New Graph

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

π = [1, 2, 2, 3, 4]
δ= [1, 1, 2, 2, 4]

POSSIBLE RANKS

1 x 12
2 x 6
3 x 4

BASE DETERMINANT 153/1024, .1494140625

NullSpace of Δ

{1, 2, 3, 4, 5}

Nullspace of A

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

1 . Coloring, {}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t + t^3$
,
cycles: {{4, 5}}   order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 4 & 8 \\ 0 & 0 & 0 & 8 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-t^3 + t^5$
,
cycles: {{1, 3}}   order: 4

$$\begin{pmatrix} 2 & 4 & 4 & 2 & 0 \\ 4 & 0 & 4 & 4 & 0 \\ 4 & 0 & 8 & 0 & 0 \\ 8 & 0 & 4 & 0 & 0 \end{pmatrix}$$

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

2 . Coloring, {2}

Ωp(Δ)=0: $p = s^2 - 4s^4$ $p' = s^2 - 2s^3$

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^{+}\ t^3$
,
cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 0 & 6 & 6 \\ 0 & 0 & 0 & 6 & 6 \end{pmatrix}$$

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

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

Omega Rank for B :
$-t^{+}\ t^3$
,
cycles: {{1, 3}, {2, 5}} order: 2

$$\begin{pmatrix} 2 & 4 & 4 & 0 & 2 \\ 4 & 2 & 2 & 0 & 4 \\ 2 & 4 & 4 & 0 & 2 \\ 4 & 2 & 2 & 0 & 4 \end{pmatrix}$$

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

$p' = -s^{+}\ s^3$ $p = -s^{+}\ s^3$

M N

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

NM

$$\begin{pmatrix} 1 & 0 & 2 & 3 & 0 \\ 0 & 2 & 0 & 0 & 4 \\ 1 & 0 & 2 & 3 & 0 \\ 1 & 0 & 2 & 3 & 0 \\ 0 & 2 & 0 & 0 & 4 \end{pmatrix}$$

τ= 13 , r'= 1/2

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

Ranges

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

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

β({1, 5}) = 1/6
β({2, 3}) = 1/3
β({4, 5}) = 1/2

Partitions
α([{1, 3, 4}, {2, 5}]) = 1/1

b1 = {1, 3, 4} ` , ` b2 = {2, 5}

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.

`

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

3 . Coloring, {3}

Ωp(Δ)=0: p = $s^2 - 4s^4$ p' = $s^2 - 2s^3$

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^2 + t^4$
,
cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 2 & 0 & 0 & 4 & 6 \\ 0 & 0 & 0 & 6 & 6 \\ 0 & 0 & 0 & 6 & 6 \end{pmatrix}$$

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

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

Omega Rank for B :
$-t + t^5$
,
cycles: {{2, 3, 4, 5}} order: 4

$$\begin{pmatrix} 0 & 4 & 4 & 2 & 2 \\ 0 & 2 & 2 & 4 & 4 \\ 0 & 4 & 4 & 2 & 2 \\ 0 & 2 & 2 & 4 & 4 \end{pmatrix}$$

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

p = $s - s^3$ p' = $s - s^3$

M N

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

NM

$$\begin{pmatrix} 3 & 4 & 2 & 9 & 0 \\ 2 & 6 & 0 & 6 & 4 \\ 1 & 0 & 6 & 3 & 8 \\ 3 & 4 & 2 & 9 & 0 \\ 0 & 2 & 4 & 0 & 12 \end{pmatrix}$$

τ= 13 , r'= 1/2

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

Ranges

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

Cycles: R , {{4, 5}}, B , {{2, 3, 4, 5}}

β({1, 5}) = 1/6
β({2, 3}) = 1/3
β({4, 5}) = 1/2

Partitions

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

α([{1, 3, 4}, {2, 5}]) = 1/3
α([{1, 2, 4}, {3, 5}]) = 2/3

b1 = {1, 2, 4} ` , ` b2 = {1, 3, 4} ` , ` b3 = {2, 5} ` , ` b4 = {3, 5}

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

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

` ` See level-2 partition graph.

`

Sandwich	
Coloring	{3}
Rank	2
R,B	[5, 5, 1, 5, 4], [3, 4, 5, 3, 2]
π_2	[0, 0, 0, 1, 2, 0, 0, 0, 0, 3]
u_2	[1, 2, 0, 3, 3, 1, 2, 2, 1, 3] (dim 1)
wpp	[9, 8, 7, 9, 6]

4 . Coloring, {4}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t + t^4$
,
cycles: {{3, 4, 5}}   order: 3

$$\begin{pmatrix} 0 & 0 & 3 & 4 & 5 \\ 0 & 0 & 4 & 5 & 3 \\ 0 & 0 & 5 & 3 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-1 - t + t^3 + t^4$
,
cycles: {{1, 3}, {2, 4, 5}}

$$\begin{pmatrix} 2 & 4 & 1 & 2 & 3 \\ 1 & 3 & 2 & 4 & 2 \\ 2 & 2 & 1 & 3 & 4 \\ 1 & 4 & 2 & 2 & 3 \\ 2 & 3 & 1 & 4 & 2 \end{pmatrix}$$

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

$p' = -1 - s + s^3 + s^4$

5 . Coloring, {5}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t + t^3$
,
cycles: {{2, 5}}   order: 2

$$\begin{pmatrix} 0 & 4 & 0 & 0 & 8 \\ 0 & 8 & 0 & 0 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-t^2 + t^4$
,
cycles: {{1, 3}}   order: 2

$$\begin{pmatrix} 2 & 0 & 4 & 6 & 0 \\ 4 & 0 & 8 & 0 & 0 \\ 8 & 0 & 4 & 0 & 0 \end{pmatrix}$$

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

6 . Coloring, {2, 3}

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

` See graph

`` See pair graph

`

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

Omega Rank for R :
$-t^2 + t^4$
,
cycles: {{4, 5}}   order: 2

$$\begin{pmatrix} 2 & 0 & 0 & 6 & 4 \\ 0 & 0 & 0 & 4 & 8 \\ 0 & 0 & 0 & 8 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-t^2 + t^4$
,
cycles: {{2, 5}}   order: 2

$$\begin{pmatrix} 0 & 4 & 4 & 0 & 4 \\ 0 & 4 & 0 & 0 & 8 \\ 0 & 8 & 0 & 0 & 4 \end{pmatrix}$$

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

7 . Coloring, {2, 4}

Ωp(Δ)=0: $p = s - 2s^3 - 4s^4$

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

` See graph

`` See pair graph

`

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

Omega Rank for R :
$-t^{+} \; t^4$
,
cycles: {{3, 4, 5}}   order: 3

$$\begin{pmatrix} 0 & 0 & 3 & 6 & 3 \\ 0 & 0 & 6 & 3 & 3 \\ 0 & 0 & 3 & 3 & 6 \end{pmatrix}$$

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

Omega Rank for B :
$-t^{+} \; t^3$
,
cycles: {{1, 3}, {2, 5}}   order: 2

$$\begin{pmatrix} 2 & 4 & 1 & 0 & 5 \\ 1 & 5 & 2 & 0 & 4 \\ 2 & 4 & 1 & 0 & 5 \\ 1 & 5 & 2 & 0 & 4 \end{pmatrix}$$

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

p = $-s^{+} \; s^3$ p' = $-s^{+} \; s^3$

8 . Coloring, {2, 5}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^{+} \; t^4$
,
cycles: {{2, 4, 5}}   order: 3

$$\begin{pmatrix} 0 & 4 & 0 & 2 & 6 \\ 0 & 6 & 0 & 4 & 2 \\ 0 & 2 & 0 & 6 & 4 \end{pmatrix}$$

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

Omega Rank for B :

$-t^3$ ' t^5

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

$$\begin{pmatrix} 2 & 0 & 4 & 4 & 2 \\ 4 & 0 & 6 & 2 & 0 \\ 6 & 0 & 6 & 0 & 0 \\ 6 & 0 & 6 & 0 & 0 \end{pmatrix}$$

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

p = $s^3 - s^4$

9 . Coloring, {3, 4}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t$ + t^5

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

$$\begin{pmatrix} 2 & 0 & 3 & 4 & 3 \\ 3 & 0 & 4 & 3 & 2 \\ 4 & 0 & 3 & 2 & 3 \\ 3 & 0 & 2 & 3 & 4 \end{pmatrix}$$

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

p = $s - s^2$ + $s^3 - s^4$

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

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

$$\begin{pmatrix} 0 & 4 & 1 & 2 & 5 \\ 0 & 5 & 0 & 4 & 3 \\ 0 & 3 & 0 & 5 & 4 \\ 0 & 4 & 0 & 3 & 5 \end{pmatrix}$$

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

10 . Coloring, {3, 5}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^2 + t^4$
,
cycles: {{2, 5}}   order: 2

$$\begin{pmatrix} 2 & 4 & 0 & 0 & 6 \\ 0 & 6 & 0 & 0 & 6 \\ 0 & 6 & 0 & 0 & 6 \end{pmatrix}$$

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

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

Omega Rank for B :
$-t + t^4$
,
cycles: {{3, 4, 5}}   order: 3

$$\begin{pmatrix} 0 & 0 & 4 & 6 & 2 \\ 0 & 0 & 6 & 2 & 4 \\ 0 & 0 & 2 & 4 & 6 \end{pmatrix}$$

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

11 . Coloring, {4, 5}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^2 + t^4$
,
cycles: {{2, 5}}   order: 2

$$\begin{pmatrix} 0 & 4 & 3 & 0 & 5 \\ 0 & 5 & 0 & 0 & 7 \\ 0 & 7 & 0 & 0 & 5 \end{pmatrix}$$

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

Omega Rank for B :
$-t + t^3$
,
cycles: {{1, 3}, {4, 5}} order: 2

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

$$[y_1, 0, y_2, 3\, y_1, 3\, y_2]$$

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

12 . Coloring, {2, 3, 4}

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t + t^5$
,
cycles: {{1, 3, 4, 5}} order: 4

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

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

Omega Rank for B :
$-t^2 + t^4$
,
cycles: {{2, 5}} order: 2

$$\begin{pmatrix} 0 & 4 & 1 & 0 & 7 \\ 0 & 7 & 0 & 0 & 5 \\ 0 & 5 & 0 & 0 & 7 \end{pmatrix}$$

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

13 . Coloring, {2, 3, 5}

Ωp(Δ)=0: p = s^3 p' = s^3

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

` See graph

` ` See pair graph

`

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

Omega Rank for R :
$-t^2 + t^5$
,
cycles: {{2, 4, 5}} order: 3

$$\begin{pmatrix} 2 & 4 & 0 & 2 & 4 \\ 0 & 4 & 0 & 4 & 4 \\ 0 & 4 & 0 & 4 & 4 \\ 0 & 4 & 0 & 4 & 4 \end{pmatrix}$$

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

p = $-s^2 + s^4$ p = $-s^2 + s^3$

Omega Rank for B :
$-t + t^4$
,
cycles: {{3, 4, 5}} order: 3

$$\begin{pmatrix} 0 & 0 & 4 & 4 & 4 \\ 0 & 0 & 4 & 4 & 4 \\ 0 & 0 & 4 & 4 & 4 \end{pmatrix}$$

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

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

` See 3-level graph

`

M N

$$\begin{pmatrix} 0 & 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 2 & 2 \\ 0 & 1 & 2 & 0 & 3 \\ 1 & 2 & 2 & 3 & 0 \end{pmatrix} \quad \begin{pmatrix} 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 & 0 \end{pmatrix}$$

NM

$$\begin{matrix} 2 & 2 & 2 & 6 & 4 \\ 1 & 4 & 4 & 3 & 4 \\ (1 & 4 & 4 & 3 & 4) \\ 2 & 2 & 2 & 6 & 4 \\ 1 & 2 & 2 & 3 & 8 \end{matrix}$$

τ= 9 , r'= 2/3

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

Ranges

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

Cycles: R , {{2, 4, 5}}, B , {{3, 4, 5}}

β({1, 2, 5}) = 1/4
β({2, 4, 5}) = 1/4
β({3, 4, 5}) = 1/2

Partitions
α([{2, 3}, {1, 4}, {5}]) = 1/1

b1 = {2, 3} ` , ` b2 = {1, 4} ` , ` b3 = {5}

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

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

` ` See level-3 partition graph.

`

Right Group	
Coloring	{2, 3, 5}
Rank	3
R,B	[5, 4, 1, 5, 2], [3, 5, 5, 3, 4]
π_2	[1, 0, 0, 1, 0, 1, 2, 2, 2, 3]
u_2	[1, 1, 0, 1, 0, 1, 1, 1, 1, 1] (dim 1)
wpp	[2, 2, 2, 2, 1]
π_3	[0, 0, 1, 0, 0, 0, 0, 0, 1, 2]
u_3	[0, 0, 1, 0, 1, 0, 0, 0, 1, 1]

14 . Coloring, {2, 4, 5}

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

` See graph

`` See pair graph

`

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

Omega Rank for R :
$-t^{+} t^{5}$
,
cycles: {{2, 3, 4, 5}}   order: 4

$$\begin{pmatrix} 0 & 4 & 3 & 2 & 3 \\ 0 & 3 & 2 & 4 & 3 \\ 0 & 3 & 4 & 3 & 2 \\ 0 & 2 & 3 & 3 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-t^{+} t^{3}$
,
cycles: {{1, 3}, {4, 5}}   order: 2

$$\begin{pmatrix} 2 & 0 & 1 & 4 & 5 \\ 1 & 0 & 2 & 5 & 4 \\ 2 & 0 & 1 & 4 & 5 \\ 1 & 0 & 2 & 5 & 4 \end{pmatrix}$$

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

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

15 . Coloring, {3, 4, 5}

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

` See graph

`` See pair graph

`

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

Omega Rank for R :
$-t^{3^{+}} t^{5}$
,
cycles: {{2, 5}}   order: 4

$$\begin{pmatrix} 2 & 4 & 3 & 0 & 3 \\ 3 & 3 & 0 & 0 & 6 \\ 0 & 6 & 0 & 0 & 6 \\ 0 & 6 & 0 & 0 & 6 \end{pmatrix}$$

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

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

Omega Rank for B :
$-t^2 + t^4$
,
cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 1 & 6 & 5 \\ 0 & 0 & 0 & 5 & 7 \\ 0 & 0 & 0 & 7 & 5 \end{pmatrix}$$

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

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

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

` See graph

`` See pair graph

`

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

Omega Rank for R :
$-1 + t^5$
,
cycles: {{1, 2, 3, 4, 5}} order: 5

$$\begin{pmatrix} 2 & 4 & 3 & 2 & 1 \\ 3 & 1 & 2 & 4 & 2 \\ 2 & 2 & 4 & 1 & 3 \\ 4 & 3 & 1 & 2 & 2 \\ 1 & 2 & 2 & 3 & 4 \end{pmatrix}$$

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

Omega Rank for B :
$-t^2 + t^4$
,
cycles: {{4, 5}} order: 2

$$\begin{pmatrix} 0 & 0 & 1 & 4 & 7 \\ 0 & 0 & 0 & 7 & 5 \\ 0 & 0 & 0 & 5 & 7 \end{pmatrix}$$

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

SUMMARY	
Graph Type	CC
ν(A)	1
ν(Δ)	1
π	[1, 2, 2, 3, 4]
Dbly Stoch	false

SANDWICH		Total 1
No .	Coloring	Rank
1	{3}	2

RT GROUPS		Total 2	
No .	Coloring	Rank	Solv
1	{2, 3, 5}	3	Solvable
2	{2}	2	Solvable

Δ-RANK'D	SC'D !RK'D	τ-RANK'D	R/B RANK'D	NOT SYNC'D	Total Runs	2^{n-1}
12	0	11 , 11	10 , 8	3	16	16