Stony Brook University
Mathematics Department
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Topology, Geometry I
MAT 530
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Homework 5

1. Construct a universal covering space and calculate the fundamental group of the Möbius strip.

2. Let S be a topological space consisting of four points, a, b, c, d, with the topology generated by the base formed by the sets $\{a\}$, $\{c\}$, $\{a, b, c\}$ and $\{a, c, d\}$.

(1) Construct the universal covering space of S,
(2) prove that this is a universal covering of S, and
(3) calculate the fundamental group of S.