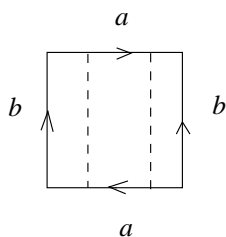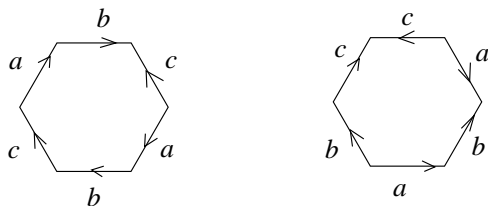MAT 364 Topology

Problem Set 10
due Wednesday, November 17

Problem 1. Prove that if you glue two Möbius bands along their boundary circles, the result is the Klein bottle. **Hint:** cut the Klein bottle diagram along the dashed lines as shown in the picture.

Problem 2. Prove that $\mathbb{T}\#\mathbb{K}$ is homeomorphic to $\mathbb{K}\#\mathbb{K}$. Here, $\mathbb{T}$ is the torus, and $\mathbb{K}$ is the Klein bottle as usual.

Problem 3. Identify, with proof, the surfaces shown below: determine to what familiar surface (or connected sums) each of them is homeomorphic.

Please also do Exercise 4.22 from the book.