

MATH 555, HOMEWORK 1

SMOOTH MAPS AND MANIFOLDS

Due at start of class, Thursday, 2/4

Reading. Read pg. 1–7 of Guillemin and Pollack.

Exercises.

- (1) Carefully prove that the product of two smooth manifolds is a smooth manifold.
- (2) Carefully prove that $S^2 = \{(x, y, z) \in \mathbb{R}^3 \mid x^2 + y^2 + z^2 = 1\} \subset \mathbb{R}^3$ is a smooth manifold.
- (3) Do exercise 3 on page 5.
- (4) Do exercise 16 on page 7.