

New Graph

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

$$\pi = [3, 6, 12, 10, 17, 24]$$

$$\delta = [1, 1, 1, 2, 2, 5]$$

POSSIBLE RANKS

- 1 x 72
- 2 x 36
- 3 x 24
- 4 x 18
- 6 x 12
- 8 x 9

BASE DETERMINANT 2381/16384, .1453247070

NullSpace of Δ

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

Nullspace of A

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

1 . Coloring, {}

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$$-t^+ \quad t^3$$

, cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 0 & 24 & 48 \\ 0 & 0 & 0 & 0 & 48 & 24 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^4 \quad t^6$$

, cycles: {{4, 5}} order: 4

$$\begin{pmatrix} 6 & 12 & 24 & 20 & 10 & 0 \\ 12 & 24 & 0 & 16 & 20 & 0 \\ (24 & 0 & 0 & 32 & 16 & 0) \\ 0 & 0 & 0 & 40 & 32 & 0 \\ 0 & 0 & 0 & 32 & 40 & 0 \end{pmatrix}$$

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

2. Coloring, {2}

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

Omega Rank for R :

$$-t^2 + t^4$$

, cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 6 & 0 & 0 & 0 & 24 & 42 \\ (0 & 0 & 0 & 0 & 42 & 30) \\ 0 & 0 & 0 & 0 & 30 & 42 \end{pmatrix}$$

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

Omega Rank for B :

$$-t - t^2 + t^4 + t^5$$

, cycles: {{2, 3, 6}, {4, 5}} order: 6

$$\begin{pmatrix} 0 & 12 & 24 & 20 & 10 & 6 \\ 0 & 24 & 6 & 10 & 20 & 12 \\ (0 & 6 & 12 & 20 & 10 & 24) \\ 0 & 12 & 24 & 10 & 20 & 6 \\ 0 & 24 & 6 & 20 & 10 & 12 \end{pmatrix}$$

$$[0, -5y_1 + 7y_2 + 7y_3 - 5y_4, 5y_1, 5y_2, 5y_3, 5y_4]$$

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

3. Coloring, {3}

$\Omega p(\Delta)=0: p = s^3 - 4s^4 + 4s^5$

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$$-t^{2+} t^4$$

, cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 12 & 0 & 0 & 24 & 36 \\ 0 & 0 & 0 & 0 & 36 & 36 \\ 0 & 0 & 0 & 0 & 36 & 36 \end{pmatrix}$$

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

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

Omega Rank for B :

$$-t^{2+} t^4$$

, cycles: {{4, 5}, {3, 6}} order: 2

$$\begin{pmatrix} 6 & 0 & 24 & 20 & 10 & 12 \\ 0 & 0 & 12 & 16 & 20 & 24 \\ 0 & 0 & 24 & 20 & 16 & 12 \\ 0 & 0 & 12 & 16 & 20 & 24 \\ 0 & 0 & 24 & 20 & 16 & 12 \end{pmatrix}$$

$$[y_1, 0, 3y_1 + 3y_2 - 2y_3, 2y_1 + 2y_2 - y_3, y_2, y_3]$$

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

M N

$$\begin{pmatrix} 0 & 0 & 3 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 6 & 0 & 0 & 1 & 0 & 0 & 1 \\ 3 & 0 & 0 & 8 & 1 & 0 & 1 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 8 & 0 & 0 & 2 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & 16 & 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 6 & 0 & 2 & 16 & 0 & 1 & 1 & 0 & 1 & 1 & 0 \end{pmatrix}$$

NM

3 6 0 10 17 0
 3 6 0 10 17 0
 $\begin{pmatrix} 0 & 0 & 12 & 0 & 0 & 24 \\ 3 & 6 & 0 & 10 & 17 & 0 \end{pmatrix}$
 3 6 0 10 17 0
 0 0 12 0 0 24

$\tau = 20, r' = 1/2$

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

Ranges

Action of R on ranges, [[2], [6], [2], [2], [6], [6]]
 Action of B on ranges, [[5], [1], [6], [5], [4], [3]]

Cycles: R, {{5, 6}}, B, {{4, 5}, {3, 6}}

$\beta(\{1, 3\}) = 1/12$
 $\beta(\{2, 6\}) = 1/6$
 $\beta(\{3, 4\}) = 2/9$
 $\beta(\{3, 5\}) = 1/36$
 $\beta(\{4, 6\}) = 1/18$
 $\beta(\{5, 6\}) = 4/9$

Partitions

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

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

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

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

See level-2 partition graph.

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Right Group	
Coloring	{3}
Rank	2
R,B	[6, 6, 2, 6, 6, 5], [4, 1, 6, 5, 4, 3]
π_2	[0, 3, 0, 0, 0, 0, 0, 6, 8, 1, 0, 0, 2, 16]
u_2	[0, 1, 0, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 1, 1] (dim 1)
wpp	[4, 4, 2, 4, 4, 2]

4. Coloring, {4}

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

\ See graph

\ \ See pair graph

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

Ω Rank for R :

$$-t \quad t^3$$

, cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 0 & 34 & 38 \\ 0 & 0 & 0 & 0 & 38 & 34 \end{pmatrix}$$

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

Ω Rank for B :

$$-t \quad t^6$$

, cycles: {{1, 2, 3, 4, 6}} order: 5

$$\begin{pmatrix} 6 & 12 & 24 & 20 & 0 & 10 \\ 12 & 24 & 10 & 6 & 0 & 20 \\ (24 & 10 & 20 & 12 & 0 & 6) \\ 10 & 20 & 6 & 24 & 0 & 12 \\ 20 & 6 & 12 & 10 & 0 & 24 \end{pmatrix}$$

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

5 . Coloring, {5}

$$R: [6, 6, 6, 6, 4, 5]$$

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

\ See graph

\ \ See pair graph

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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

Ω Rank for R :

$$-t \quad t^4$$

, cycles: {{4, 5, 6}} order: 3

$$\begin{pmatrix} 0 & 0 & 0 & 17 & 24 & 31 \\ (0 & 0 & 0 & 24 & 31 & 17) \\ 0 & 0 & 0 & 31 & 17 & 24 \end{pmatrix}$$

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

Omega Rank for B :

$$-1 \quad t^6$$

,
cycles: {{1, 2, 3, 4, 5, 6}} order: 6

$$\begin{pmatrix} 6 & 12 & 24 & 3 & 10 & 17 \\ 12 & 24 & 17 & 6 & 3 & 10 \\ 24 & 17 & 10 & 12 & 6 & 3 \\ 17 & 10 & 3 & 24 & 12 & 6 \\ 10 & 3 & 6 & 17 & 24 & 12 \\ 3 & 6 & 12 & 10 & 17 & 24 \end{pmatrix}$$

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

6 . Coloring, {6}

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

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$$-t \quad t^3$$

,
cycles: {{3, 6}} order: 2

$$\begin{pmatrix} 0 & 0 & 24 & 0 & 0 & 48 \\ 0 & 0 & 48 & 0 & 0 & 24 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^3 \quad t^5$$

,
cycles: {{4, 5}} order: 4

$$\begin{pmatrix} 6 & 12 & 0 & 20 & 34 & 0 \\ 12 & 0 & 0 & 40 & 20 & 0 \\ 0 & 0 & 0 & 32 & 40 & 0 \\ 0 & 0 & 0 & 40 & 32 & 0 \end{pmatrix}$$

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

7. Coloring, {2, 3}

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$$-t^3 + t^5$$

,
 cycles: {{5, 6}} order: 4

$$\begin{pmatrix} 6 & 12 & 0 & 0 & 24 & 30 \\ 12 & 0 & 0 & 0 & 30 & 30 \\ 0 & 0 & 0 & 0 & 30 & 42 \\ 0 & 0 & 0 & 0 & 42 & 30 \end{pmatrix}$$

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

Omega Rank for B :

$$-t + t^3$$

,
 cycles: {{4, 5}, {3, 6}} order: 2

$$\begin{pmatrix} 0 & 0 & 24 & 20 & 10 & 18 \\ 0 & 0 & 18 & 10 & 20 & 24 \\ 0 & 0 & 24 & 20 & 10 & 18 \\ 0 & 0 & 18 & 10 & 20 & 24 \end{pmatrix}$$

$$[0, 0, -21 y_1 + 25 y_2, -25 y_1 + 25 y_2, 10 y_1, 10 y_2]$$

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

8. Coloring, {2, 4}

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

` See graph

` ` See pair graph

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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 :

$$-t^2 + t^4$$

,

cycles: {{5, 6}} order: 2

6 0 0 0 34 32
 (0 0 0 0 32 40)
 0 0 0 0 40 32

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

Omega Rank for B :

$$-t^2 + t^5$$

' cycles: {{2, 3, 6}} order: 3

0 12 24 20 0 16
 (0 24 16 0 0 32)
 0 16 32 0 0 24
 0 32 24 0 0 16

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

9 . Coloring, {2, 5}

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

` See graph

` ` See pair graph

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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 :

$$-t^2 + t^5$$

' cycles: {{4, 5, 6}} order: 3

6 0 0 17 24 25
 (0 0 0 24 25 23)
 0 0 0 25 23 24
 0 0 0 23 24 25

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

Omega Rank for B :

$$-t^3 + t^6$$

' cycles: {{2, 3, 6}} order: 3

0 12 24 3 10 23
 0 24 23 0 3 22
 (0 23 22 0 0 27)
 0 22 27 0 0 23
 0 27 23 0 0 22

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

10 . Coloring, {2, 6}

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

` See graph

` ` See pair graph

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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 :

$$-t^2 + t^4$$

, cycles: {{3, 6}} order: 2

6 0 24 0 0 42
 (0 0 42 0 0 30)
 0 0 30 0 0 42

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

Omega Rank for B :

$$-t^3 + t^5$$

, cycles: {{4, 5}} order: 4

0 12 0 20 34 6
 0 0 0 34 26 12
 (0 0 0 26 46 0)
 0 0 0 46 26 0

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

11 . Coloring, {3, 4}

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

` See graph

`` See pair graph

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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 :

$$-t^2 + t^4$$

, cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 12 & 0 & 0 & 34 & 26 \\ 0 & 0 & 0 & 0 & 26 & 46 \\ 0 & 0 & 0 & 0 & 46 & 26 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^3 + t^5$$

, cycles: {{3, 6}} order: 4

$$\begin{pmatrix} 6 & 0 & 24 & 20 & 0 & 22 \\ 0 & 0 & 22 & 6 & 0 & 44 \\ 0 & 0 & 44 & 0 & 0 & 28 \\ 0 & 0 & 28 & 0 & 0 & 44 \end{pmatrix}$$

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

12 . Coloring, {3, 5}

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

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

` See graph

`` See pair graph

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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 :

$$-t^2 + t^5$$

, cycles: {{4, 5, 6}} order: 3

$$\begin{pmatrix} 0 & 12 & 0 & 17 & 24 & 19 \\ 0 & 0 & 0 & 24 & 19 & 29 \\ 0 & 0 & 0 & 19 & 29 & 24 \\ 0 & 0 & 0 & 29 & 24 & 19 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^4 + t^6$$

, cycles: {{3, 6}} order: 4

```

6 0 24 3 10 29
0 0 29 6 3 34
(0 0 34 0 6 32)
0 0 32 0 0 40
0 0 40 0 0 32
    
```

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

13 . Coloring, {3, 6}

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

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$$-t + t^4$$

, cycles: {{2, 3, 6}} order: 3

```

0 12 24 0 0 36
(0 24 36 0 0 12)
0 36 12 0 0 24
    
```

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

Omega Rank for B :

tailcheck $-t^2 + t^4$

, cycles: {{4, 5}} order: 2

```

6 0 0 20 34 12
0 0 0 40 32 0
(0 0 0 32 40 0)
0 0 0 40 32 0
    
```

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

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

14 . Coloring, {4, 5}

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

[` See graph](#)

[`` See pair graph](#)

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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 :

$$-t^2 + t^4$$

,
 cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 17 & 34 & 21 \\ 0 & 0 & 0 & 34 & 38 & 0 \\ 0 & 0 & 0 & 38 & 34 & 0 \end{pmatrix}$$

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

Omega Rank for B :

$$-t + t^6$$

,
 cycles: {{1, 2, 3, 4, 6}} order: 5

$$\begin{pmatrix} 6 & 12 & 24 & 3 & 0 & 27 \\ 12 & 24 & 27 & 6 & 0 & 3 \\ 24 & 27 & 3 & 12 & 0 & 6 \\ 27 & 3 & 6 & 24 & 0 & 12 \\ 3 & 6 & 12 & 27 & 0 & 24 \end{pmatrix}$$

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

15 . Coloring, {4, 6}

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

[` See graph](#)

[`` See pair graph](#)

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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 :

$$-t^2 + t^4$$

,
 cycles: {{3, 6}} order: 2

0 0 24 0 10 38
 (0 0 38 0 0 34)
 0 0 34 0 0 38

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

Omega Rank for B :

$-t^3 + t^6$

' cycles: {{4, 5, 6}} order: 3

6 12 0 20 24 10
 12 0 0 30 10 20
 (0 0 0 22 20 30)
 0 0 0 20 30 22
 0 0 0 30 22 20

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

16 . Coloring, {5, 6}

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

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

` See graph

` ` See pair graph

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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 :

$-t^2 + t^4$

' cycles: {{3, 6}} order: 2

0 0 24 17 0 31
 (0 0 31 0 0 41)
 0 0 41 0 0 31

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

Omega Rank for B :

$-t^4 + t^6$

' cycles: {{5, 6}} order: 4

6 12 0 3 34 17
 12 0 0 6 20 34
 (0 0 0 12 40 20)
 0 0 0 0 32 40
 0 0 0 0 40 32

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

17 . Coloring, {2, 3, 4}

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

` See graph

` ` See pair graph

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

Omega Rank for R :

$-t^3 + t^5$

, cycles: {{5, 6}} order: 4

6 12 0 0 34 20
 12 0 0 0 20 40
 (0 0 0 0 40 32)
 0 0 0 0 32 40

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

Omega Rank for B :

$-t^2 + t^4$

, cycles: {{3, 6}} order: 2

0 0 24 20 0 28
 (0 0 28 0 0 44)
 0 0 44 0 0 28

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

18 . Coloring, {2, 3, 5}

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

` See graph

`` See pair graph

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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 :

$$-t^3 + t^6$$

, cycles: {{4, 5, 6}} order: 3

$$\begin{pmatrix} 6 & 12 & 0 & 17 & 24 & 13 \\ 12 & 0 & 0 & 24 & 13 & 23 \\ 0 & 0 & 0 & 13 & 23 & 36 \\ 0 & 0 & 0 & 23 & 36 & 13 \\ 0 & 0 & 0 & 36 & 13 & 23 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^3 + t^5$$

, cycles: {{3, 6}} order: 4

$$\begin{pmatrix} 0 & 0 & 24 & 3 & 10 & 35 \\ 0 & 0 & 35 & 0 & 3 & 34 \\ 0 & 0 & 34 & 0 & 0 & 38 \\ 0 & 0 & 38 & 0 & 0 & 34 \end{pmatrix}$$

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

19 . Coloring, {2, 3, 6}

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

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

` See graph

`` See pair graph

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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 :

$$-t + t^5$$

, cycles: {{1, 2, 3, 6}} order: 4

$$\begin{pmatrix} 6 & 12 & 24 & 0 & 0 & 30 \\ 12 & 24 & 30 & 0 & 0 & 6 \\ 24 & 30 & 6 & 0 & 0 & 12 \\ 30 & 6 & 12 & 0 & 0 & 24 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^2 + t^4$$

' cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 20 & 34 & 18 \\ 0 & 0 & 0 & 34 & 38 & 0 \\ 0 & 0 & 0 & 38 & 34 & 0 \end{pmatrix}$$

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

20 . Coloring, {2, 4, 5}

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

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

` See graph

` ` See pair graph

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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 :

$$-t^3 + t^5$$

' cycles: {{4, 5}} order: 4

$$\begin{pmatrix} 6 & 0 & 0 & 17 & 34 & 15 \\ 0 & 0 & 0 & 34 & 32 & 6 \\ 0 & 0 & 0 & 32 & 40 & 0 \\ 0 & 0 & 0 & 40 & 32 & 0 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^2 + t^5$$

' cycles: {{2, 3, 6}} order: 3

$$\begin{pmatrix} 0 & 12 & 24 & 3 & 0 & 33 \\ 0 & 24 & 33 & 0 & 0 & 15 \\ 0 & 33 & 15 & 0 & 0 & 24 \\ 0 & 15 & 24 & 0 & 0 & 33 \end{pmatrix}$$

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

21 . Coloring, {2, 4, 6}

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

` 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 :
 tailcheck $-t^2 + t^4$

,
 cycles: {{3, 6}} order: 2

$$\begin{pmatrix} 6 & 0 & 24 & 0 & 10 & 32 \\ 0 & 0 & 32 & 0 & 0 & 40 \\ 0 & 0 & 40 & 0 & 0 & 32 \\ 0 & 0 & 32 & 0 & 0 & 40 \end{pmatrix}$$

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

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

Omega Rank for B :
 tailcheck $-t^2 + t^5$

,
 cycles: {{4, 5, 6}} order: 3

$$\begin{pmatrix} 0 & 12 & 0 & 20 & 24 & 16 \\ 0 & 0 & 0 & 24 & 16 & 32 \\ 0 & 0 & 0 & 16 & 32 & 24 \\ 0 & 0 & 0 & 32 & 24 & 16 \end{pmatrix}$$

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

22 . Coloring, {2, 5, 6}

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

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

Omega Rank for R :
 tailcheck $-t^2 + t^4$

' cycles: {{3, 6}} order: 2

$$\begin{pmatrix} 6 & 0 & 24 & 17 & 0 & 25 \\ 0 & 0 & 25 & 0 & 0 & 47 \\ 0 & 0 & 47 & 0 & 0 & 25 \\ 0 & 0 & 25 & 0 & 0 & 47 \end{pmatrix}$$

$$[6 y_1, 0, 6 y_2, 17 y_1, 0, 6 y_3]$$

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

Omega Rank for B :

$$\text{tailcheck } -t^2 + t^4$$

' cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 12 & 0 & 3 & 34 & 23 \\ 0 & 0 & 0 & 0 & 26 & 46 \\ 0 & 0 & 0 & 0 & 46 & 26 \\ 0 & 0 & 0 & 0 & 26 & 46 \end{pmatrix}$$

$$[0, 4 y_1, 0, y_1, y_2, y_3]$$

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

23 . Coloring, {3, 4, 5}

$$R: [6, 6, 2, 5, 4, 5]$$

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

` 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	4 vs 4

Omega Rank for R :

$$-t^3 + t^5$$

' cycles: {{4, 5}} order: 4

$$\begin{pmatrix} 0 & 12 & 0 & 17 & 34 & 9 \\ 0 & 0 & 0 & 34 & 26 & 12 \\ 0 & 0 & 0 & 26 & 46 & 0 \\ 0 & 0 & 0 & 46 & 26 & 0 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^3 + t^5$$

' cycles: {{3, 6}} order: 4

$$\begin{pmatrix} 6 & 0 & 24 & 3 & 0 & 39 \\ 0 & 0 & 39 & 6 & 0 & 27 \\ 0 & 0 & 27 & 0 & 0 & 45 \\ 0 & 0 & 45 & 0 & 0 & 27 \end{pmatrix}$$

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

24 . Coloring, {3, 4, 6}

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

` 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	4 vs 4

Omega Rank for R :

$$-t^{2+} t^5$$

, cycles: {{2, 3, 6}} order: 3

$$\begin{pmatrix} 0 & 12 & 24 & 0 & 10 & 26 \\ 0 & 24 & 26 & 0 & 0 & 22 \\ 0 & 26 & 22 & 0 & 0 & 24 \\ 0 & 22 & 24 & 0 & 0 & 26 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^{2+} t^5$$

, cycles: {{4, 5, 6}} order: 3

$$\begin{pmatrix} 6 & 0 & 0 & 20 & 24 & 22 \\ 0 & 0 & 0 & 30 & 22 & 20 \\ 0 & 0 & 0 & 22 & 20 & 30 \\ 0 & 0 & 0 & 20 & 30 & 22 \end{pmatrix}$$

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

25 . Coloring, {3, 5, 6}

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

` 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 :

$$-t^2 \quad t^5$$

, cycles: {{2, 3, 6}} order: 3

$$\begin{pmatrix} 0 & 12 & 24 & 17 & 0 & 19 \\ 0 & 24 & 19 & 0 & 0 & 29 \\ 0 & 19 & 29 & 0 & 0 & 24 \\ 0 & 29 & 24 & 0 & 0 & 19 \end{pmatrix}$$

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

Omega Rank for B :

$$-t^3 \quad t^5$$

, cycles: {{5, 6}} order: 4

$$\begin{pmatrix} 6 & 0 & 0 & 3 & 34 & 29 \\ 0 & 0 & 0 & 6 & 32 & 34 \\ 0 & 0 & 0 & 0 & 40 & 32 \\ 0 & 0 & 0 & 0 & 32 & 40 \end{pmatrix}$$

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

26 . Coloring, {4, 5, 6}

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

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

` 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 :

$$-t \quad t^3$$

, cycles: {{4, 5}, {3, 6}} order: 2

$$\begin{pmatrix} 0 & 0 & 24 & 17 & 10 & 21 \\ 0 & 0 & 21 & 10 & 17 & 24 \\ 0 & 0 & 24 & 17 & 10 & 21 \\ 0 & 0 & 21 & 10 & 17 & 24 \end{pmatrix}$$

$$[0, 0, -15 y_1 + 22 y_2, -22 y_1 + 21 y_2, 13 y_1, 13 y_2]$$

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

Omega Rank for B :

$$-t^4 + t^6$$

, cycles: {{5, 6}} order: 4

$$\begin{matrix} 6 & 12 & 0 & 3 & 24 & 27 \\ 12 & 0 & 0 & 6 & 27 & 27 \\ (0 & 0 & 0 & 12 & 27 & 33) \\ 0 & 0 & 0 & 0 & 33 & 39 \\ 0 & 0 & 0 & 0 & 39 & 33 \end{matrix}$$

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

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

$$R: [6, 1, 2, 5, 4, 5]$$

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

` 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	3 vs 3

Omega Rank for R :

$$-t^4 + t^6$$

, cycles: {{4, 5}} order: 4

$$\begin{matrix} 6 & 12 & 0 & 17 & 34 & 3 \\ 12 & 0 & 0 & 34 & 20 & 6 \\ (0 & 0 & 0 & 20 & 40 & 12) \\ 0 & 0 & 0 & 40 & 32 & 0 \\ 0 & 0 & 0 & 32 & 40 & 0 \end{matrix}$$

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

Omega Rank for B :

$$-t^2 + t^4$$

, cycles: {{3, 6}} order: 2

$$\begin{matrix} 0 & 0 & 24 & 3 & 0 & 45 \\ (0 & 0 & 45 & 0 & 0 & 27) \\ 0 & 0 & 27 & 0 & 0 & 45 \end{matrix}$$

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

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

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

` 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	5 vs 5	3 vs 3

Omega Rank for R :

$$-t^2 \quad t^6$$

, cycles: {{1, 2, 3, 6}} order: 4

6	12	24	0	10	20
12	24	20	0	0	16
(24	20	16	0	0	12)
20	16	12	0	0	24
16	12	24	0	0	20

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

Omega Rank for B :

$$-t \quad t^4$$

, cycles: {{4, 5, 6}} order: 3

0	0	0	20	24	28
(0	0	0	24	28	20)
0	0	0	28	20	24

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

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

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

` 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 :

$$-t^2 \quad t^6$$

' cycles: {{1, 2, 3, 6}} order: 4

6 12 24 17 0 13
 12 24 13 0 0 23
 (24 13 23 0 0 12)
 13 23 12 0 0 24
 23 12 24 0 0 13

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

Omega Rank for B :

$$-t^{2+} t^4$$

' cycles: {{5, 6}} order: 2

0 0 0 3 34 35
 (0 0 0 0 38 34)
 0 0 0 0 34 38

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

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

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

` 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 5	3 vs 4

Omega Rank for R :

$$-t^{2+} t^4$$

' cycles: {{4, 5}, {3, 6}} order: 2

6 0 24 17 10 15
 0 0 15 10 17 30
 (0 0 30 17 10 15)
 0 0 15 10 17 30
 0 0 30 17 10 15

$$[-5 y_2 + 75 y_1 - 40 y_3, 0, 5 y_2, 40 y_1 - 21 y_3, 5 y_1, 5 y_3]$$

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

Omega Rank for B :

$$\text{tailcheck } -t^{2+} t^4$$

' cycles: {{5, 6}} order: 2

$$\begin{pmatrix} 0 & 12 & 0 & 3 & 24 & 33 \\ 0 & 0 & 0 & 0 & 33 & 39 \\ 0 & 0 & 0 & 0 & 39 & 33 \\ 0 & 0 & 0 & 0 & 33 & 39 \end{pmatrix}$$

$$[0, 4y_1, 0, y_1, y_2, y_3]$$

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

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

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

` 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 5	4 vs 4

Omega Rank for R :

$$-t - t^2 + t^4 + t^5$$

, cycles: {{4, 5}, {2, 3, 6}} order: 6

$$\begin{pmatrix} 0 & 12 & 24 & 17 & 10 & 9 \\ 0 & 24 & 9 & 10 & 17 & 12 \\ 0 & 9 & 12 & 17 & 10 & 24 \\ 0 & 12 & 24 & 10 & 17 & 9 \\ 0 & 24 & 9 & 17 & 10 & 12 \end{pmatrix}$$

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

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

Omega Rank for B :

$$-t^3 + t^5$$

, cycles: {{5, 6}} order: 4

$$\begin{pmatrix} 6 & 0 & 0 & 3 & 24 & 39 \\ 0 & 0 & 0 & 6 & 39 & 27 \\ 0 & 0 & 0 & 0 & 27 & 45 \\ 0 & 0 & 0 & 0 & 45 & 27 \end{pmatrix}$$

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

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

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

` 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 6	3 vs 3

Omega Rank for R :

$$-1 \quad t^4$$

, cycles: {{1, 2, 3, 6}, {4, 5}} order: 4

6	12	24	17	10	3
12	24	3	10	17	6
24	3	6	17	10	12
3	6	12	10	17	24
6	12	24	17	10	3
12	24	3	10	17	6

$$p' = -1 \quad s^4 \quad p' = -s \quad s^5 \quad [5y_1, -40y_1 - 40y_2 + 75y_3 - 5y_4, 5y_2, 5y_3, -21y_1 - 21y_2 + 40y_3, 5y_4]$$

Omega Rank for B :

$$-t^2 \quad t^4$$

, cycles: {{5, 6}} order: 2

0	0	0	3	24	45
0	0	0	0	45	27
0	0	0	0	27	45

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

SUMMARY	
Graph Type	CC
$v(A)$	1
$v(\Delta)$	1
π	[3, 6, 12, 10, 17, 24]
Dbly Stoch	false

SANDWICH		Total 0
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No .	Coloring	Rank
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RT GROUPS		Total 1	
No .	Coloring	Rank	Solv
1	{3}	2	Solvable

Δ -RANK'D	SC'D !RK'D	τ -RANK'D	R/B RANK'D	NOT SYNC'D	Total Runs	2^{n-1}
31	0	31 , 30	25 , 26	1	32	32
