All homework is to be completed in LaTeX.

**Book problems:** 5.1.4, 5.1.5, 5.2.1, 5.2.2, 5.2.3, 5.2.7, 5.3.3, 5.3.10, 5.3.13, 5.3.20.

**Problem:** The unit sphere $S^3 \subset \mathbb{R}^4$ is a manifold. Find a “relaxed” parametrization in the sense of Definition 5.2.3.