

New Graph

[3, 1, 1, 1, 2, 3], [5, 4, 4, 6, 4, 4]

$$\pi = [4, 1, 3, 4, 2, 2]$$

POSSIBLE RANKS

1 x 16

2 x 8

4 x 4

BASE DETERMINANT 2831/16384, .1727905273

NullSpace of Δ

{1, 2, 3, 4, 5, 6}

Nullspace of A

[{1, 2, 3},{4, 5, 6}]

1 . Coloring, {}

$$\Omega p(\Delta)=0: \quad p = s^4 \quad p' = s^4$$

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

B: [5, 4, 4, 6, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	A+(1/2) Δ	A-(1/2) Δ	R	B
3 vs 5	3 vs 5	3 vs 5	2 vs 3	2 vs 3

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

[See Matrix](#)

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

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

Omega Rank for B : cycles: {{4, 6}} order: 2

[See Matrix](#)

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

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

	M	N
0 1 3 0 0 0	0 2 2 1 1 1	
1 0 0 0 0 0	2 0 0 1 1 1	
3 0 0 0 0 0	2 0 0 1 1 1	
[0 0 0 0 2 2]	[1 1 1 0 2 2]	
0 0 0 2 0 0	1 1 1 2 0 0	
0 0 0 2 0 0	1 1 1 2 0 0	

$\tau = 19, r' = 1/2$

R: [3, 1, 1, 1, 2, 3]
B: [5, 4, 4, 6, 4, 4]

Ranges

Action of R on ranges, [[2], [2], [1], [2]]
 Action of B on ranges, [[3], [3], [4], [4]]

Cycles: R, {{1, 3}}, B, {{4, 6}}

$\beta(\{1, 2\}) = 1/8$
 $\beta(\{1, 3\}) = 3/8$
 $\beta(\{4, 5\}) = 1/4$
 $\beta(\{4, 6\}) = 1/4$

Partitions

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

$\alpha(\{2, 3, 4\}, \{1, 5, 6\}) = 1/2$
 $\alpha(\{1, 4\}, \{2, 3, 5, 6\}) = 1/2$

$b_1 = \{2, 3, 4\}, b_2 = \{1, 5, 6\}, b_3 = \{1, 4\}, b_4 = \{2, 3, 5, 6\}$

Action of R and B on the blocks of the partitions: = [2, 1, 1, 2] [4, 3, 4, 3]
 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	[3, 1, 1, 1, 2, 3], [5, 4, 4, 6, 4, 4]
Π_2	[1, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 2, 0]

u_2	[2, 2, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 2, 2, 0] (dim 1)
wpp	[5, 7, 7, 5, 7, 7]

2 . Coloring, {2}

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

B: [5, 1, 4, 6, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	3 vs 4

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

[See Matrix](#)

$$[y_2, y_1, y_3, y_4, 0, 0]$$

Omega Rank for B : cycles: {{4, 6}} order: 4

[See Matrix](#)

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

$$p = -s^3 + s^4$$

3 . Coloring, {3}

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

B: [5, 4, 1, 6, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	3 vs 4

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

[See Matrix](#)

$$[y_2, y_1, y_3, y_4, 0, 0]$$

Omega Rank for B : cycles: {{4, 6}} order: 4

[See Matrix](#)

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

$$p = -s^3 + s^4$$

4 . Coloring, {4}

R: [3, 1, 1, 6, 2, 3]

B: [5, 4, 4, 1, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	A+(1/2) Δ	A-(1/2) Δ	R	B
5 vs 5	5 vs 5	4 vs 5	2 vs 4	3 vs 3

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

[See Matrix](#)

$$[-y_1 + y_2, y_1, y_2, 0, 0, 2y_1]$$

$$p' = s^2 - s^3 \quad p = s^2 - s^4$$

Omega Rank for B : cycles: {{1, 4, 5}} order: 3

[See Matrix](#)

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

5 . Coloring, {5}

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

B: [5, 4, 4, 6, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	A+(1/2) Δ	A-(1/2) Δ	R	B
5 vs 5	5 vs 5	5 vs 5	2 vs 3	4 vs 4

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

[See Matrix](#)

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

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

Omega Rank for B : cycles: $\{\{4, 6\}\}$ order: 4

[See Matrix](#)

$$[0, y_2, 0, y_1, y_4, y_3]$$

6 . Coloring, $\{6\}$

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

B: [5, 4, 4, 6, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	2 vs 4	4 vs 4

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

[See Matrix](#)

$$[2y_1 + y_2, y_1, y_2, y_1, 0, 0]$$

$$p = s^2 - s^4 \quad p' = s^2 - s^3$$

Omega Rank for B : cycles: $\{\{3, 4, 6\}\}$ order: 3

[See Matrix](#)

$$[0, 0, y_4, y_3, y_2, y_1]$$

7 . Coloring, $\{2, 3\}$

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

B: [5, 1, 1, 6, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	4 vs 4	3 vs 4

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

[See Matrix](#)

$$[y_3, y_4, y_2, y_1, 0, 0]$$

Omega Rank for B : cycles: $\{\{4, 6\}\}$ order: 4

[See Matrix](#)

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

$$p = -s^3 + s^4$$

8 . Coloring, $\{2, 4\}$

R: [3, 4, 1, 6, 2, 3]

B: [5, 1, 4, 1, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	5 vs 5	3 vs 3

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

[See Matrix](#)

$$[y_1, y_2, y_3, y_4, 0, y_5]$$

Omega Rank for B : cycles: $\{\{1, 4, 5\}\}$ order: 3

[See Matrix](#)

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

9 . Coloring, $\{2, 5\}$

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

B: [5, 1, 4, 6, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 3	4 vs 5

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

[See Matrix](#)

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

Omega Rank for B : cycles: $\{\{1, 2, 5\}, \{4, 6\}\}$ order: 6

[See Matrix](#)

$$[7y_1, 7y_4, 0, 7y_3, 7y_2, 9y_1 + 9y_4 - 7y_3 + 9y_2]$$

$$p = -s - s^2 + s^4 + s^5$$

10 . Coloring, $\{2, 6\}$

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

B: [5, 1, 4, 6, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	5 vs 5

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

[See Matrix](#)

$$[y_4, y_2, y_3, y_1, 0, 0]$$

Omega Rank for B : cycles: $\{\{3, 4, 6\}\}$ order: 3

[See Matrix](#)

$$[y_1, 0, y_2, y_3, y_4, y_5]$$

11 . Coloring, $\{3, 4\}$

R: [3, 1, 4, 6, 2, 3]

B: [5, 4, 1, 1, 4, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	5 vs 5	3 vs 3

Omega Rank for R : cycles: $\{\{3, 4, 6\}\}$ order: 3

[See Matrix](#)

$[y_1, y_4, y_3, y_2, 0, y_5]$

Omega Rank for B : cycles: $\{\{1, 4, 5\}\}$ order: 3

[See Matrix](#)

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

12 . Coloring, {3, 5}

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

B: [5, 4, 1, 6, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 3	5 vs 5

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

[See Matrix](#)

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

Omega Rank for B : cycles: $\{\{4, 6\}\}$ order: 4

[See Matrix](#)

$[y_5, y_4, 0, y_3, y_1, y_2]$

13 . Coloring, {3, 6}

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

B: [5, 4, 1, 6, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	5 vs 5

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

[See Matrix](#)

$$[y_1, y_2, y_3, y_4, 0, 0]$$

Omega Rank for B : cycles: {{1, 3, 4, 5, 6}} order: 5

[See Matrix](#)

$$[y_5, 0, y_4, y_3, y_1, y_2]$$

14 . Coloring, {4, 5}

R: [3, 1, 1, 6, 4, 3]

B: [5, 4, 4, 1, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 4	4 vs 4

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

[See Matrix](#)

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

$$p = -s^3 + s^4$$

Omega Rank for B : cycles: {{1, 2, 4, 5}} order: 4

[See Matrix](#)

$$[y_3, y_4, 0, y_1, y_2, 0]$$

15 . Coloring, {4, 6}

R: [3, 1, 1, 6, 2, 4]

B: [5, 4, 4, 1, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 5	4 vs 4

Omega Rank for R : cycles: {{1, 3}, {4, 6}} order: 2

[See Matrix](#)

$$[y_3, 4y_3 - y_2 - 5y_1, y_2, y_1, 0, 3y_3 - 4y_1]$$

$$p' = s^2 - s^4 \quad p = -s^2 + s^4$$

Omega Rank for B : cycles: {{1, 4, 5}} order: 3

[See Matrix](#)

$$[y_1, 0, y_2, y_3, y_4, 0]$$

16 . Coloring, {5, 6}

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

B: [5, 4, 4, 6, 2, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	2 vs 3	5 vs 5

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

[See Matrix](#)

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

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

Omega Rank for B : cycles: {{3, 4, 6}} order: 3

[See Matrix](#)

$$[0, y_1, y_2, y_3, y_4, y_5]$$

17 . Coloring, {2, 3, 4}

R: [3, 4, 4, 6, 2, 3]

B: [5, 1, 1, 1, 4, 4]

[See graph](#)[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	4 vs 4	3 vs 3

Omega Rank for R : cycles: {{3, 4, 6}} order: 3

[See Matrix](#)

$$[0, y_3, y_4, y_2, 0, y_1]$$

Omega Rank for B : cycles: {{1, 4, 5}} order: 3

[See Matrix](#)

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

18 . Coloring, {2, 3, 5}

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

B: [5, 1, 1, 6, 2, 4]

[See graph](#)[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 3	4 vs 5

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

[See Matrix](#)

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

Omega Rank for B : cycles: {{1, 2, 5}, {4, 6}} order: 6

[See Matrix](#)

$$[-3 y_2 + 5 y_1 - 3 y_3 + 5 y_4, 3 y_2, 0, 3 y_1, 3 y_3, 3 y_4]$$

$$p = -s - s^2 + s^4 + s^5$$

19 . Coloring, {2, 3, 6}

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

B: [5, 1, 1, 6, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	4 vs 4	5 vs 5

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

[See Matrix](#)

$$[y_1, y_2, y_3, y_4, 0, 0]$$

Omega Rank for B : cycles: {{1, 3, 4, 5, 6}} order: 5

[See Matrix](#)

$$[y_2, 0, y_1, y_3, y_4, y_5]$$

20 . Coloring, {2, 4, 5}

R: [3, 4, 1, 6, 4, 3]

B: [5, 1, 4, 1, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	4 vs 4

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

[See Matrix](#)

$$[y_1, 0, y_2, y_3, 0, y_4]$$

Omega Rank for B : cycles: {{1, 2, 5}} order: 3

[See Matrix](#)

$$[y_4, y_3, 0, y_2, y_1, 0]$$

21 . Coloring, {2, 4, 6}

R: [3, 4, 1, 6, 2, 4]

B: [5, 1, 4, 1, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	A+(1/2) Δ	A-(1/2) Δ	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 5	4 vs 4

Omega Rank for R : cycles: {{1, 3}, {4, 6}} order: 2

[See Matrix](#)

$$[-7 y_1 + 15 y_2 - 7 y_3, 6 y_1, 6 y_2, -15 y_1 + 27 y_2 - 15 y_3, 0, 6 y_3]$$

$$p = -s^2 + s^4 \quad p' = -s^2 + s^4$$

Omega Rank for B : cycles: {{1, 4, 5}} order: 3

[See Matrix](#)

$$[y_2, 0, y_1, y_3, y_4, 0]$$

22 . Coloring, {2, 5, 6}

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

B: [5, 1, 4, 6, 2, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	A+(1/2) Δ	A-(1/2) Δ	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 3	3 vs 6

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

[See Matrix](#)

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

Omega Rank for B : cycles: {{1, 2, 5}, {3, 4, 6}} order: 3

[See Matrix](#)

$$[28 y_1 + 25 y_2 - 35 y_3, -20 y_2 + 28 y_3, 16 y_1, 20 y_1 + 27 y_2 - 25 y_3, 16 y_2, 16 y_3]$$

$$p' = 1 - s^3 \quad p' = s - s^4 \quad p' = s^2 - s^5$$

23 . Coloring, {3, 4, 5}

R: [3, 1, 4, 6, 4, 3]

B: [5, 4, 1, 1, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	4 vs 4	4 vs 4

Omega Rank for R : cycles: {{3, 4, 6}} order: 3

[See Matrix](#)

$$[y_1, 0, y_2, y_3, 0, y_4]$$

Omega Rank for B : cycles: {{1, 2, 4, 5}} order: 4

[See Matrix](#)

$$[y_1, y_2, 0, y_3, y_4, 0]$$

24 . Coloring, {3, 4, 6}

R: [3, 1, 4, 6, 2, 4]

B: [5, 4, 1, 1, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	5 vs 5	4 vs 4

Omega Rank for R : cycles: $\{\{4, 6\}\}$ order: 4

[See Matrix](#)

$$[y_4, y_1, y_2, y_3, 0, y_5]$$

Omega Rank for B : cycles: $\{\{1, 4, 5\}\}$ order: 3

[See Matrix](#)

$$[y_3, 0, y_1, y_2, y_4, 0]$$

25 . Coloring, $\{3, 5, 6\}$

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

B: [5, 4, 1, 6, 2, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 3	6 vs 6

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

[See Matrix](#)

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

Omega Rank for B : cycles: $\{\{1, 2, 3, 4, 5, 6\}\}$ order: 6

[See Matrix](#)

$$[y_1, y_2, y_3, y_4, y_5, y_6]$$

26 . Coloring, $\{4, 5, 6\}$

$$\Omega_p(\Delta)=0: \quad p = s^3 \quad p' = s^3 \quad p'' = s^4$$

R: [3, 1, 1, 6, 4, 4]

B: [5, 4, 4, 1, 2, 3]

[See graph](#)

See pair graph

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
2 vs 5	2 vs 5	2 vs 5	1 vs 4	2 vs 5

Omega Rank for R : cycles: $\{\{1, 3\}, \{4, 6\}\}$ order: 2

See Matrix

$$[y_1, 0, y_1, y_1, 0, y_1]$$

$$p' = -s + s^3 \quad p = s - s^2 \quad p' = -s + s^2$$

Omega Rank for B : cycles: $\{\{1, 2, 4, 5\}\}$ order: 4

See Matrix

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

$$p = -s^2 + s^3 \quad p = -s^2 + s^4 \quad p = -s^2 + s^5$$

See 4-level graph

	M						N					
	0	8	24	36	18	18	0	1	1	1	1	1
	8	0	0	9	9	0	1	0	0	1	1	1
	24	0	0	27	9	18	1	0	0	1	1	1
	36	9	27	0	16	16	1	1	1	0	1	1
	18	9	9	16	0	0	1	1	1	1	0	0
	18	0	18	16	0	0	1	1	1	1	0	0

$$\tau = 10, r' = 3/4$$

$$\begin{aligned} \mathbf{R}: & [3, 1, 1, 6, 4, 4] \\ \mathbf{B}: & [5, 4, 4, 1, 2, 3] \end{aligned}$$

Ranges

Action of R on ranges, $[[3], [3], [3]]$
 Action of B on ranges, $[[1], [1], [2]]$

Cycles: R, $\{\{1, 3\}, \{4, 6\}\}$, B, $\{\{1, 2, 4, 5\}\}$

$$\begin{aligned} \beta(\{1, 2, 4, 5\}) &= 1/4 \\ \beta(\{1, 3, 4, 5\}) &= 1/4 \\ \beta(\{1, 3, 4, 6\}) &= 1/2 \end{aligned}$$

Partitions

$$\alpha(\{\{1\}, \{5, 6\}, \{4\}, \{2, 3\}\}) = 1/1$$

$b_1 = \{1\}$, $b_2 = \{5, 6\}$, $b_3 = \{4\}$, $b_4 = \{2, 3\}$

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

N by blocks, check: true . [See partition graph.](#)

[See level-4 partition graph.](#)

Right Group	
Coloring	{4, 5, 6}
Rank	4
R,B	[3, 1, 1, 6, 4, 4], [5, 4, 4, 1, 2, 3]
Π_2	[8, 24, 36, 18, 18, 0, 9, 9, 0, 27, 9, 18, 16, 16, 0]
u_2	[1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 0] (dim 2)
wpp	[1, 2, 2, 1, 2, 2]
Π_4	[0, 0, 0, 1, 0, 0, 1, 2, 0, 0, 0, 0, 0, 0, 0]
u_4	[0, 0, 0, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0]

27 . Coloring, {2, 3, 4, 5}

R: [3, 4, 4, 6, 4, 3]

B: [5, 1, 1, 1, 2, 4]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 3	4 vs 4

Omega Rank for R : cycles: {{3, 4, 6}} order: 3

[See Matrix](#)

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

Omega Rank for B : cycles: {{1, 2, 5}} order: 3

[See Matrix](#)

$$[y_4, y_3, 0, y_2, y_1, 0]$$

28 . Coloring, {2, 3, 4, 6}

R: [3, 4, 4, 6, 2, 4]

B: [5, 1, 1, 1, 4, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 4	4 vs 4

Omega Rank for R : cycles: {{4, 6}} order: 2

[See Matrix](#)

$$[0, y_1, 2y_1, y_3, 0, y_2]$$

$$p = s^2 - s^4$$

Omega Rank for B : cycles: {{1, 4, 5}} order: 3

[See Matrix](#)

$$[y_1, 0, y_4, y_2, y_3, 0]$$

29 . Coloring, {2, 3, 5, 6}

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

B: [5, 1, 1, 6, 2, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	5 vs 5	5 vs 5	3 vs 3	5 vs 5

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

[See Matrix](#)

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

Omega Rank for B : cycles: {{1, 2, 5}} order: 3

[See Matrix](#)

$$[y_5, y_3, y_4, 0, y_1, y_2]$$

30 . Coloring, {2, 4, 5, 6}

R: [3, 4, 1, 6, 4, 4]

B: [5, 1, 4, 1, 2, 3]

[See graph](#)[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	2 vs 4	5 vs 5

Omega Rank for R : cycles: {{1, 3}, {4, 6}} order: 2

[See Matrix](#)

$$[-8 y_2 + 7 y_1, 0, y_2, y_1, 0, -9 y_2 + 8 y_1]$$

$$p = -s + s^3 \quad p' = -s + s^3$$

Omega Rank for B : cycles: {{1, 2, 5}} order: 3

[See Matrix](#)

$$[y_4, y_5, y_2, y_1, y_3, 0]$$

31 . Coloring, {3, 4, 5, 6}

R: [3, 1, 4, 6, 4, 4]

B: [5, 4, 1, 1, 2, 3]

[See graph](#)[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	6 vs 6	6 vs 6	3 vs 4	5 vs 5

Omega Rank for R : cycles: {{4, 6}} order: 4

[See Matrix](#)

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

$$p = -s^3 + s^4$$

Omega Rank for B : cycles: {{1, 2, 4, 5}} order: 4

[See Matrix](#)

$$[y_2, y_1, y_4, y_5, y_3, 0]$$

32 . Coloring, {2, 3, 4, 5, 6}

R: [3, 4, 4, 6, 4, 4]

B: [5, 1, 1, 1, 2, 3]

[See graph](#)

[See pair graph](#)

Δ -Rank	$A+(1/2)\Delta$	$A-(1/2)\Delta$	R	B
5 vs 5	4 vs 5	5 vs 5	2 vs 3	4 vs 4

Omega Rank for R : cycles: {{4, 6}} order: 2

[See Matrix](#)

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

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

Omega Rank for B : cycles: {{1, 2, 5}} order: 3

[See Matrix](#)

$$[y_3, y_2, y_1, 0, y_4, 0]$$

SUMMARY	
Graph Type	CC
$\nu(A)$	1
$\nu(\Delta)$	1
π	[4, 1, 3, 4, 2, 2]

Dbly Stoch	false
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SANDWICH		Total 1
No .	Coloring	Rank
1	{}	2

RT GROUPS		Total 1	
No .	Coloring	Rank	Solv
1	{4, 5, 6}	4	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}
30	0	29 , 29	19 , 24	2	32	32
