

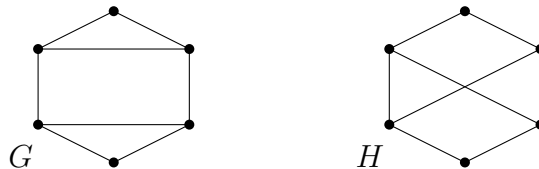
EXERCISE SHEET 1

GRAPH COMPLEXES, SUMMER 23, HU BERLIN

Exercise 1. Show that the two graphs below are isomorphic.

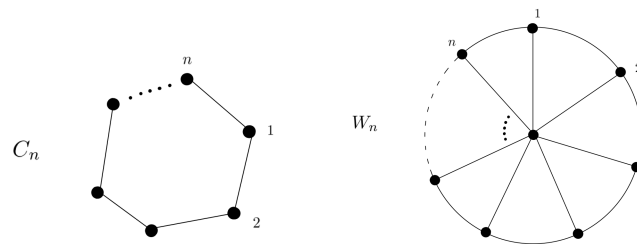


Are the following two graphs isomorphic?



Exercise 2. Endow the graph $G = \square$ with an orientation and compute its differential.

Exercise 3. Consider the *cycle graph on n vertices* C_n and the *wheel with n spokes* W_n ,



For which $n \in \mathbb{N}$ do they represent

- (1) non-zero elements in GC_0 ?
- (2) cycles in GC_0 ?
- (3) non-trivial classes in $H(GC_0)$?

(in the case C_n we work in the larger complex $GC_0^{v \geq 2}$ where vertices of valence 2 are allowed)