

Exercise Sheet 3

To be handed in until October 11

1. The Catenoid

Compute k_1 , k_2 , H and K for the catenoid.

2. The Helicoid

Compute k_1 , k_2 , H and K for the helicoid.

3. Compact surfaces have positive K

Let M be a compact surface in \mathbb{R}^3 . Prove that there is a point p in M such that $K(p) > 0$.

4. Vanishing 2nd fundamental form implies planar surface

Suppose M is a connected surface in \mathbb{R}^3 with 2nd fundamental form A vanishing everywhere. Show that M is contained in a plane.