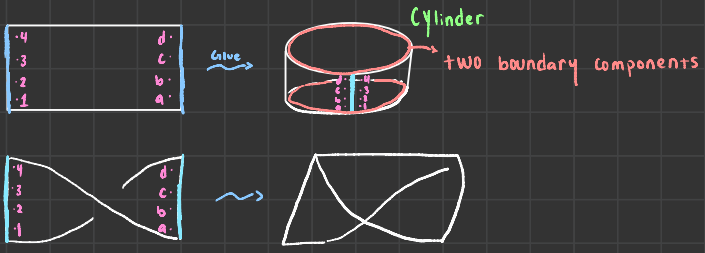
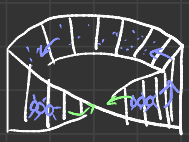
DATE: August 22, 2023

Cite your homework!

The Möbius Band (strip)





Möbius strip

Sets

Def (informal): A **set** is a collection of things.

Notation: We write, e.g., $A = \{a, b, \text{banana}, \pi\} = \{\text{banana}, \pi, b, a\}$ to mean A is a set with elements a, b, banana, π.

Notating: We write $\emptyset$ for the **empty set**.

Ex: $\emptyset = \{\}$ Ex: $B = \{b, A, \{b\}, \emptyset\}$

Ex: $\underbrace{\emptyset}_{0}, \underbrace{\{\emptyset\}}_{1}, \underbrace{\{\emptyset, \{\emptyset\}\}}_{2}, \underbrace{\{\emptyset, \{\emptyset\}, \{\emptyset, \{\emptyset\}\}\}}_{3}, \ldots$

Defn: Fit two sets A and B. We say A is a subset of B if $\forall\, a \in A,\ a \in B$

↑ "for all" "for every" ↑ "is an element of"

We write $A \subset B$

Defn: Fix a set A.

The power set of A is the set of (all) subsets of A.

let $\mathcal{P}(A)$ denote the power set of A.