New Graph

[2, 3, 2, 3], [4, 4, 1, 1]

π = [1, 1, 1, 1]

POSSIBLE RANKS

1 x 4
2 x 2

BASE DETERMINANT 117/512, .2285156250

NullSpace of Δ

{1, 2, 3, 4}

Nullspace of A

[{1, 4},{2, 3}]

1 . Coloring, {}

$\Omega p(\Delta)=0$: $p' = s^2$ $p = s^2$

R: [2, 3, 2, 3]
B: [4, 4, 1, 1]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
1 *vs* 3	1 *vs* 3	1 *vs* 3	1 *vs* 2	1 *vs* 2

Omega Rank for R : cycles: {{2, 3}} order: 2

See Matrix

$[0, y_1, y_1, 0]$

$p = - s + s^2$

Omega Rank for B : cycles: {{1, 4}} order: 2

See Matrix

$[y_1, 0, 0, y_1]$

$p = - s + s^2$

$$M = \begin{bmatrix} 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{bmatrix} \quad N = \begin{bmatrix} 0 & 1 & 1 & 2 \\ 1 & 0 & 2 & 1 \\ 1 & 2 & 0 & 1 \\ 2 & 1 & 1 & 0 \end{bmatrix}$$

τ= 8 , r'= 1/2

R: [2, 3, 2, 3]
B: [4, 4, 1, 1]

Ranges

Action of R on ranges, [[2], [2]]
Action of B on ranges, [[1], [1]]

Cycles: R , {{2, 3}}, B , {{1, 4}}

β({1, 4}) = 1/2
β({2, 3}) = 1/2

Partitions

Action of R on partitions, [[1], [1]]
Action of B on partitions, [[2], [2]]

α([{1, 3}, {2, 4}]) = 1/2
α([{1, 2}, {3, 4}]) = 1/2

b1 = {1, 2} , b2 = {1, 3} , b3 = {3, 4} , b4 = {2, 4}

Action of R and B on the blocks of the partitions: = [2, 4, 4, 2] [3, 3, 1, 1]
with invariant measure [1, 1, 1, 1]

N by blocks, check: true . See partition graph.

See level-2 partition graph.

Sandwich	
Coloring	{}
Rank	2
R,B	[2, 3, 2, 3], [4, 4, 1, 1]
π_2	[0, 0, 1, 1, 0, 0]
u_2	[1, 1, 2, 2, 1, 1] (dim 1)
wpp	[2, 2, 2, 2]

2 . Coloring, {2}

R: [2, 4, 2, 3]
B: [4, 3, 1, 1]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	3 *vs* 3	2 *vs* 3

Omega Rank for R : cycles: {{2, 3, 4}} order: 3

See Matrix

$$[0, y_2, y_3, y_1]$$

Omega Rank for B : cycles: {{1, 4}} order: 2

See Matrix

$$[y_2, 0, y_2 - y_1, y_1]$$

$$p = - s^2 + s^3$$

3 . Coloring, {3}

R: [2, 3, 1, 3]
B: [4, 4, 2, 1]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	3 *vs* 3	2 *vs* 3

Omega Rank for R : cycles: {{1, 2, 3}} order: 3

See Matrix

$$[y_2, y_3, y_1, 0]$$

Omega Rank for B : cycles: {{1, 4}} order: 2

See Matrix

$$[-y_1 + y_2, y_1, 0, y_2]$$

$p = s^2 - s^3$

4 . Coloring, {4}

R: [2, 3, 2, 1]
B: [4, 4, 1, 3]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	2 *vs* 3	3 *vs* 3

Omega Rank for R : cycles: {{2, 3}} order: 2

See Matrix

$$[y_1 - y_2, y_1, y_2, 0]$$

$p = s^2 - s^3$

Omega Rank for B : cycles: {{1, 3, 4}} order: 3

See Matrix

$$[y_1, 0, y_3, y_2]$$

5 . Coloring, {2, 3}

Ωp(Δ)=0: $p' = s^2$ $p' = s$ $p = s$

R: [2, 4, 1, 3]
B: [4, 3, 2, 1]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
0 *vs* 3	1 *vs* 4	1 *vs* 4	1 *vs* 4	1 *vs* 4

Omega Rank for R : cycles: {{1, 2, 3, 4}} order: 4

See Matrix

$[y_1, y_1, y_1, y_1]$

$p' = -1 + s$ $p' = -1 + s^3$ $p' = -1 + s^2$

Omega Rank for B : cycles: {{1, 4}, {2, 3}}   order: 2

See Matrix

$[y_1, y_1, y_1, y_1]$

$p' = -1 + s$ $p' = -1 + s^2$ $p' = -1 + s^3$

See 4-level graph

$$M = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix} \quad N = \begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix}$$

$\tau = 4$, $r' = 3/4$

R: [2, 4, 1, 3]
B: [4, 3, 2, 1]

Ranges

Action of R on ranges, [[1]]
Action of B on ranges, [[1]]

Cycles: R , {{1, 2, 3, 4}}, B , {{1, 4}, {2, 3}}

β({1, 2, 3, 4}) = 1/1

Partitions
α([{1}, {2}, {3}, {4}]) = 1/1

b1 = {1} , b2 = {2} , b3 = {3} , b4 = {4}

Action of R and B on the blocks of the partitions: = [3, 1, 4, 2] [4, 3, 2, 1]
with invariant measure [1, 1, 1, 1]

N by blocks, check: true . See partition graph.

See level-4 partition graph.

Right Group

Coloring	{2, 3}
Rank	4
R,B	[2, 4, 1, 3], [4, 3, 2, 1]
π_2	[1, 1, 1, 1, 1, 1]
u_2	[1, 1, 1, 1, 1, 1] (dim 2)
wpp	[1, 1, 1, 1]
π_4	[1]
u_4	[1]

6 . Coloring, {2, 4}

R: [2, 4, 2, 1]
B: [4, 3, 1, 3]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3

Omega Rank for R : cycles: {{1, 2, 4}} order: 3

See Matrix

$[y_2, y_3, 0, y_1]$

Omega Rank for B : cycles: {{1, 3, 4}} order: 3

See Matrix

$[y_1, 0, y_2, y_3]$

7 . Coloring, {3, 4}

R: [2, 3, 1, 1]
B: [4, 4, 2, 3]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3	3 *vs* 3

Omega Rank for R : cycles: {{1, 2, 3}} order: 3

See Matrix

$[y_1, y_3, y_2, 0]$

Omega Rank for B : cycles: {{2, 3, 4}} order: 3

See Matrix

$[0, y_3, y_2, y_1]$

8 . Coloring, {2, 3, 4}

R: [2, 4, 1, 1]
B: [4, 3, 2, 3]

See graph

See pair graph

Δ-Rank	A+(1/2)Δ	A-(1/2)Δ	R	B
3 *vs* 3	4 *vs* 4	4 *vs* 4	3 *vs* 3	2 *vs* 3

Omega Rank for R : cycles: {{1, 2, 4}} order: 3

See Matrix

$[y_1, y_3, 0, y_2]$

Omega Rank for B : cycles: {{2, 3}} order: 2

See Matrix

$[0, y_1, y_2, -y_1 + y_2]$

$p = s^2 - s^3$

SUMMARY

Graph Type	CC
ν(A)	1
ν(Δ)	1
π	[1, 1, 1, 1]
Dbly Stoch	true

SANDWICH		Total 1
No .	**Coloring**	**Rank**
1	{}	2

RT GROUPS		Total 1	
No .	**Coloring**	**Rank**	**Solv**
1	{2, 3}	4	["group", Not Solvable]

CC Colorings		Total 1
No .	**Coloring**	**Sandwich,Rank**
1	{}	true, 2

Δ-RANK'D	**SC'D !RK'D**	**τ-RANK'D**	**R/B RANK'D**	**NOT SYNC'D**	**Total Runs**	**2^{n-1}**
6	0	6 , 6	5 , 3	2	8	8