



9nXaX | Zk^ \ dc FZgb j iVi ^dch #Vc VcVanh^h d[b Veh VcY hi Vi ^hi ^Xh ^e i] Z



<^Y | iVi YVi VWhZ tVgmKQ * &(\$, (+ ' Z

7h] aZ ^] 7YVb h" @Zcc fZg; aZg DVY V BV[gc f g"; gC C XD X] da/h" @hh XV i ig^ Zg 7b VcYV L ZaX]

Ddgj : V diVi iViZ J cKZgh^n C ^hdj gL ZhiZgc i iViZ J cKZgh^n 9dcXdg^ V J cKZgh^n L ^ab ZiiZ J cKZgh^n Ddgj : V diVi iViZ J cKZgh^n; VhiZgc Z^cd^h J cKZgh^n

E kZg^Zl

5p%o., wB^ Y^mH > %%%L > B%o^Bp, N^pL t s-H3 > H > A>%o Y%on 3>nL > p", T-H s-%o-BL%o N^pL ~ %B 3d Cs-n /pL~, } L~, ~ ~ 3/ , ~ ..L^} Y"> , ~-%o



/^, BL%o^, ^ 4 n 6, EL "L%LH > B } As-> , ~-%o N24 As^B CL } >..%o ~ ..L^ } Y"> , ~-%o S_n >-H 400 ..L^} Y"> , ~-%o %oB^L Y-H s- t s-H3">

2L%o %o

- : L N Y-HB, Y~"L^ L^> } ..L%L^ "pL%o B } As-> , ~-%o > AY" 202 B>%o%o
- : L ... , CLH30 -LE s-%o-BL%o N^ 3/
- : L ... , CLH3 -LE s-"L^L%o-n L^Y^H^s^s^AY , ~ "L%o %o ~ ..L^} Y"> , ~-%o %oB%o
- : L B, ~wB^Y^LH3 >Hs , ~> s-%o-BL%o N^ 3/ , ~ ..L^} Y"> , ~-%o

6y -y y^ E d^ y

&L" S AL >%o >-H L" f(q) AL >... %-, } s &L" g AL >-LL } L~, N, ^HL^ m >B -n, ~ S As^B CL % 5pL- EL %o^ "pL" ^s.L (S, f(q), g) L^ps^s^%pL B^B^B^%Cs-n..pL~, } L~, ~ ^ 3/ \$N^ > d, f(q) B, Y~" %pL ~Y} AL^, NT^LH... s-%o NS Y-HL^ g^d E pL^L = e^m.

I] ZdgZb

: pL- f(q) %pL) >p, ~s~ %o %oB E p sBp } L>-%o
f(q) = \prod_{s=1}^n (1 + q^s) = (1 + q)(1 + q^2) \cdots (1 + q + \cdots + q^{n-1}),

>-H g %o^%y } >...E p, p>%o~ , ^As , N%BL d, E s p 1 d n, "pL~ "pL "s.L (S_n, f(q), g) L^ps^s^%o 3/

+ E

) >p, ~s~ %o %oB^L^ps^s^ ~ 3/ Y~HL^ "LCL%o B } ..L } L~" ^, "> , ~ >-H", ^B... } , ~ } >..%o

: Z c^d^c%; nVb eaZh

&L" = 1 2 \cdots n, 5pL- EL p >CL "pL N , E s-n } >..%o

2LCL%o	^, } ..L } L~"	2, "> , ~
Rev()_i = n-i+1	Comp()_i = (n - i + 1)	Rot()_i = i+1 mod n
Rev(1432) = 3241	Comp(1432) = 4123	Rot(1432) = 4321

6y 6y E

5pL 5 ^B... } , , ~, N S_n %o
TPro() = n_1 n_{-1,n} \cdots 1,2()

E pL^L
ij = \binom{(i,j)}{i,j} \frac{\\$V^{-1}(i) - ^{-1}(j)}{> 1}, "pL^E %o

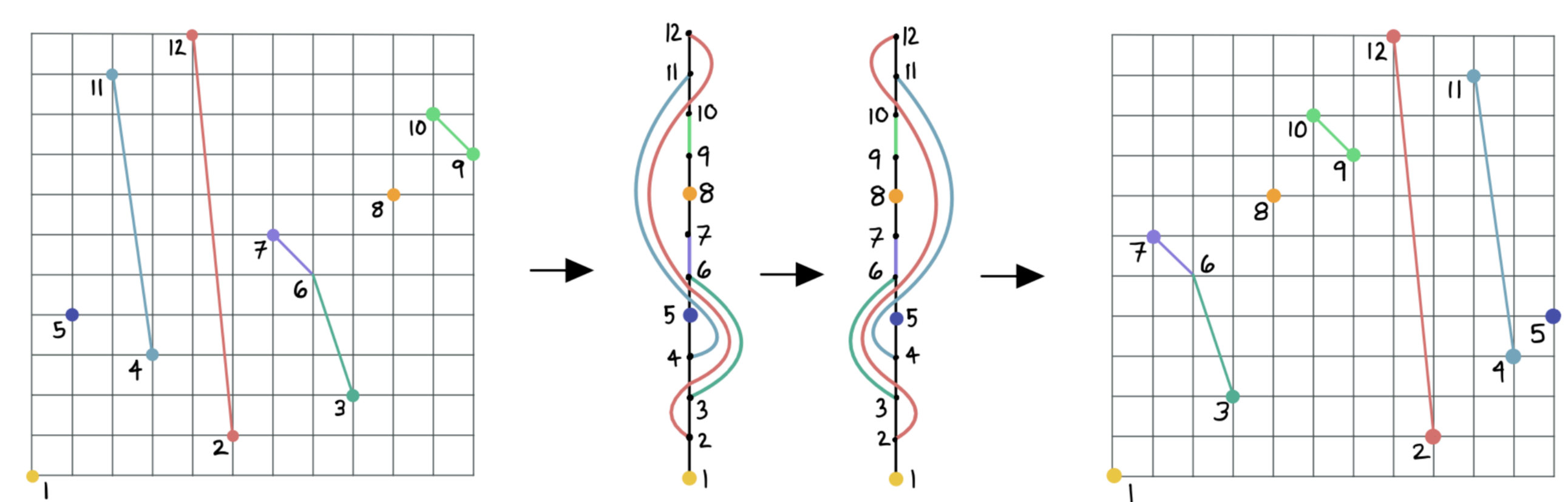
I] ZdgZb

^, ~n E s p "pL 19) >p, ~s~ %o %oB%o ~ t s-H3"> "pL ^LCL^%o >-HB } ..L } L~" } >..%o ps^s^ ~ 3/ E s p 29 , "pL^ %o %oB%o-BYHs-n

- 5pL ~Y} AL^, N%o s-BL%o^snp" , LI } >as >
- 5pL ~Y} AL^, NB^BL%o "pL B^BL HLB } ... %o, ~
- 5pL ~Y} AL^, NLCL~ s-CL^%o~%o
- 5pL ~Y} AL^, NY...H, E ~ ^Y~%o
- 5pL ~Y} AL^, NB^B^B^ % %p ...L ^>~%o %o, ~%o LLHLH" , %o" >..L^} Y"> , ~
- 5pL ~Y} AL^, N, BB^L~BL%o N^pL ..>^ML^ 123 , ^, N^pL ..>^ML^ ~ 132,
- 5pL ~Y} AL^, Ns-CL^%o~%o N^H%o-BL >" } , %o3 E pL- n %o HH "" %o%o > B, ~wB^Y^L "p>" "p^p, H%BL ^ nLCL~

: Z c^d^c

Z^CL~>..L^} Y"> , ~ = 1 2 \cdots n, ... " >...s- " >AL LH i > (i, i) N^L >Bp 1 i n. t, ^L >Bp HLB^L>%on ^Y~ E s p } , ^L "p>~ , ~L L L } L~" s- s H^>E > s-L AL^EL L~L >Bp ..>S, N>HwBL~" ~Y} AL^%s sps- "pL HLB^L>%on ^Y~ * , E } , CL > "pL ... s-%o" , AL >sn-LHCL^ B> % B, ~CL^ ~n "pL s-L%B ~-LB ~n~Y} AL^%s- , ~, ~ B^, %on >B%o-HyLL..s-n > ~Y} AL^%o~ "pL B ^L B^ %BL , N^pL >B%o5pL s-CL^" &nY^L^L pLL... } >... , BLLH^%CL^ B> % ^Lj LB ~n "p^%o B^Hs^n^> >-H^LB, ~%oYB ~n "pL ..L^} Y"> , ~ A^>... %s-n "pL A>B^E >H } >..



t snY^L 5pL s-CL^" &nY^L^L pL... } >...%o sH, "pL ..L^} Y"> , ~ 1 5 11 4 12 2 7 6 3 8 10 9 1^L%o ~n s- "pL ..L^} Y"> , ~ 1 7 6 3 8 10 9 12 2 11 4 5.

BZb b V

5pL ~Y} AL^, NT^LH... s-%o Y~HL^ "pL >B , ~, N^pL s-CL^" &nY^L^L pLL... } >... , ~ S_n %o 2^{n-1}.

I] ZdgZb

13 %o %oB%o ps^s^ "pL ~ 3/ E s p ^L%dB" , "pL s-CL^" &nY^L^L pLL... } >... s- B^YHs-n

- 5pL ~Y} AL^, NB^, %on%o pL ~Y} AL^, N-L%o-n%o>-H "pL ~Y} AL^, N, BB^L~BL%o N^pL ..>^ML^ ~ 13 - 2.
- 5pL ~Y} AL^, N } sH... s-%o NHLB^L>%on %A%ot^Y^L~BL%o N L~n^p 3, >-H "pL ~Y} AL^, N^H%o-B" ... %o, ~%o N^pL ..>^ML^ ~ L^ML^ 3 s-, BB^L~BL%o N132.
- 5pL ~Y} AL^, Ns-HBL%o^p>" >L LI " , ^snp" } >as > , ^ ^snp" , LI } s-s >
- 5pL ~Y} AL^, N, BB^L~BL%o N^pL ..>^ML^ ~ 12 - 3.
- ^, ~wB^Y^L 5pL ~Y} AL^, NE L>y L^BLLH>~BL%o^p>" >L >%o } sH ... s-%o N>HLB^L>%on %A%ot^Y^L~BL , N L~n^p 3 L^ps^s^%o 3/ E s p ^L%dB" , "pL ^, ^LL } >...

: Z c^d^c

&L" S_n >-H L" / AL "pL %o > L%o H^s-"LnL^ %Bp "p>" . (i, i+1) >-H p>CL "pL %o } L %o , N^snp" , LI } s-s > \$N%oBp >- / L^s%o%o 5pL^ L^>-HL^%o~ %LALHL } >...%o

$$\binom{(i, i+1)}{i, i+1} = \frac{\$N\%oBp >- / L^s\%o\%o}{, "pL^E %o}$$

- Let $\sigma = 2 1 3 4 7 5 6$.
- If $i=1$, $\sigma.(12) = 1 2 3 4 7 5 6$. ✗
 - If $i=3$, $\sigma.(34) = 2 1 4 3 7 5 6$. ✗
 - If $i=5$, $\sigma.(56) = 2 1 3 4 5 7 6$. ✓
- ||
K(σ)

: Z c^d^c

~ s-CL^%o~ (i, j) , N S_n %o%o^H" , AL s-CL%o L \$N%o %o %d%o (i) > (j) > i.

I] ZdgZb

5pL %o , N..L^} Y"> , ~%o Nn" , nL "pL^ E s p "pL^ L^>-HL^%o~ %LALHL } >..L^ ps^s^%o pL ~ 3/ E s p "pL N , E s-n "E, %o %oB%o

- 5pL ~Y} AL^, Ns-HBL%o^p>" >L LI " , ^snp" } >as > , ^ ^snp" , LI } s-s >
- 5pL ~Y} AL^, Ns-CL%o L s-CL^%o~%o

7X^ cdl aZY^b Zcih

5p%o., wB^ E >%o.> > %o... ^" LH A^ * 3t n^>- /) 3 >-H 3s , ~%o t, Y~H> , ~ n\$) / 53) 5pL >Y^p, ^%E, Y^H >%o sL " , "p>-y "pL ~-%o^Y^L N^ ^ , } ..Y"> , ~ >-H fl^L^s^ L^> 2L%o^Bp s-) >"pL } > B%o "pL^ , >A, ^>L " fl2) ...; n^>}

HZ[ZgZcXZh%HZhdj gXZh

- "~L^L%LH 5p%o%o s-y" , "pL E , ^y^pLL" E s p "pL 3>nL) >p B HL , ~ , ~ >B
- /L^L^L^>-HL^%o~ >-H L^pL^Z^>BpLE %LALHL
^~s-CL^Y , ~, ~HL^>-nL } L~%o.L%oCs-n L^BLH>-BL%o-H^snp" , LI } s-s >
>: \$...L...s^>: \$
- 3Y^CL^ , ^LL
^ , %on%o-H>sn- } L~%o N..L^} Y"> , ~%o
^H>-BL%o^...sH } >pL } > B%o
- ^, s- / L^>-
5 ^B... } , , ~
/ , BLLHs-n%o N^pL^ } L^sB>-) >pL } > B> 3 BL^Y
- \$L~>-sL^flHL^ * >Hs &NL-s L fl^s-) B^ sBp. >%sL%oB> 3^sL^ >-H^ } >-H>: L Bp
Z , } ,) L^%o~..L^} Y"> , ~%o^ >-> %o N } >..%o-H%o %oB%o "pL T-H%o^ H^>A>%o
) >pL } > B%o N^ , } ..Y"> , ~
- * >p>- 2L^Hs-n
* , ~B^, %on >B^Hs^n^> %o-HB>, ~sB> wS- L..L%o^> , ~%o
3") \$ Y~> , ~ / \$BL^L } >pL } > B%o
- 9sB^ 2Ls-L^ / L~%o^>^ , ~ >-H / L~%o pSL
5pL B^B^B^%Cs-n..pL~, } L~, ~
\$ Y~> , N^ , } As>, ^s 5pL ^Y 3L^%o