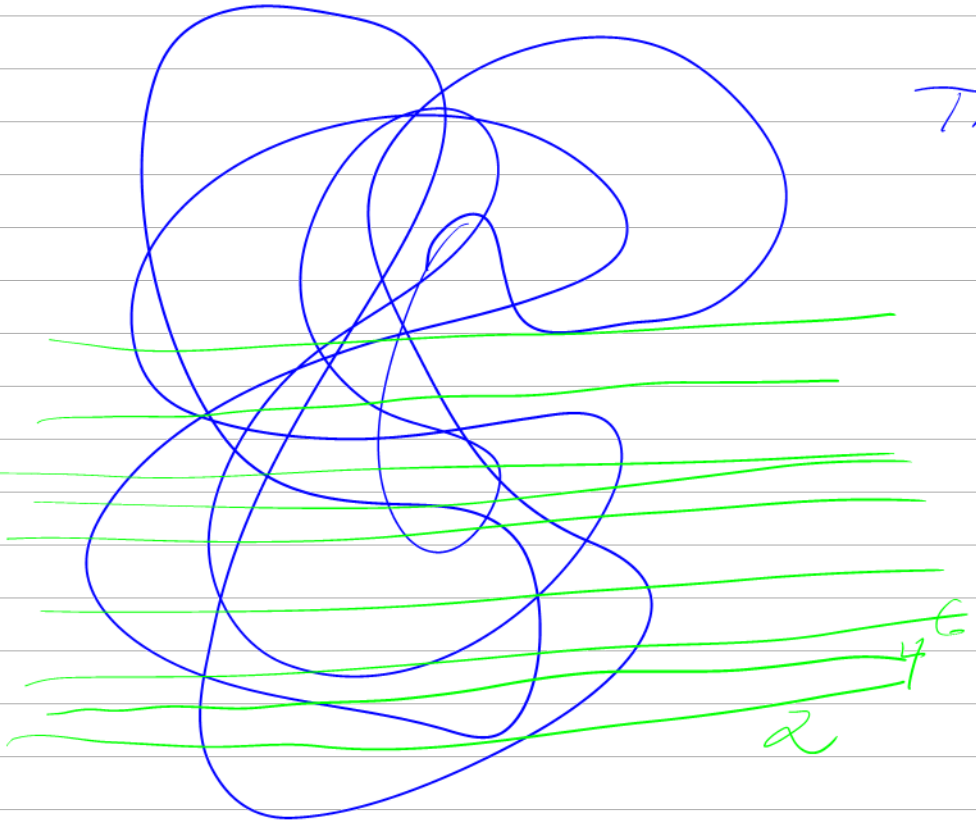
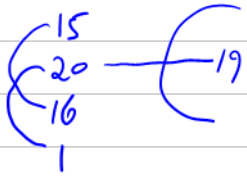
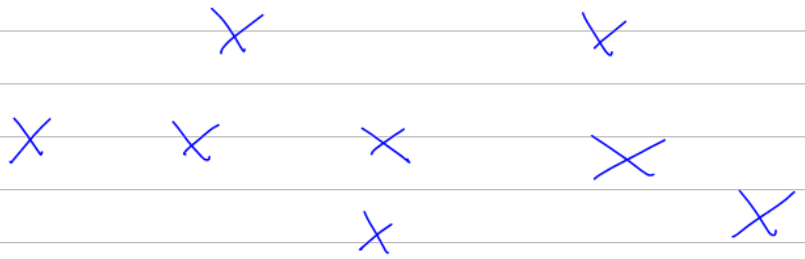
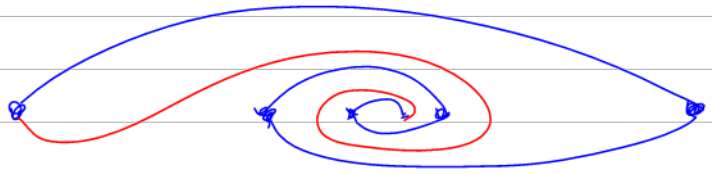
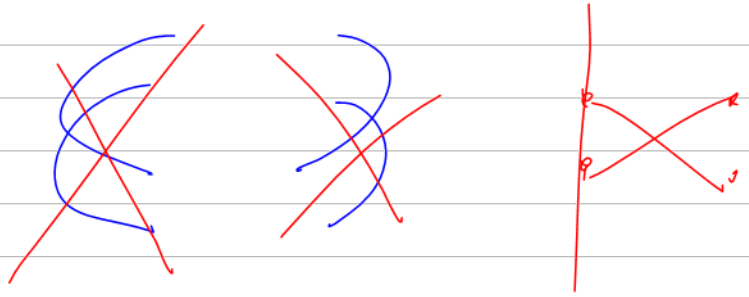


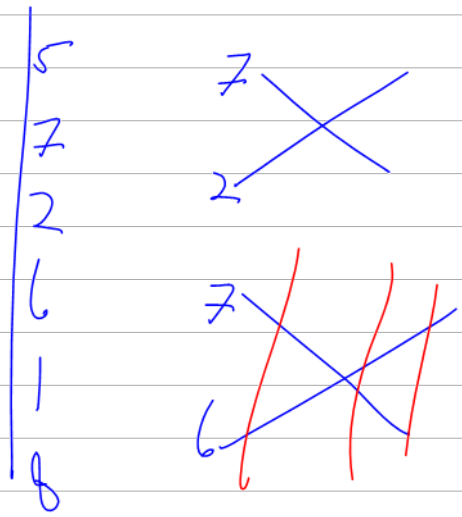
{X[15, 20, 16, 1], X[19, 7, 20, 6], X[5, 14, 6, 15], X[7, 19, 8, 18], X[17, 9, 18, 8], X[9, 17, 10, 16], X[1, 4, 2, 5], X[13, 10, 14, 11], X[11, 2, 12, 3], X[3, 12, 4, 13]}

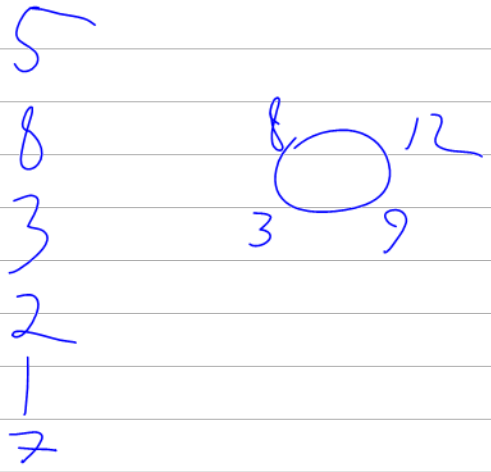




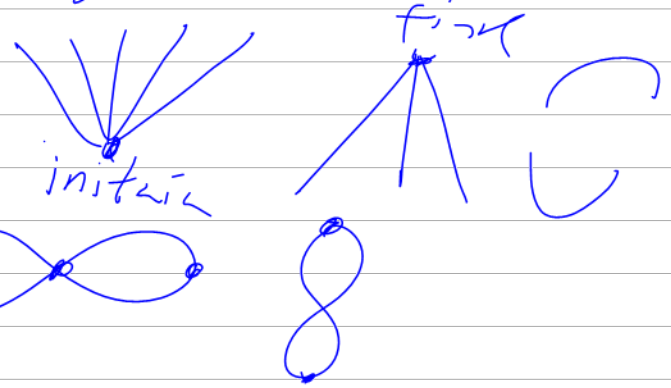


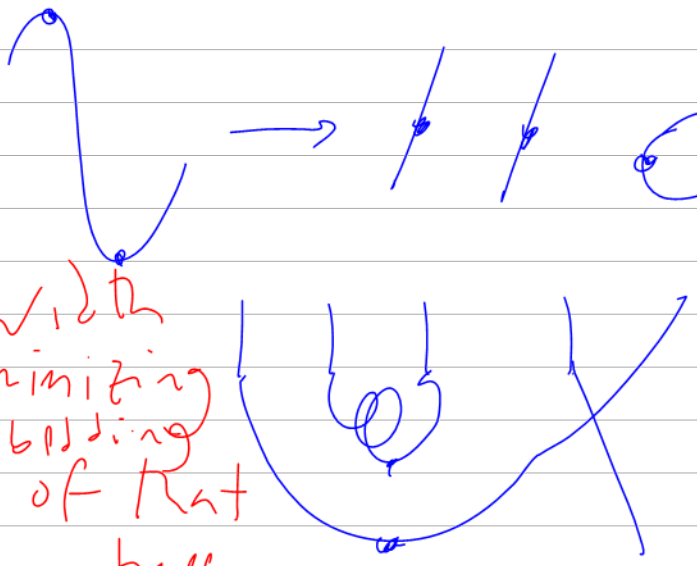




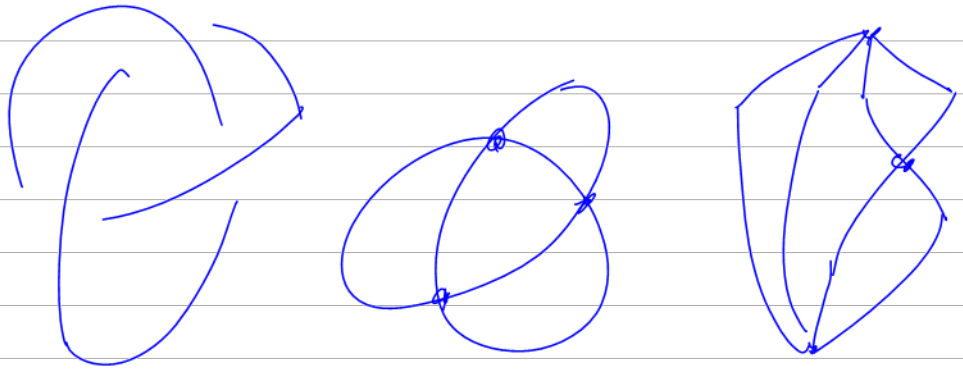


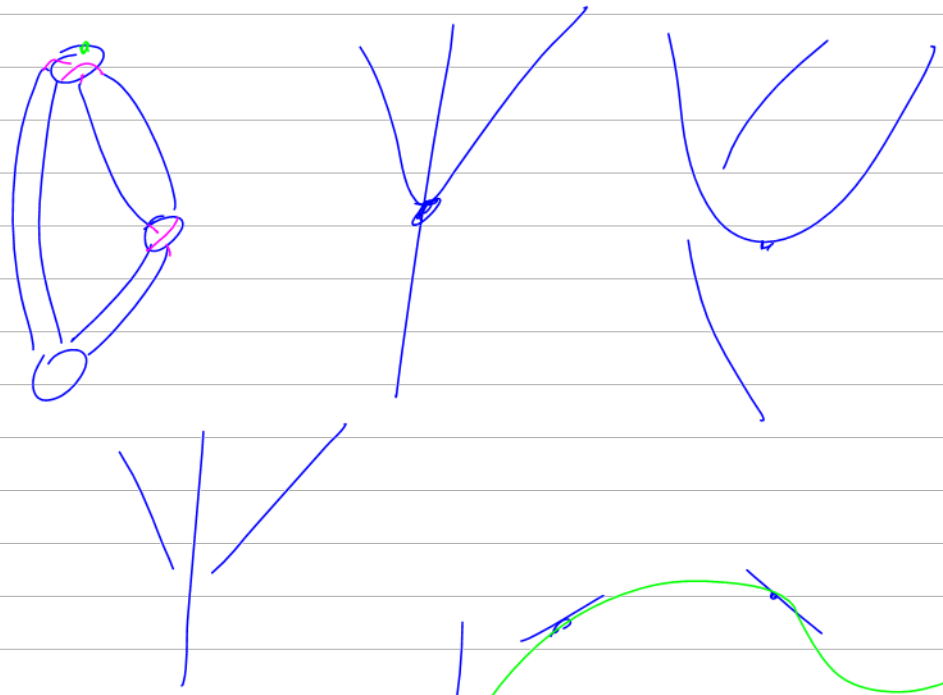
Thm Every planar graph can be embedded sans



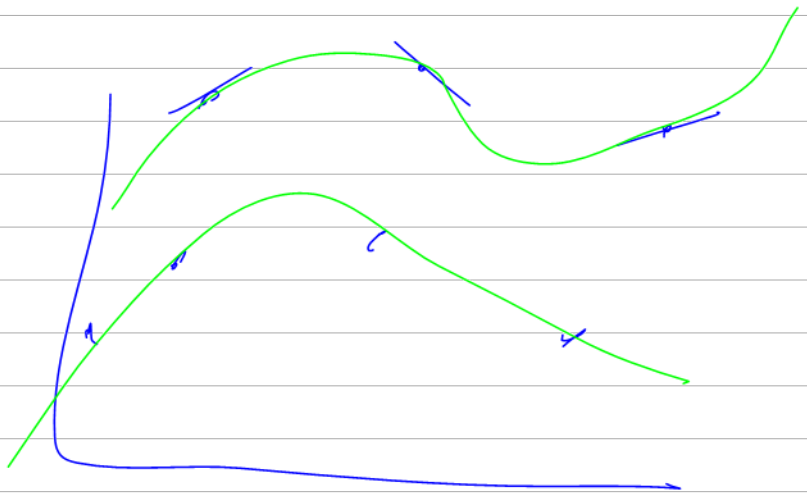


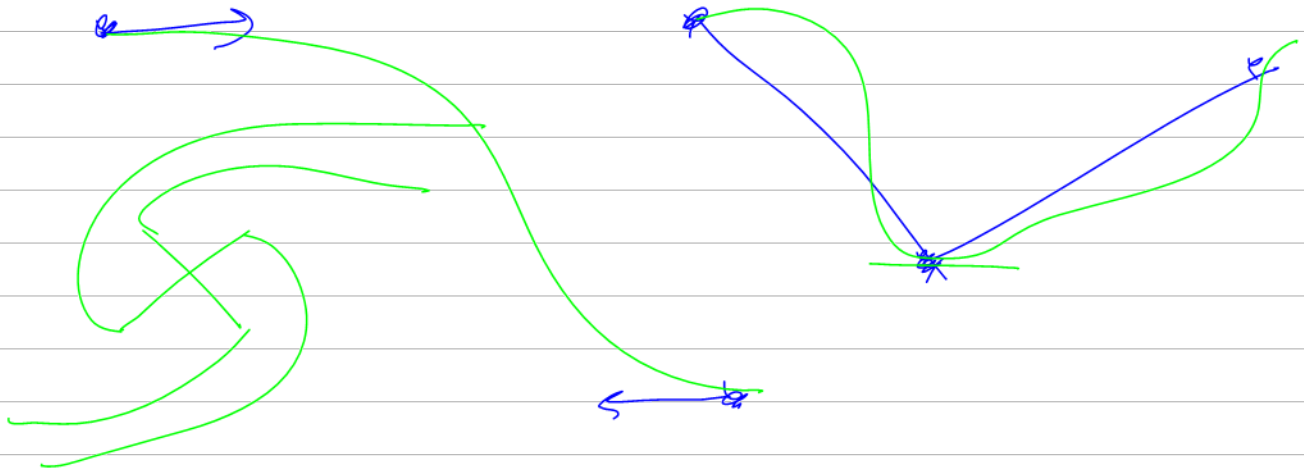
tw/th minimizing embedding is of flat type.



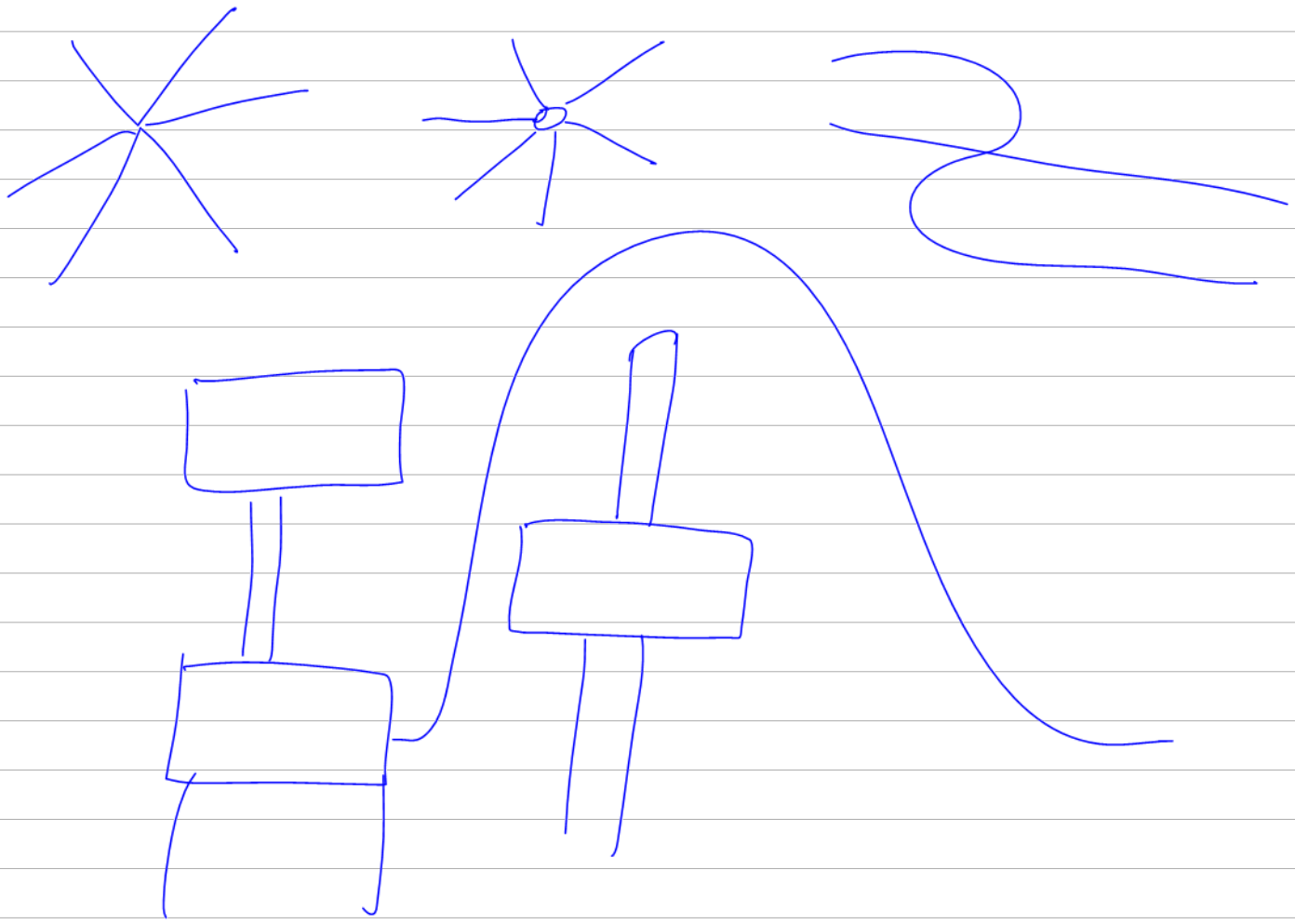


Bezier

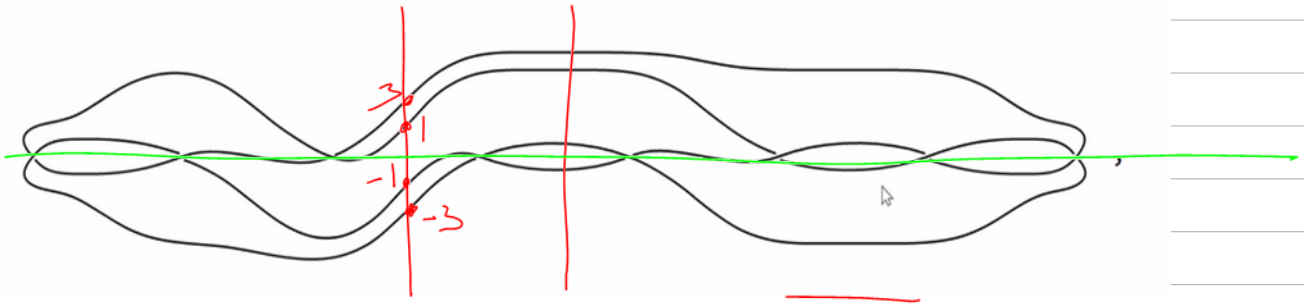




Planar separator theorem



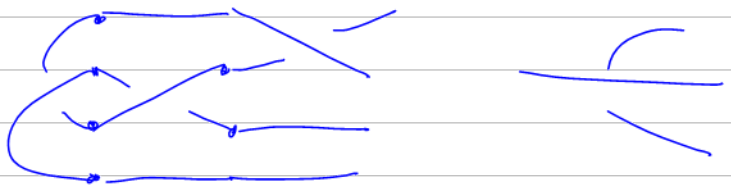
, Knot[8, 6] →

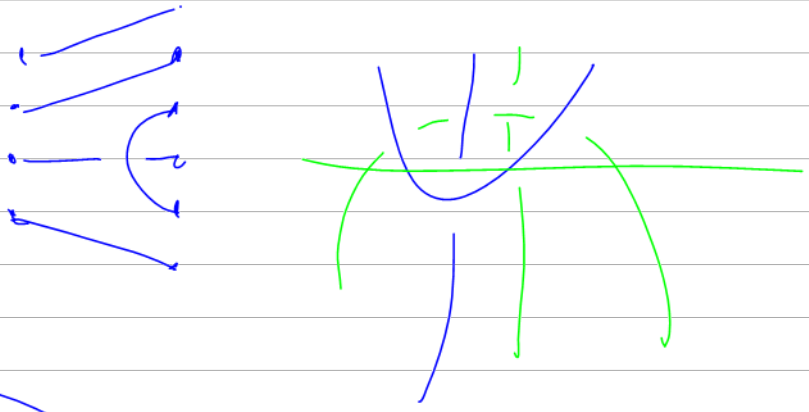


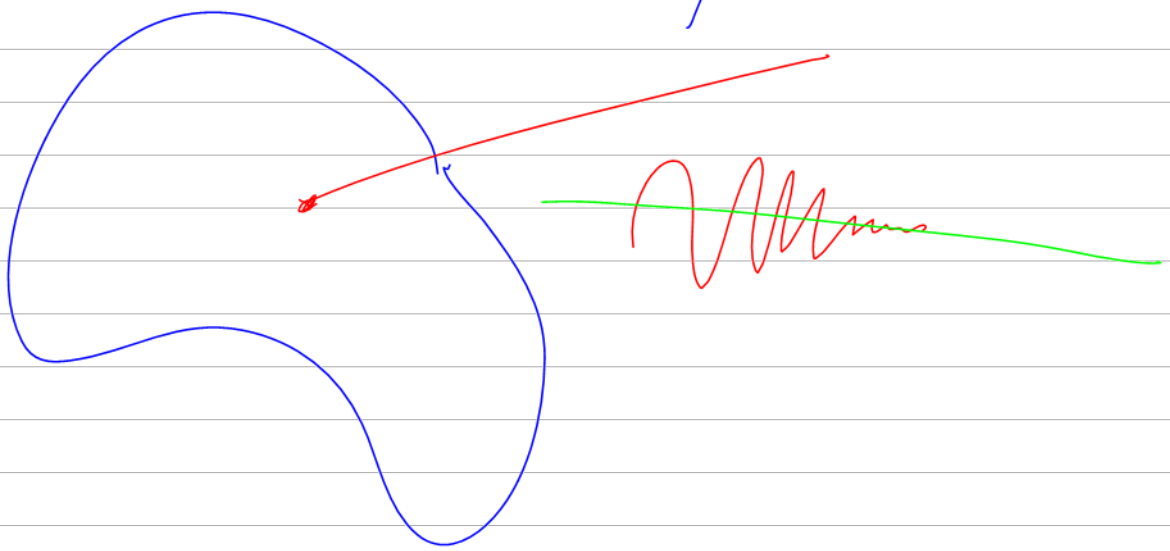
-1 1

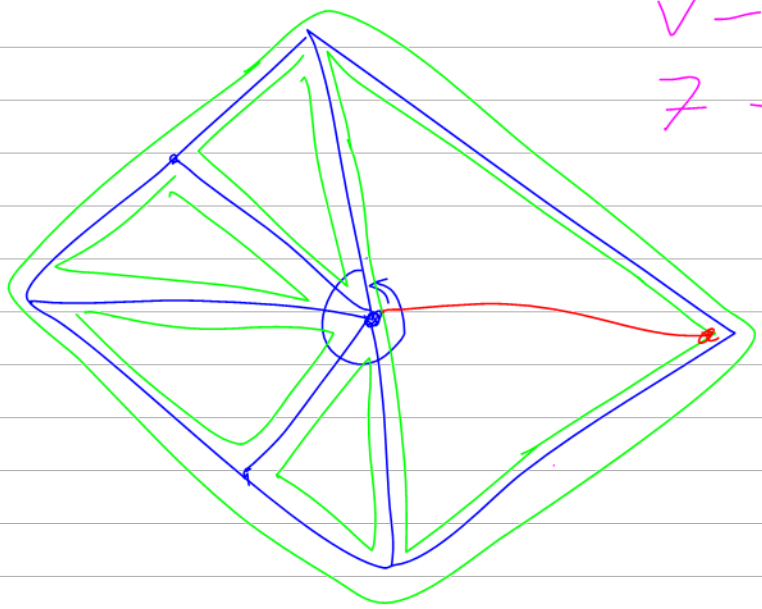
-3 -1 1 3

-5 -3 -1 1 3 5



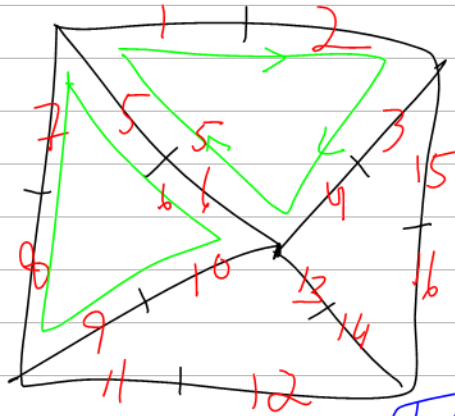






$V - E + F = 2$

$7 - 11 + 6 = 2$



$\sigma : (12)(34)(57)(78)(9\,10)(11,12)(15,16)(13,14)$

$\tau : (2\,3\,15)(1\,7\,5)(4\,6\,10\,13)\ldots$

$\sigma\tau = \phi : (2\,4\,5)(6\,9\,7)\ldots$

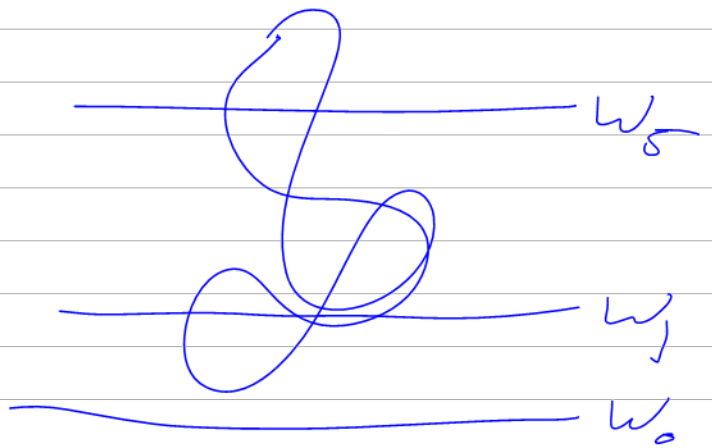
s.t. $c(\tau) - c(\sigma) + c(\sigma\cdot\tau) = 2$

$\sigma^2 = I$, $\sigma \neq 1$

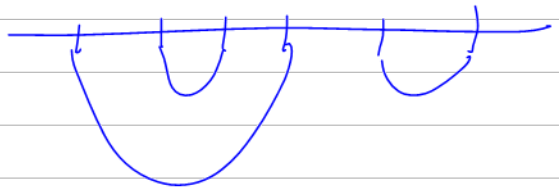
W_k : the width after k swings

Quantities to optimize:

1. $\max(W_k)$



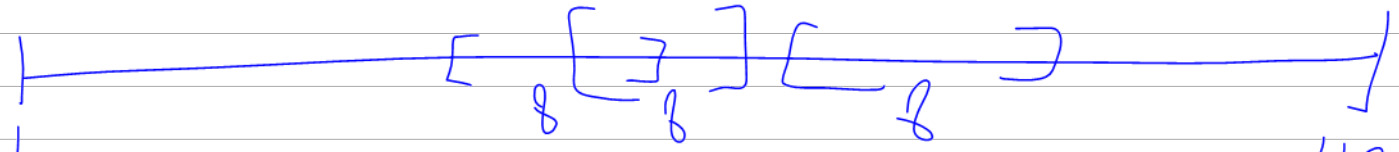
2. Jones: $\sum_{k=1}^{n} k W C_{V_k/2}$ (Catalan)



3. S_2: $\sum_{k=1}^{n} k^2 W_k^4$

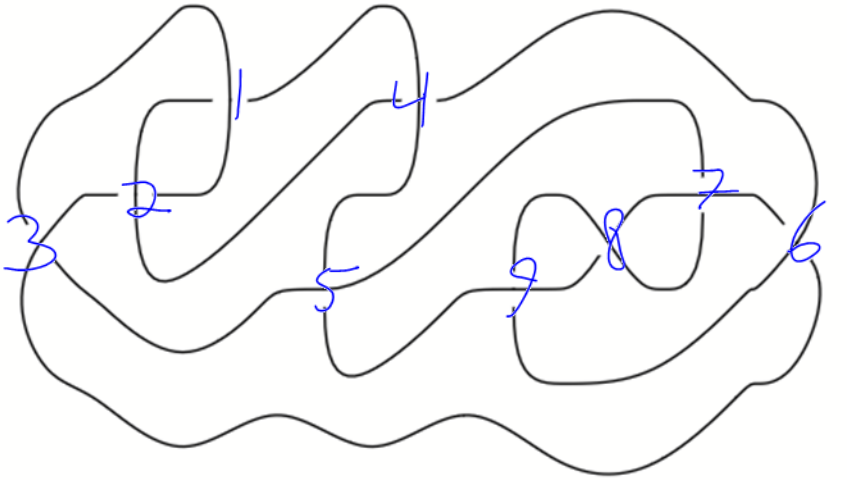
12 12 10 10 10

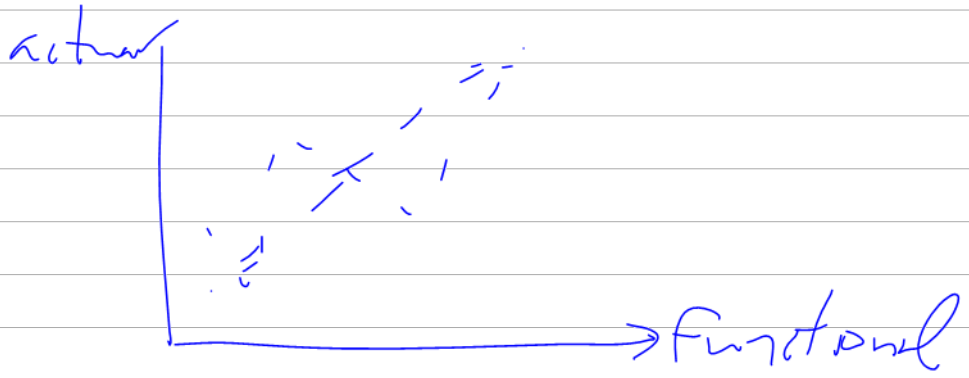
10 10 10 12 12



$8! = 40{,}000$

$7! = 5000$


1
2
3
4
5
6
7
8
9


actual
functional