

45011 Differential Geometry (3)

Knowledge

The students should be able to define the Gaussian Curvature, to formulate the Gauss-Bonnet Theorem and to prove Theorema Egregium.

Comprehension

Should be able to compute the normal, geodesic, Mean and Gaussian curvatures. They also should be able to distinguish well-known surfaces of positive, negative and zero Gaussian curvature.

Application

The main and most important application is to solve many different problems related to the subject.

Analysis

Should be able to find the main curvatures and main and asymptotic directions of the surface. Should use this information to analyze the geometry of the surface.

Synthesis

Should get use to combine their skills from Calculus I, Calculus II, Calculus III and Linear Algebra to solve the problems in Geometry.

Evaluation

Should be able to find the curvatures of the regular surface given by its parametrization or by an algebraic equation or as a graph of a function.

Class Activities

To solve problems and prove Theorems in class.

Out of class Activities

To submit every week home assignments.