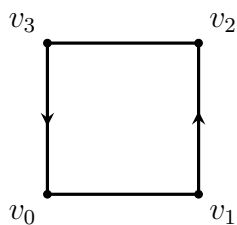


TOPOLOGY 2, HOMEWORK 4

- (1) (2 pts) Hatcher, Section 1.1 #7
- (2) (2 pts) Hatcher, Section 1.1 #8
- (3) (2 pts) Hatcher, Section 1.1 #11
- (4) The *Möbius band* M is the quotient of the square by identifying its vertical edges as pictured below (ie, so that $v_0 \sim v_2$ and $v_1 \sim v_3$).



- (a) (1 pt) Endow M with the structure of a CW complex.
 - (b) (1 pt) Prove that $\pi_1 M \cong \mathbb{Z}$.
- (5) (6 pts) Hatcher, Section 1.1, #16