

Name \_\_\_\_\_ Student number \_\_\_\_\_

### Assignment 3 (4p)

Consider the bending of a cantilever plate strip which is loaded by distributed force  $p$  [N/m] acting on the free edge. Write down the equilibrium equations, constitutive equations, and boundary conditions for the bending mode according to the Kirchhoff model. After that, solve the equations for the stress resultant, displacement, and rotation components. Thickness and length of the plate are  $t$  and  $L$ , respectively. Young's modulus  $E$  and Poisson's ratio  $\nu$  are constants. Consider a plate of width  $H$  but assume that stress resultants, displacements, and rotations depend on  $y$  only.

