Space: Its Light, Its Shape.

Chapter 3: Vocabulary

Assignment:

- Read Chapter 3.
- **For Friday, January 21:** Write an essay (approximately two pages, word processed, double spaced) describing two of the idea pairs presented in this chapter (topology/geometry, intrinsic/extrinsic, local/global, homogeneous/nonhomogeneous, closed/open) to a friend or family member. These descriptions must be in your own words, should be clear and understandable to persons not in our class and should contain examples.
- **For Wednesday, January 19:** Though everyone is responsible for reading all of the material and for working out all of the exercises, teams have been specific material and exercises for which they are responsible in class presentations. You may want to come to class early to firm up and smooth out the exercises with your teammates.

Topology versus Geometry

Team 1: Describe the nature of the topology of a manifold. Give examples.

Team 2: Describe the nature of the geometry of a manifold. Give examples.

Team 3: Present an answer for Exercise 3.1.

Team 4: Present an answer for Exercise 3.2.

Intrinsic versus Extrinsic Geometry and Topology

Team 1: Describe the issues of intrinsic geometric and topological properties. Give examples.

Team 2: Explain how the intrinsic geometries of the surfaces drawn in Figure 3.7 can be detected by the "landers" that live there.

Team 3: Describe the nature of extrinsic geometric and topological properties. Give examples.

Team 4: Present an answer for Exercise 3.3 and an answer for Exercise 3.4 Then answer is in the back of the book. Why is the extrinsic topology of the Mobius band different from the topology of the single twisted band?

Team 1: Present Exercise 3.5

Local versus Global Properties

Team 2: Describe the difference between local and global properties.

Team 3: Present an answer for Exercise 3.7.

Team 4: Give examples of local geometric properties, global geometric properties, local topological properties, global topological properties.

Team 1: With which of the four types of properties above are we usually concerned?

Team 2: Present an answer for Exercise 3.9.

Team 3: Present an answer for Exercise 3.10.

Homogeneousl versus Nonhomogeneous Geometries

Team 4: Describe the difference between homogeneous and nonhomogeneous geometries. Give examples.

Team 1: Present an answer for Exercise 3.11.

Closed versus Open Manifolds

Team 2: Give the intuitive definitions of open and closed manifolds.

Team 3: Present an answer for Exercise 3.12.

Team 4: What are the two complications to these definitions?