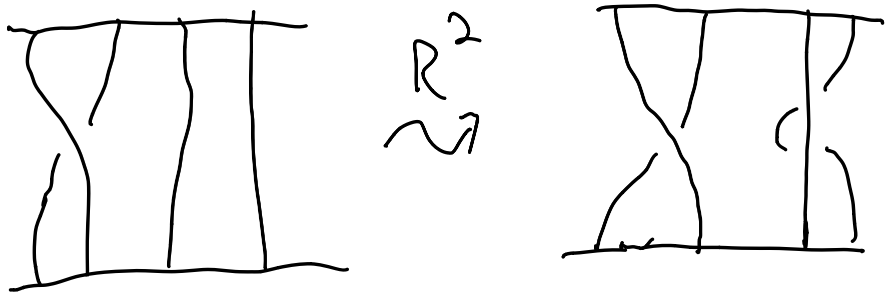
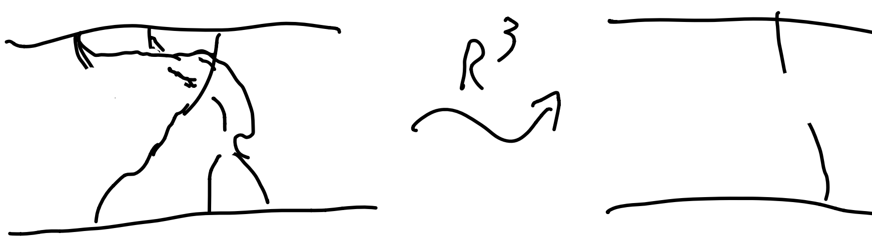
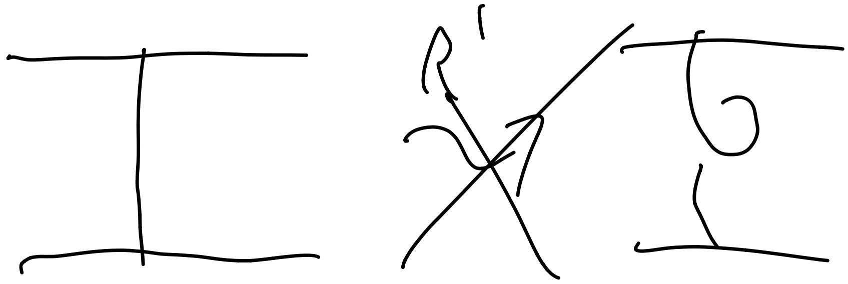
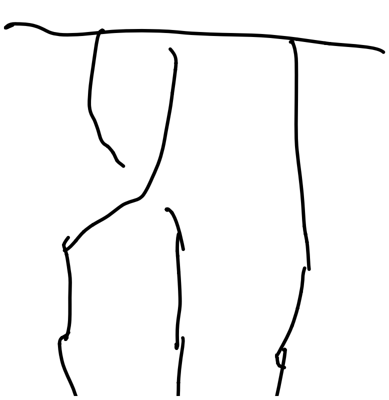
Braids



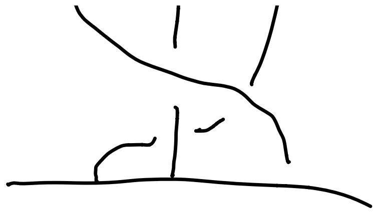






$|i-j| \geq 2$

$$\langle \sigma_1, \dots, \sigma_i \mid [\sigma_i, \sigma_j],\ \sigma_i \sigma_{i+1} \sigma_i = \sigma_{i+1} \sigma_i \sigma_{i+1} \rangle$$

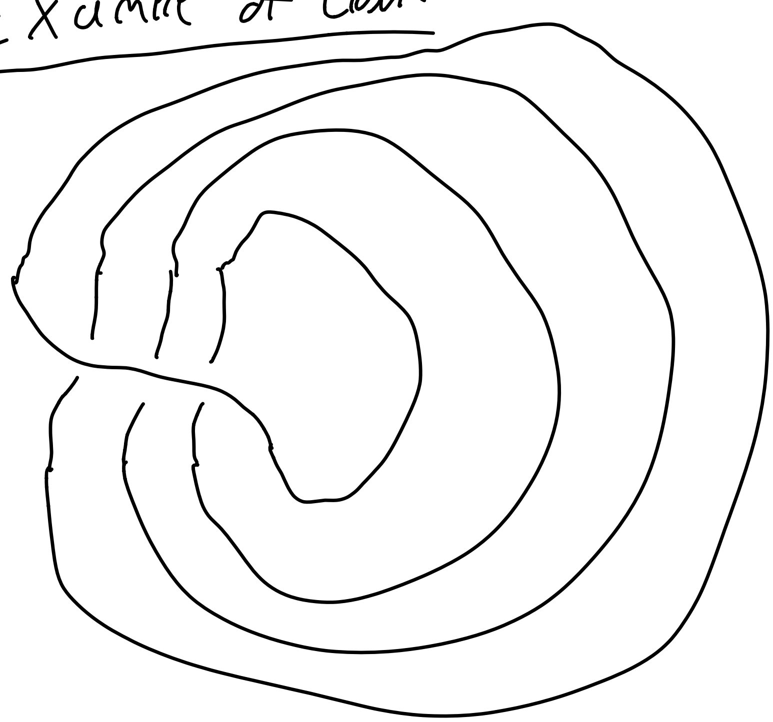


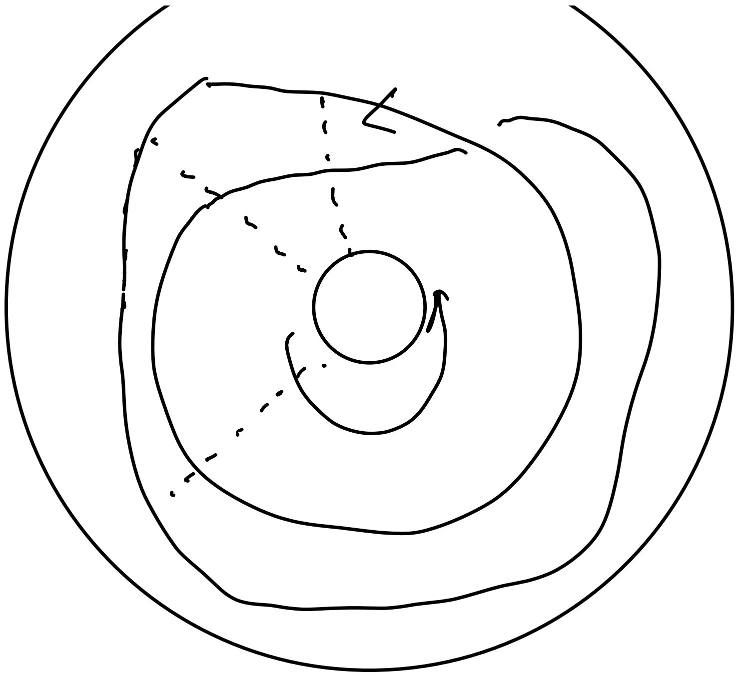
Braid group on n strings is B_n

$\hat{\beta}$ $\qquad$ $\beta \in B_n$

closure of β

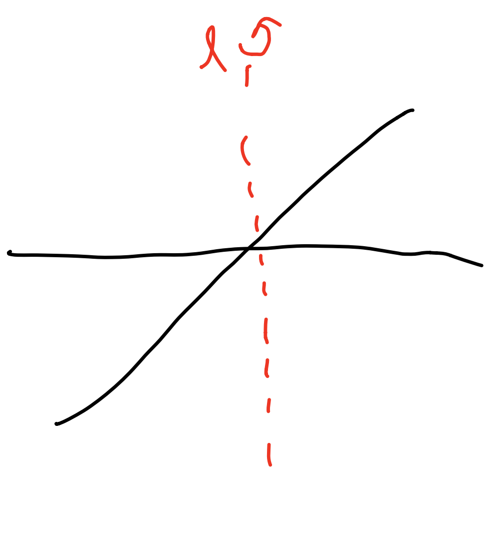
Example of closure





First, any link is isotopic to a

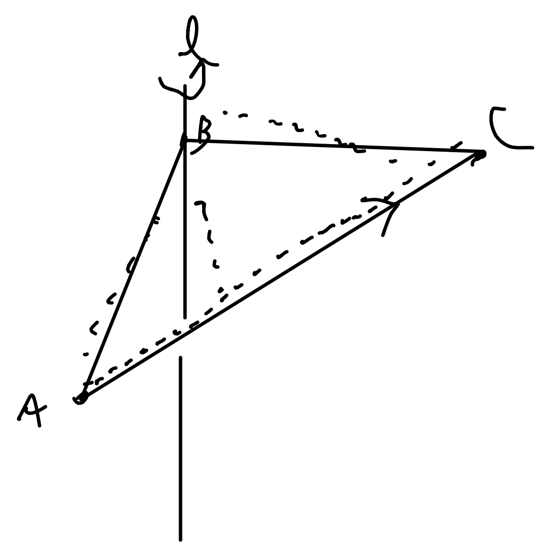
polygonal link



Wlog, we may assume no edges of an oriented polygonal link are parallel to l. Further, no edges intersect l.

Call an edge AC of a polygonal link L <u>positive</u> if, when traversing AC in the positive direction, the projection onto a cylinder centered at l rotates anticlockwise around l

<u>Ex</u>



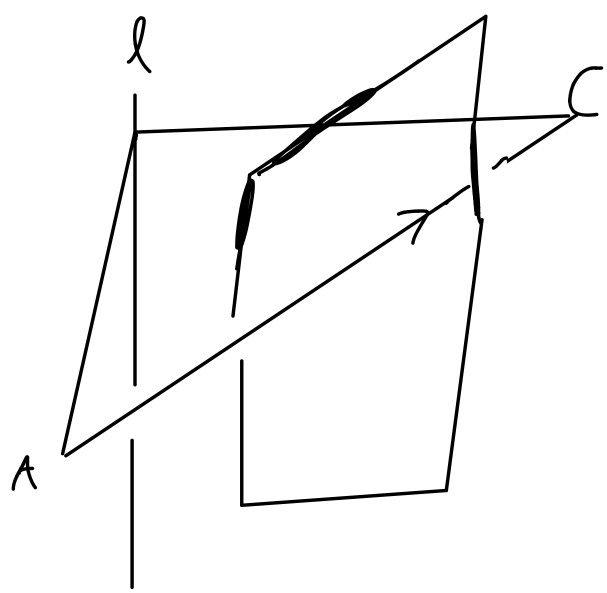
Otherwise, AC is called *negative*

wlog AC is either positive or negative

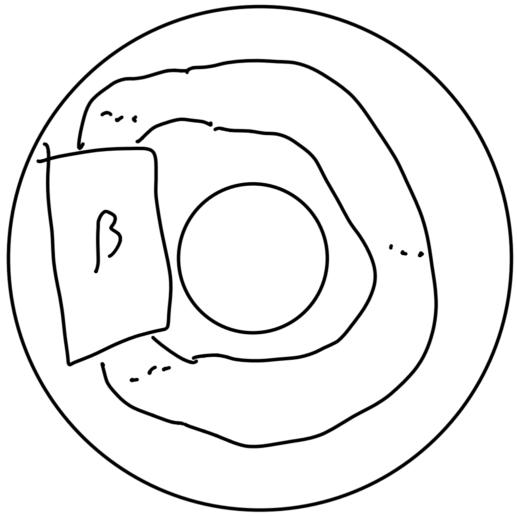
Now, call an edge AC *accessible*

if $\exists B \in l$ s.t $\Delta ABC \cap L = AC$

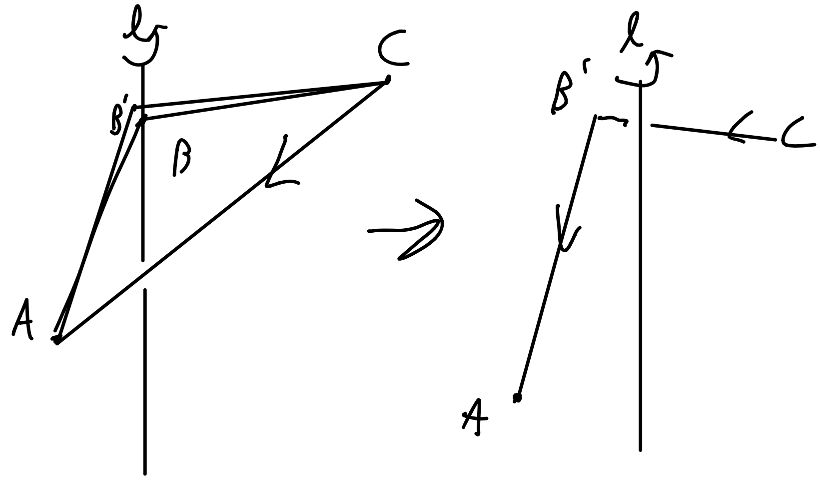
Non-Ex



Suppose all edges of L are positive. $\boxtimes$



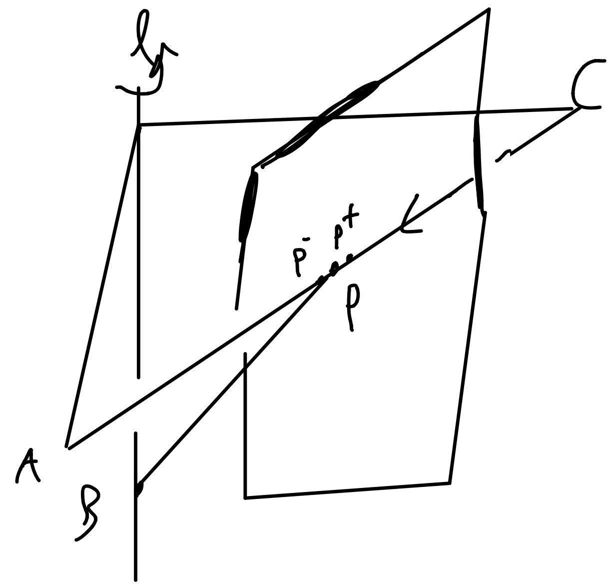
If an edge AC is negative & accessible



Replace AC with CB', $B'A$

After this, L has one fewer negative edges

Suppose AC is negative & not accessible



Any point on AC is part of an accessible subsegment

$$\Delta p^- B p^+ \cap L = p^- p^+$$

Because AC is compact, we can partition AC into finitely many accessible subsegments, and perform the same procedure to them, results in a polygonal link isotopic to L with one fewer negative edges