

Homework 4

Due Monday, October 26, 2020

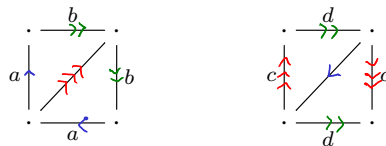
This week's reading is long, so the homework is on the short side.

1. Hatcher §1.1 #8.
2. Hatcher §1.1 #16.
3. Show that the groups

$$G = \langle a, b \mid abba = 1 \rangle$$

$$H = \langle c, d \mid cdcd^{-1} = 1 \rangle$$

are isomorphic. Your proof should be purely algebraic, but it may help to consider the following diagrams:



Hint: After exhibiting a homomorphism $\varphi: G \rightarrow H$, you may be tempted to work hard showing that it is injective and surjective. It is easier just to exhibit an inverse $\psi: H \rightarrow G$.