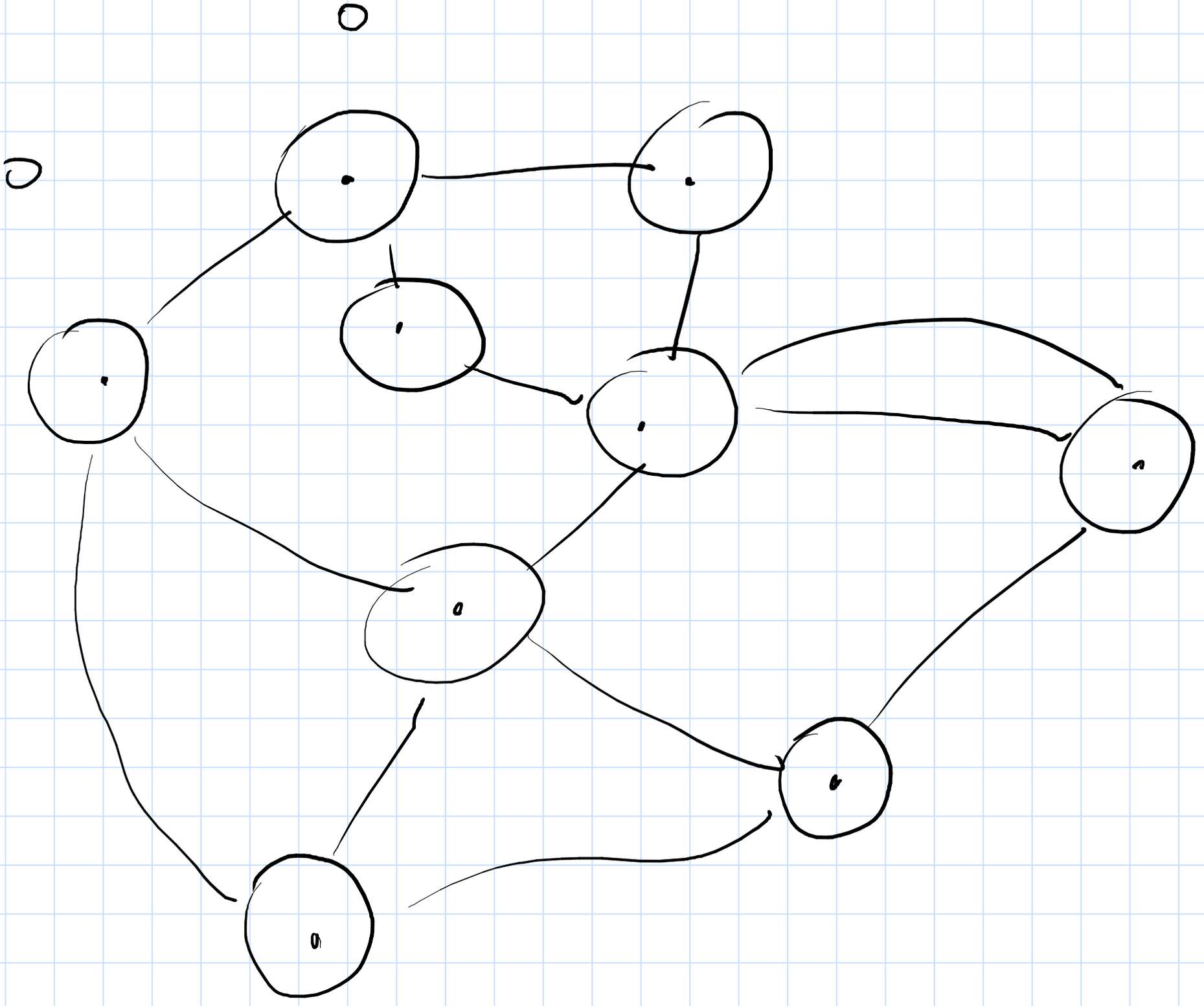
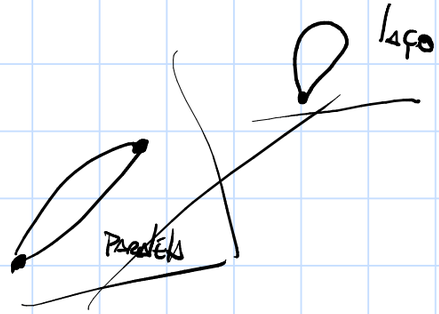
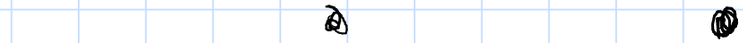


GRAFOS (SIMPLES)

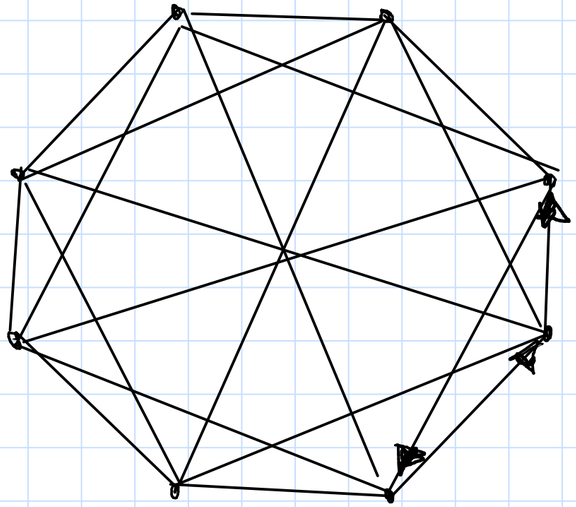
MULTIGRAFOS

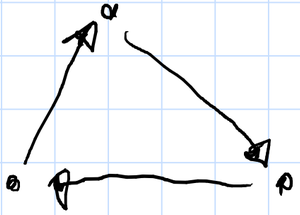


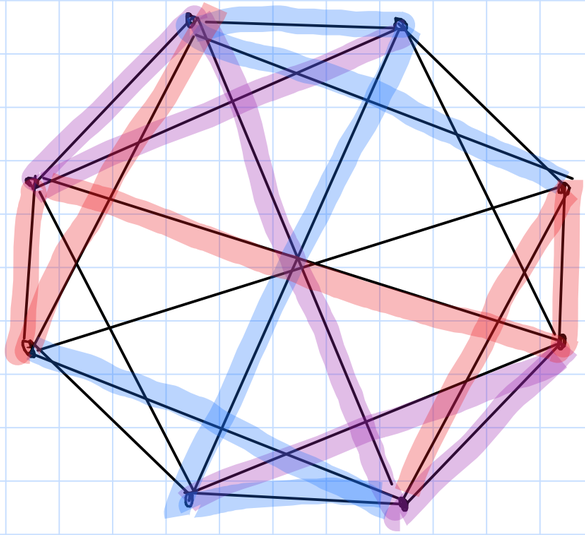


K_6 COMPLETO

Z^m ← nº DE ARESTAS

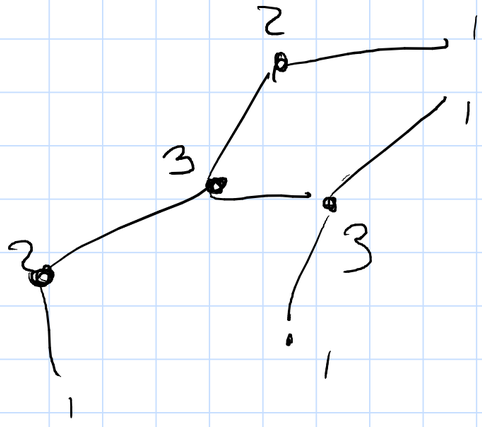




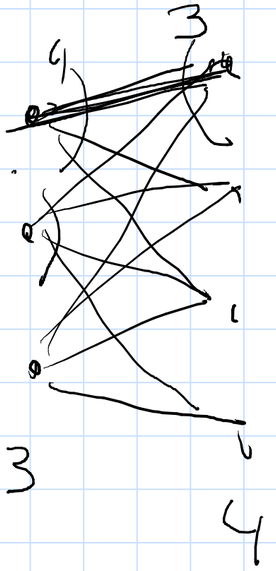


G É LOCALMENTE IRREGULAR

CONJECTURA: 3 CORES



BIPARTIDO COMPLETO



CONJ.: $\chi'_{IRR}(G) \leq 3$

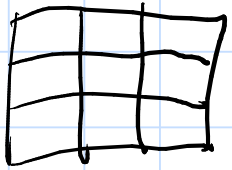
$=$

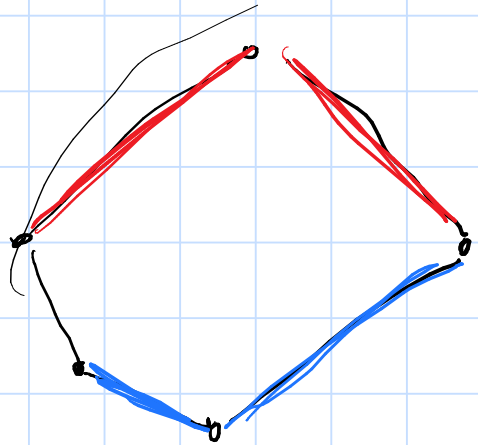
MENOR # CORES EM UMA COLORAÇÃO LOC. IRREG

$C \leq 3$

$f : E(G) \to [1, \ldots, c]$

G_1





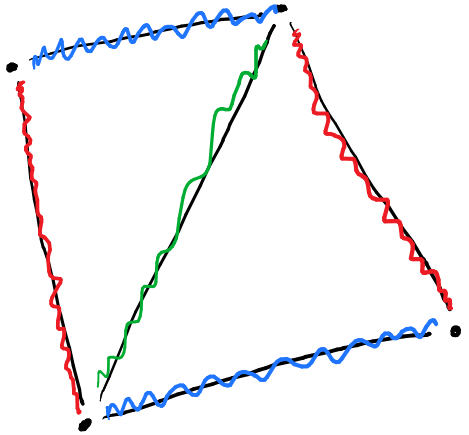
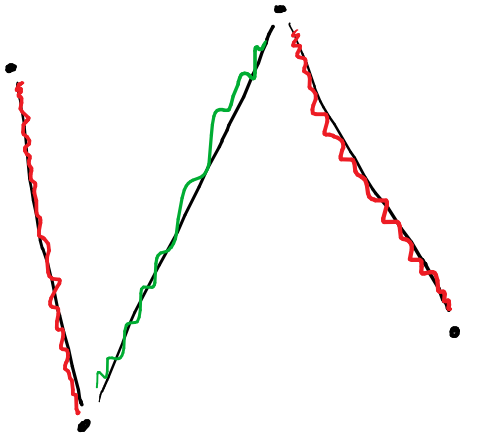
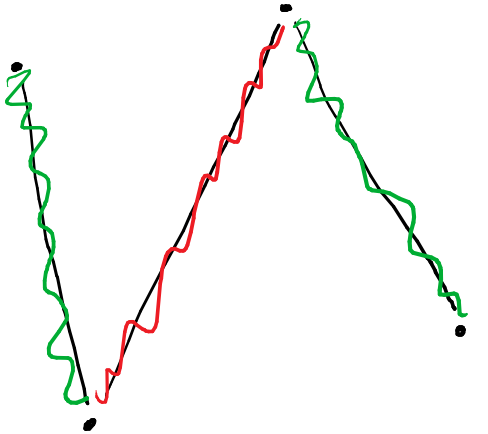
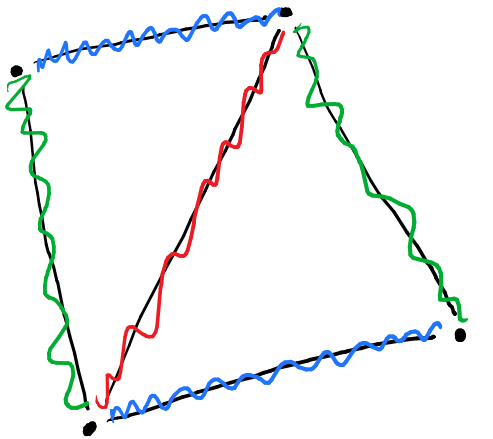
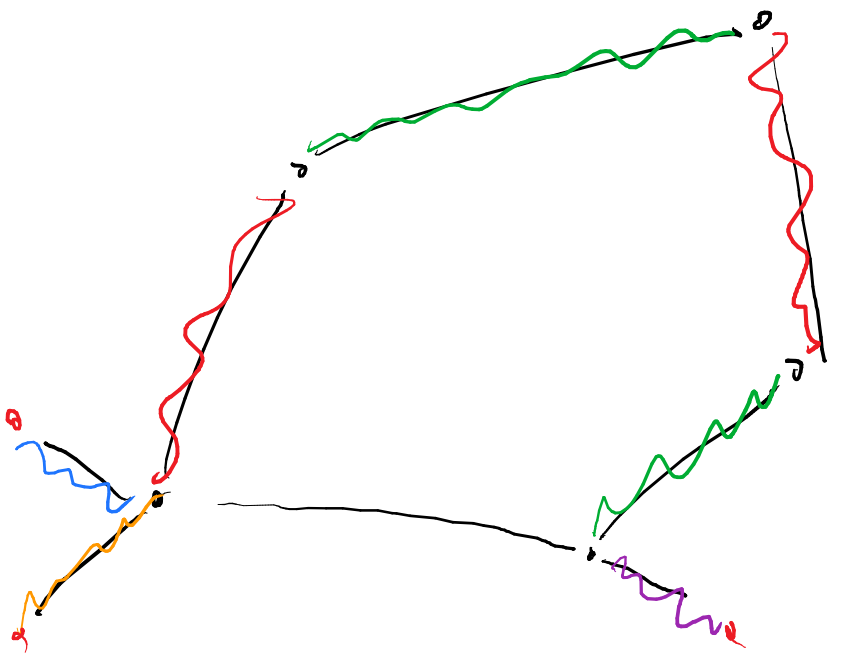
2 x 1

$$D(G, C_3^{\square}) \leq 2^{\left\lceil \frac{n^2}{4} \right\rceil}$$

$$D(G, C_3^{\square}) = 2^{\left\lfloor \frac{n^2}{4} \right\rfloor}$$

n É Nº DE VÉRTICES DE G

$$\Leftrightarrow D \quad G = K_{\left\lfloor \frac{n}{2} \right\rfloor, \left\lceil \frac{n}{2} \right\rceil}$$

$n-k-1$

0 5 7 3 2 6 1 4

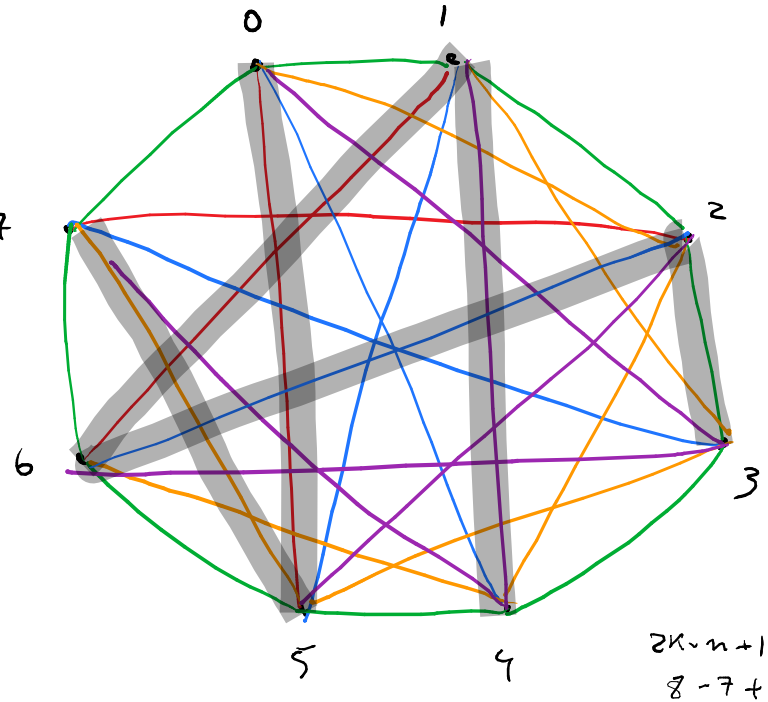
5 2 4 1 4 5 3

6 6

$k=6$: 6 | 6 5 4 3 2 1

$k=5$: 5,4 | 5 4 3 2 1

$k=4$: 4,3,2 | 4,3,2,1



$k=5$

5

4 0 5 1 6 2 7 3

$k=6$

$k=4$

$|2-7+1|$

$2k-n+1$

$8-7+1=2$

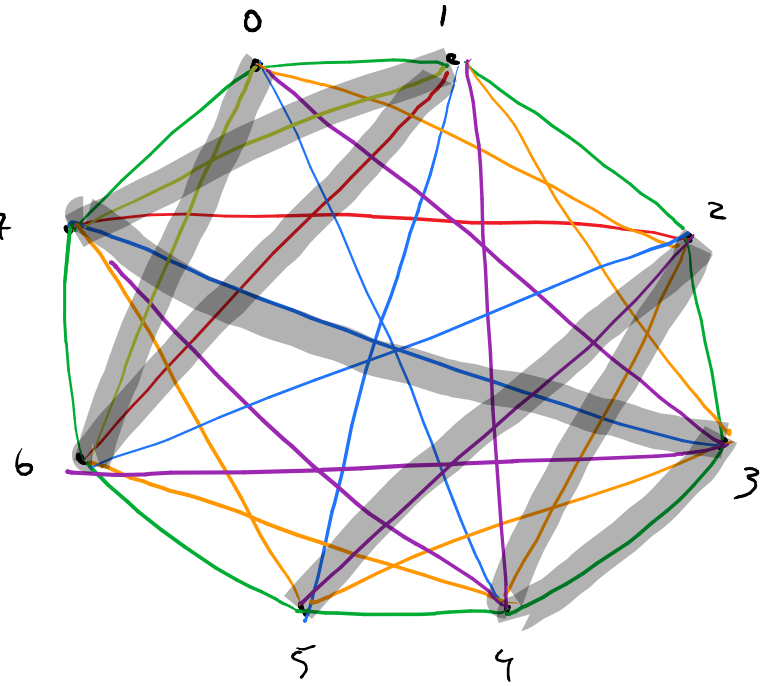
6

$n-k-1$

0 5 7 3 2 6 1 4
5 2 4 1 4 5 3

6 6 7

K=6 : 6 | 5 4 3 2 1
K=5 : 5,4 | 5 4 3 2 1
K=4 : 4,3,2 | 4,3,2,1



6 1 4 6
0 6 5 1 7

0 1 5 6 7
0 4 1 1

5

0 6 1 7 3 2 4
6 5 6 4 1 2 3

0 3 4 2 5 1 6 9
3 1 2 3 4 5 3

0 6 7 1

0 6 1 7 3 4 2 5
6 5 6 4 1 2 3

0 1

$n-k-1$

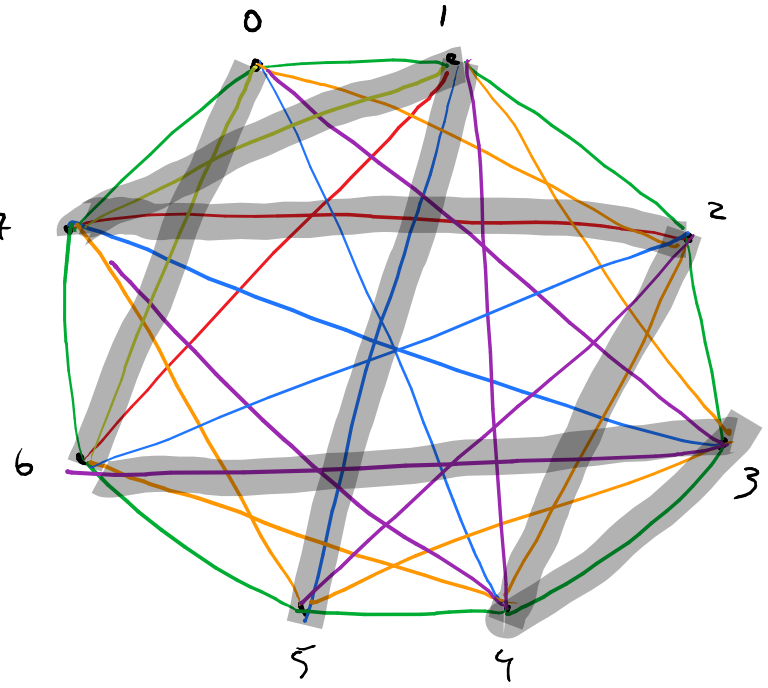
0 5 7 3 2 6 1 4
5 2 4 1 4 5 3

6 6

K=6 : 6 6 5 4 3 2 1

K=5 : 5 4 5 4 3 2 1

K=4 : 4 3 2 | 4 3 2 1



6 1 4 6
0 6 5 1 7

0 1 5 6 7
0 4 1 1

0 6 1 7 3 2 4
6 5 6 4 1 2 3

0 3 4 2 5 1 6 9
3 1 2 3 4 5 3

0 6 7 1

0 6 7 3 4 2 5
6 5 6 4 1 2 3

0 1

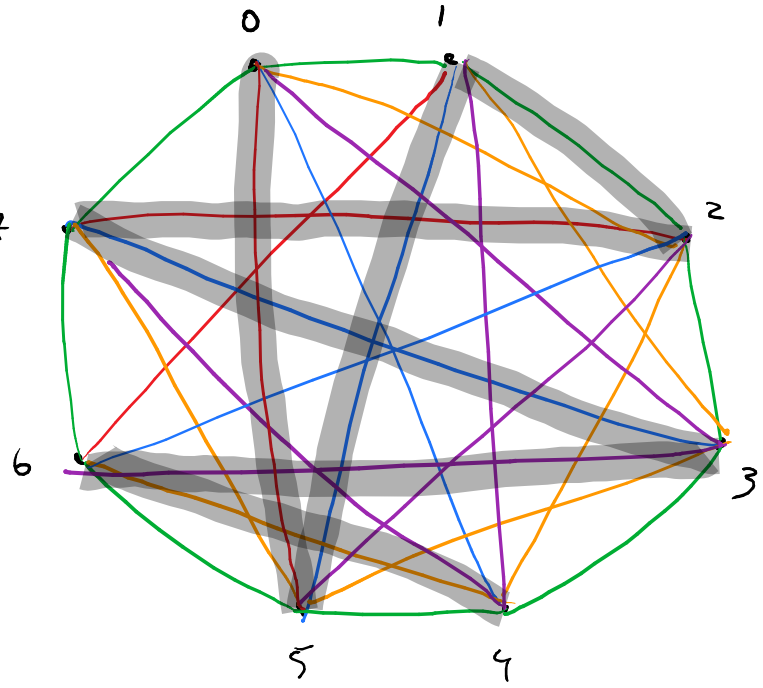
0 6 3 4 2 7 1 5
6 3 1 2 5 6 4

$n-k-1$

0 5 7 3 2 6 1 4
5 2 4 1 4 5 3

6 6

K=6 : 6 | 5 4 3 2 1
K=5 : 5,4 | 5 4 3 2 1
K=4 : 4,3,2 | 4,3,2,1



5

0 6 1 7 3 2 4
6 5 6 4 1 2 3

0 3 4 2 5 1 6 9
3 1 2 3 4 5 3

0 6 7 1

0 6 7 3 4 2 5
6 5 6 4 1 2 3 0 5

0 1 0 4

6 1 4 6
0 6 5 1 7

0 1 5 6 7
0 4 1 1

0 6 3 4 2 7 1 5
6 3 1 2 5 6 4

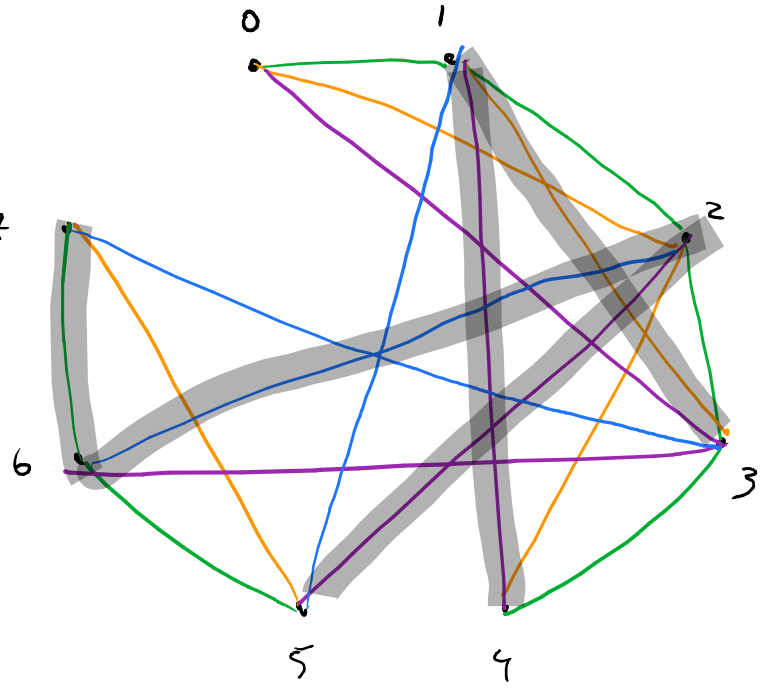
0 5 1 2 7 3 6 4
5 4 1 5 4 3 2

$n-k-1$

0 5 7 3 2 6 1 4
5 2 4 1 4 5 3

6 6 7

K=6 : 6 | 5 4 3 2 1
K=5 : 5,4 | 5 4 3 2 1
K=4 : 4,3,2 | 4,3,2,1



5

0 6 1 7 3 2 4
6 5 6 4 1 2 3

0 3 4 2 5 1 6 9
3 1 2 3 4 5 3

0 6 7 1

0 6 7 3 4 2 5
6 5 6 4 1 2 3

0 5

0 1 0 4

6 1 4 6
0 6 5 1 7

0 1 5 6 7
0 4 1 1

0 6 4 2 7 1 5
6 3 1 2 5 6 4

0 4 1 3 5 2 6 7
4 3 2 2 3 4 1

0 5 1 2 7 3 6 4
5 4 1 5 4 3 2

5445

$K = \frac{n}{2}$

$\Delta \quad n - n + 1$

$2K - n + 1$

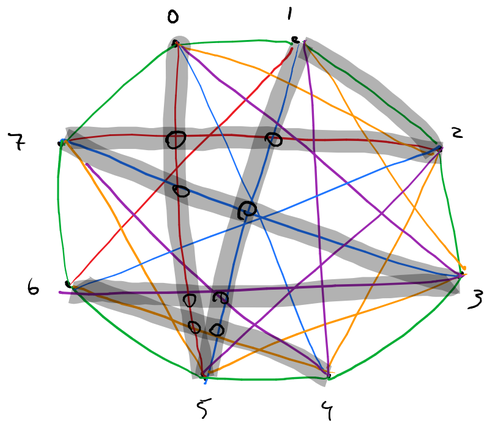
$K = n - 1$

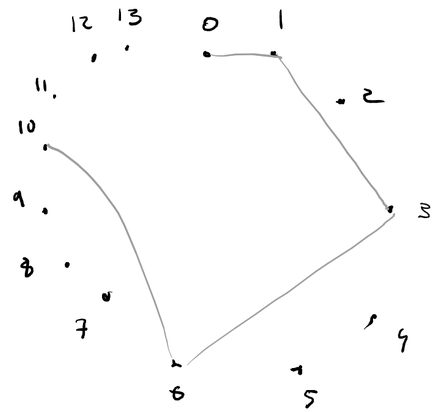
$2(n-1) - n + 1$

$2n - 2 - n + 1$

$n - 1$

① 3 2 4 3 2 4





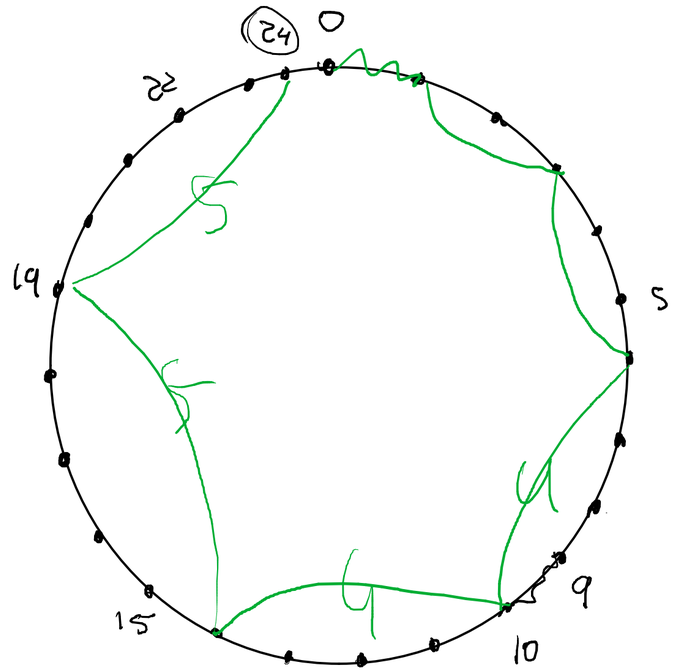
0 5 1 2 7 3 6 4

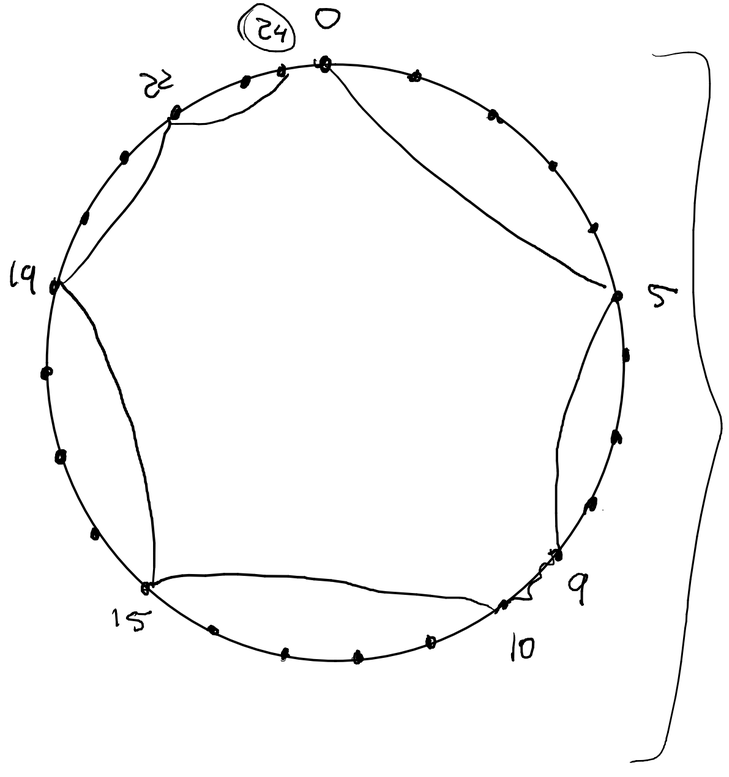
5 4 1 5 4 3 2 ⇝ }

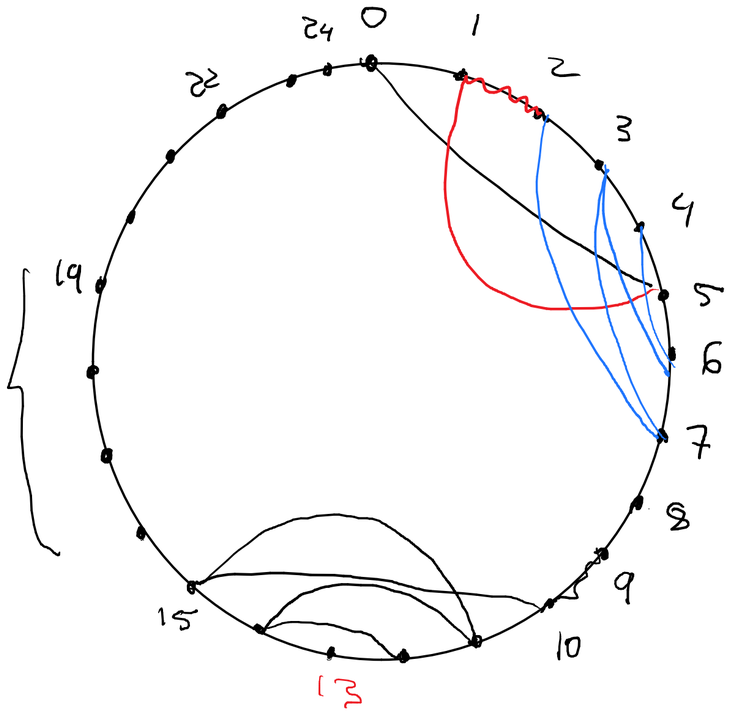
0 5 9 10 15 19 22 24

0 + 1 + 2 + 3 + 4 + 4 + 5 + 5 = 24

0 5 1 2 7 3 6 4







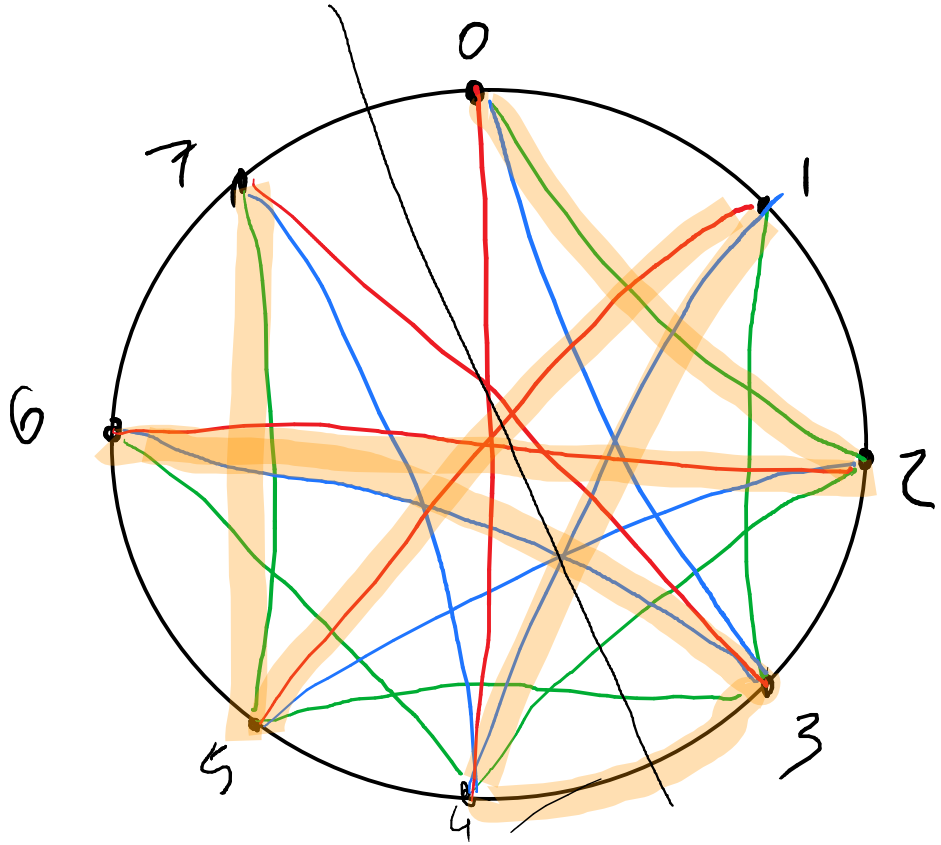
$\frac{n}{2} \leq k < n$

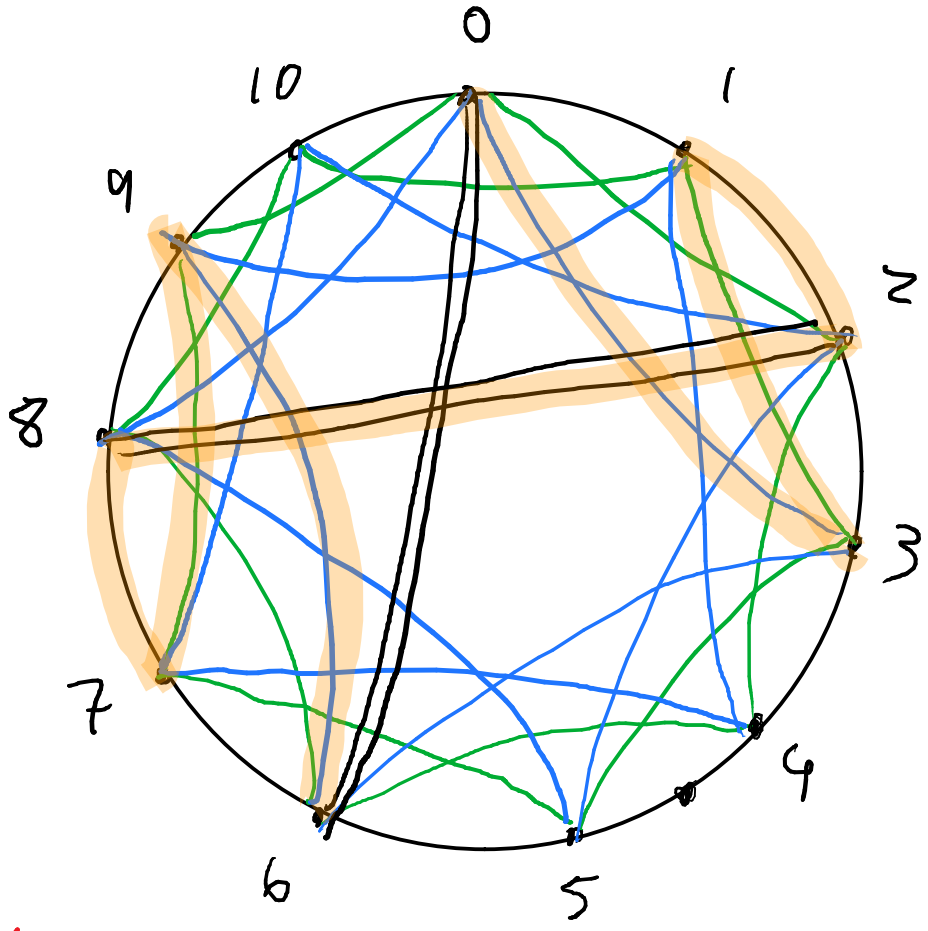
REPETIDOS : $2k - n + 1 \quad \cdots \quad k$

EX: $k=5 \quad n=7 \qquad 4, 5$

$k=6 \quad n=7 \qquad 6$

$k=4 \quad n=7 \qquad 2 \quad \cdots \quad 4$





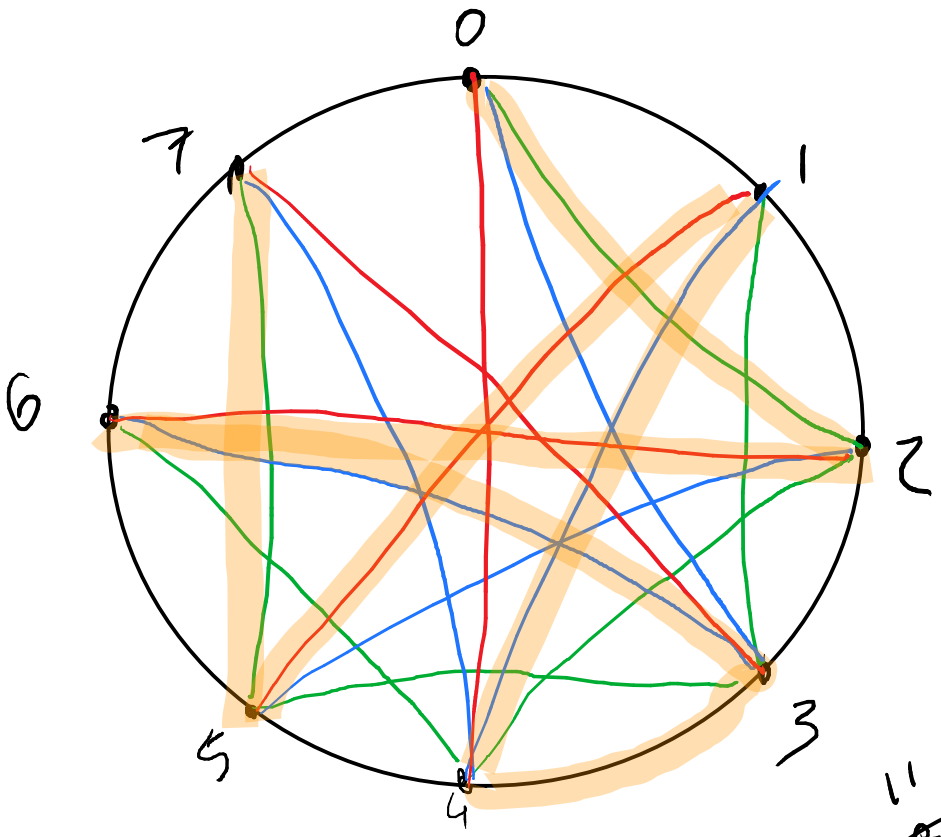
x_0

$7 \; x_1 \; x_2 \; \cdots \; x_7$

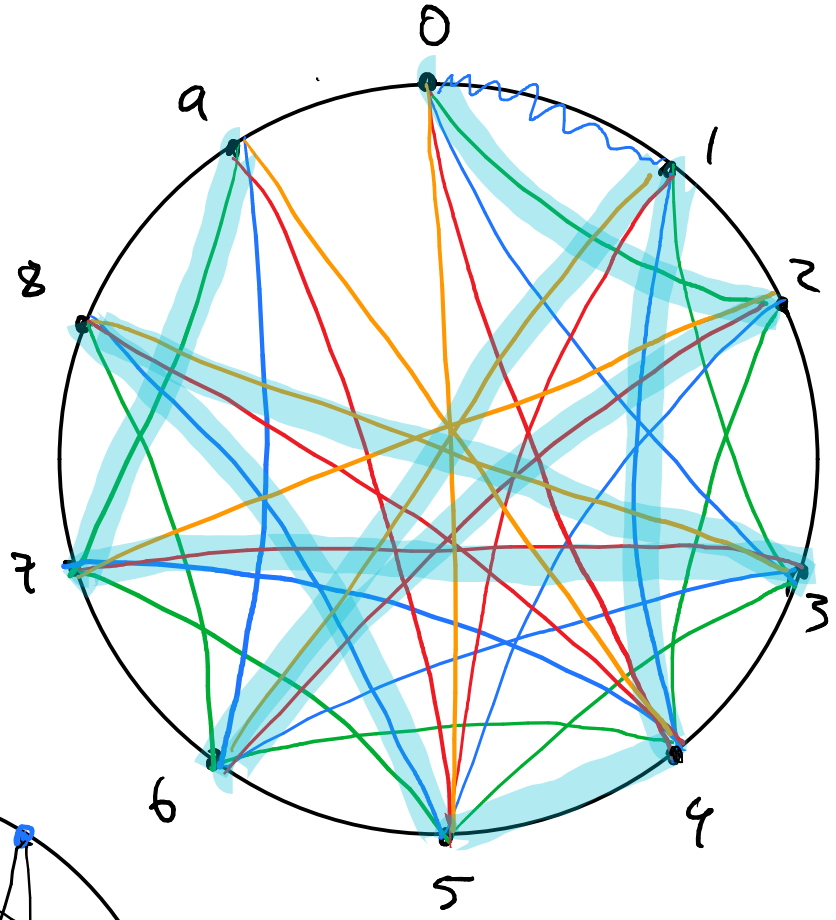
$0 \; 7-x_1 \; 7-x_2 \; \cdots \; 7-x_7$

H-DECOMP. G

$y_i = 7 - x_i$ $\quad D = \{H_1, \ldots, H_k\}$

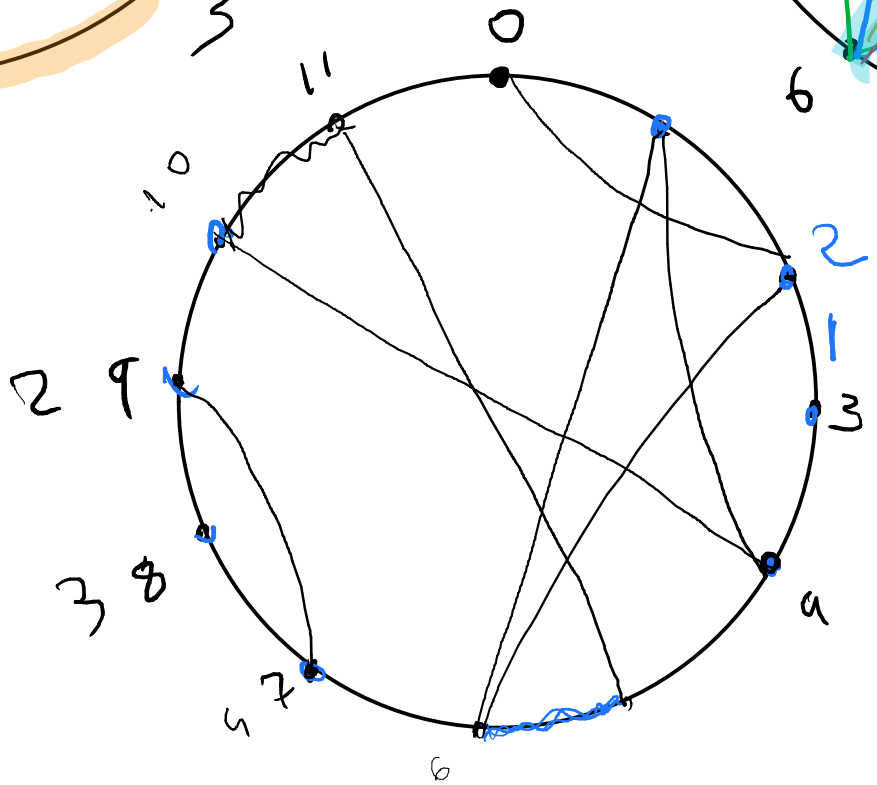


0263
243



026145
2453

65

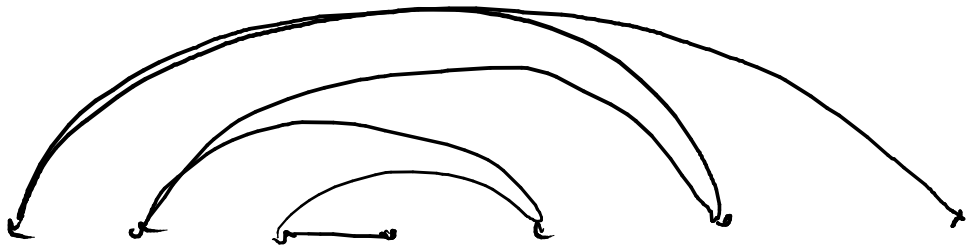


$n = 11 \qquad k = 6$

$2k - n + 1 = 2 \quad \dots \quad 6 = k$

$1 + 2 \cdot \sum_{i=1}^{6} i \qquad 1 + 2 \cdot 20 = 41$

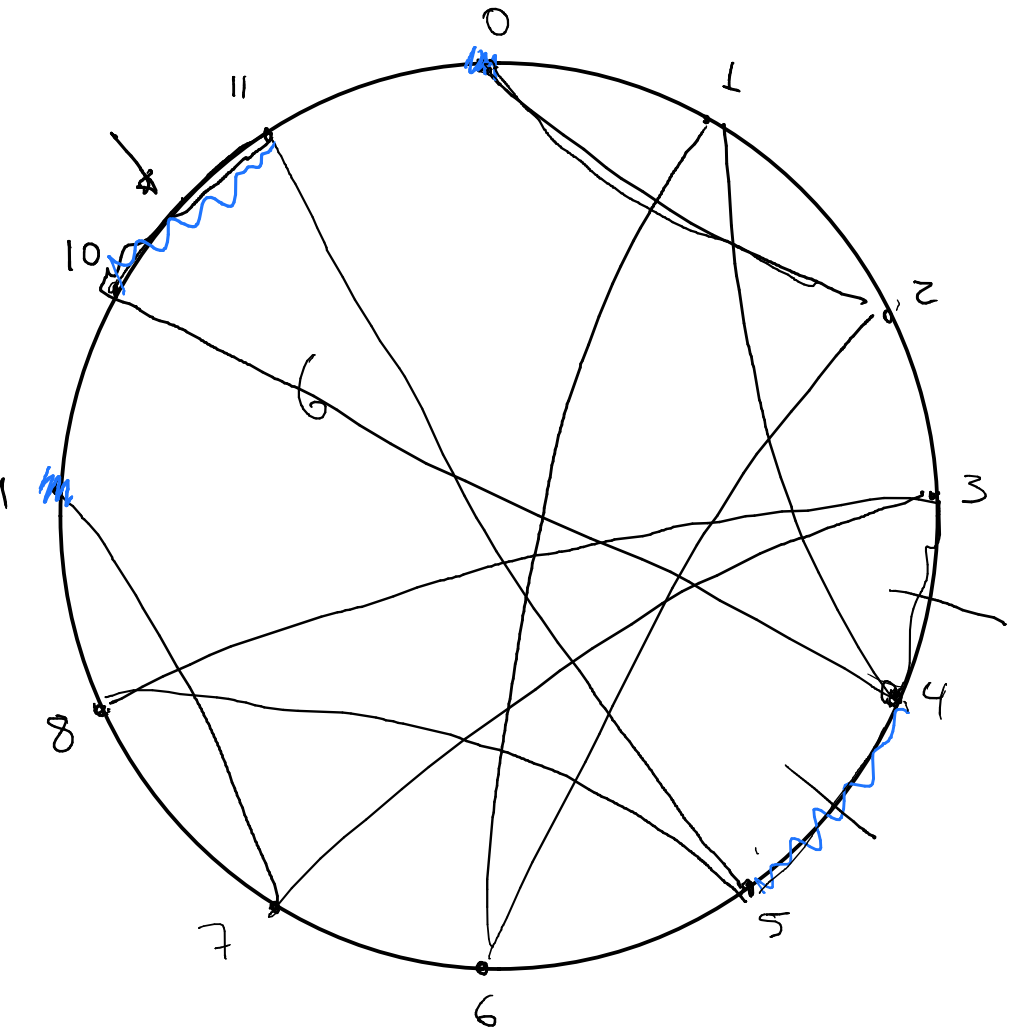
$2 \quad 3 \quad 4 \quad 5 \quad 6$



$n = 12$

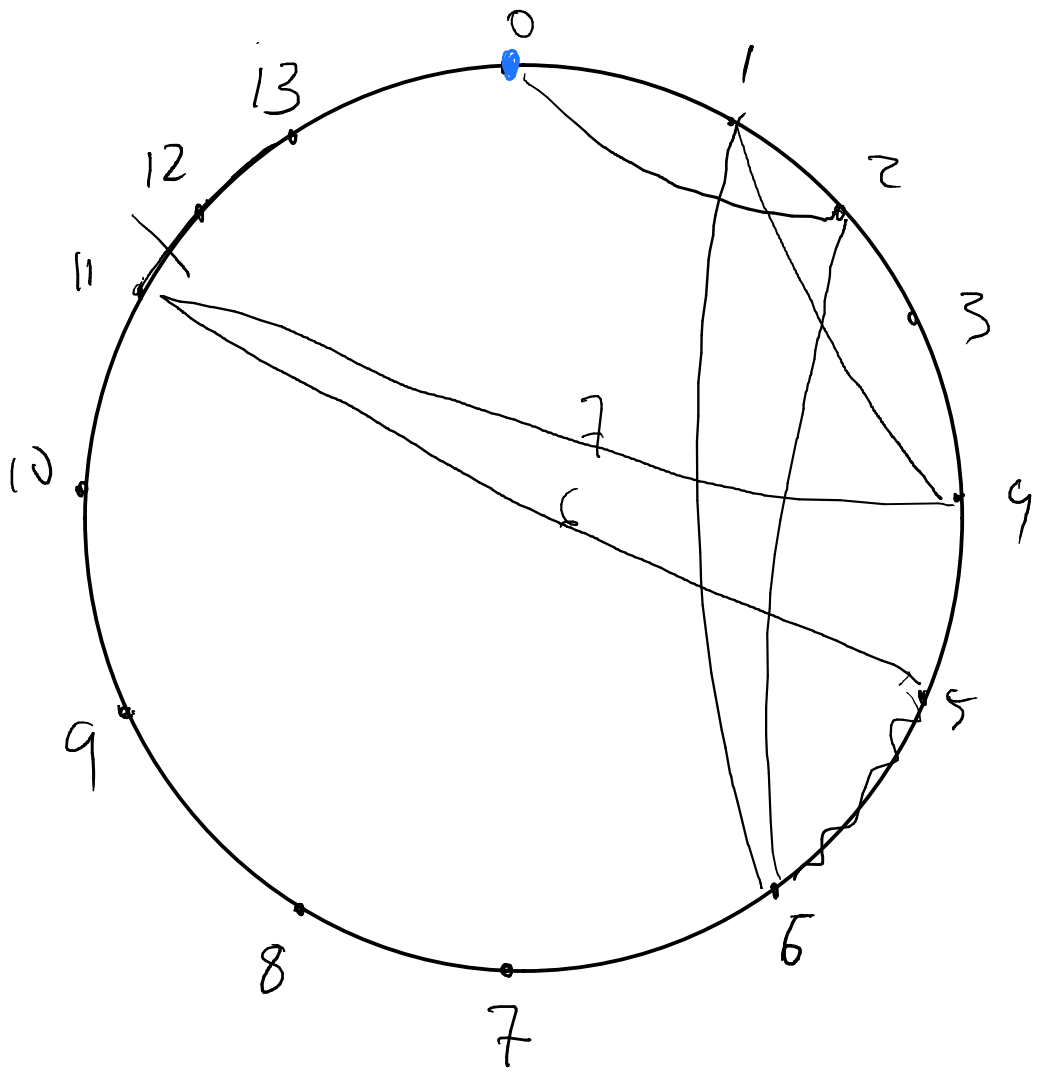
$K = 6$

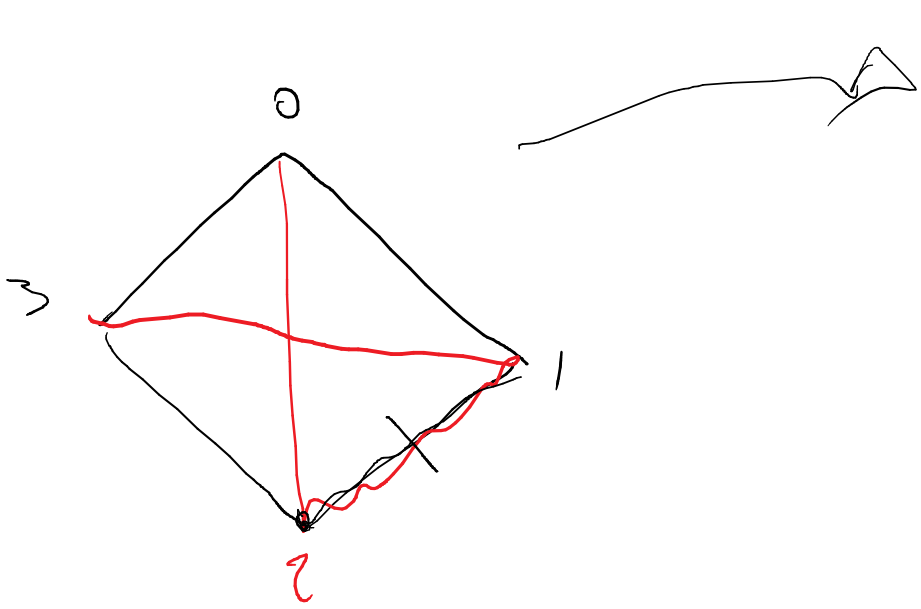
0 2 6 1 4 10 11

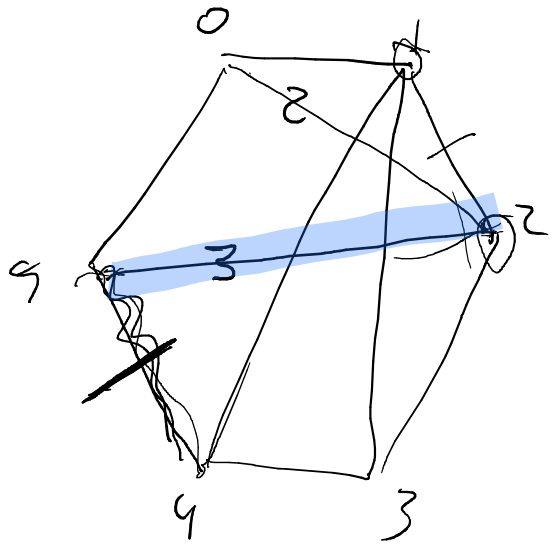


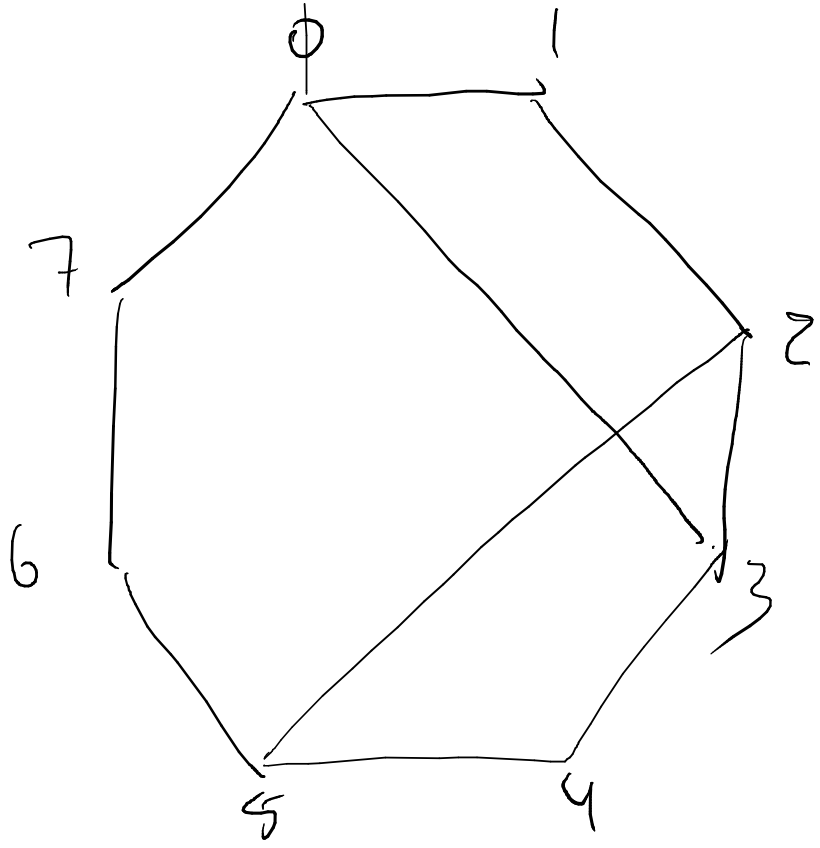
0 3 1 7 2 6 5 9 4 10 8 11

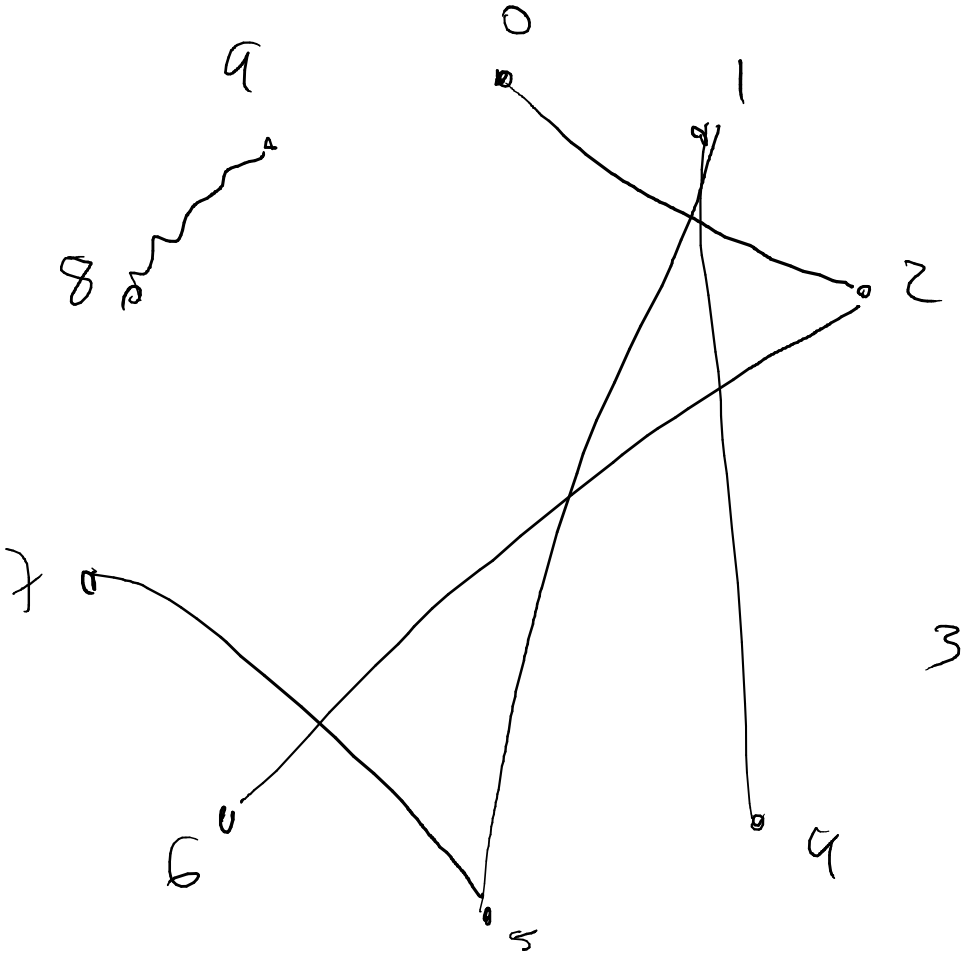
3 2 6 5 9 1 4 5 6 2 3

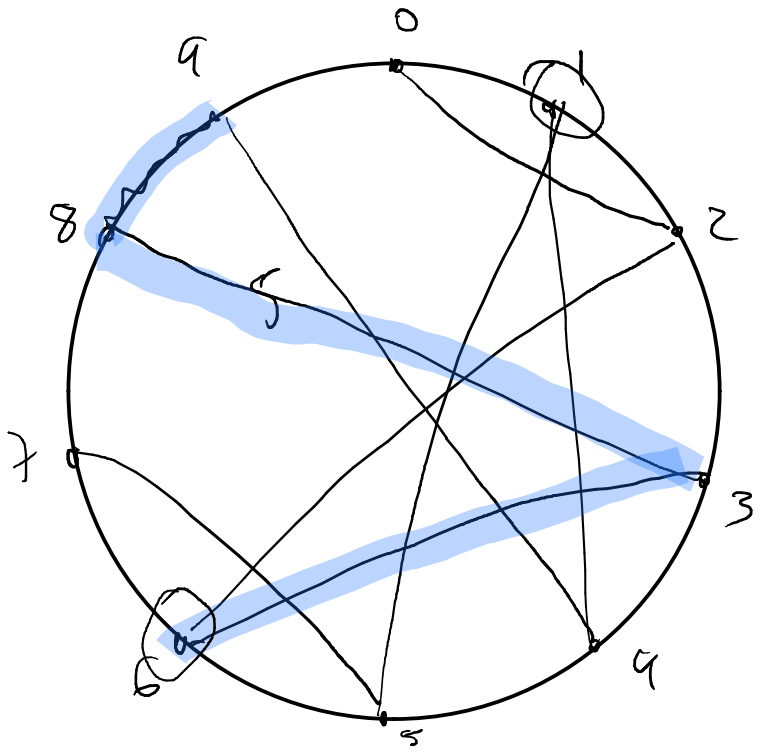


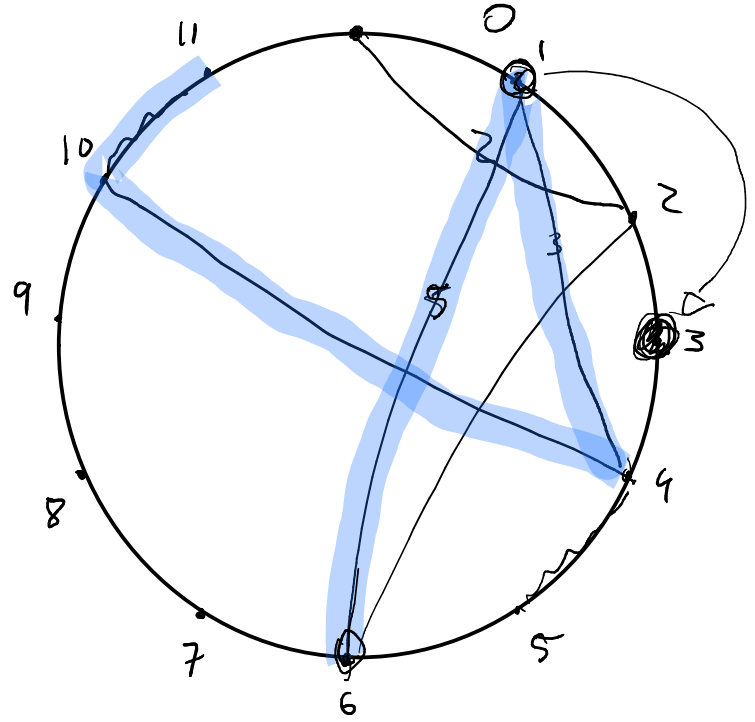

0
3
1
2


0
2
2
3
4
3


0
1
7
2
6
3
5
4

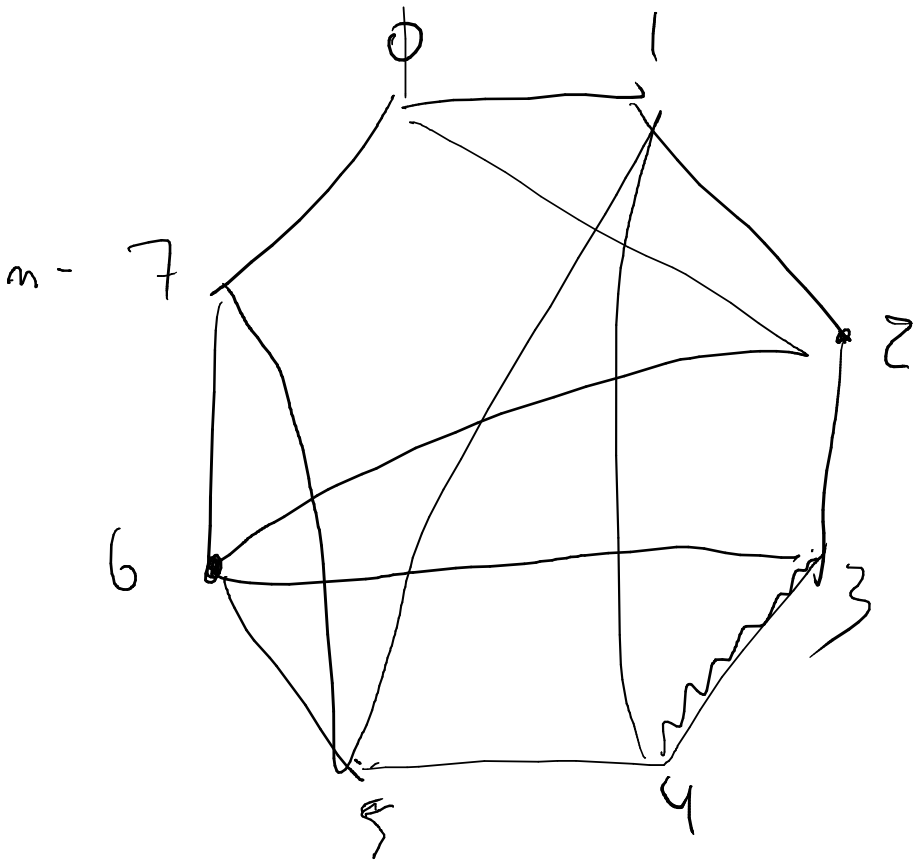

9
0
1
8
2
7
3
6
4
5

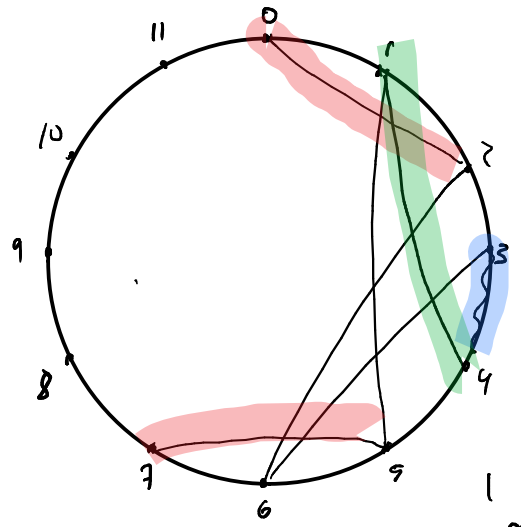


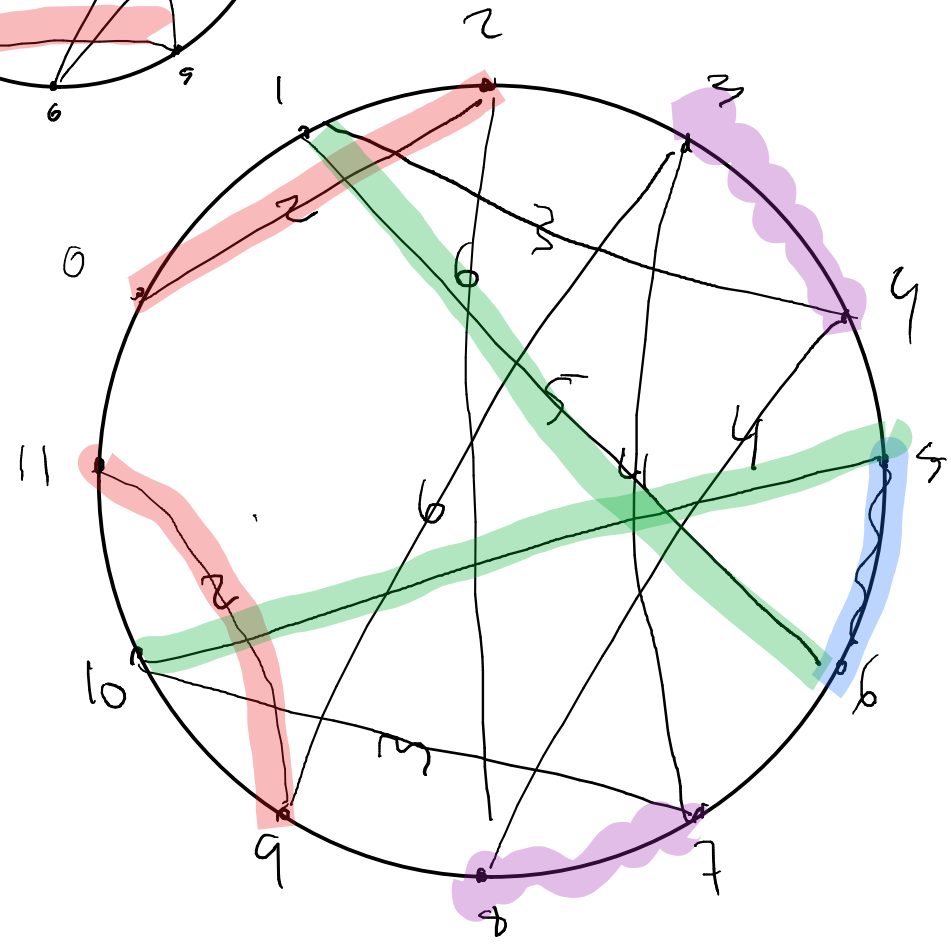


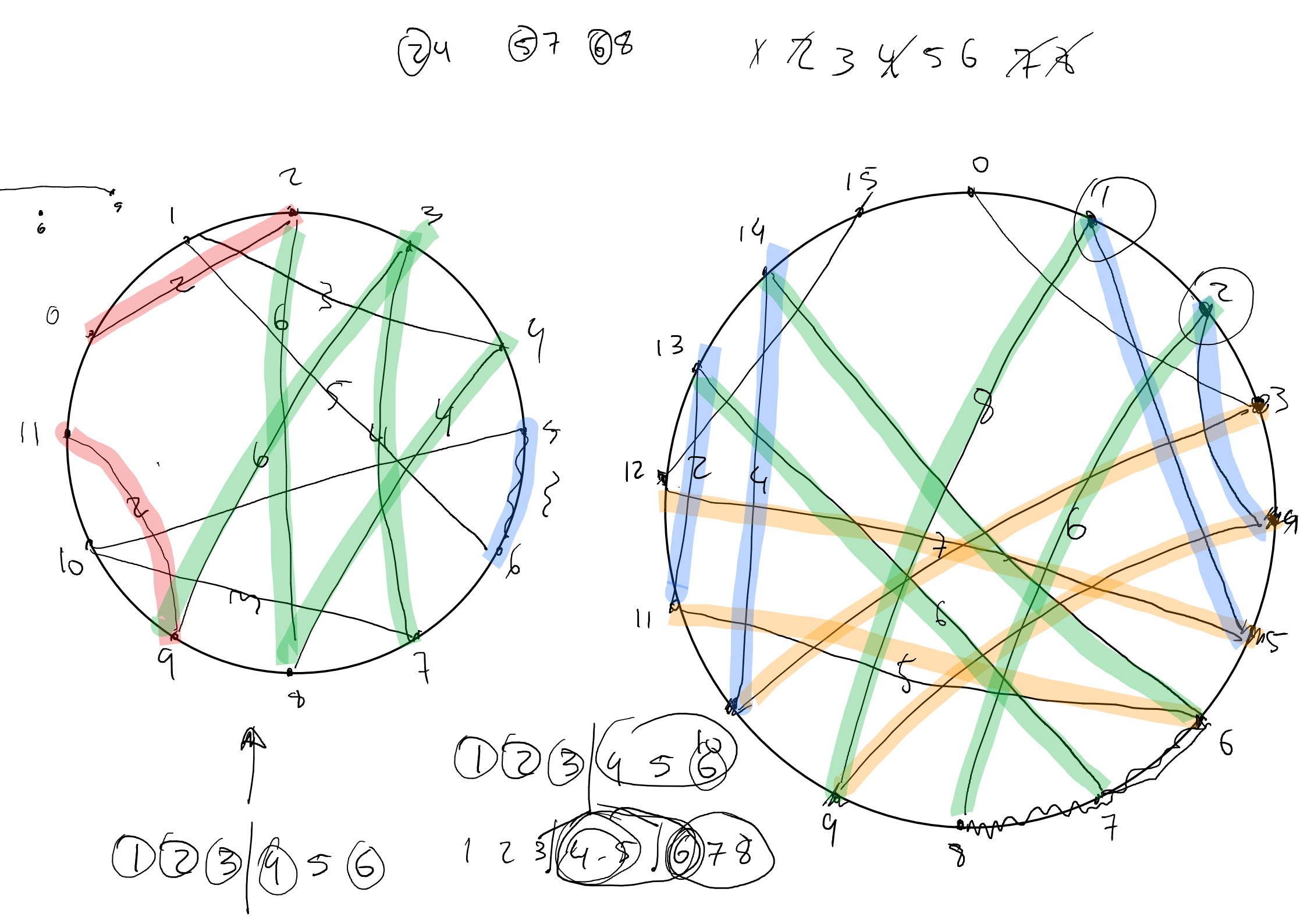
3 5 1

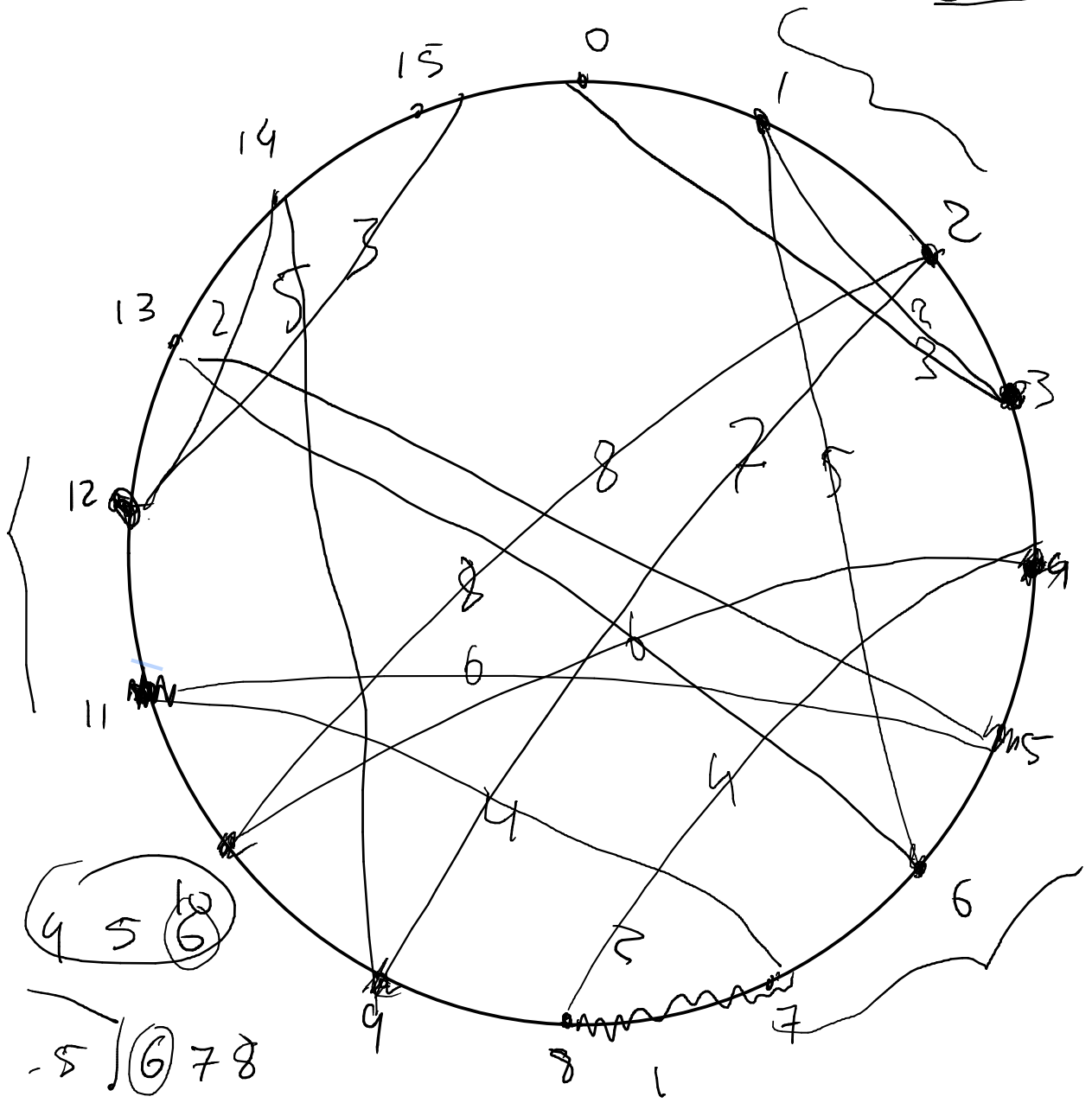
5 3 6 1

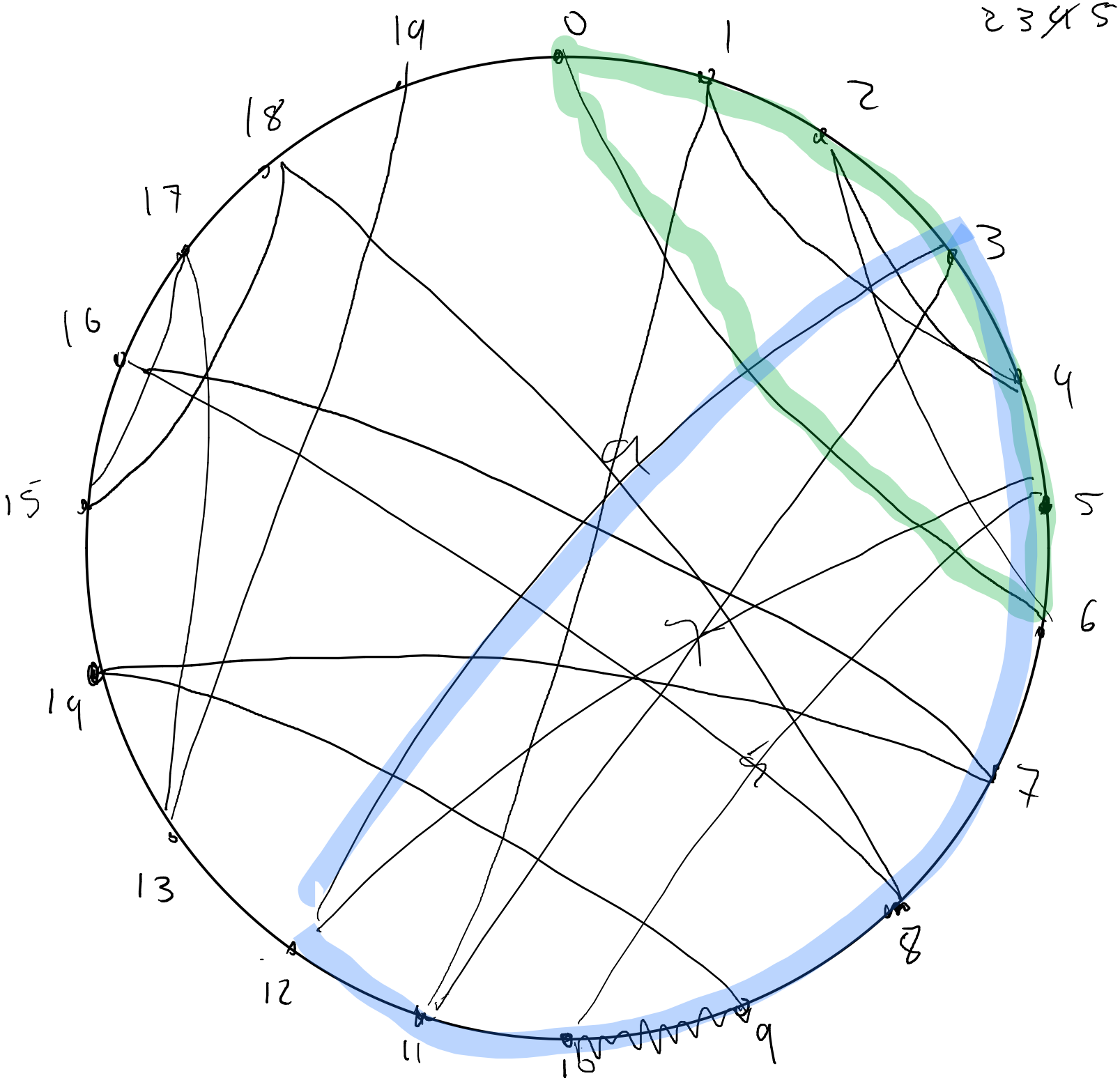

0
1
2
3
4
5
6
7


0
1
2
3
4
5
6
7
8
9
10
11


0
1
2
3
4
5
6
7
8
9
10
11


①②④ ⑤⑦ ⑥⑧
X 2 3 4 5 6 7 8
①②③|⑨5⑥
①②③|4 5 ⑥
1 2 3|4-5|⑥78


0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15


19
0
1
2
18
17
3
16
4
15
5
6
14
7
13
8
12
11
10
9

$n = 15$

$K = \frac{n+1}{2}$ 1 2 3 4 5 6 7 8

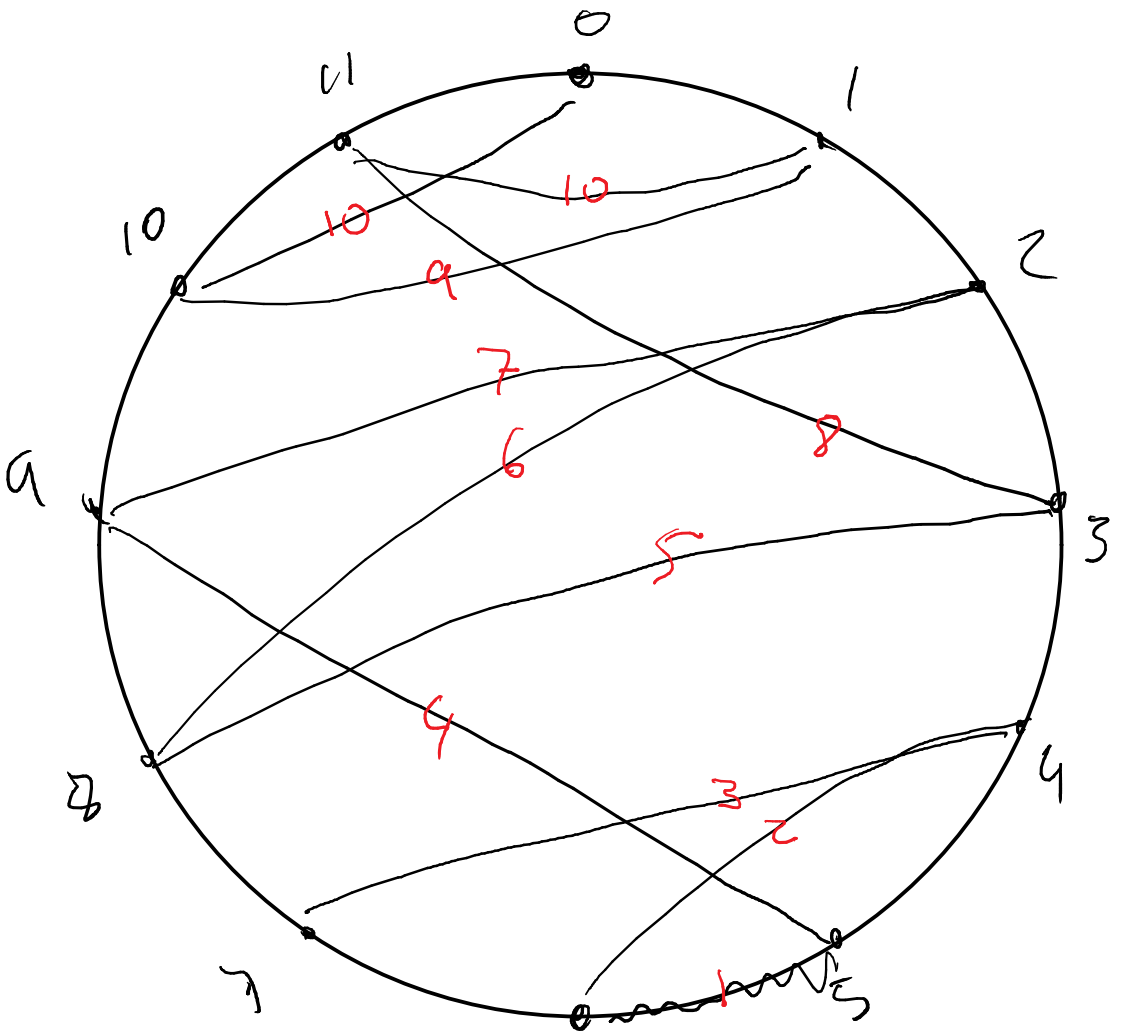
2 3 4 5 6 7 8

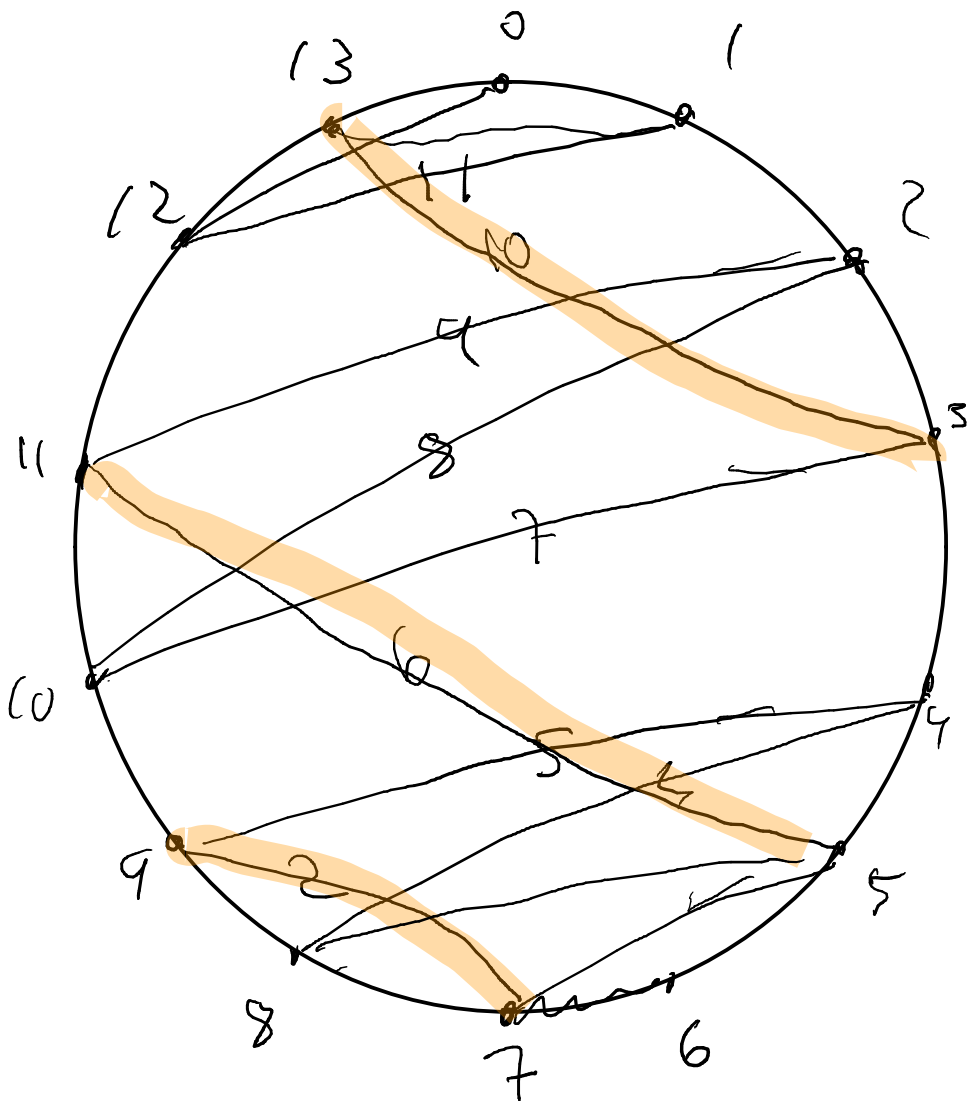
$K = \frac{n+3}{2}$ 1 2 3 4 5 6 7 8 9

4 5 6 7 8 9

K

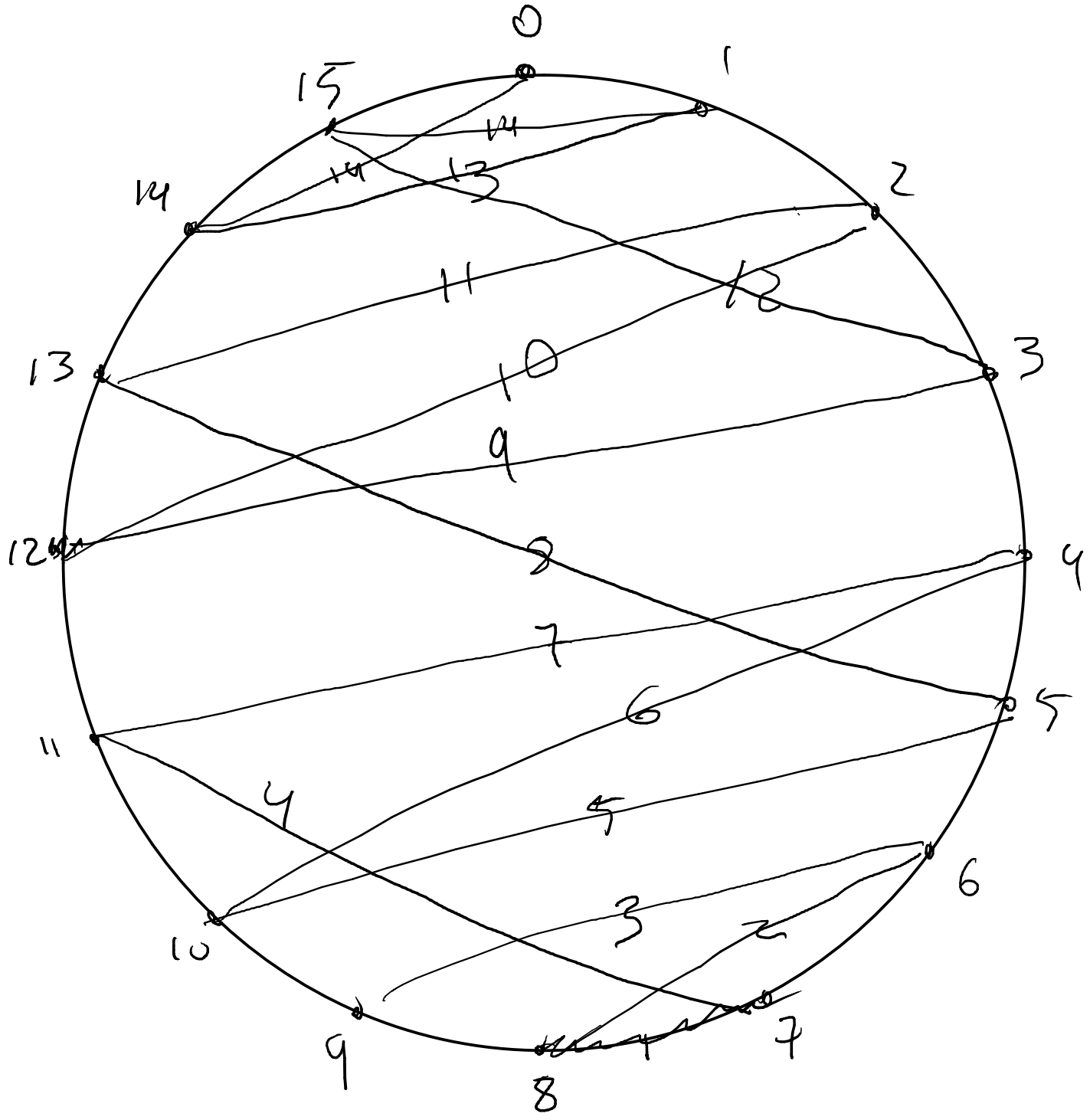
~~1~~ ~~2~~ ~~3~~ 4 ~~5~~ 6 ~~7~~
8 ~~9~~ ~~10~~ ~~11~~ ~~12~~ ~~12~~

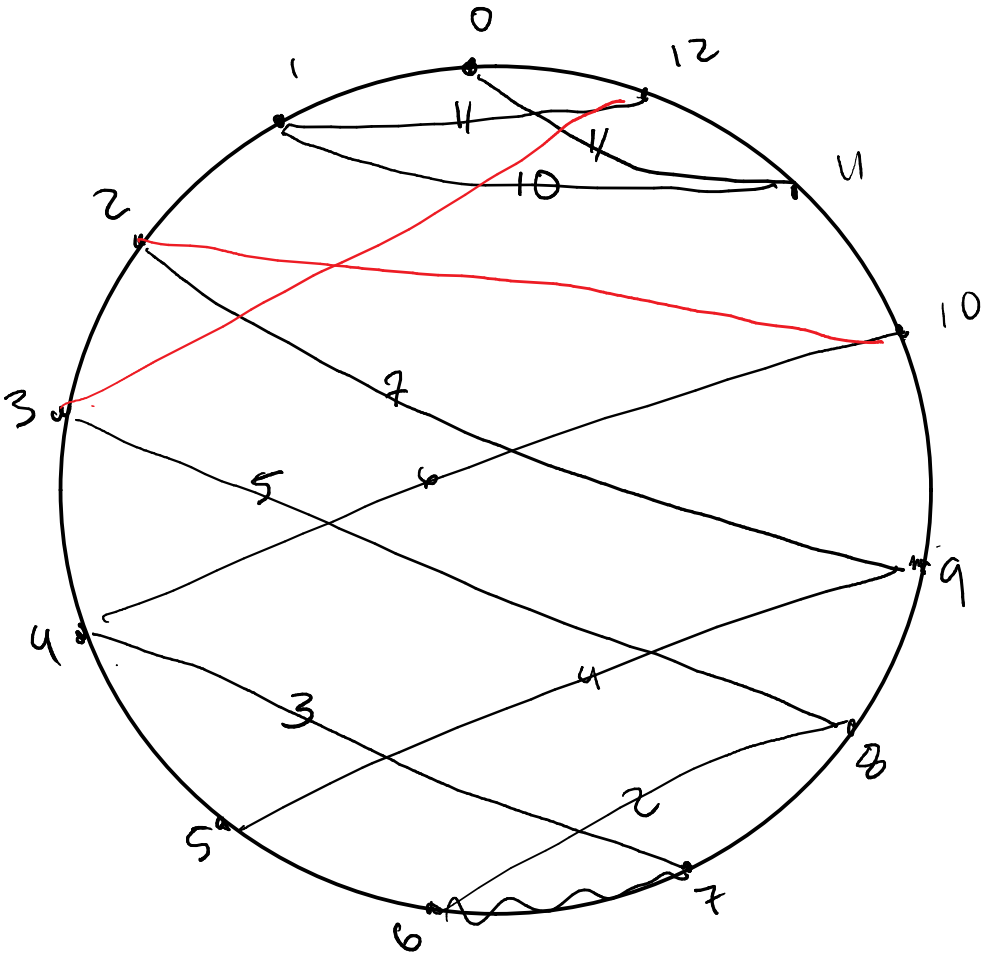




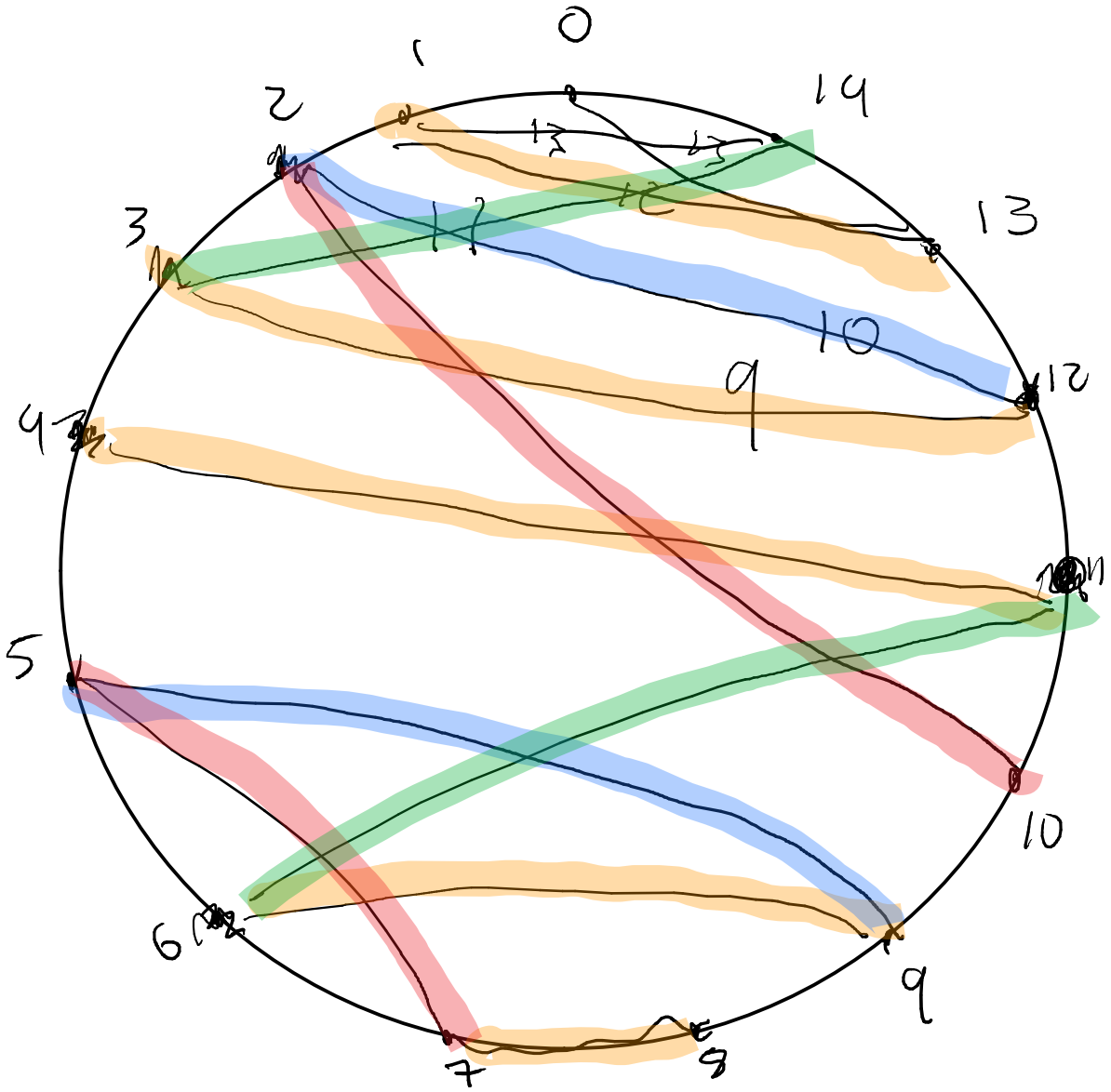
6

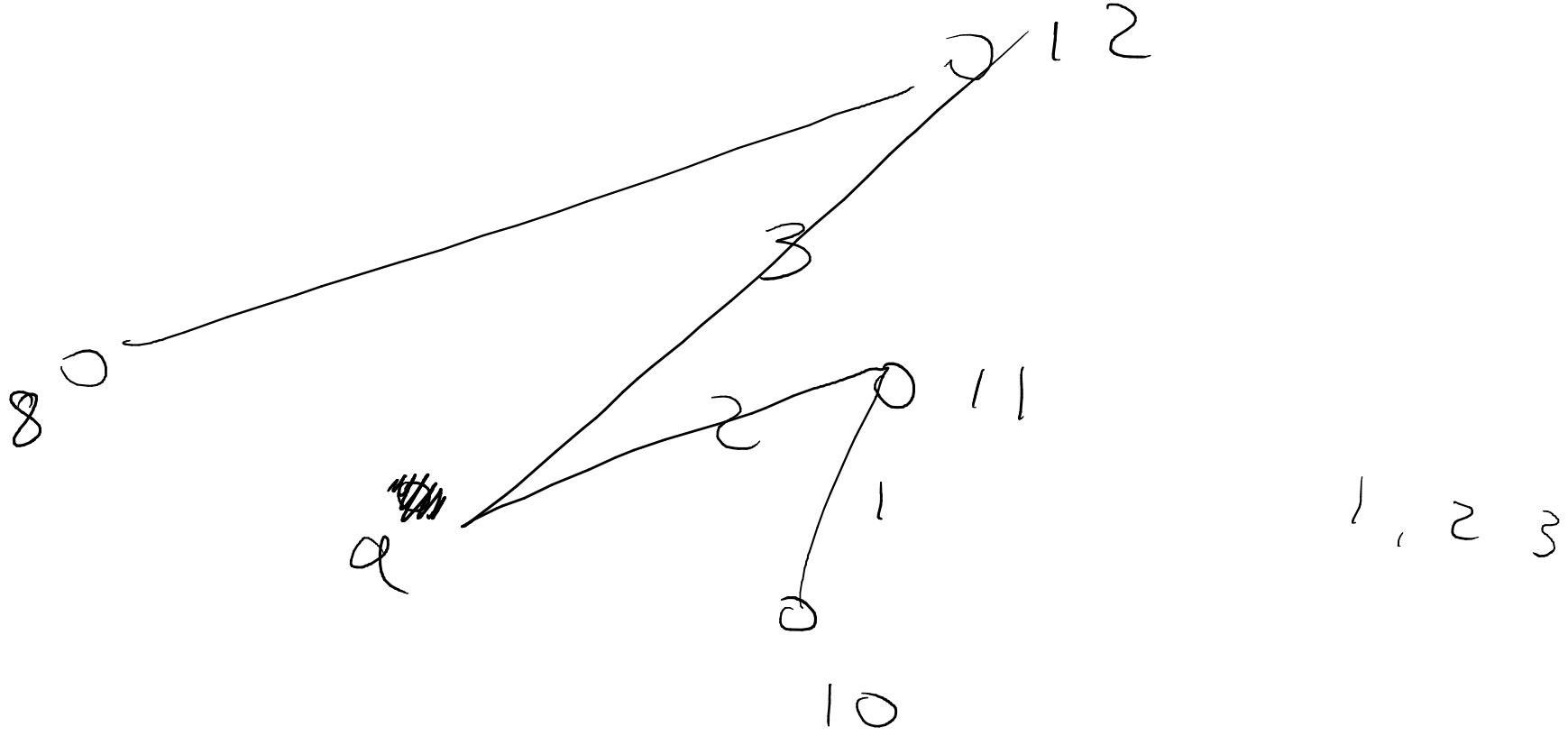
$\frac{13-3}{2} = 5$


0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
n = 15
n - 3
2



11 10 9




12
3
8
2
11
1
9
10
1, 2 3