HW3: Constrained Problems

1. In the problem of the minimal surface of revolution, assume that the volume between two supporting circles is fixed. Formulate the constrained problem of the minimal surface area, solve using Maple.

   Comment: The answer will be expressed through elliptic integrals. However, Maple can able to draw the solution for the given values of the Lagrange multiplier.

2. A heavy chain of the length L = 4 is hanged over a floor h = 0, a part of the chain lies on a floor. The coordinates of the supports are h = 1, x = 0 and h = 1, x = 1. Find the equilibrium position of the chain.

   Hint: Find the equation for the point where the chain touches floor using the length and shape of the chain. The problem of the heavy chain is described in the note "Constrained problems" p. 14.