free end at $t = \Delta t$. Cross-sectional area A, density ρ of the material, and Young's modulus E of the material are constants.