Name_____ Student number_____

Home assignment 1

A rectangular membrane of side length $4L$, density ρ, thickness t, and tightening S' (force per unit length) is loaded by its own weigh as shown. If the edges are fixed, find the transverse displacements at the grid points $(i, j) \in \{0,1,2,3,4\} \times \{0,1,2,3,4\}$ of constant spacing. Use the Finite Element Method with a piecewise linear approximation on regular triangle elements. Use symmetry to reduce the number of non-zero independent displacements to three.