

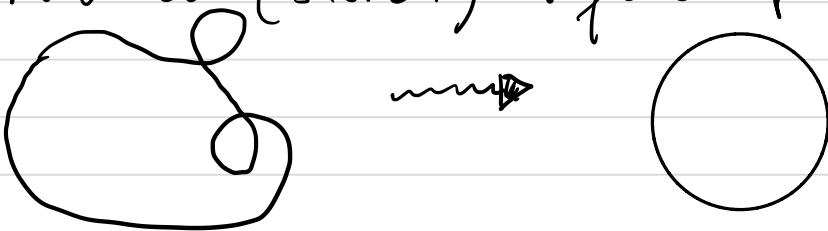
Homework 1, due Tu, Oct. 16

- ① Draw a generic map $S^1 \hookrightarrow \mathbb{R}^2$ with few (non-zero) self-intersections and without monogons and bigons:

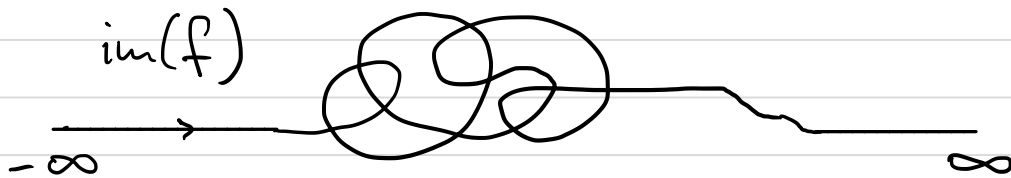


Provide a sequence of I, II, III-moves to the embedding $S^1 \subset \mathbb{R}^2$.

- ② Find a (short!) sequence of II, III moves



- ③ Consider a generic "long arc", i.e. a generic map $f: \mathbb{R} \hookrightarrow \mathbb{R}^2$ s.t. f is horizontal near $\pm\infty$:



Define $w(f)$ as the degree of $\frac{f'}{|f'|}$

and $\#(f)$ as the signed sum of double points of f , in a way

$$\text{that } w(f) = \#(f) \in \mathbb{Z}$$