Math 441 **Topology** **Autumn 2002**

Assignment #9: Due 12/2/02

I. Reading:

- Read Patty, §3.1.

II. Practice problems:

1. Patty, Exercises 2.6 (pp. 99–101) #1, 2, 3

III. Required problems:

1. Patty, Exercises 2.6 (pp. 99–101) #4.
2. Patty, Exercises 2.6 (pp. 99–101) #5.
3. Patty, Exercises 2.6 (pp. 99–101) #6.
4. Patty, Exercises 2.6 (pp. 99–101) #7.
5. Patty, Exercises 2.6 (pp. 99–101) #9.
6. Patty, Exercises 2.6 (pp. 99–101) #14.
7. Patty, Exercises 2.6 (pp. 99–101) #15.
8. Define an equivalence relation on $\mathbb{R}$ by saying that $x \sim y$ if and only if $x - y \in \mathbb{Z}$. Prove that the identification space $\mathbb{R}/\sim$ is homeomorphic to $S^1 = \{(x, y) \in \mathbb{R}^2 : x^2 + y^2 = 1\}$.