1. Do the following problems from the Exercises at the end of Section 1.1 from Guillemin-Pollack:

   4, 6, 8, 9, 12, 18a.

2. Also solve exercise 10, but for the case $b > a$, only draw the picture and indicate the problematic points. You are not required to prove that it is not a manifold.

3. Let $S := \{(t, 0) \mid t \geq 0\} \cup \{(0, t) \mid t \geq 0\} \subset \mathbb{R}^2$. Prove that $S$ is not a manifold.