CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
S1414

Project Title
Gaussian Curvatures of Non-Euclidean Surfaces

Abstract

Objectives/Goals
The objective is to compare and contrast the first five postulates of Euclid in elliptic geometry , hyperbolic geometry and Euclidean geometry and measure the Gaussian curvatures of non-Euclidean surfaces.

Methods/Materials
The objective is to compare and contrast the first five postulates of Euclid in elliptic geometry , hyperbolic geometry and Euclidean geometry and measure the Gaussian curvatures of non-Euclidean surfaces.

Results
The first five postulates of Euclid can be applied only in Euclidean geometry and only a few of them can be applied in elliptic and hyperbolic geometry.Also measured curvatures indicates the sphere has positive Gaussian curvature and hyperbolic surface has negative Gaussian curvature.

Conclusions/Discussion
The first five postulates of Euclid contradict each other in hyperbolic and elliptic geometry. For the sphere the measured curvature matched the theoretical curvature to within 1% error. For the hyperbolic paraboloid ,the result were less accurate ,the experimental curvatures were all in the same order of magnitude as theoretical and were all negative.

Summary Statement
My project is about Gaussian curvatures of Non-Euclidean surfaces and differences of the first five postulates of Euclid in the non-Euclidean geometry

Help Received
Used lab equipment at Ribet academy under the supervision of Mr.John shirajian (science teacher)