Fatgraphs of $M_{1,3}$

Automatically generated by FatGHoL 5.4
(See: `http://fatghol.googlecode.com/`)

2012-02-09

There are a total of 745 undecorated fatgraphs in the Kontsevich graph complex of $M_{1,3}$, originating 4218 marked ones.

Contents

Notation

We denote $G_{m,j}$ the j-th graph in the set of undecorated fatgraphs with m edges; the symbol $G_{m,j}^{(k)}$ denotes the k-th inequivalent marking of $G_{m,j}$.

Fatgraph vertices are marked with lowercase latin letters "a", "b", "c", etc.; edges are marked with an arabic numeral starting from "1"; boundary cycles are denoted by lowercase greek letters "α", "β", etc.

Automorphisms are specified by their action on the set of vertices, edges, and boundary cycles: for each automorphism A_k, a table line lists how it permutes vertices, edges and boundary cycles relative to the identity morphism A_0. The automorphism table is printed only if the automorphism group is non-trivial.

Automorphisms that reverse the orientation of the unmarked fatgraph are indicated with a "†" symbol in the automorphism table; those that reverse the orientation of the marked fatgraphs are distinguished with a "‡" sign.

If a fatgraph is orientable, a "Markings" section lists all the inequivalent ways of assigning distinct numbers $\{0, \ldots, n-1\}$ to the boundary cycles; this is of course a set of representatives for the orbits of $\mathfrak{S}_n$ under the action of $\mathrm{Aut}(G)$.

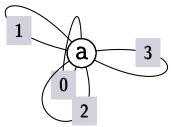
A separate section lists the differential of marked fatgraphs; graphs with null differential are omitted. If no marked fatgraph has a non-zero differential, the entire section is dropped.

Boundary cycles are specified using a "sequence of corners" notation: each corner is represented as ${}^{p}L^{q}$ where L is a latin letter indicating a vertex, and p, q are the attachment indices of the incoming and outgoing edges, respectively. Attachment indices match the Python representation of the vertex: e.g., if a=`Vertex([0,0,1])`, the two legs of edge 0 have attachment indices 0 and 1, and the boundary cycle enclosed by them is represented by the (single) corner ${}^{0}a^{1}$.

Fatgraphs with 4 edges / 1 vertex

There are 11 unmarked fatgraphs in this section, originating 108 marked fatgraphs (54 orientable, and 54 nonorientable).

The Fatgraph $G_{4,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 1, 2, 0, 2, 3, 3]),# a
])
```

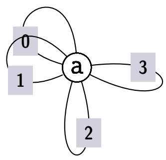
Boundary cycles

$$\alpha = ({}^7a^0 \to {}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^5a^6 \to {}^3a^4)$$
$$\beta = ({}^1a^2)$$
$$\gamma = ({}^6a^7)$$

Markings

Fatgraph $G_{4,0}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{4,0}$ to $G^{(6)}_{4,0}$ are formed by decorating boundary cycles of $G_{4,0}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,1}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 2, 2, 3, 3]),# a
])
```

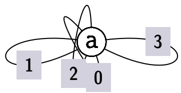
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^5a^6 \to {}^0a^1 \to {}^1a^2 \to {}^7a^0)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^6a^7)$$

Markings

Fatgraph $G_{4,1}$ only has the identity automorphism, so the marked fatgraphs $G_{4,1}^{(0)}$ to $G_{4,1}^{(6)}$ are formed by decorating boundary cycles of $G_{4,1}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,2}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 1, 1, 2, 0, 3, 3]),# a
])
```

Boundary cycles

$$\alpha = ({}^7a^0 \to {}^5a^6 \to {}^0a^1 \to {}^3a^4 \to {}^1a^2 \to {}^4a^5)$$
$$\beta = ({}^2a^3)$$
$$\gamma = ({}^6a^7)$$

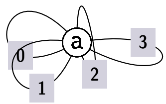
Automorphisms

A_0	a	0	1	2	3	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	0	3	2	1	α	γ	β

Markings

	$G_{4,2}^{(0)}$	$G_{4,2}^{(1)}$	$G_{4,2}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{4,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 1, 0, 1, 2, 3, 3]),# a
])
```

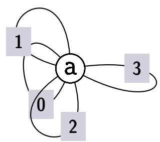
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{4}a^{5})$$
$$\beta = ({}^{5}a^{6} \to {}^{7}a^{0})$$
$$\gamma = ({}^{6}a^{7})$$

Markings

Fatgraph $G_{4,3}$ only has the identity automorphism, so the marked fatgraphs $G_{4,3}^{(0)}$ to $G_{4,3}^{(6)}$ are formed by decorating boundary cycles of $G_{4,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,4}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 2, 0, 2, 3, 3]),# a
])
```

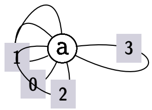
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{0}a^{1} \to {}^{3}a^{4})$$
$$\beta = ({}^{2}a^{3} \to {}^{5}a^{6} \to {}^{7}a^{0})$$
$$\gamma = ({}^{6}a^{7})$$

Markings

Fatgraph $G_{4,4}$ only has the identity automorphism, so the marked fatgraphs $G_{4,4}^{(0)}$ to $G_{4,4}^{(6)}$ are formed by decorating boundary cycles of $G_{4,4}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 1, 0, 2, 3, 3]),# a
])
```

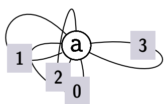
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{4}a^{5} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{5}a^{6} \to {}^{7}a^{0} \to {}^{3}a^{4})$$
$$\gamma = ({}^{6}a^{7})$$

Markings

Fatgraph $G_{4,5}$ only has the identity automorphism, so the marked fatgraphs $G_{4,5}^{(0)}$ to $G_{4,5}^{(6)}$ are formed by decorating boundary cycles of $G_{4,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 2, 0, 3, 3]),# a
])
```

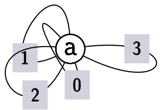
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{5}a^{6} \to {}^{4}a^{5} \to {}^{7}a^{0} \to {}^{2}a^{3})$$
$$\gamma = ({}^{6}a^{7})$$

Markings

Fatgraph $G_{4,6}$ only has the identity automorphism, so the marked fatgraphs $G_{4,6}^{(0)}$ to $G_{4,6}^{(6)}$ are formed by decorating boundary cycles of $G_{4,6}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,7}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 1, 2, 0, 3, 3]),# a
])
```

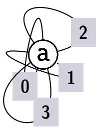
Boundary cycles

$$\alpha = ({}^{5}a^{6} \to {}^{7}a^{0} \to {}^{0}a^{1} \to {}^{3}a^{4} \to {}^{2}a^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5})$$
$$\gamma = ({}^{6}a^{7})$$

Markings

Fatgraph $G_{4,7}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{4,7}$ to $G^{(6)}_{4,7}$ are formed by decorating boundary cycles of $G_{4,7}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{4,8}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 0, 3, 1, 2]),# a
])
```

Boundary cycles

$$\alpha = ({}^{7}a^{0} \to {}^{4}a^{5} \to {}^{0}a^{1} \to {}^{3}a^{4})$$
$$\beta = ({}^{1}a^{2} \to {}^{6}a^{7})$$
$$\gamma = ({}^{2}a^{3} \to {}^{5}a^{6})$$

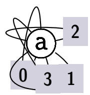
Automorphisms

A_0	a	0	1	2	3	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	0	1	3	2	α	γ	β

Markings

	$G^{(0)}_{4,8}$	$G^{(1)}_{4,8}$	$G^{(2)}_{4,8}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{4,9}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 2, 1, 0, 3, 1, 2]),# a
])
```

Boundary cycles

$$\alpha = ({}^{5}a^{6} \to {}^{3}a^{4} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{7}a^{0})$$
$$\gamma = ({}^{2}a^{3} \to {}^{6}a^{7})$$

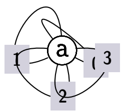
Automorphisms

A_0	a	0	1	2	3	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	0	2	1	3	β	α	γ

Markings

	$G^{(0)}_{4,9}$	$G^{(1)}_{4,9}$	$G^{(2)}_{4,9}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{4,10}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 1, 3, 2, 0, 3]),# a
])
```

Boundary cycles

$$\alpha = ({}^{6}a^{7} \to {}^{4}a^{5} \to {}^{0}a^{1} \to {}^{2}a^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{5}a^{6})$$
$$\gamma = ({}^{7}a^{0} \to {}^{3}a^{4})$$

Automorphisms

A_0	a	0	1	2	3	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	1	2	3	0	α	γ	β
A_2	a	2	3	0	1	α	β	γ
$A_3{}^{\dagger\ddagger}$	a	3	0	1	2	α	γ	β

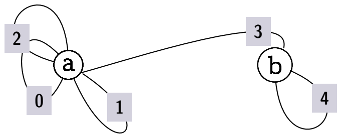
Markings

	$G^{(0)}_{4,10}$	$G^{(1)}_{4,10}$	$G^{(2)}_{4,10}$
α	0	1	2
β	1	0	0
γ	2	2	1

Fatgraphs with 5 edges / 2 vertices

There are 72 unmarked fatgraphs in this section, originating 816 marked fatgraphs (408 orientable, and 408 nonorientable).

The Fatgraph $G_{5,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 2, 3, 0, 1, 1]),# a
  Vertex([4, 4, 3]),            # b
])
```

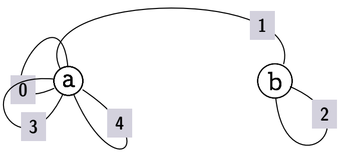
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^3a^4 \to {}^2b^0 \to {}^6a^0)$$
$$\beta = ({}^5a^6)$$
$$\gamma = ({}^0b^1)$$

Markings

Fatgraph $G_{5,0}$ only has the identity automorphism, so the marked fatgraphs $G_{5,0}^{(0)}$ to $G_{5,0}^{(6)}$ are formed by decorating boundary cycles of $G_{5,0}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,1}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 0, 3, 4, 4]),# a
  Vertex([2, 2, 1]),            # b
])
```

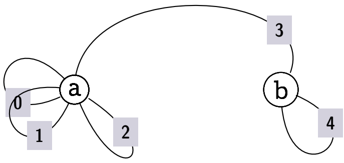
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^3a^4 \to {}^2b^0 \to {}^6a^0)$$
$$\beta = ({}^5a^6)$$
$$\gamma = ({}^0b^1)$$

Markings

Fatgraph $G_{5,1}$ only has the identity automorphism, so the marked fatgraphs $G_{5,1}^{(0)}$ to $G_{5,1}^{(6)}$ are formed by decorating boundary cycles of $G_{5,1}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,2}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 0, 1, 0, 1, 2, 2]),# a
  Vertex([4, 4, 3]),            # b
])
```

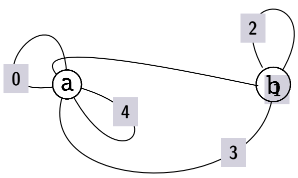
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{4}a^{5} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\beta = ({}^{5}a^{6})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,2}$ only has the identity automorphism, so the marked fatgraphs $G_{5,2}^{(0)}$ to $G_{5,2}^{(6)}$ are formed by decorating boundary cycles of $G_{5,2}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 3, 4, 4]),# a
  Vertex([3, 1, 2, 2]),      # b
])
```

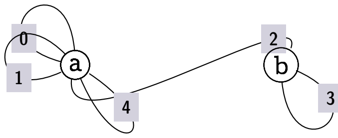
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,3}$ only has the identity automorphism, so the marked fatgraphs $G_{5,3}^{(0)}$ to $G_{5,3}^{(6)}$ are formed by decorating boundary cycles of $G_{5,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,4}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 2, 4, 4]),# a
  Vertex([3, 3, 2]),            # b
])
```

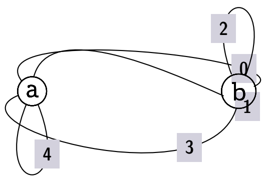
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^4a^5 \to {}^2b^0 \to {}^6a^0)$$
$$\beta = ({}^5a^6)$$
$$\gamma = ({}^0b^1)$$

Markings

Fatgraph $G_{5,4}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,4}$ to $G^{(6)}_{5,4}$ are formed by decorating boundary cycles of $G_{5,4}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4, 4]),# a
  Vertex([3, 1, 0, 2, 2]),# b
])
```

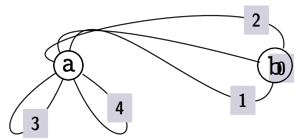
Boundary cycles

$$\alpha = ({}^2b^3 \to {}^4b^0 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{5,5}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,5}$ to $G^{(6)}_{5,5}$ are formed by decorating boundary cycles of $G_{5,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 3, 4, 4]),# a
  Vertex([1, 0, 2]),           # b
])
```

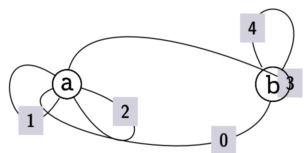
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{6}a^{0})$$
$$\beta = ({}^{3}a^{4})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,6}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,6}$ to $G^{(6)}_{5,6}$ are formed by decorating boundary cycles of $G_{5,6}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,7}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 1, 2, 2]),# a
  Vertex([0, 3, 4, 4]),      # b
])
```

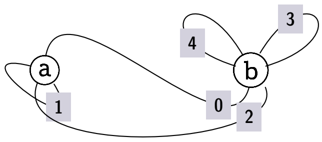
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,7}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,7}$ to $G^{(6)}_{5,7}$ are formed by decorating boundary cycles of $G_{5,7}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,8}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),      # a
  Vertex([0, 2, 3, 3, 4, 4]),# b
])
```

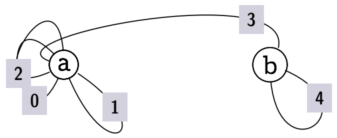
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{4} \to {}^{0}b^{1} \to {}^{5}b^{0})$$
$$\beta = ({}^{2}b^{3})$$
$$\gamma = ({}^{4}b^{5})$$

Markings

Fatgraph $G_{5,8}$ only has the identity automorphism, so the marked fatgraphs $G_{5,8}^{(0)}$ to $G_{5,8}^{(6)}$ are formed by decorating boundary cycles of $G_{5,8}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,9}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 3, 2, 0, 1, 1]),# a
  Vertex([4, 4, 3]),            # b
])
```

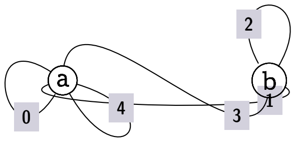
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\beta = ({}^{5}a^{6})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,9}$ only has the identity automorphism, so the marked fatgraphs $G_{5,9}^{(0)}$ to $G_{5,9}^{(6)}$ are formed by decorating boundary cycles of $G_{5,9}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,10}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 0, 1, 0, 4, 4]),# a
  Vertex([3, 1, 2, 2]),      # b
])
```

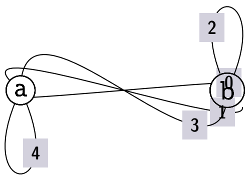
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^3b^0 \to {}^5a^0 \to {}^1b^2)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^2b^3)$$

Markings

Fatgraph $G_{5,10}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,10}$ to $G^{(6)}_{5,10}$ are formed by decorating boundary cycles of $G_{5,10}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,11}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 4, 4]),# a
  Vertex([3, 1, 0, 2, 2]),# b
])
```

Boundary cycles

$$\alpha = ({}^2b^3 \to {}^4b^0 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^4a^0 \to {}^1b^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^3b^4)$$

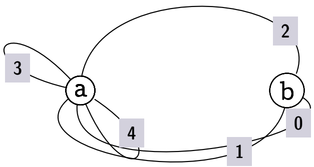
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	0	1	4	3	2	α	γ	β

Markings

	$G^{(0)}_{5,11}$	$G^{(1)}_{5,11}$	$G^{(2)}_{5,11}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{5,12}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 3, 3, 1, 0, 4, 4]),# a
  Vertex([1, 0, 2]),            # b
])
```

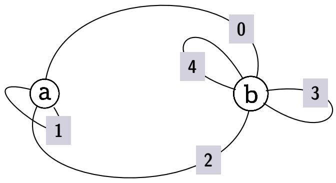
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{6}a^{0})$$
$$\beta = ({}^{1}a^{2})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,12}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,12}$ to $G^{(6)}_{5,12}$ are formed by decorating boundary cycles of $G_{5,12}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,13}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),      # a
  Vertex([2, 3, 3, 0, 4, 4]),# b
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{3}b^{4} \to {}^{2}b^{3} \to {}^{5}b^{0})$$
$$\beta = ({}^{1}b^{2})$$
$$\gamma = ({}^{4}b^{5})$$

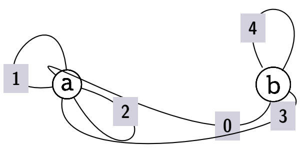
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
A_1 ‡	a	b	2	1	0	4	3	α	γ	β

Markings

	$G_{5,13}^{(0)}$	$G_{5,13}^{(1)}$	$G_{5,13}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{5,14}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 3, 2, 2]),# a
  Vertex([0, 3, 4, 4]),      # b
])
```

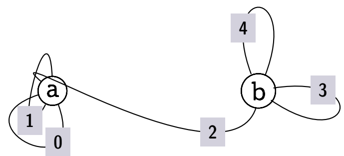
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,14}$ only has the identity automorphism, so the marked fatgraphs $G_{5,14}^{(0)}$ to $G_{5,14}^{(6)}$ are formed by decorating boundary cycles of $G_{5,14}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,15}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([2, 3, 3, 4, 4]),# b
])
```

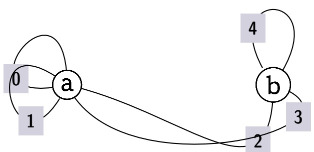
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3a^4 \to {}^4a^0 \to {}^0b^1)\\
\beta &= ({}^1b^2)\\
\gamma &= ({}^3b^4)
\end{aligned}$$

Markings

Fatgraph $G_{5,15}$ only has the identity automorphism, so the marked fatgraphs $G_{5,15}^{(0)}$ to $G_{5,15}^{(6)}$ are formed by decorating boundary cycles of $G_{5,15}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,16}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 3, 2]),# a
  Vertex([2, 3, 4, 4]),      # b
])
```

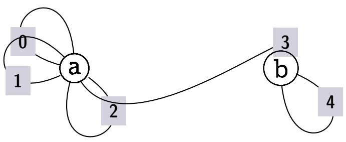
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{5}a^{0})$$
$$\beta = ({}^{4}a^{5} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,16}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,16}$ to $G^{(6)}_{5,16}$ are formed by decorating boundary cycles of $G_{5,16}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,17}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 2, 3, 2]),# a
  Vertex([4, 4, 3]),            # b
])
```

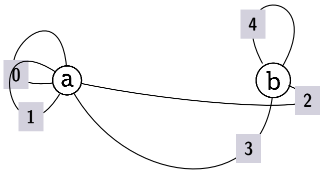
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{6}a^{0})$$
$$\beta = ({}^{5}a^{6} \to {}^{2}b^{0} \to {}^{4}a^{5} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,17}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,17}$ to $G^{(6)}_{5,17}$ are formed by decorating boundary cycles of $G_{5,17}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,18}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 3, 2]),# a
  Vertex([3, 2, 4, 4]),      # b
])
```

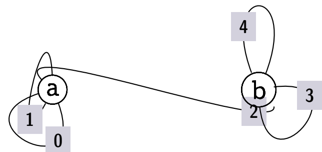
Boundary cycles

$$\begin{aligned}\alpha &= ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^5a^0)\\ \beta &= ({}^3b^0 \to {}^4a^5 \to {}^1b^2)\\ \gamma &= ({}^2b^3)\end{aligned}$$

Markings

Fatgraph $G_{5,18}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,18}$ to $G^{(6)}_{5,18}$ are formed by decorating boundary cycles of $G_{5,18}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,19}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([3, 2, 3, 4, 4]),# b
])
```

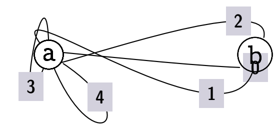
Boundary cycles

$$\begin{aligned}\alpha &= ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^4a^0 \to {}^1b^2)\\ \beta &= ({}^4b^0 \to {}^2b^3)\\ \gamma &= ({}^3b^4)\end{aligned}$$

Markings

Fatgraph $G_{5,19}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,19}$ to $G^{(6)}_{5,19}$ are formed by decorating boundary cycles of $G_{5,19}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,20}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 3, 4, 4]),# a
  Vertex([1, 0, 2]),            # b
])
```

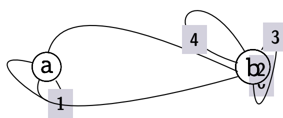
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{2}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}a^{5} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,20}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,20}$ to $G^{(6)}_{5,20}$ are formed by decorating boundary cycles of $G_{5,20}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,21}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),      # a
  Vertex([3, 0, 2, 3, 4, 4]),# b
])
```

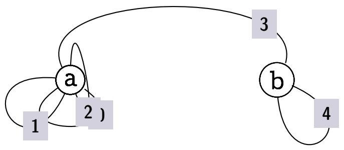
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{5}b^{0} \to {}^{3}b^{4})$$
$$\gamma = ({}^{4}b^{5})$$

Markings

Fatgraph $G_{5,21}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,21}$ to $G^{(6)}_{5,21}$ are formed by decorating boundary cycles of $G_{5,21}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,22}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 3, 1, 0, 1, 2, 0]),# a
  Vertex([4, 4, 3]),            # b
])
```

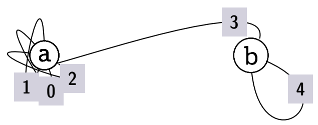
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{5}a^{6} \to {}^{3}a^{4} \to {}^{6}a^{0})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,22}$ only has the identity automorphism, so the marked fatgraphs $G_{5,22}^{(0)}$ to $G_{5,22}^{(6)}$ are formed by decorating boundary cycles of $G_{5,22}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,23}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 1, 0, 2]),# a
  Vertex([4, 4, 3]),            # b
])
```

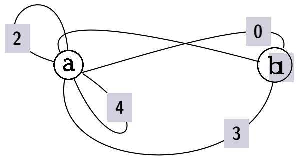
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{6} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{6}a^{0})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,23}$ only has the identity automorphism, so the marked fatgraphs $G_{5,23}^{(0)}$ to $G_{5,23}^{(6)}$ are formed by decorating boundary cycles of $G_{5,23}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,24}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 2, 0, 3, 4, 4]),# a
  Vertex([3, 1, 0]),            # b
])
```

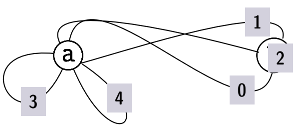
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{3}a^{4} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{4}a^{5} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,24}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,24}$ to $G^{(6)}_{5,24}$ are formed by decorating boundary cycles of $G_{5,24}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,25}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 3, 1, 3, 4, 4]),# a
  Vertex([0, 2, 1]),            # b
])
```

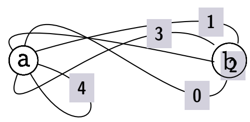
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{6}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,25}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,25}$ to $G^{(6)}_{5,25}$ are formed by decorating boundary cycles of $G_{5,25}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,26}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 4, 4]),# a
  Vertex([0, 2, 1, 3]),      # b
])
```

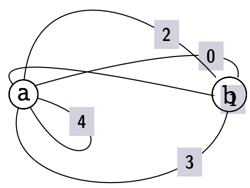
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^3b^0 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^0b^1 \to {}^3a^4 \to {}^5a^0 \to {}^2b^3)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{5,26}$ only has the identity automorphism, so the marked fatgraphs $G_{5,26}^{(0)}$ to $G_{5,26}^{(6)}$ are formed by decorating boundary cycles of $G_{5,26}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,27}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 3, 4, 4]),# a
  Vertex([3, 1, 0, 2]),      # b
])
```

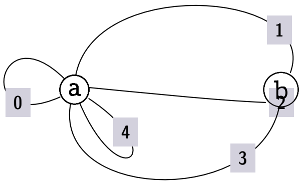
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^3b^0 \to {}^3a^4 \to {}^5a^0)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{5,27}$ only has the identity automorphism, so the marked fatgraphs $G_{5,27}^{(0)}$ to $G_{5,27}^{(6)}$ are formed by decorating boundary cycles of $G_{5,27}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,28}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 0, 3, 4, 4]),# a
  Vertex([3, 2, 1]),           # b
])
```

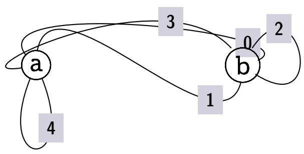
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}b^{0} \to {}^{4}a^{5} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,28}$ only has the identity automorphism, so the marked fatgraphs $G_{5,28}^{(0)}$ to $G_{5,28}^{(6)}$ are formed by decorating boundary cycles of $G_{5,28}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,29}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4, 4]),# a
  Vertex([1, 2, 0, 2, 3]),# b
])
```

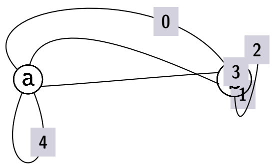
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{4}b^{0} \to {}^{1}b^{2} \to {}^{0}a^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{2}a^{3} \to {}^{3}b^{4} \to {}^{0}b^{1} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{5,29}$ only has the identity automorphism, so the marked fatgraphs $G_{5,29}^{(0)}$ to $G_{5,29}^{(6)}$ are formed by decorating boundary cycles of $G_{5,29}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,30}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4, 4]),# a
  Vertex([2, 1, 3, 2, 0]),# b
])
```

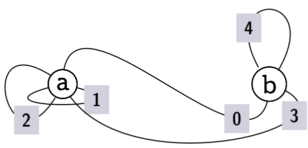
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^4 \to {}^2b^3)$$
$$\beta = ({}^2a^3 \to {}^1b^2 \to {}^4a^0)$$
$$\gamma = ({}^3a^4)$$

Markings

Fatgraph $G_{5,30}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,30}$ to $G^{(6)}_{5,30}$ are formed by decorating boundary cycles of $G_{5,30}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,31}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 2, 3, 1]),# a
  Vertex([0, 3, 4, 4]),      # b
])
```

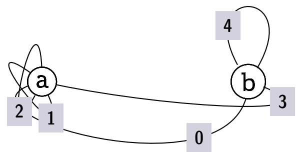
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^3b^0 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^2a^3 \to {}^4a^5 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^2b^3)$$

Markings

Fatgraph $G_{5,31}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,31}$ to $G^{(6)}_{5,31}$ are formed by decorating boundary cycles of $G_{5,31}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,32}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 2, 1, 3]),# a
  Vertex([0, 3, 4, 4]),      # b
])
```

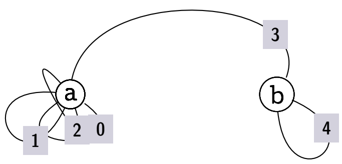
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{4}a^{5} \to {}^{3}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{4} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,32}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,32}$ to $G^{(6)}_{5,32}$ are formed by decorating boundary cycles of $G_{5,32}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,33}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 1, 2, 0]),# a
  Vertex([4, 4, 3]),            # b
])
```

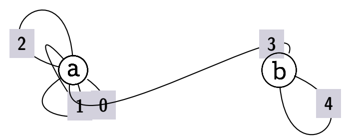
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{6} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,33}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,33}$ to $G^{(6)}_{5,33}$ are formed by decorating boundary cycles of $G_{5,33}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,34}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 2, 0, 3, 1, 0]),# a
  Vertex([4, 4, 3]),           # b
])
```

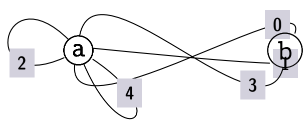
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{6} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{4}a^{5} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{6}a^{0})$$
$$\gamma = ({}^{0}b^{1})$$

Markings

Fatgraph $G_{5,34}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,34}$ to $G^{(6)}_{5,34}$ are formed by decorating boundary cycles of $G_{5,34}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,35}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 2, 0, 4, 4]),# a
  Vertex([3, 1, 0]),           # b
])
```

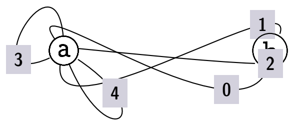
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,35}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,35}$ to $G^{(6)}_{5,35}$ are formed by decorating boundary cycles of $G_{5,35}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,36}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 0, 2, 3, 1, 4, 4]),# a
  Vertex([0, 2, 1]),            # b
])
```

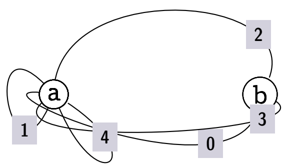
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^3a^4 \to {}^1a^2 \to {}^1b^2 \to {}^4a^5 \to {}^2b^0 \to {}^6a^0)$$
$$\gamma = ({}^5a^6)$$

Markings

Fatgraph $G_{5,36}$ only has the identity automorphism, so the marked fatgraphs $G_{5,36}^{(0)}$ to $G_{5,36}^{(6)}$ are formed by decorating boundary cycles of $G_{5,36}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,37}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 3, 1, 4, 4]),# a
  Vertex([0, 3, 2]),            # b
])
```

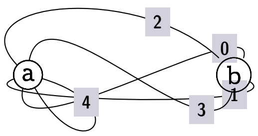
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^2b^0 \to {}^6a^0)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^0b^1)$$
$$\gamma = ({}^5a^6)$$

Markings

Fatgraph $G_{5,37}$ only has the identity automorphism, so the marked fatgraphs $G_{5,37}^{(0)}$ to $G_{5,37}^{(6)}$ are formed by decorating boundary cycles of $G_{5,37}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,38}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 4, 4]),# a
  Vertex([3, 1, 0, 2]),      # b
])
```

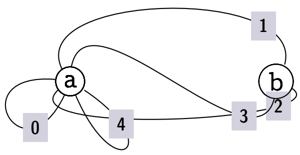
Boundary cycles

$$\alpha = ({}^{3}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{2}b^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{5}a^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{4}a^{5})$$

Markings

Fatgraph $G_{5,38}$ only has the identity automorphism, so the marked fatgraphs $G_{5,38}^{(0)}$ to $G_{5,38}^{(6)}$ are formed by decorating boundary cycles of $G_{5,38}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,39}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 0, 4, 4]),# a
  Vertex([3, 2, 1]),            # b
])
```

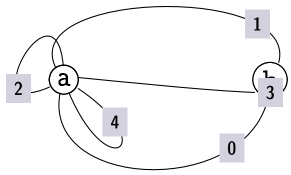
Boundary cycles

$$\alpha = ({}^{2}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{4}a^{5} \to {}^{1}b^{2} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,39}$ only has the identity automorphism, so the marked fatgraphs $G_{5,39}^{(0)}$ to $G_{5,39}^{(6)}$ are formed by decorating boundary cycles of $G_{5,39}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,40}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 3, 2, 0, 4, 4]),# a
  Vertex([0, 3, 1]),            # b
])
```

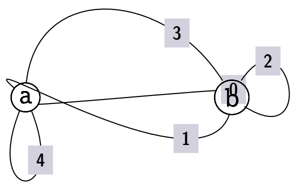
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^3a^4 \to {}^2b^0 \to {}^6a^0)$$
$$\beta = ({}^1a^2 \to {}^1b^2)$$
$$\gamma = ({}^5a^6)$$

Markings

Fatgraph $G_{5,40}$ only has the identity automorphism, so the marked fatgraphs $G_{5,40}^{(0)}$ to $G_{5,40}^{(6)}$ are formed by decorating boundary cycles of $G_{5,40}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,41}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 4, 4]),# a
  Vertex([1, 2, 0, 2, 3]),# b
])
```

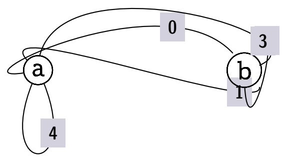
Boundary cycles

$$\alpha = ({}^3b^4 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^2b^3 \to {}^4b^0 \to {}^1a^2 \to {}^1b^2 \to {}^2a^3 \to {}^4a^0)$$
$$\gamma = ({}^3a^4)$$

Markings

Fatgraph $G_{5,41}$ only has the identity automorphism, so the marked fatgraphs $G_{5,41}^{(0)}$ to $G_{5,41}^{(6)}$ are formed by decorating boundary cycles of $G_{5,41}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,42}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 4, 4]),# a
  Vertex([2, 1, 3, 2, 0]),# b
])
```

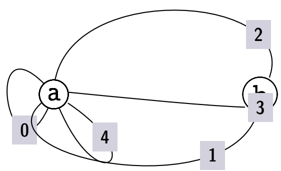
Boundary cycles

$$\alpha = ({}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}b^{0} \to {}^{1}a^{2} \to {}^{2}b^{3} \to {}^{2}a^{3} \to {}^{3}b^{4} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{5,42}$ only has the identity automorphism, so the marked fatgraphs $G_{5,42}^{(0)}$ to $G_{5,42}^{(6)}$ are formed by decorating boundary cycles of $G_{5,42}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,43}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 3, 1, 0, 4, 4]),# a
  Vertex([1, 3, 2]),            # b
])
```

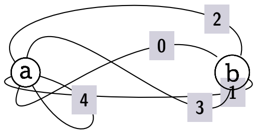
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{0}b^{1})$$
$$\gamma = ({}^{5}a^{6})$$

Markings

Fatgraph $G_{5,43}$ only has the identity automorphism, so the marked fatgraphs $G_{5,43}^{(0)}$ to $G_{5,43}^{(6)}$ are formed by decorating boundary cycles of $G_{5,43}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,44}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 4, 4]),# a
  Vertex([3, 1, 2, 0]),      # b
])
```

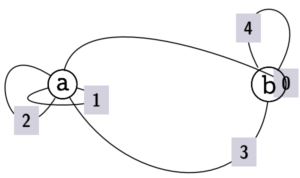
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{5}a^{0} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{4}a^{5})$$

Markings

Fatgraph $G_{5,44}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,44}$ to $G^{(6)}_{5,44}$ are formed by decorating boundary cycles of $G_{5,44}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,45}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 2, 3, 1]),# a
  Vertex([3, 0, 4, 4]),      # b
])
```

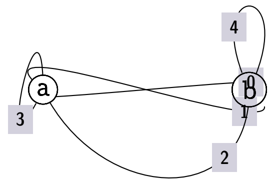
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{5}a^{0})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,45}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,45}$ to $G^{(6)}_{5,45}$ are formed by decorating boundary cycles of $G_{5,45}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,46}$ (6 orientable markings)



```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([2, 1, 0, 4, 4]),# b
])
```

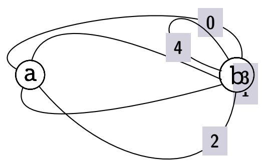
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}b^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{4}b^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}b^{4})$$

Markings

Fatgraph $G_{5,46}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,46}$ to $G^{(6)}_{5,46}$ are formed by decorating boundary cycles of $G_{5,46}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,47}$ (6 orientable markings)



```
Fatgraph([
  Vertex([1, 0, 3, 2]),      # a
  Vertex([2, 1, 3, 0, 4, 4]),# b
])
```

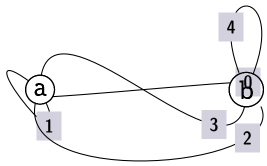
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{4} \to {}^{0}b^{1} \to {}^{5}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{4}b^{5})$$

Markings

Fatgraph $G_{5,47}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,47}$ to $G^{(6)}_{5,47}$ are formed by decorating boundary cycles of $G_{5,47}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,48}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([3, 2, 0, 4, 4]),# b
])
```

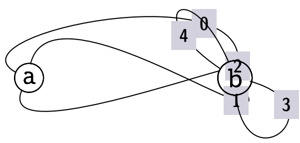
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{4}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}a^{3} \to {}^{1}b^{2})$$
$$\gamma = ({}^{3}b^{4})$$

Markings

Fatgraph $G_{5,48}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,48}$ to $G^{(6)}_{5,48}$ are formed by decorating boundary cycles of $G_{5,48}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,49}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),             # a
  Vertex([3, 1, 3, 2, 0, 4, 4]),# b
])
```

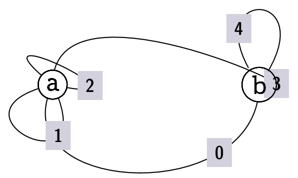
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{4}b^{5} \to {}^{6}b^{0} \to {}^{2}b^{3} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{4})$$
$$\gamma = ({}^{5}b^{6})$$

Markings

Fatgraph $G_{5,49}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,49}$ to $G^{(6)}_{5,49}$ are formed by decorating boundary cycles of $G_{5,49}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,50}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 1, 2]),# a
  Vertex([0, 3, 4, 4]),      # b
])
```

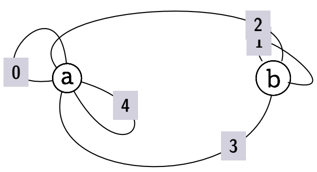
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5})$$
$$\gamma = ({}^{2}b^{3})$$

Markings

Fatgraph $G_{5,50}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,50}$ to $G^{(6)}_{5,50}$ are formed by decorating boundary cycles of $G_{5,50}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,51}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 0, 3, 4, 4]),# a
  Vertex([3, 1, 2, 1]),      # b
])
```

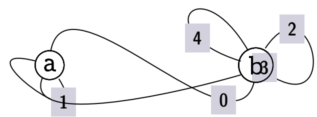
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{1}b^{2} \to {}^{0}a^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{2}a^{3} \to {}^{3}b^{0} \to {}^{3}a^{4} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{4}a^{5})$$

Markings

Fatgraph $G_{5,51}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,51}$ to $G^{(6)}_{5,51}$ are formed by decorating boundary cycles of $G_{5,51}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,52}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),      # a
  Vertex([0, 2, 3, 2, 4, 4]),# b
])
```

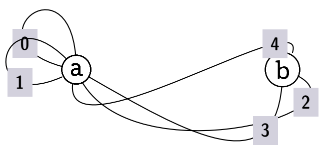
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{3}b^{4} \to {}^{0}a^{1} \to {}^{5}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{4}b^{5})$$

Markings

Fatgraph $G_{5,52}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,52}$ to $G^{(6)}_{5,52}$ are formed by decorating boundary cycles of $G_{5,52}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,53}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 4, 2, 3]),# a
  Vertex([3, 2, 4]),            # b
])
```

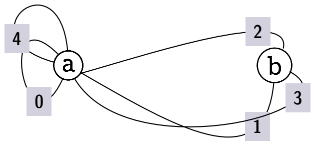
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}a^{2} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\beta = ({}^{4}a^{5} \to {}^{1}b^{2})$$
$$\gamma = ({}^{5}a^{6} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{5,53}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,53}$ to $G^{(6)}_{5,53}$ are formed by decorating boundary cycles of $G_{5,53}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,54}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 0, 4, 2, 0, 3, 1]),# a
  Vertex([1, 3, 2]),            # b
])
```

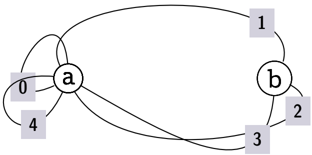
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{0}a^{1} \to {}^{3}a^{4} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{5,54}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,54}$ to $G^{(6)}_{5,54}$ are formed by decorating boundary cycles of $G_{5,54}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,55}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 0, 4, 2, 3]),# a
  Vertex([3, 2, 1]),            # b
])
```

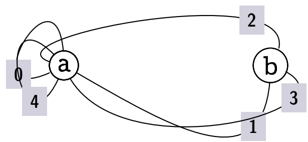
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{6}a^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{1}b^{2})$$
$$\gamma = ({}^{5}a^{6} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{5,55}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,55}$ to $G^{(6)}_{5,55}$ are formed by decorating boundary cycles of $G_{5,55}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,56}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 2, 0, 4, 3, 1]),# a
  Vertex([1, 3, 2]),            # b
])
```

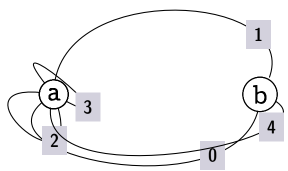
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{4}a^{5} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{3}a^{4} \to {}^{6}a^{0})$$
$$\gamma = ({}^{5}a^{6} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{5,56}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,56}$ to $G^{(6)}_{5,56}$ are formed by decorating boundary cycles of $G_{5,56}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,57}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 3, 2, 0, 4, 2, 3]),# a
  Vertex([0, 4, 1]),            # b
])
```

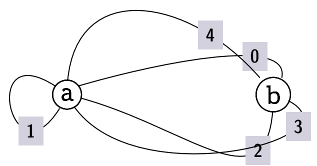
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{6}a^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{5}a^{6})$$
$$\gamma = ({}^{2}a^{3} \to {}^{4}a^{5} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{5,57}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,57}$ to $G^{(6)}_{5,57}$ are formed by decorating boundary cycles of $G_{5,57}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,58}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 1, 0, 1, 3, 2]),# a
  Vertex([2, 3, 0, 4]),      # b
])
```

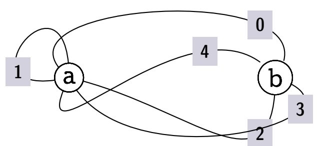
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^1b^2)$$
$$\beta = ({}^4a^5 \to {}^0b^1)$$
$$\gamma = ({}^3b^0 \to {}^5a^0)$$

Markings

Fatgraph $G_{5,58}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,58}$ to $G^{(6)}_{5,58}$ are formed by decorating boundary cycles of $G_{5,58}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,59}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 4, 3, 2]),# a
  Vertex([2, 3, 0, 4]),      # b
])
```

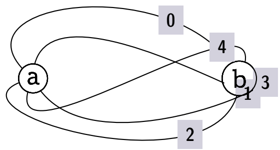
Boundary cycles

$$\alpha = ({}^1a^2 \to {}^3a^4 \to {}^1b^2 \to {}^0a^1 \to {}^2b^3)$$
$$\beta = ({}^2a^3 \to {}^3b^0 \to {}^5a^0)$$
$$\gamma = ({}^4a^5 \to {}^0b^1)$$

Markings

Fatgraph $G_{5,59}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,59}$ to $G^{(6)}_{5,59}$ are formed by decorating boundary cycles of $G_{5,59}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,60}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([2, 1, 3, 4, 0]),# b
])
```

Boundary cycles

$$\alpha = ({}^4b^0 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^3b^4)$$
$$\beta = ({}^3a^4 \to {}^2b^3)$$
$$\gamma = ({}^1b^2 \to {}^4a^0)$$

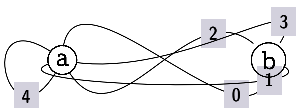
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	0	4	2	3	1	α	γ	β

Markings

	$G^{(0)}_{5,60}$	$G^{(1)}_{5,60}$	$G^{(2)}_{5,60}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{5,61}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 1, 4, 2, 3]),# a
  Vertex([0, 1, 3, 2]),      # b
])
```

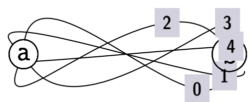
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{3}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{5}a^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{4}a^{5} \to {}^{2}b^{3})$$

Markings

Fatgraph $G_{5,61}$ only has the identity automorphism, so the marked fatgraphs $G_{5,61}^{(0)}$ to $G_{5,61}^{(6)}$ are formed by decorating boundary cycles of $G_{5,61}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,62}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2, 3]),# a
  Vertex([0, 1, 4, 3, 2]),# b
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{4}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{0} \to {}^{0}b^{1} \to {}^{2}b^{3})$$
$$\gamma = ({}^{3}a^{4} \to {}^{3}b^{4})$$

Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	0	1	3	2	4	β	α	γ

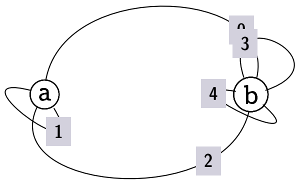
Markings

	$G_{5,62}^{(0)}$	$G_{5,62}^{(1)}$	$G_{5,62}^{(2)}$
α	0	0	1

(continued.)

β	1	2	2
γ	2	1	0

The Fatgraph $G_{5,63}$ (3 orientable markings)



```
Fatgraph([
  Vertex([0, 1, 2, 1]),       # a
  Vertex([2, 4, 3, 0, 3, 4]),# b
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{2}b^{3} \to {}^{0}a^{1} \to {}^{3}b^{4})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{5}b^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{4}b^{5} \to {}^{1}b^{2})$$

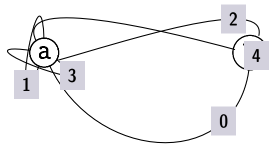
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\ddagger}$	a	b	2	1	0	4	3	β	α	γ

Markings

	$G_{5,63}^{(0)}$	$G_{5,63}^{(1)}$	$G_{5,63}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{5,64}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 4, 3, 2, 1, 0, 3]),# a
  Vertex([0, 4, 2]),            # b
])
```

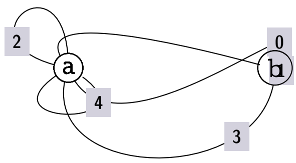
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5} \to {}^{6}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}a^{3} \to {}^{5}a^{6} \to {}^{2}b^{0})$$

Markings

Fatgraph $G_{5,64}$ only has the identity automorphism, so the marked fatgraphs $G_{5,64}^{(0)}$ to $G_{5,64}^{(6)}$ are formed by decorating boundary cycles of $G_{5,64}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,65}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 2, 4, 3, 0, 4]),# a
  Vertex([3, 1, 0]),            # b
])
```

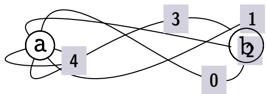
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{6} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{6}a^{0})$$
$$\gamma = ({}^{2}b^{0} \to {}^{4}a^{5})$$

Markings

Fatgraph $G_{5,65}$ only has the identity automorphism, so the marked fatgraphs $G_{5,65}^{(0)}$ to $G_{5,65}^{(6)}$ are formed by decorating boundary cycles of $G_{5,65}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,66}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 4, 3, 1, 4]),# a
  Vertex([0, 2, 1, 3]),      # b
])
```

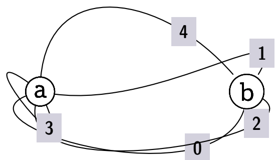
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^4a^5 \to {}^3b^0 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^3a^4 \to {}^2b^3)$$

Markings

Fatgraph $G_{5,66}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,66}$ to $G^{(6)}_{5,66}$ are formed by decorating boundary cycles of $G_{5,66}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{5,67}$ (3 orientable markings)




```
Fatgraph([
  Vertex([4, 3, 0, 2, 3, 1]),# a
  Vertex([0, 2, 1, 4]),      # b
])
```

Boundary cycles

$$\alpha = ({}^4a^5 \to {}^0a^1 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^0b^1)$$
$$\gamma = ({}^2a^3 \to {}^3b^0 \to {}^5a^0 \to {}^1b^2)$$

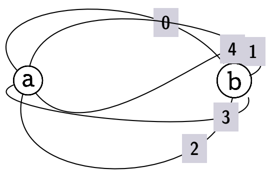
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^\ddagger$	a	b	1	0	4	3	2	β	α	γ

Markings

	$G^{(0)}_{5,67}$	$G^{(1)}_{5,67}$	$G^{(2)}_{5,67}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{5,68}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2, 4]),# a
  Vertex([2, 3, 1, 4, 0]),# b
])
```

Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^3b^4 \to {}^3a^4)$$
$$\beta = ({}^2a^3 \to {}^0b^1)$$
$$\gamma = ({}^2b^3 \to {}^4a^0)$$

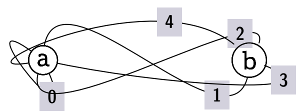
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
A_1	b	a	0	4	3	2	1	α	β	γ

Markings

Fatgraph $G_{5,68}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{5,68}$ to $G^{(6)}_{5,68}$ are formed by decorating boundary cycles of $G_{5,68}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,69}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2, 0, 3]),# a
  Vertex([1, 3, 2, 4]),      # b
])
```

Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{3}a^{4})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}b^{3})$$
$$\gamma = ({}^{5}a^{0} \to {}^{0}b^{1})$$

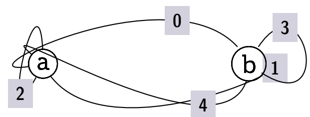
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\ddagger}$	a	b	0	2	1	4	3	α	γ	β

Markings

	$G^{(0)}_{5,69}$	$G^{(1)}_{5,69}$	$G^{(2)}_{5,69}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{5,70}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 4, 0, 2, 1]),# a
  Vertex([4, 3, 1, 3, 0]),# b
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^3b^4 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^4b^0)$$
$$\gamma = ({}^1b^2 \to {}^3a^4 \to {}^4a^0 \to {}^2b^3)$$

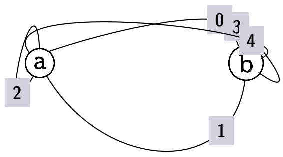
Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
A_1	b	a	4	1	3	2	0	α	β	γ

Markings

Fatgraph $G_{5,70}$ only has the identity automorphism, so the marked fatgraphs $G_{5,70}^{(0)}$ to $G_{5,70}^{(6)}$ are formed by decorating boundary cycles of $G_{5,70}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{5,71}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([2, 4, 0, 2, 1]),# a
  Vertex([1, 3, 4, 0, 3]),# b
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^1b^2 \to {}^3b^4)$$
$$\gamma = ({}^4b^0 \to {}^4a^0 \to {}^3a^4 \to {}^0b^1)$$

Automorphisms

A_0	a	b	0	1	2	3	4	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	0	1	3	2	4	β	α	γ

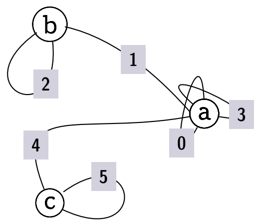
Markings

	$G_{5,71}^{(0)}$	$G_{5,71}^{(1)}$	$G_{5,71}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Fatgraphs with 6 edges / 3 vertices

There are 198 unmarked fatgraphs in this section, originating 2238 marked fatgraphs (1112 orientable, and 1126 nonorientable).

The Fatgraph $G_{6,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 4, 0, 1, 3]),# a
  Vertex([2, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

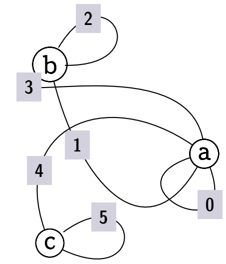
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^5a^0 \to {}^3a^4 \to {}^2b^0 \to {}^2c^0)$$
$$\beta = ({}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,0}$ only has the identity automorphism, so the marked fatgraphs $G_{6,0}^{(0)}$ to $G_{6,0}^{(6)}$ are formed by decorating boundary cycles of $G_{6,0}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,1}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 4, 0, 1, 0]),# a
  Vertex([3, 1, 2, 2]),   # b
  Vertex([5, 5, 4]),      # c
])
```

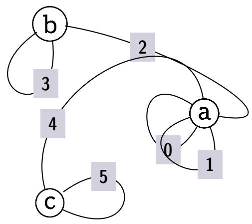
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^4a^0 \to {}^1b^2)$$
$$\beta = ({}^2b^3)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,1}$ only has the identity automorphism, so the marked fatgraphs $G_{6,1}^{(0)}$ to $G_{6,1}^{(6)}$ are formed by decorating boundary cycles of $G_{6,1}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,2}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 0, 1, 0, 1, 2]),# a
  Vertex([3, 3, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

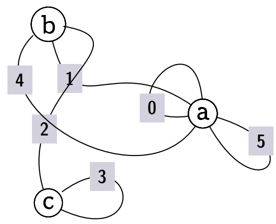
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^5a^0 \to {}^4a^5 \to {}^2b^0 \to {}^2c^0)$$
$$\beta = ({}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,2}$ only has the identity automorphism, so the marked fatgraphs $G_{6,2}^{(0)}$ to $G_{6,2}^{(6)}$ are formed by decorating boundary cycles of $G_{6,2}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 4, 5, 5]),# a
  Vertex([4, 1, 2]),         # b
  Vertex([3, 3, 2]),         # c
])
```

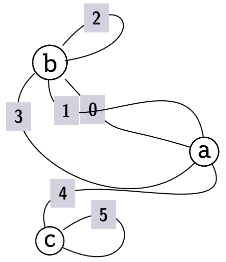
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^5a^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,3}$ only has the identity automorphism, so the marked fatgraphs $G_{6,3}^{(0)}$ to $G_{6,3}^{(6)}$ are formed by decorating boundary cycles of $G_{6,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,4}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4]),   # a
  Vertex([3, 1, 0, 2, 2]),# b
  Vertex([5, 5, 4]),      # c
])
```

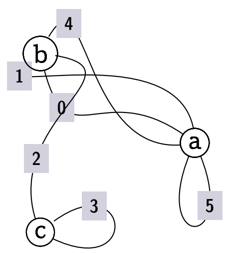
Boundary cycles

$$\alpha = ({}^{4}b^{0} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{1}c^{2} \to {}^{2}b^{3} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}b^{4})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,4}$ only has the identity automorphism, so the marked fatgraphs $G_{6,4}^{(0)}$ to $G_{6,4}^{(6)}$ are formed by decorating boundary cycles of $G_{6,4}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 0, 2, 4]),   # b
  Vertex([3, 3, 2]),      # c
])
```

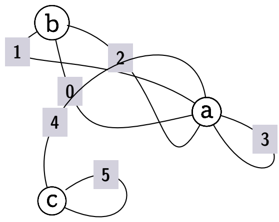
Boundary cycles

$$\alpha = ({}^4a^0 \to {}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,5}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,5}$ to $G^{(6)}_{6,5}$ are formed by decorating boundary cycles of $G_{6,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 1, 0, 2, 3, 3]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

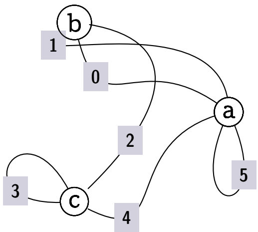
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^5a^0 \to {}^2c^0 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,6}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,6}$ to $G^{(6)}_{6,6}$ are formed by decorating boundary cycles of $G_{6,6}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,7}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 2, 3, 3]),   # c
])
```

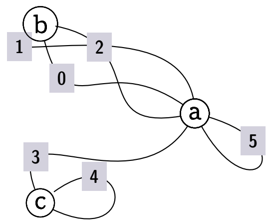
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^2a^3 \to {}^0c^1 \to {}^0a^1 \to {}^4a^0 \to {}^1a^2 \to {}^3c^0 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,7}$ only has the identity automorphism, so the marked fatgraphs $G_{6,7}^{(0)}$ to $G_{6,7}^{(6)}$ are formed by decorating boundary cycles of $G_{6,7}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,8}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 5, 5]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([4, 4, 3]),         # c
])
```

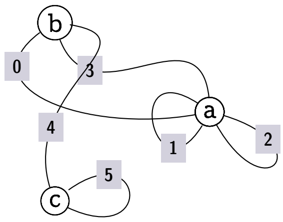
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^5a^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,8}$ only has the identity automorphism, so the marked fatgraphs $G_{6,8}^{(0)}$ to $G_{6,8}^{(6)}$ are formed by decorating boundary cycles of $G_{6,8}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,9}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 1, 2, 2]),# a
  Vertex([0, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

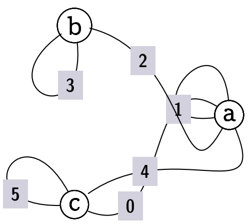
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^5a^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,9}$ only has the identity automorphism, so the marked fatgraphs $G_{6,9}^{(0)}$ to $G_{6,9}^{(6)}$ are formed by decorating boundary cycles of $G_{6,9}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,10}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 2, 4]),# a
  Vertex([3, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

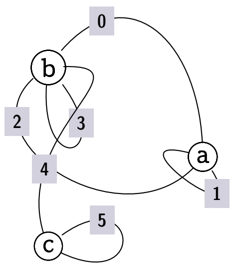
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{4}a^{0})$$
$$\beta = ({}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,10}$ only has the identity automorphism, so the marked fatgraphs $G_{6,10}^{(0)}$ to $G_{6,10}^{(6)}$ are formed by decorating boundary cycles of $G_{6,10}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,11}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([2, 3, 3, 4, 0]),# b
  Vertex([5, 5, 4]),      # c
])
```

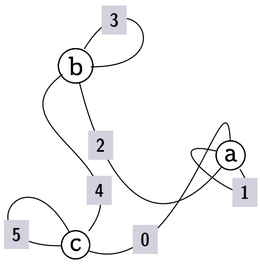
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^2a^3 \to {}^3a^0 \to {}^3b^4 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^1c^2 \to {}^2c^0 \to {}^2b^3)$$
$$\beta = ({}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,11}$ only has the identity automorphism, so the marked fatgraphs $G_{6,11}^{(0)}$ to $G_{6,11}^{(6)}$ are formed by decorating boundary cycles of $G_{6,11}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,12}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([4, 2, 3, 3]),# b
  Vertex([0, 4, 5, 5]),# c
])
```

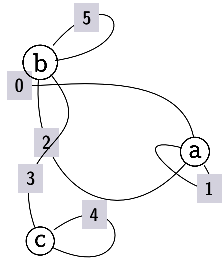
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2)$$
$$\beta = ({}^2b^3)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,12}$ only has the identity automorphism, so the marked fatgraphs $G_{6,12}^{(0)}$ to $G_{6,12}^{(6)}$ are formed by decorating boundary cycles of $G_{6,12}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,13}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([0, 2, 3, 5, 5]),# b
  Vertex([4, 4, 3]),      # c
])
```

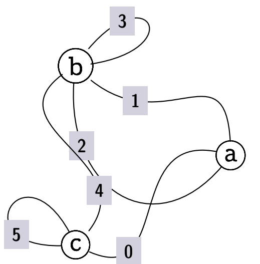
Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{4}b^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{3}b^{4})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,13}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,13}$ to $G^{(6)}_{6,13}$ are formed by decorating boundary cycles of $G_{6,13}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,14}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([4, 2, 1, 3, 3]),# b
  Vertex([0, 4, 5, 5]),   # c
])
```

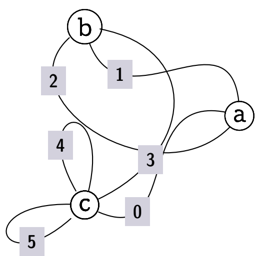
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}b^{4})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,14}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,14}$ to $G^{(6)}_{6,14}$ are formed by decorating boundary cycles of $G_{6,14}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,15}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 1, 3]),          # b
  Vertex([0, 3, 4, 4, 5, 5]),# c
])
```

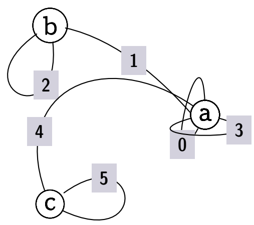
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{5}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{3}c^{4})$$
$$\beta = ({}^{2}c^{3})$$
$$\gamma = ({}^{4}c^{5})$$

Markings

Fatgraph $G_{6,15}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,15}$ to $G^{(6)}_{6,15}$ are formed by decorating boundary cycles of $G_{6,15}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,16}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 3, 0, 1, 3]),# a
  Vertex([2, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{5}a^{0} \to {}^{4}a^{5} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

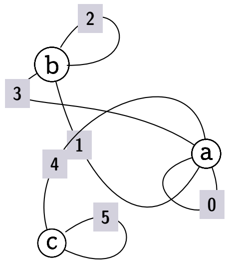
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	0	4	5	3	1	2	α	γ	β

Markings

	$G_{6,16}^{(0)}$	$G_{6,16}^{(1)}$	$G_{6,16}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,17}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 3, 0, 1, 0]),# a
  Vertex([3, 1, 2, 2]),   # b
  Vertex([5, 5, 4]),      # c
])
```

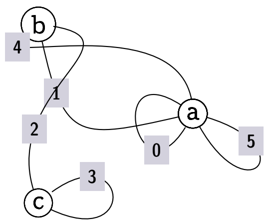
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}b^{3})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,17}$ only has the identity automorphism, so the marked fatgraphs $G_{6,17}^{(0)}$ to $G_{6,17}^{(6)}$ are formed by decorating boundary cycles of $G_{6,17}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,18}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 0, 1, 0, 5, 5]),# a
  Vertex([4, 1, 2]),         # b
  Vertex([3, 3, 2]),         # c
])
```

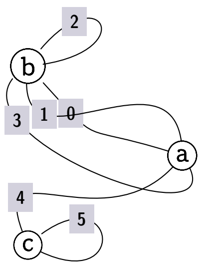
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{5}a^{0} \to {}^{2}c^{0} \to {}^{2}b^{0} \to {}^{1}b^{2}) \\
\beta &= ({}^{4}a^{5}) \\
\gamma &= ({}^{0}c^{1})
\end{aligned}
$$

Markings

Fatgraph $G_{6,18}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,18}$ to $G^{(6)}_{6,18}$ are formed by decorating boundary cycles of $G_{6,18}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,19}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([3, 1, 0, 2, 2]),# b
  Vertex([5, 5, 4]),      # c
])
```

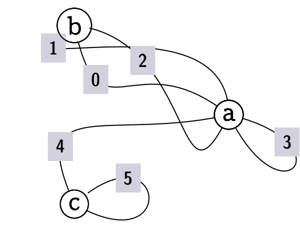
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{4}b^{0} \to {}^{2}a^{3} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{2}b^{3} \to {}^{0}b^{1}) \\
\beta &= ({}^{3}b^{4}) \\
\gamma &= ({}^{0}c^{1})
\end{aligned}
$$

Markings

Fatgraph $G_{6,19}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,19}$ to $G^{(6)}_{6,19}$ are formed by decorating boundary cycles of $G_{6,19}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,20}$ (6 orientable markings)



```
Fatgraph([
  Vertex([1, 0, 4, 2, 3, 3]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

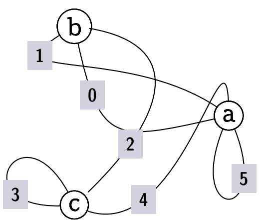
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{5}a^{0} \to {}^{2}c^{0} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,20}$ only has the identity automorphism, so the marked fatgraphs $G_{6,20}^{(0)}$ to $G_{6,20}^{(6)}$ are formed by decorating boundary cycles of $G_{6,20}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,21}$ (6 orientable markings)



```
Fatgraph([
  Vertex([4, 1, 0, 5, 5]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 2, 3, 3]),   # c
])
```

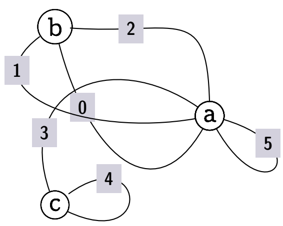
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}a^{4})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,21}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,21}$ to $G^{(6)}_{6,21}$ are formed by decorating boundary cycles of $G_{6,21}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,22}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 3, 1, 0, 5, 5]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([4, 4, 3]),         # c
])
```

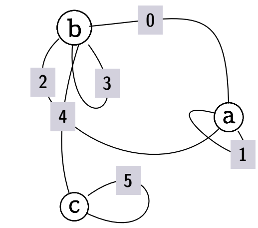
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,22}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,22}$ to $G^{(6)}_{6,22}$ are formed by decorating boundary cycles of $G_{6,22}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,23}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([2, 3, 3, 0, 4]),# b
  Vertex([5, 5, 4]),      # c
])
```

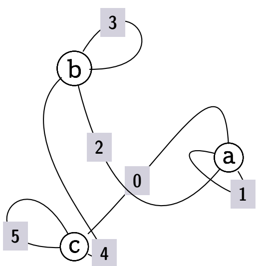
Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{4}b^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{3}b^{4} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,23}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,23}$ to $G^{(6)}_{6,23}$ are formed by decorating boundary cycles of $G_{6,23}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,24}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([4, 2, 3, 3]),# b
  Vertex([4, 0, 5, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{3}c^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3})$$

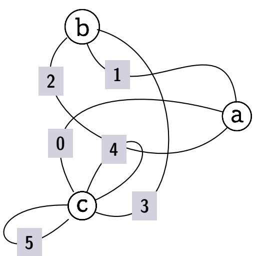
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	5	4	3	α	γ	β

Markings

	$G_{6,24}^{(0)}$	$G_{6,24}^{(1)}$	$G_{6,24}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,25}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 1, 3]),          # b
  Vertex([3, 4, 4, 0, 5, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{5}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{3}c^{4} \to {}^{0}b^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}c^{2})$$
$$\gamma = ({}^{4}c^{5})$$

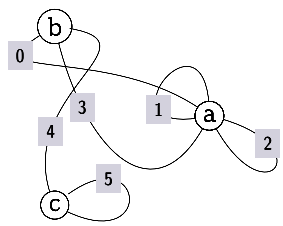
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1 ‡	b	a	c	3	1	2	0	5	4	α	γ	β

Markings

	$G_{6,25}^{(0)}$	$G_{6,25}^{(1)}$	$G_{6,25}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,26}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 3, 2, 2]),# a
  Vertex([0, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

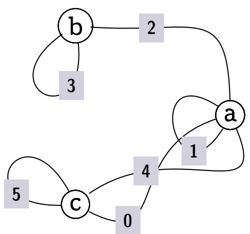
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^5a^0 \to {}^2c^0 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,26}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,26}$ to $G^{(6)}_{6,26}$ are formed by decorating boundary cycles of $G_{6,26}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,27}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 4]),# a
  Vertex([3, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

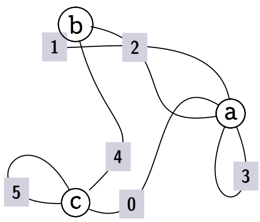
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0c^1 \to {}^0a^1 \to {}^4a^0 \to {}^1a^2 \to {}^3c^0 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,27}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,27}$ to $G^{(6)}_{6,27}$ are formed by decorating boundary cycles of $G_{6,27}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,28}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 3]),# a
  Vertex([1, 4, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

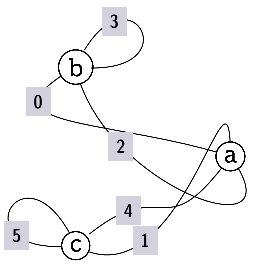
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2b^0 \to {}^4a^0 \to {}^1b^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,28}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,28}$ to $G^{(6)}_{6,28}$ are formed by decorating boundary cycles of $G_{6,28}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,29}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2]),# a
  Vertex([0, 2, 3, 3]),# b
  Vertex([1, 4, 5, 5]),# c
])
```

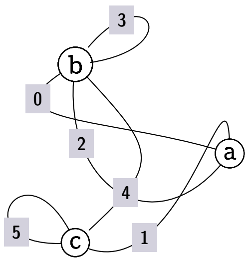
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^0b^1)$$
$$\beta = ({}^2b^3)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,29}$ only has the identity automorphism, so the marked fatgraphs $G_{6,29}^{(0)}$ to $G_{6,29}^{(6)}$ are formed by decorating boundary cycles of $G_{6,29}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,30}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([0, 2, 4, 3, 3]),# b
  Vertex([1, 4, 5, 5]),   # c
])
```

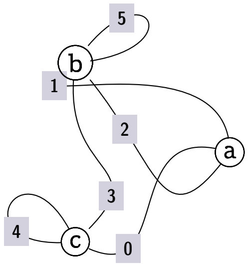
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^2b^3 \to {}^0c^1 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^3b^4)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,30}$ only has the identity automorphism, so the marked fatgraphs $G_{6,30}^{(0)}$ to $G_{6,30}^{(6)}$ are formed by decorating boundary cycles of $G_{6,30}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,31}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([1, 3, 2, 5, 5]),# b
  Vertex([0, 3, 4, 4]),   # c
])
```

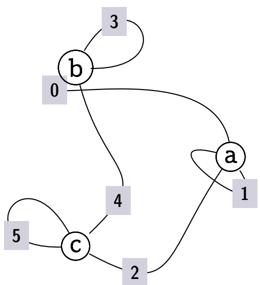
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^2b^3 \to {}^4b^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^1c^2 \to {}^1b^2)$$
$$\beta = ({}^3b^4)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,31}$ only has the identity automorphism, so the marked fatgraphs $G_{6,31}^{(0)}$ to $G_{6,31}^{(6)}$ are formed by decorating boundary cycles of $G_{6,31}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,32}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 4, 3, 3]),# b
  Vertex([2, 4, 5, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{3}c^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3})$$

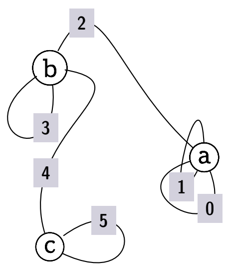
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	5	4	3	α	γ	β

Markings

	$G^{(0)}_{6,32}$	$G^{(1)}_{6,32}$	$G^{(2)}_{6,32}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,33}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([3, 3, 4, 2]),   # b
  Vertex([5, 5, 4]),      # c
])
```

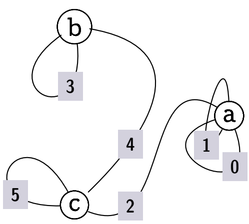
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^4a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^1b^2)$$
$$\beta = ({}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,33}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,33}$ to $G^{(6)}_{6,33}$ are formed by decorating boundary cycles of $G_{6,33}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,34}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([3, 3, 4]),      # b
  Vertex([2, 4, 5, 5]),   # c
])
```

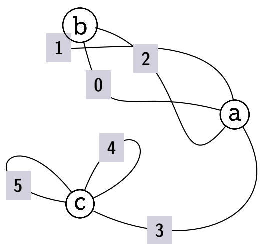
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^1a^2 \to {}^0c^1 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^3c^0 \to {}^2b^0 \to {}^4a^0)$$
$$\beta = ({}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,34}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,34}$ to $G^{(6)}_{6,34}$ are formed by decorating boundary cycles of $G_{6,34}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,35}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),   # a
  Vertex([1, 0, 2]),      # b
  Vertex([3, 4, 4, 5, 5]),# c
])
```

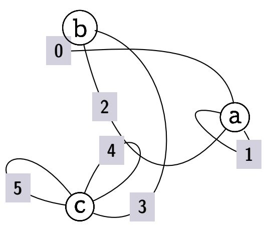
Boundary cycles

$$\alpha = ({}^{4}c^{0} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}c^{2})$$
$$\gamma = ({}^{3}c^{4})$$

Markings

Fatgraph $G_{6,35}$ only has the identity automorphism, so the marked fatgraphs $G_{6,35}^{(0)}$ to $G_{6,35}^{(6)}$ are formed by decorating boundary cycles of $G_{6,35}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,36}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([0, 2, 3]),      # b
  Vertex([3, 4, 4, 5, 5]),# c
])
```

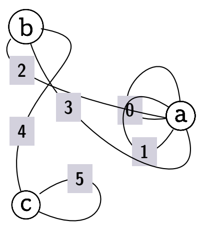
Boundary cycles

$$\alpha = ({}^{4}c^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}c^{2})$$
$$\gamma = ({}^{3}c^{4})$$

Markings

Fatgraph $G_{6,36}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,36}$ to $G^{(6)}_{6,36}$ are formed by decorating boundary cycles of $G_{6,36}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,37}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 3, 2]),# a
  Vertex([2, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

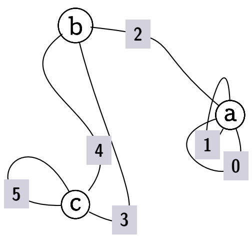
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,37}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,37}$ to $G^{(6)}_{6,37}$ are formed by decorating boundary cycles of $G_{6,37}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,38}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([3, 4, 5, 5]),   # c
])
```

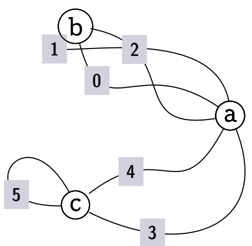
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}c^{0} \to {}^{2}b^{0} \to {}^{4}a^{0})$$
$$\beta = ({}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,38}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,38}$ to $G^{(6)}_{6,38}$ are formed by decorating boundary cycles of $G_{6,38}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,39}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([3, 4, 5, 5]),   # c
])
```

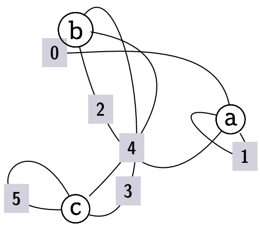
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{3}c^{0} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{3}a^{4} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,39}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,39}$ to $G^{(6)}_{6,39}$ are formed by decorating boundary cycles of $G_{6,39}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,40}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([3, 4, 5, 5]),# c
])
```

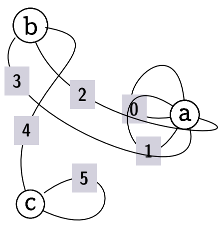
Boundary cycles

$$\alpha = ({}^{3}c^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{0}c^{1} \to {}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,40}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,40}$ to $G^{(6)}_{6,40}$ are formed by decorating boundary cycles of $G_{6,40}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,41}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 3, 2]),# a
  Vertex([3, 2, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

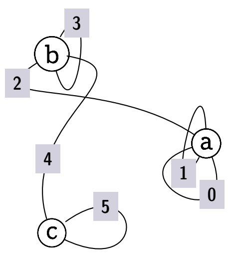
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{5}a^{0})$$
$$\beta = ({}^{2}b^{0} \to {}^{2}c^{0} \to {}^{4}a^{5} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,41}$ only has the identity automorphism, so the marked fatgraphs $G_{6,41}^{(0)}$ to $G_{6,41}^{(6)}$ are formed by decorating boundary cycles of $G_{6,41}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,42}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([2, 3, 4, 3]),   # b
  Vertex([5, 5, 4]),      # c
])
```

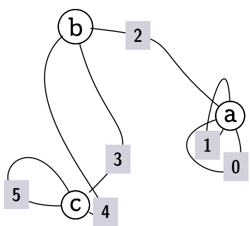
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^2a^3 \to {}^3b^0 \to {}^0b^1)$$
$$\beta = ({}^2b^3 \to {}^2c^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,42}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,42}$ to $G^{(6)}_{6,42}$ are formed by decorating boundary cycles of $G_{6,42}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,43}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([4, 3, 5, 5]),   # c
])
```

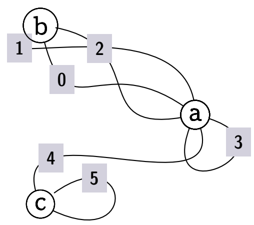
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^2a^3 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^3c^0 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,43}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,43}$ to $G^{(6)}_{6,43}$ are formed by decorating boundary cycles of $G_{6,43}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,44}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 4, 3]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

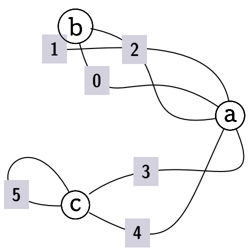
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{5}a^{0} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5} \to {}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,44}$ only has the identity automorphism, so the marked fatgraphs $G_{6,44}^{(0)}$ to $G_{6,44}^{(6)}$ are formed by decorating boundary cycles of $G_{6,44}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,45}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 3, 5, 5]),   # c
])
```

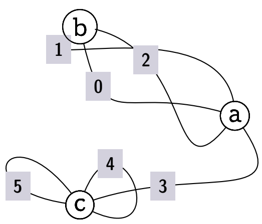
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2b^0 \to {}^4a^0 \to {}^1b^2) \\
\beta &= ({}^3a^4 \to {}^3c^0 \to {}^1c^2) \\
\gamma &= ({}^2c^3)
\end{aligned}$$

Markings

Fatgraph $G_{6,45}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,45}$ to $G^{(6)}_{6,45}$ are formed by decorating boundary cycles of $G_{6,45}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,46}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),   # a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 3, 4, 5, 5]),# c
])
```

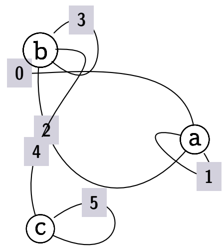
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^1c^2 \to {}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^3a^0 \to {}^0c^1 \to {}^2b^0 \to {}^0b^1) \\
\beta &= ({}^4c^0 \to {}^2c^3) \\
\gamma &= ({}^3c^4)
\end{aligned}$$

Markings

Fatgraph $G_{6,46}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,46}$ to $G^{(6)}_{6,46}$ are formed by decorating boundary cycles of $G_{6,46}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,47}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([0, 2, 3, 4, 3]),# b
  Vertex([5, 5, 4]),      # c
])
```

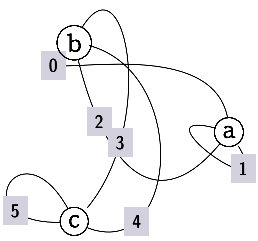
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^0b^1)$$
$$\beta = ({}^3b^4 \to {}^2c^0 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,47}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,47}$ to $G^{(6)}_{6,47}$ are formed by decorating boundary cycles of $G_{6,47}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,48}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([4, 3, 5, 5]),# c
])
```

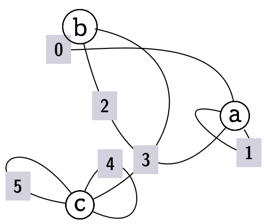
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^0b^1)$$
$$\beta = ({}^3c^0 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,48}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,48}$ to $G^{(6)}_{6,48}$ are formed by decorating boundary cycles of $G_{6,48}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,49}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([0, 2, 3]),      # b
  Vertex([4, 3, 4, 5, 5]),# c
])
```

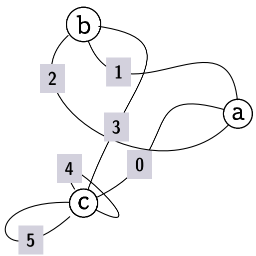
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^4c^0 \to {}^2c^3)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{6,49}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,49}$ to $G^{(6)}_{6,49}$ are formed by decorating boundary cycles of $G_{6,49}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,50}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 1, 3]),          # b
  Vertex([4, 0, 3, 4, 5, 5]),# c
])
```

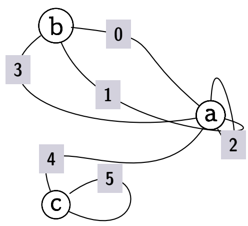
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{2}c^{3})$$
$$\beta = ({}^{5}c^{0} \to {}^{3}c^{4})$$
$$\gamma = ({}^{4}c^{5})$$

Markings

Fatgraph $G_{6,50}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,50}$ to $G^{(6)}_{6,50}$ are formed by decorating boundary cycles of $G_{6,50}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,51}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 3, 4, 2, 1]),# a
  Vertex([3, 1, 0]),          # b
  Vertex([5, 5, 4]),          # c
])
```

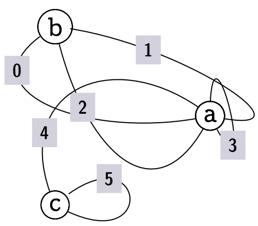
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1c^2 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^1b^2 \to {}^4a^5 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,51}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,51}$ to $G^{(6)}_{6,51}$ are formed by decorating boundary cycles of $G_{6,51}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,52}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 4, 0, 2, 3, 1]),# a
  Vertex([0, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

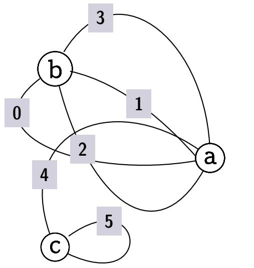
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^2c^0)$$
$$\beta = ({}^2a^3 \to {}^2b^0 \to {}^4a^5 \to {}^5a^0 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,52}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,52}$ to $G^{(6)}_{6,52}$ are formed by decorating boundary cycles of $G_{6,52}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,53}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 4, 0, 2, 1]),# a
  Vertex([0, 2, 1, 3]),   # b
  Vertex([5, 5, 4]),      # c
])
```

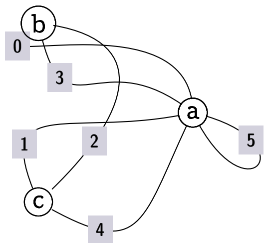
Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}c^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{4}a^{0} \to {}^{3}b^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,53}$ only has the identity automorphism, so the marked fatgraphs $G_{6,53}^{(0)}$ to $G_{6,53}^{(6)}$ are formed by decorating boundary cycles of $G_{6,53}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,54}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 1, 4, 5, 5]),# a
  Vertex([0, 3, 2]),         # b
  Vertex([4, 2, 1]),         # c
])
```

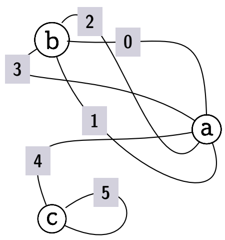
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^0b^1 \to {}^3a^4 \to {}^5a^0 \to {}^2c^0)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{6,54}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,54}$ to $G^{(6)}_{6,54}$ are formed by decorating boundary cycles of $G_{6,54}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,55}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 4, 2, 1]),# a
  Vertex([3, 1, 0, 2]),   # b
  Vertex([5, 5, 4]),      # c
])
```

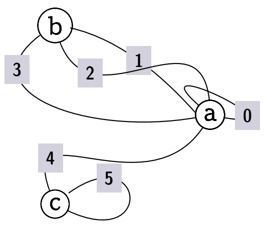
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^4a^0 \to {}^0a^1 \to {}^1b^2 \to {}^2b^3 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,55}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,55}$ to $G^{(6)}_{6,55}$ are formed by decorating boundary cycles of $G_{6,55}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,56}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 3, 4, 1, 0]),# a
  Vertex([3, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

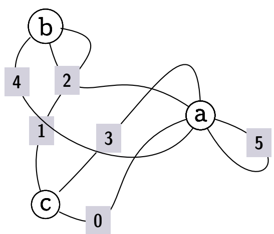
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{5}a^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,56}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,56}$ to $G^{(6)}_{6,56}$ are formed by decorating boundary cycles of $G_{6,56}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,57}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 0, 4, 5, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([0, 3, 1]),         # c
])
```

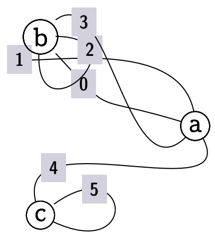
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^1b^2)$$
$$\beta = ({}^2b^0 \to {}^3a^4 \to {}^1c^2 \to {}^5a^0)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{6,57}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,57}$ to $G^{(6)}_{6,57}$ are formed by decorating boundary cycles of $G_{6,57}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,58}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4]),   # a
  Vertex([1, 2, 0, 2, 3]),# b
  Vertex([5, 5, 4]),      # c
])
```

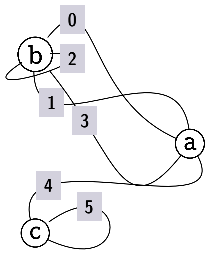
Boundary cycles

$$\alpha = ({}^1a^2 \to {}^4b^0 \to {}^1b^2 \to {}^0a^1 \to {}^2b^3)$$
$$\beta = ({}^2a^3 \to {}^0b^1 \to {}^3a^0 \to {}^1c^2 \to {}^3b^4 \to {}^2c^0)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,58}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,58}$ to $G^{(6)}_{6,58}$ are formed by decorating boundary cycles of $G_{6,58}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,59}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 4]),   # a
  Vertex([2, 1, 3, 2, 0]),# b
  Vertex([5, 5, 4]),      # c
])
```

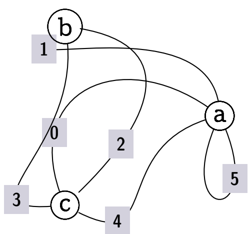
Boundary cycles

$$\alpha = ({}^{4}b^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{4} \to {}^{2}b^{3})$$
$$\beta = ({}^{2}a^{3} \to {}^{3}a^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,59}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,59}$ to $G^{(6)}_{6,59}$ are formed by decorating boundary cycles of $G_{6,59}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,60}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([4, 2, 0, 3]),   # c
])
```

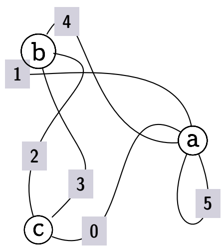
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,60}$ only has the identity automorphism, so the marked fatgraphs $G_{6,60}^{(0)}$ to $G_{6,60}^{(6)}$ are formed by decorating boundary cycles of $G_{6,60}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,61}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 3, 2, 4]),   # b
  Vertex([0, 3, 2]),      # c
])
```

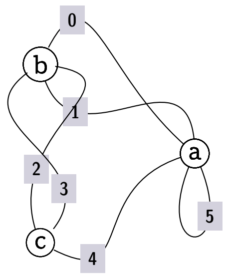
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}b^{3} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,61}$ only has the identity automorphism, so the marked fatgraphs $G_{6,61}^{(0)}$ to $G_{6,61}^{(6)}$ are formed by decorating boundary cycles of $G_{6,61}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,62}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([3, 1, 2, 0]),   # b
  Vertex([4, 3, 2]),      # c
])
```

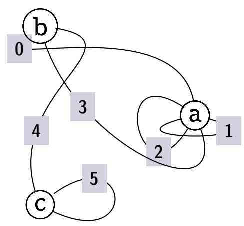
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}a^{3} \to {}^{1}b^{2} \to {}^{2}c^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,62}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,62}$ to $G^{(6)}_{6,62}$ are formed by decorating boundary cycles of $G_{6,62}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,63}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 2, 3, 1]),# a
  Vertex([0, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

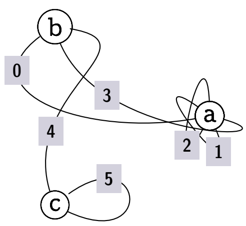
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^2c^0 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^2a^3 \to {}^4a^5 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,63}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,63}$ to $G^{(6)}_{6,63}$ are formed by decorating boundary cycles of $G_{6,63}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,64}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 2, 1, 3]),# a
  Vertex([0, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

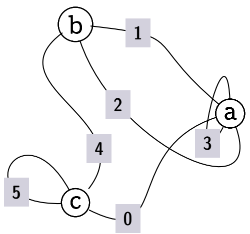
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,64}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,64}$ to $G^{(6)}_{6,64}$ are formed by decorating boundary cycles of $G_{6,64}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,65}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

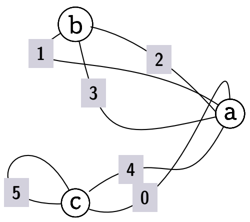
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2b^0 \to {}^0a^1 \to {}^3c^0 \to {}^1c^2)$$
$$\beta = ({}^3a^4 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^4a^0 \to {}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,65}$ only has the identity automorphism, so the marked fatgraphs $G_{6,65}^{(0)}$ to $G_{6,65}^{(6)}$ are formed by decorating boundary cycles of $G_{6,65}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,66}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 4, 2]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

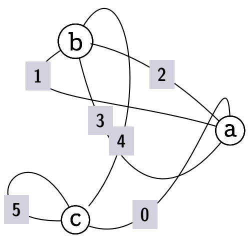
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,66}$ only has the identity automorphism, so the marked fatgraphs $G_{6,66}^{(0)}$ to $G_{6,66}^{(6)}$ are formed by decorating boundary cycles of $G_{6,66}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,67}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 2]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([0, 4, 5, 5]),# c
])
```

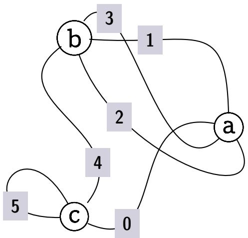
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,67}$ only has the identity automorphism, so the marked fatgraphs $G_{6,67}^{(0)}$ to $G_{6,67}^{(6)}$ are formed by decorating boundary cycles of $G_{6,67}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,68}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 2, 1, 3]),# b
  Vertex([0, 4, 5, 5]),# c
])
```

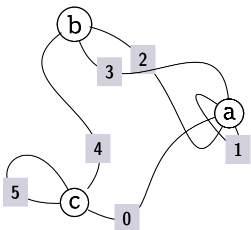
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{0} \to {}^{3}c^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,68}$ only has the identity automorphism, so the marked fatgraphs $G_{6,68}^{(0)}$ to $G_{6,68}^{(6)}$ are formed by decorating boundary cycles of $G_{6,68}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,69}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

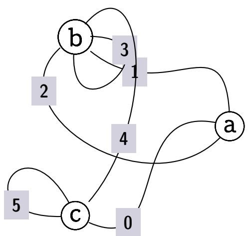
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^2b^0 \to {}^3c^0 \to {}^1c^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,69}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,69}$ to $G^{(6)}_{6,69}$ are formed by decorating boundary cycles of $G_{6,69}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,70}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 1, 3, 4]),# b
  Vertex([0, 4, 5, 5]),   # c
])
```

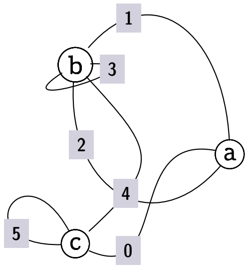
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^3b^4 \to {}^3c^0 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,70}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,70}$ to $G^{(6)}_{6,70}$ are formed by decorating boundary cycles of $G_{6,70}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,71}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 4, 3, 1]),# b
  Vertex([0, 4, 5, 5]),   # c
])
```

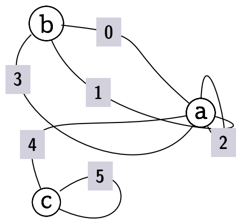
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{3}b^{4} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}c^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,71}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,71}$ to $G^{(6)}_{6,71}$ are formed by decorating boundary cycles of $G_{6,71}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,72}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 4, 3, 2, 1]),# a
  Vertex([3, 1, 0]),         # b
  Vertex([5, 5, 4]),         # c
])
```

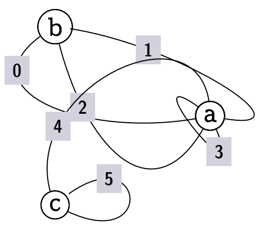
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{4}a^{5} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{5}a^{0} \to {}^{2}c^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,72}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,72}$ to $G^{(6)}_{6,72}$ are formed by decorating boundary cycles of $G_{6,72}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,73}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 3, 0, 2, 3, 1]),# a
  Vertex([0, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

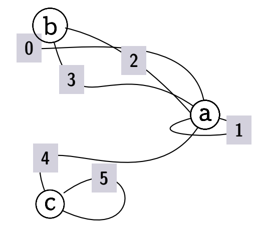
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{5}a^{0} \to {}^{2}b^{0} \to {}^{2}c^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{4} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,73}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,73}$ to $G^{(6)}_{6,73}$ are formed by decorating boundary cycles of $G_{6,73}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,74}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 1, 4, 2, 1]),# a
  Vertex([0, 3, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

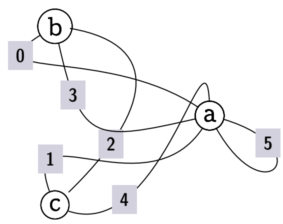
Boundary cycles

$$\alpha = ({}^{4}a^{5} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}c^{2} \to {}^{3}a^{4} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,74}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,74}$ to $G^{(6)}_{6,74}$ are formed by decorating boundary cycles of $G_{6,74}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,75}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 0, 3, 1, 5, 5]),# a
  Vertex([0, 3, 2]),         # b
  Vertex([4, 2, 1]),         # c
])
```

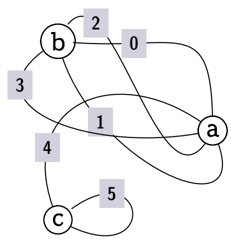
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2c^0 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^1c^2 \to {}^3a^4 \to {}^5a^0 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{6,75}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,75}$ to $G^{(6)}_{6,75}$ are formed by decorating boundary cycles of $G_{6,75}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,76}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 3, 2, 1]),# a
  Vertex([3, 1, 0, 2]),   # b
  Vertex([5, 5, 4]),      # c
])
```

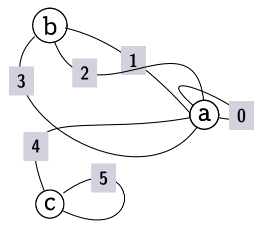
Boundary cycles

$$\alpha = ({}^2b^3 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^2a^3 \to {}^3b^0)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,76}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,76}$ to $G^{(6)}_{6,76}$ are formed by decorating boundary cycles of $G_{6,76}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,77}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 0, 4, 3, 1, 0]),# a
  Vertex([3, 2, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

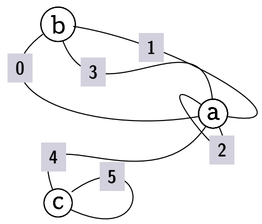
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^5a^0 \to {}^1b^2 \to {}^0b^1)$$
$$\beta = ({}^2b^0 \to {}^3a^4)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,77}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,77}$ to $G^{(6)}_{6,77}$ are formed by decorating boundary cycles of $G_{6,77}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,78}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 0, 4, 2, 1]),# a
  Vertex([0, 3, 1]),         # b
  Vertex([5, 5, 4]),         # c
])
```

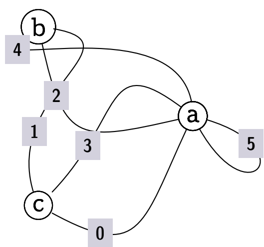
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^3a^4 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^5a^0 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,78}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,78}$ to $G^{(6)}_{6,78}$ are formed by decorating boundary cycles of $G_{6,78}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,79}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 3, 2, 0, 5, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([0, 3, 1]),         # c
])
```

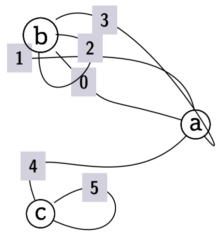
Boundary cycles

$$\alpha = ({}^2b^0 \to {}^0a^1 \to {}^1c^2)$$
$$\beta = ({}^3a^4 \to {}^0c^1 \to {}^1a^2 \to {}^0b^1 \to {}^2a^3 \to {}^5a^0 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{6,79}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,79}$ to $G^{(6)}_{6,79}$ are formed by decorating boundary cycles of $G_{6,79}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,80}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([1, 2, 0, 2, 3]),# b
  Vertex([5, 5, 4]),      # c
])
```

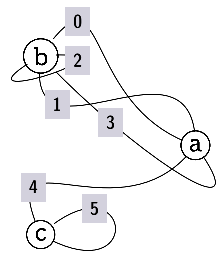
Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{4}b^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0})$$
$$\beta = ({}^{3}a^{0} \to {}^{3}b^{4} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,80}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,80}$ to $G^{(6)}_{6,80}$ are formed by decorating boundary cycles of $G_{6,80}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,81}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([2, 1, 3, 2, 0]),# b
  Vertex([5, 5, 4]),      # c
])
```

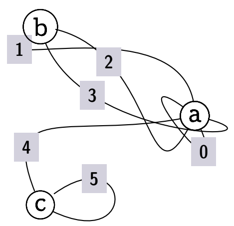
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^1c^2 \to {}^3b^4 \to {}^2b^3 \to {}^0b^1)$$
$$\beta = ({}^3a^0 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,81}$ only has the identity automorphism, so the marked fatgraphs $G_{6,81}^{(0)}$ to $G_{6,81}^{(6)}$ are formed by decorating boundary cycles of $G_{6,81}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,82}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2, 0, 3]),# a
  Vertex([1, 3, 2]),         # b
  Vertex([5, 5, 4]),         # c
])
```

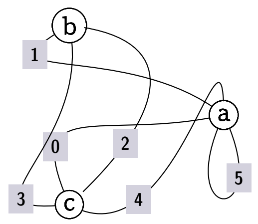
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^1c^2 \to {}^3a^4 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,82}$ only has the identity automorphism, so the marked fatgraphs $G_{6,82}^{(0)}$ to $G_{6,82}^{(6)}$ are formed by decorating boundary cycles of $G_{6,82}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,83}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 1, 0, 5, 5]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([4, 2, 0, 3]),   # c
])
```

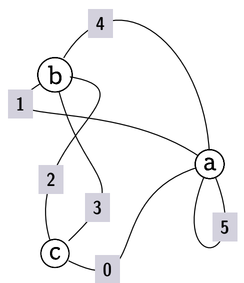
Boundary cycles

$$\alpha = ({}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{1}b^{2} \to {}^{2}b^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,83}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,83}$ to $G^{(6)}_{6,83}$ are formed by decorating boundary cycles of $G_{6,83}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,84}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 1, 0, 5, 5]),# a
  Vertex([1, 3, 2, 4]),   # b
  Vertex([0, 3, 2]),      # c
])
```

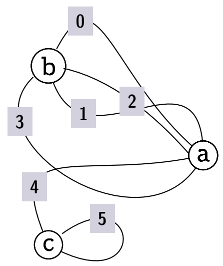
Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{0}a^{1} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{4}a^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,84}$ only has the identity automorphism, so the marked fatgraphs $G_{6,84}^{(0)}$ to $G_{6,84}^{(6)}$ are formed by decorating boundary cycles of $G_{6,84}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,85}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3, 2]),# a
  Vertex([3, 1, 2, 0]),   # b
  Vertex([5, 5, 4]),      # c
])
```

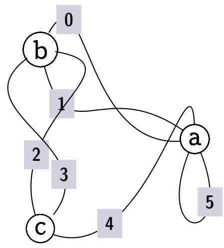
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}b^{3} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}b^{2} \to {}^{4}a^{0})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,85}$ only has the identity automorphism, so the marked fatgraphs $G_{6,85}^{(0)}$ to $G_{6,85}^{(6)}$ are formed by decorating boundary cycles of $G_{6,85}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,86}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 1, 0, 5, 5]),# a
  Vertex([3, 1, 2, 0]),   # b
  Vertex([4, 3, 2]),      # c
])
```

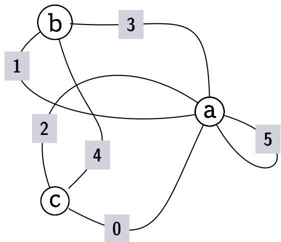
Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}b^{3} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,86}$ only has the identity automorphism, so the marked fatgraphs $G_{6,86}^{(0)}$ to $G_{6,86}^{(6)}$ are formed by decorating boundary cycles of $G_{6,86}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{6,87}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 5, 5]),# a
  Vertex([1, 4, 3]),         # b
  Vertex([0, 4, 2]),         # c
])
```

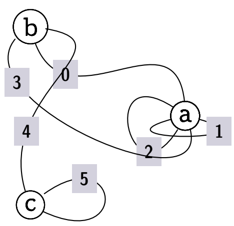
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^5a^0 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^4a^5)$$

Markings

Fatgraph $G_{6,87}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,87}$ to $G^{(6)}_{6,87}$ are formed by decorating boundary cycles of $G_{6,87}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,88}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 2, 3, 1]),# a
  Vertex([3, 0, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

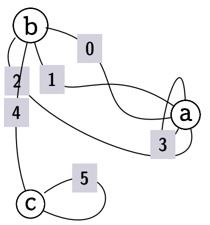
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^4a^5 \to {}^5a^0 \to {}^1a^2 \to {}^2c^0 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,88}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,88}$ to $G^{(6)}_{6,88}$ are formed by decorating boundary cycles of $G_{6,88}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,89}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([2, 1, 0, 4]),   # b
  Vertex([5, 5, 4]),      # c
])
```

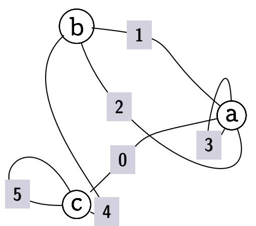
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}b^{3} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,89}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,89}$ to $G^{(6)}_{6,89}$ are formed by decorating boundary cycles of $G_{6,89}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,90}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([4, 0, 5, 5]),   # c
])
```

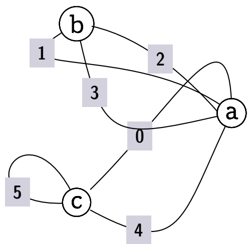
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2b^0 \to {}^0a^1 \to {}^0c^1)$$
$$\beta = ({}^3a^4 \to {}^1c^2 \to {}^1a^2 \to {}^4a^0 \to {}^3c^0 \to {}^0b^1 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,90}$ only has the identity automorphism, so the marked fatgraphs $G_{6,90}^{(0)}$ to $G_{6,90}^{(6)}$ are formed by decorating boundary cycles of $G_{6,90}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,91}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 4, 2]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([4, 0, 5, 5]),   # c
])
```

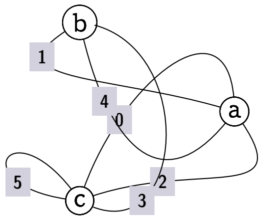
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0c^1 \to {}^0b^1)$$
$$\beta = ({}^3a^4 \to {}^1c^2 \to {}^1a^2 \to {}^4a^0 \to {}^3c^0 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,91}$ only has the identity automorphism, so the marked fatgraphs $G_{6,91}^{(0)}$ to $G_{6,91}^{(6)}$ are formed by decorating boundary cycles of $G_{6,91}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,92}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),   # a
  Vertex([1, 4, 3]),      # b
  Vertex([3, 2, 0, 5, 5]),# c
])
```

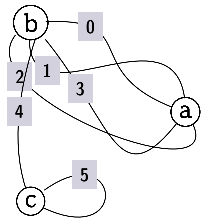
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{4}c^{0} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{2}b^{0})$$
$$\gamma = ({}^{3}c^{4})$$

Markings

Fatgraph $G_{6,92}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,92}$ to $G^{(6)}_{6,92}$ are formed by decorating boundary cycles of $G_{6,92}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,93}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),   # a
  Vertex([2, 1, 3, 0, 4]),# b
  Vertex([5, 5, 4]),      # c
])
```

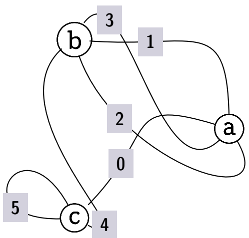
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^4b^0 \to {}^3a^0 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^1c^2 \to {}^3b^4 \to {}^1b^2 \to {}^0b^1) \\
\beta &= ({}^1a^2 \to {}^2b^3) \\
\gamma &= ({}^0c^1)
\end{aligned}
$$

Markings

Fatgraph $G_{6,93}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,93}$ to $G^{(6)}_{6,93}$ are formed by decorating boundary cycles of $G_{6,93}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,94}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 2, 1, 3]),# b
  Vertex([4, 0, 5, 5]),# c
])
```

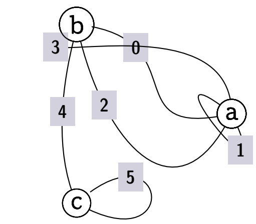
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^1c^2 \to {}^3a^0 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3c^0 \to {}^0b^1 \to {}^1b^2) \\
\beta &= ({}^1a^2 \to {}^3b^0 \to {}^0c^1) \\
\gamma &= ({}^2c^3)
\end{aligned}
$$

Markings

Fatgraph $G_{6,94}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,94}$ to $G^{(6)}_{6,94}$ are formed by decorating boundary cycles of $G_{6,94}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,95}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([3, 2, 0, 4]),   # b
  Vertex([5, 5, 4]),      # c
])
```

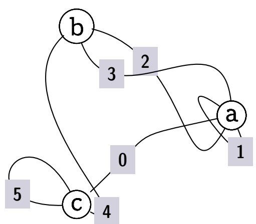
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^4a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^1b^2)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,95}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,95}$ to $G^{(6)}_{6,95}$ are formed by decorating boundary cycles of $G_{6,95}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{6,96}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([4, 0, 5, 5]),   # c
])
```

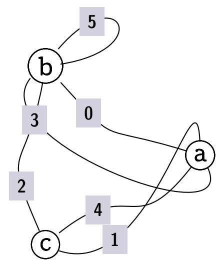
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^3c^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^2b^0 \to {}^0c^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,96}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,96}$ to $G^{(6)}_{6,96}$ are formed by decorating boundary cycles of $G_{6,96}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,97}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([3, 2, 0, 5, 5]),# b
  Vertex([1, 4, 2]),      # c
])
```

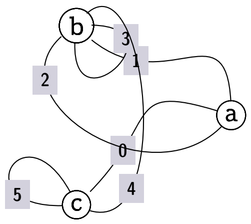
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^3a^0 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{6,97}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,97}$ to $G^{(6)}_{6,97}$ are formed by decorating boundary cycles of $G_{6,97}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,98}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 1, 3, 4]),# b
  Vertex([4, 0, 5, 5]),   # c
])
```

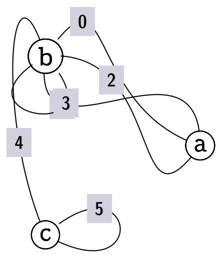
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}c^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{4} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,98}$ only has the identity automorphism, so the marked fatgraphs $G_{6,98}^{(0)}$ to $G_{6,98}^{(6)}$ are formed by decorating boundary cycles of $G_{6,98}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,99}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),         # a
  Vertex([3, 1, 3, 2, 0, 4]),# b
  Vertex([5, 5, 4]),         # c
])
```

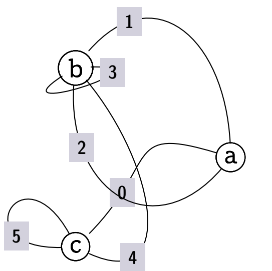
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0a^1 \to {}^2b^3 \to {}^4b^5 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1 \to {}^5b^0 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3b^4)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,99}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,99}$ to $G^{(6)}_{6,99}$ are formed by decorating boundary cycles of $G_{6,99}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,100}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 4, 3, 1]),# b
  Vertex([4, 0, 5, 5]),   # c
])
```

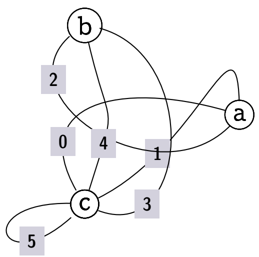
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^0 \to {}^3b^4 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,100}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,100}$ to $G^{(6)}_{6,100}$ are formed by decorating boundary cycles of $G_{6,100}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,101}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 4, 3]),          # b
  Vertex([3, 1, 4, 0, 5, 5]),# c
])
```

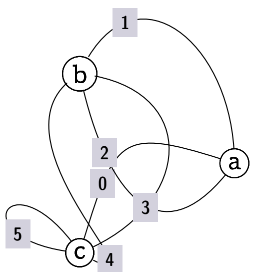
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{5}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{3}c^{4} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{3} \to {}^{0}b^{1})$$
$$\gamma = ({}^{4}c^{5})$$

Markings

Fatgraph $G_{6,101}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,101}$ to $G^{(6)}_{6,101}$ are formed by decorating boundary cycles of $G_{6,101}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,102}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([4, 2, 3, 1]),    # b
  Vertex([4, 3, 0, 5, 5]),# c
])
```

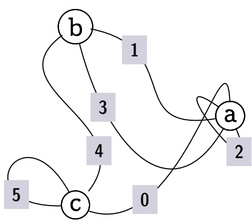
Boundary cycles

$$\alpha = ({}^4c^0 \to {}^2a^0 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^0c^1 \to {}^2c^3 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{6,102}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,102}$ to $G^{(6)}_{6,102}$ are formed by decorating boundary cycles of $G_{6,102}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,103}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 2]),# a
  Vertex([4, 3, 1]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

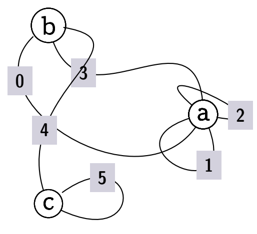
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^0c^1 \to {}^2b^0 \to {}^4a^0)$$
$$\beta = ({}^2a^3 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,103}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,103}$ to $G^{(6)}_{6,103}$ are formed by decorating boundary cycles of $G_{6,103}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,104}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 1, 0, 1, 2]),# a
  Vertex([0, 3, 4]),         # b
  Vertex([5, 5, 4]),         # c
])
```

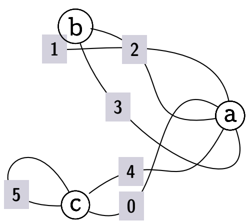
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,104}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,104}$ to $G^{(6)}_{6,104}$ are formed by decorating boundary cycles of $G_{6,104}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,105}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

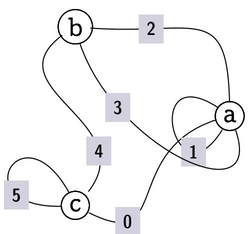
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0)$$
$$\beta = ({}^0b^1 \to {}^4a^0)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,105}$ only has the identity automorphism, so the marked fatgraphs $G_{6,105}^{(0)}$ to $G_{6,105}^{(6)}$ are formed by decorating boundary cycles of $G_{6,105}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,106}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 3]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([0, 4, 5, 5]),   # c
])
```

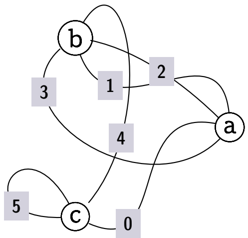
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^0c^1 \to {}^1a^2 \to {}^3c^0 \to {}^4a^0 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,106}$ only has the identity automorphism, so the marked fatgraphs $G_{6,106}^{(0)}$ to $G_{6,106}^{(6)}$ are formed by decorating boundary cycles of $G_{6,106}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,107}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([3, 1, 2, 4]),# b
  Vertex([0, 4, 5, 5]),# c
])
```

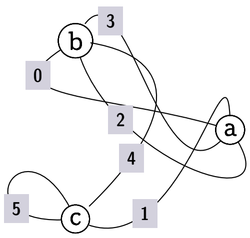
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^3c^0 \to {}^2b^3 \to {}^1a^2 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1)$$
$$\beta = ({}^3a^0 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,107}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,107}$ to $G^{(6)}_{6,107}$ are formed by decorating boundary cycles of $G_{6,107}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,108}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([1, 4, 5, 5]),# c
])
```

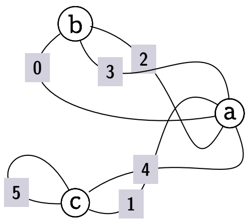
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^0a^1 \to {}^3c^0 \to {}^2b^3 \to {}^2a^3 \to {}^0c^1 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3b^0)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,108}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,108}$ to $G^{(6)}_{6,108}$ are formed by decorating boundary cycles of $G_{6,108}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,109}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 4]),# a
  Vertex([0, 3, 2]),      # b
  Vertex([1, 4, 5, 5]),   # c
])
```

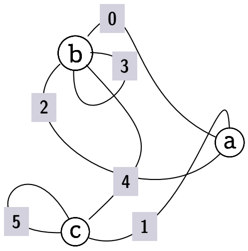
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^1c^2 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^2b^0)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,109}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,109}$ to $G^{(6)}_{6,109}$ are formed by decorating boundary cycles of $G_{6,109}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,110}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 4, 3, 0]),# b
  Vertex([1, 4, 5, 5]),   # c
])
```

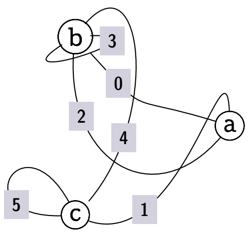
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{4} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,110}$ only has the identity automorphism, so the marked fatgraphs $G_{6,110}^{(0)}$ to $G_{6,110}^{(6)}$ are formed by decorating boundary cycles of $G_{6,110}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,111}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 0, 3, 4]),# b
  Vertex([1, 4, 5, 5]),   # c
])
```

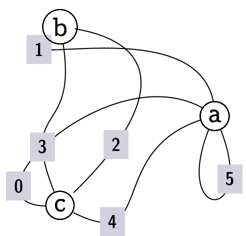
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^1c^2 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^0c^1 \to {}^3b^4 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^1b^2)$$
$$\gamma = ({}^2c^3)$$

Markings

Fatgraph $G_{6,111}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,111}$ to $G^{(6)}_{6,111}$ are formed by decorating boundary cycles of $G_{6,111}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,112}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([4, 2, 3, 0]),   # c
])
```

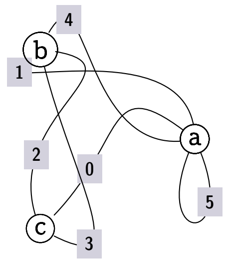
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^3c^0 \to {}^2c^3 \to {}^4a^0 \to {}^2b^0)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^1c^2 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,112}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,112}$ to $G^{(6)}_{6,112}$ are formed by decorating boundary cycles of $G_{6,112}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,113}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 3, 2, 4]),   # b
  Vertex([3, 0, 2]),      # c
])
```

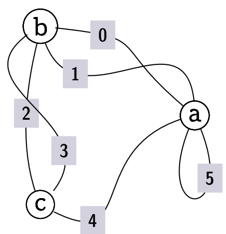
Boundary cycles

$$\alpha = ({}^2b^3 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^3b^0 \to {}^1c^2 \to {}^4a^0)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2c^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,113}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,113}$ to $G^{(6)}_{6,113}$ are formed by decorating boundary cycles of $G_{6,113}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,114}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([3, 1, 0, 2]),   # b
  Vertex([4, 3, 2]),      # c
])
```

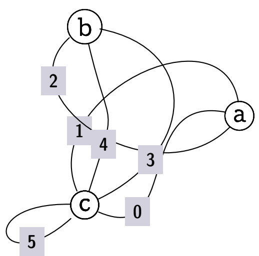
Boundary cycles

$$\alpha = ({}^2b^3 \to {}^4a^0 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^3b^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{6,114}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,114}$ to $G^{(6)}_{6,114}$ are formed by decorating boundary cycles of $G_{6,114}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,115}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 4, 3]),          # b
  Vertex([0, 3, 4, 1, 5, 5]),# c
])
```

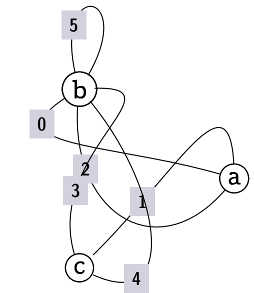
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^5c^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2c^3 \to {}^2b^0 \to {}^3c^4)$$
$$\beta = ({}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^4c^5)$$

Markings

Fatgraph $G_{6,115}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,115}$ to $G^{(6)}_{6,115}$ are formed by decorating boundary cycles of $G_{6,115}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,116}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([0, 2, 4, 3, 5, 5]),# b
  Vertex([4, 1, 3]),          # c
])
```

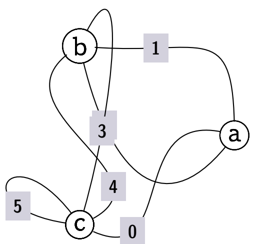
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{3}b^{4} \to {}^{1}b^{2} \to {}^{5}b^{0})$$
$$\beta = ({}^{2}c^{0} \to {}^{2}b^{3})$$
$$\gamma = ({}^{4}b^{5})$$

Markings

Fatgraph $G_{6,116}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,116}$ to $G^{(6)}_{6,116}$ are formed by decorating boundary cycles of $G_{6,116}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,117}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([4, 2, 1, 3]),   # b
  Vertex([0, 4, 3, 5, 5]),# c
])
```

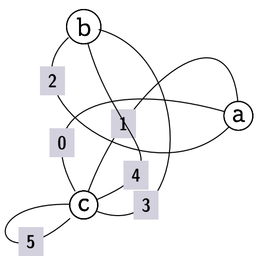
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4c^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^3 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^3b^0 \to {}^1c^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{6,117}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,117}$ to $G^{(6)}_{6,117}$ are formed by decorating boundary cycles of $G_{6,117}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,118}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),         # a
  Vertex([2, 4, 3]),         # b
  Vertex([3, 4, 1, 0, 5, 5]),# c
])
```

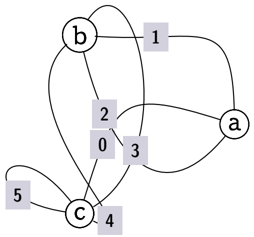
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^5c^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^1c^2 \to {}^2c^3 \to {}^3c^4 \to {}^2b^0)$$
$$\beta = ({}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^4c^5)$$

Markings

Fatgraph $G_{6,118}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,118}$ to $G^{(6)}_{6,118}$ are formed by decorating boundary cycles of $G_{6,118}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,119}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([4, 2, 1, 3]),   # b
  Vertex([4, 3, 0, 5, 5]),# c
])
```

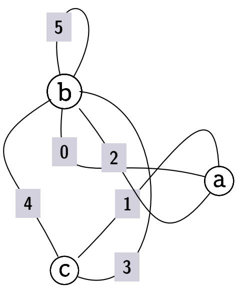
Boundary cycles

$$\alpha = ({}^{4}c^{0} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}b^{0} \to {}^{0}c^{1})$$
$$\gamma = ({}^{3}c^{4})$$

Markings

Fatgraph $G_{6,119}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,119}$ to $G^{(6)}_{6,119}$ are formed by decorating boundary cycles of $G_{6,119}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,120}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),         # a
  Vertex([4, 0, 2, 3, 5, 5]),# b
  Vertex([3, 1, 4]),         # c
])
```

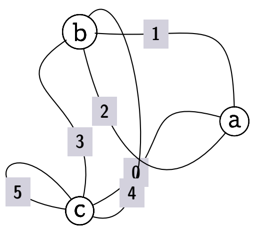
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}a^{0} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{1}b^{2}) \\
\beta &= ({}^{2}c^{0} \to {}^{5}b^{0} \to {}^{3}b^{4}) \\
\gamma &= ({}^{4}b^{5})
\end{aligned}
$$

Markings

Fatgraph $G_{6,120}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,120}$ to $G^{(6)}_{6,120}$ are formed by decorating boundary cycles of $G_{6,120}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,121}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 1, 4]),   # b
  Vertex([4, 0, 3, 5, 5]),# c
])
```

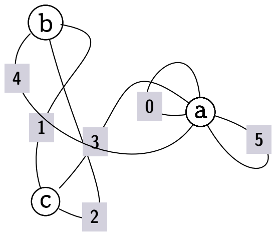
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}b^{2}) \\
\beta &= ({}^{4}c^{0} \to {}^{2}c^{3} \to {}^{3}b^{0}) \\
\gamma &= ({}^{3}c^{4})
\end{aligned}
$$

Markings

Fatgraph $G_{6,121}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,121}$ to $G^{(6)}_{6,121}$ are formed by decorating boundary cycles of $G_{6,121}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,122}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 0, 4, 5, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([2, 3, 1]),         # c
])
```

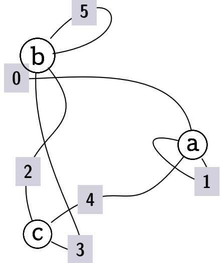
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{5}a^{0} \to {}^{2}b^{0})$$
$$\beta = ({}^{4}a^{5})$$
$$\gamma = ({}^{2}c^{0} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{6,122}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,122}$ to $G^{(6)}_{6,122}$ are formed by decorating boundary cycles of $G_{6,122}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,123}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),   # a
  Vertex([0, 3, 2, 5, 5]),# b
  Vertex([3, 4, 2]),      # c
])
```

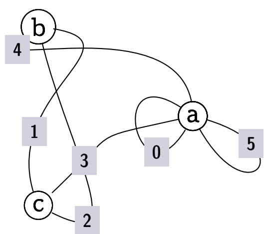
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2b^3)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{6,123}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,123}$ to $G^{(6)}_{6,123}$ are formed by decorating boundary cycles of $G_{6,123}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,124}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 0, 3, 0, 5, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([2, 3, 1]),         # c
])
```

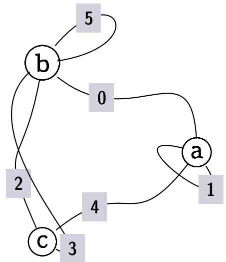
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^4 \to {}^5a^0 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2b^0)$$
$$\beta = ({}^4a^5)$$
$$\gamma = ({}^2c^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,124}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,124}$ to $G^{(6)}_{6,124}$ are formed by decorating boundary cycles of $G_{6,124}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,125}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),   # a
  Vertex([3, 2, 0, 5, 5]),# b
  Vertex([3, 4, 2]),      # c
])
```

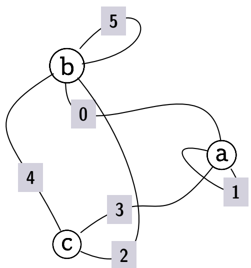
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^0c^1 \to {}^1b^2)$$
$$\beta = ({}^2c^0 \to {}^0b^1)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{6,125}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,125}$ to $G^{(6)}_{6,125}$ are formed by decorating boundary cycles of $G_{6,125}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,126}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),   # a
  Vertex([4, 0, 2, 5, 5]),# b
  Vertex([2, 3, 4]),      # c
])
```

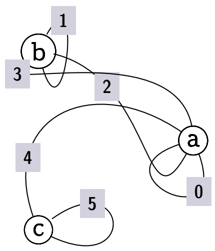
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^0c^1 \to {}^0b^1)$$
$$\beta = ({}^2c^0 \to {}^4b^0 \to {}^2b^3)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{6,126}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,126}$ to $G^{(6)}_{6,126}$ are formed by decorating boundary cycles of $G_{6,126}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,127}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 4, 0, 2, 0]),# a
  Vertex([3, 1, 2, 1]),   # b
  Vertex([5, 5, 4]),      # c
])
```

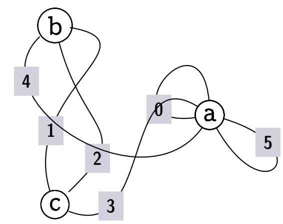
Boundary cycles

$$\alpha = ({}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^4a^0)$$
$$\beta = ({}^2a^3 \to {}^1b^2 \to {}^3a^4 \to {}^2b^3)$$
$$\gamma = ({}^0c^1)$$

Markings

Fatgraph $G_{6,127}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,127}$ to $G^{(6)}_{6,127}$ are formed by decorating boundary cycles of $G_{6,127}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,128}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 0, 4, 5, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([3, 2, 1]),         # c
])
```

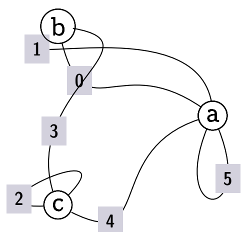
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{0}a^{1} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{5}a^{0} \to {}^{2}b^{0})$$
$$\gamma = ({}^{4}a^{5})$$

Markings

Fatgraph $G_{6,128}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,128}$ to $G^{(6)}_{6,128}$ are formed by decorating boundary cycles of $G_{6,128}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,129}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5, 5]),# a
  Vertex([1, 0, 3]),      # b
  Vertex([4, 2, 3, 2]),   # c
])
```

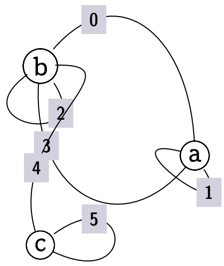
Boundary cycles

$$\alpha = ({}^{2}c^{3} \to {}^{0}a^{1} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{3}c^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{6,129}$ only has the identity automorphism, so the marked fatgraphs $G_{6,129}^{(0)}$ to $G_{6,129}^{(6)}$ are formed by decorating boundary cycles of $G_{6,129}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,130}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),   # a
  Vertex([2, 3, 2, 4, 0]),# b
  Vertex([5, 5, 4]),      # c
])
```

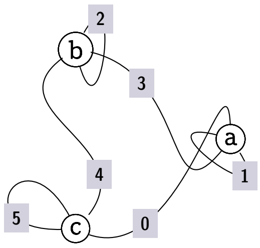
Boundary cycles

$$\alpha = ({}^{4}b^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}c^{2} \to {}^{3}b^{4} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1})$$

Markings

Fatgraph $G_{6,130}$ only has the identity automorphism, so the marked fatgraphs $G_{6,130}^{(0)}$ to $G_{6,130}^{(6)}$ are formed by decorating boundary cycles of $G_{6,130}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,131}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([4, 2, 3, 2]),# b
  Vertex([0, 4, 5, 5]),# c
])
```

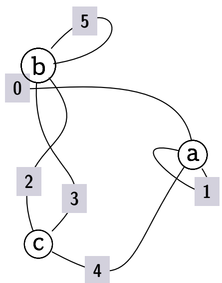
Boundary cycles

$$\alpha = ({}^{0}c^{1} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{1}c^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,131}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,131}$ to $G^{(6)}_{6,131}$ are formed by decorating boundary cycles of $G_{6,131}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,132}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),   # a
  Vertex([0, 3, 2, 5, 5]),# b
  Vertex([4, 3, 2]),      # c
])
```

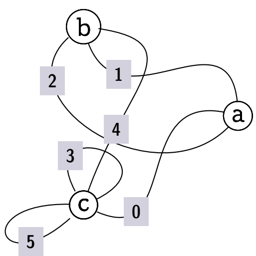
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{4}b^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1}) \\
\beta &= ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{1}b^{2}) \\
\gamma &= ({}^{3}b^{4})
\end{aligned}
$$

Markings

Fatgraph $G_{6,132}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,132}$ to $G^{(6)}_{6,132}$ are formed by decorating boundary cycles of $G_{6,132}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,133}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 1, 4]),          # b
  Vertex([0, 3, 4, 3, 5, 5]),# c
])
```

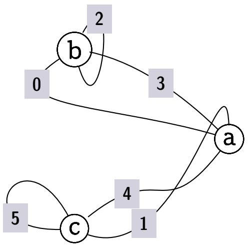
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{5}c^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{3}c^{4}) \\
\beta &= ({}^{2}a^{0} \to {}^{2}c^{3} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{1}b^{2}) \\
\gamma &= ({}^{4}c^{5})
\end{aligned}
$$

Markings

Fatgraph $G_{6,133}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,133}$ to $G^{(6)}_{6,133}$ are formed by decorating boundary cycles of $G_{6,133}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,134}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 2, 3, 2]),# b
  Vertex([1, 4, 5, 5]),# c
])
```

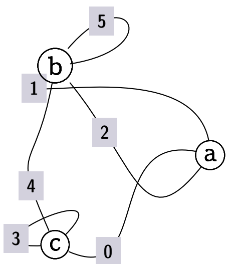
Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{3}c^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{3}a^{0} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3})$$

Markings

Fatgraph $G_{6,134}$ only has the identity automorphism, so the marked fatgraphs $G_{6,134}^{(0)}$ to $G_{6,134}^{(6)}$ are formed by decorating boundary cycles of $G_{6,134}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,135}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([1, 4, 2, 5, 5]),# b
  Vertex([0, 3, 4, 3]),   # c
])
```

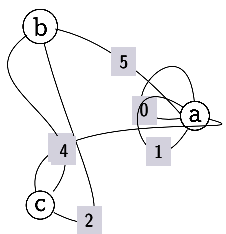
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3c^0)$$
$$\beta = ({}^2a^0 \to {}^2c^3 \to {}^1b^2 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{6,135}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,135}$ to $G^{(6)}_{6,135}$ are formed by decorating boundary cycles of $G_{6,135}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,136}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 0, 1, 5, 3]),# a
  Vertex([4, 2, 5]),         # b
  Vertex([2, 4, 3]),         # c
])
```

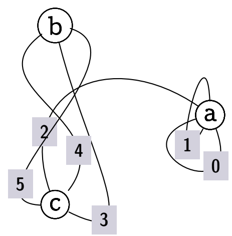
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1a^2 \to {}^5a^0 \to {}^2b^0)$$
$$\beta = ({}^1b^2 \to {}^4a^5 \to {}^2c^0)$$
$$\gamma = ({}^0c^1 \to {}^0b^1)$$

Markings

Fatgraph $G_{6,136}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,136}$ to $G^{(6)}_{6,136}$ are formed by decorating boundary cycles of $G_{6,136}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,137}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([4, 3, 5]),      # b
  Vertex([3, 4, 2, 5]),   # c
])
```

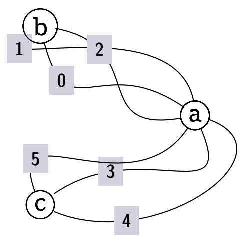
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{2}b^{0})$$
$$\beta = ({}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}c^{0} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{6,137}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,137}$ to $G^{(6)}_{6,137}$ are formed by decorating boundary cycles of $G_{6,137}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,138}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 5, 3, 4]),# a
  Vertex([1, 0, 2]),         # b
  Vertex([4, 3, 5]),         # c
])
```

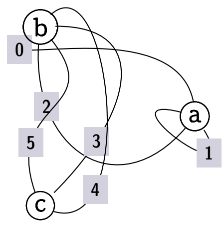
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{5}a^{0} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}b^{2}) \\
\beta &= ({}^{3}a^{4} \to {}^{1}c^{2}) \\
\gamma &= ({}^{4}a^{5} \to {}^{0}c^{1})
\end{aligned}$$

Markings

Fatgraph $G_{6,138}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,138}$ to $G^{(6)}_{6,138}$ are formed by decorating boundary cycles of $G_{6,138}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,139}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([0, 2, 5, 3, 4]),# b
  Vertex([4, 3, 5]),      # c
])
```

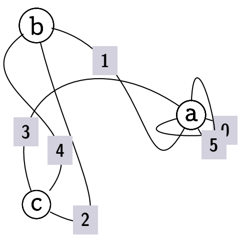
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^{4}b^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}b^{1}) \\
\beta &= ({}^{1}c^{2} \to {}^{2}b^{3}) \\
\gamma &= ({}^{0}c^{1} \to {}^{3}b^{4})
\end{aligned}$$

Markings

Fatgraph $G_{6,139}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,139}$ to $G^{(6)}_{6,139}$ are formed by decorating boundary cycles of $G_{6,139}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,140}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 3, 0, 1, 5, 0]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([2, 4, 3]),         # c
])
```

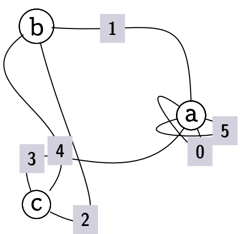
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1b^2 \to {}^0a^1 \to {}^2c^0)$$
$$\beta = ({}^4a^5 \to {}^5a^0 \to {}^1a^2 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0)$$
$$\gamma = ({}^0c^1 \to {}^0b^1)$$

Markings

Fatgraph $G_{6,140}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,140}$ to $G^{(6)}_{6,140}$ are formed by decorating boundary cycles of $G_{6,140}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,141}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 3, 0, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([2, 4, 3]),         # c
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{4}a^{5} \to {}^{1}b^{2} \to {}^{0}a^{1} \to {}^{2}c^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{3}a^{4} \to {}^{1}c^{2} \to {}^{5}a^{0})$$
$$\gamma = ({}^{0}c^{1} \to {}^{0}b^{1})$$

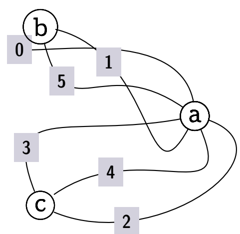
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1 ‡	a	c	b	0	3	4	1	2	5	β	α	γ

Markings

	$G^{(0)}_{6,141}$	$G^{(1)}_{6,141}$	$G^{(2)}_{6,141}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{6,142}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 5, 3, 1, 4, 2]),# a
  Vertex([0, 5, 1]),         # b
  Vertex([2, 4, 3]),         # c
])
```

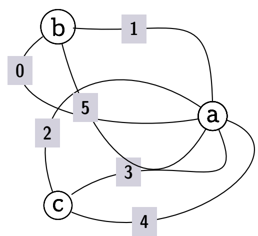
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}b^{1} \to {}^{5}a^{0} \to {}^{2}c^{0})$$
$$\gamma = ({}^{4}a^{5} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{6,142}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,142}$ to $G^{(6)}_{6,142}$ are formed by decorating boundary cycles of $G_{6,142}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,143}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 5, 3, 4]),# a
  Vertex([0, 5, 1]),         # b
  Vertex([4, 3, 2]),         # c
])
```

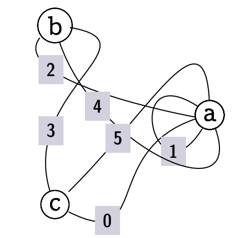
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{5}a^{0} \to {}^{2}b^{0} \to {}^{2}c^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{4} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{4}a^{5} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{6,143}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,143}$ to $G^{(6)}_{6,143}$ are formed by decorating boundary cycles of $G_{6,143}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,144}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 1, 0, 1, 4, 2]),# a
  Vertex([2, 4, 3]),         # b
  Vertex([0, 5, 3]),         # c
])
```

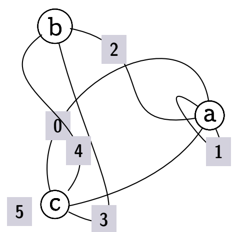
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}b^{0} \to {}^{1}c^{2} \to {}^{5}a^{0})$$

Markings

Fatgraph $G_{6,144}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,144}$ to $G^{(6)}_{6,144}$ are formed by decorating boundary cycles of $G_{6,144}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,145}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 5, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([3, 4, 0, 5]),   # c
])
```

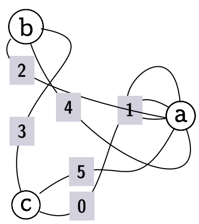
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^1c^2 \to {}^2c^3 \to {}^2b^0) \\
\beta &= ({}^2a^3 \to {}^3c^0 \to {}^1b^2) \\
\gamma &= ({}^0c^1 \to {}^0b^1)
\end{aligned}
$$

Markings

Fatgraph $G_{6,145}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,145}$ to $G^{(6)}_{6,145}$ are formed by decorating boundary cycles of $G_{6,145}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,146}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 5, 4, 2]),# a
  Vertex([2, 4, 3]),         # b
  Vertex([0, 5, 3]),         # c
])
```

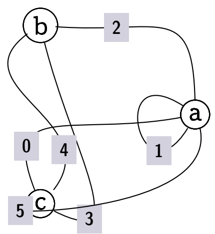
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^0c^1 \to {}^1b^2) \\
\beta &= ({}^2a^3 \to {}^2b^0 \to {}^5a^0 \to {}^1c^2) \\
\gamma &= ({}^4a^5 \to {}^0b^1)
\end{aligned}
$$

Markings

Fatgraph $G_{6,146}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,146}$ to $G^{(6)}_{6,146}$ are formed by decorating boundary cycles of $G_{6,146}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,147}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 5]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([3, 4, 0, 5]),   # c
])
```

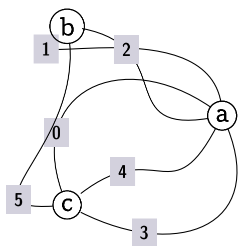
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{2}b^{0})$$
$$\gamma = ({}^{0}c^{1} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{6,147}$ only has the identity automorphism, so the marked fatgraphs $G_{6,147}^{(0)}$ to $G_{6,147}^{(6)}$ are formed by decorating boundary cycles of $G_{6,147}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,148}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 5, 2]),      # b
  Vertex([3, 4, 0, 5]),   # c
])
```

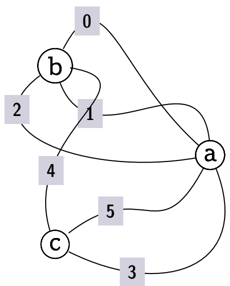
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2c^3 \to {}^2b^0)$$
$$\beta = ({}^3a^4 \to {}^0c^1)$$
$$\gamma = ({}^0b^1 \to {}^3c^0 \to {}^4a^0)$$

Markings

Fatgraph $G_{6,148}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,148}$ to $G^{(6)}_{6,148}$ are formed by decorating boundary cycles of $G_{6,148}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,149}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 5, 3]),# a
  Vertex([2, 1, 4, 0]),   # b
  Vertex([3, 5, 4]),      # c
])
```

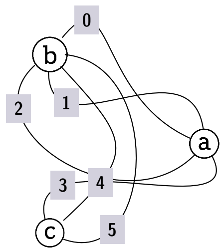
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1)$$
$$\beta = ({}^3a^4 \to {}^0c^1)$$
$$\gamma = ({}^1b^2 \to {}^2c^0 \to {}^4a^0)$$

Markings

Fatgraph $G_{6,149}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,149}$ to $G^{(6)}_{6,149}$ are formed by decorating boundary cycles of $G_{6,149}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,150}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),   # a
  Vertex([2, 1, 4, 5, 0]),# b
  Vertex([5, 4, 3]),      # c
])
```

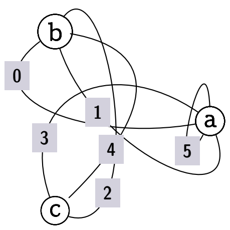
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^3b^4 \to {}^0b^1)$$
$$\beta = ({}^3a^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0c^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{6,150}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,150}$ to $G^{(6)}_{6,150}$ are formed by decorating boundary cycles of $G_{6,150}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,151}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 3, 0, 5, 1]),# a
  Vertex([0, 1, 4, 2]),   # b
  Vertex([2, 4, 3]),      # c
])
```

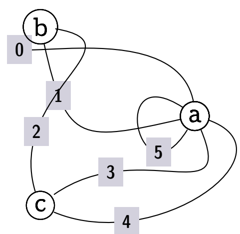
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}b^{0} \to {}^{0}a^{1} \to {}^{2}c^{0})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1} \to {}^{2}b^{3})$$

Markings

Fatgraph $G_{6,151}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,151}$ to $G^{(6)}_{6,151}$ are formed by decorating boundary cycles of $G_{6,151}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,152}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 5, 1, 5, 3, 4]),# a
  Vertex([0, 1, 2]),         # b
  Vertex([4, 3, 2]),         # c
])
```

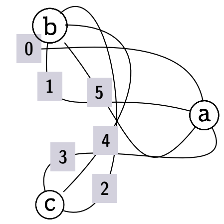
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{1}c^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{5}a^{0} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{4}a^{5} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{6,152}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,152}$ to $G^{(6)}_{6,152}$ are formed by decorating boundary cycles of $G_{6,152}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,153}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 5, 3]),   # a
  Vertex([0, 1, 5, 4, 2]),# b
  Vertex([2, 4, 3]),      # c
])
```

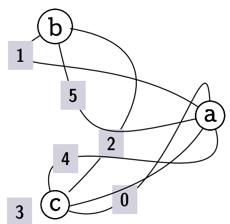
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^4b^0 \to {}^2c^0 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3a^0 \to {}^0b^1 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^0c^1 \to {}^3b^4)$$

Markings

Fatgraph $G_{6,153}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,153}$ to $G^{(6)}_{6,153}$ are formed by decorating boundary cycles of $G_{6,153}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,154}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 5, 3, 4]),# a
  Vertex([1, 5, 2]),      # b
  Vertex([0, 2, 4, 3]),   # c
])
```

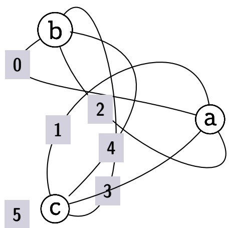
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^4a^0 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^2c^3 \to {}^3a^4)$$

Markings

Fatgraph $G_{6,154}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,154}$ to $G^{(6)}_{6,154}$ are formed by decorating boundary cycles of $G_{6,154}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,155}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([3, 4, 1, 5]),# c
])
```

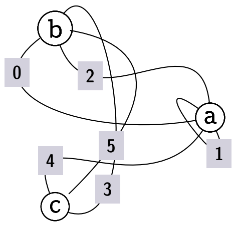
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^2c^3 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^3b^0 \to {}^3c^0)$$
$$\gamma = ({}^0c^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{6,155}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,155}$ to $G^{(6)}_{6,155}$ are formed by decorating boundary cycles of $G_{6,155}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,156}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 4, 1]),# a
  Vertex([0, 2, 5, 3]),   # b
  Vertex([3, 5, 4]),      # c
])
```

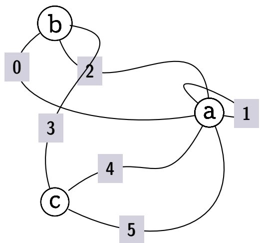
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}a^{3} \to {}^{3}b^{0} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}c^{1} \to {}^{2}b^{3})$$

Markings

Fatgraph $G_{6,156}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,156}$ to $G^{(6)}_{6,156}$ are formed by decorating boundary cycles of $G_{6,156}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,157}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 4, 5, 1]),# a
  Vertex([0, 2, 3]),         # b
  Vertex([5, 4, 3]),         # c
])
```

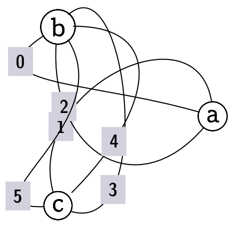
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^{4}a^{5} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{5}a^{0} \to {}^{1}b^{2} \to {}^{0}b^{1}) \\
\beta &= ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{1}c^{2}) \\
\gamma &= ({}^{3}a^{4} \to {}^{0}c^{1})
\end{aligned}$$

Markings

Fatgraph $G_{6,157}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,157}$ to $G^{(6)}_{6,157}$ are formed by decorating boundary cycles of $G_{6,157}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,158}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([0, 2, 5, 4, 3]),# b
  Vertex([3, 4, 1, 5]),   # c
])
```

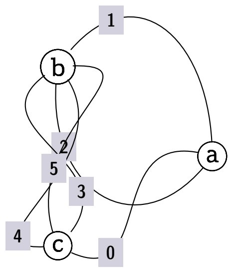
Boundary cycles

$$\begin{aligned}
\alpha &= ({}^{2}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}b^{1}) \\
\beta &= ({}^{1}a^{2} \to {}^{4}b^{0} \to {}^{3}c^{0} \to {}^{1}b^{2}) \\
\gamma &= ({}^{0}c^{1} \to {}^{3}b^{4})
\end{aligned}$$

Markings

Fatgraph $G_{6,158}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,158}$ to $G^{(6)}_{6,158}$ are formed by decorating boundary cycles of $G_{6,158}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,159}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 4, 5, 1]),# b
  Vertex([0, 3, 5, 4]),   # c
])
```

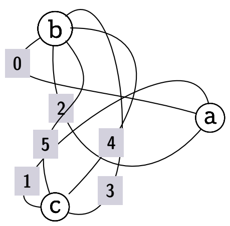
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^0c^1 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^3b^4)$$
$$\beta = ({}^1a^2 \to {}^3c^0 \to {}^1b^2)$$
$$\gamma = ({}^2c^3 \to {}^2b^3)$$

Markings

Fatgraph $G_{6,159}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,159}$ to $G^{(6)}_{6,159}$ are formed by decorating boundary cycles of $G_{6,159}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,160}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([0, 2, 5, 4, 3]),# b
  Vertex([3, 4, 5, 1]),   # c
])
```

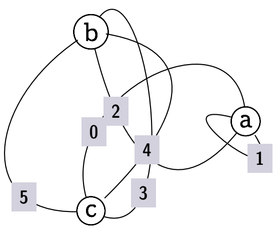
Boundary cycles

$$\alpha = ({}^{2}a^{0} \rightarrow {}^{4}b^{0} \rightarrow {}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{0}b^{1} \rightarrow {}^{3}c^{0} \rightarrow {}^{2}c^{3} \rightarrow {}^{1}b^{2})$$
$$\beta = ({}^{1}c^{2} \rightarrow {}^{2}b^{3})$$
$$\gamma = ({}^{0}c^{1} \rightarrow {}^{3}b^{4})$$

Markings

Fatgraph $G_{6,160}$ only has the identity automorphism, so the marked fatgraphs $G_{6,160}^{(0)}$ to $G_{6,160}^{(6)}$ are formed by decorating boundary cycles of $G_{6,160}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{6,161}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([5, 2, 4, 3]),# b
  Vertex([3, 4, 0, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \rightarrow {}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{0}b^{1} \rightarrow {}^{2}a^{3} \rightarrow {}^{1}c^{2} \rightarrow {}^{2}c^{3} \rightarrow {}^{1}b^{2})$$
$$\beta = ({}^{0}c^{1} \rightarrow {}^{2}b^{3})$$
$$\gamma = ({}^{3}b^{0} \rightarrow {}^{3}c^{0})$$

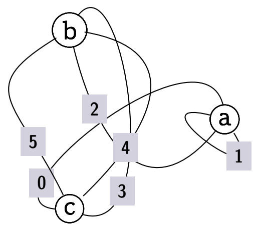
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1‡	a	c	b	2	1	0	3	5	4	α	γ	β

Markings

	$G_{6,161}^{(0)}$	$G_{6,161}^{(1)}$	$G_{6,161}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,162}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([5, 2, 4, 3]),# b
  Vertex([3, 4, 5, 0]),# c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{2}c^{3} \to {}^{3}b^{0} \to {}^{0}a^{1} \to {}^{3}c^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1} \to {}^{2}b^{3})$$

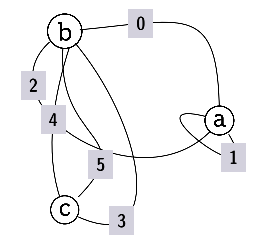
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	4	3	5	β	α	γ

Markings

	$G_{6,162}^{(0)}$	$G_{6,162}^{(1)}$	$G_{6,162}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{6,163}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),   # a
  Vertex([2, 5, 3, 0, 4]),# b
  Vertex([3, 5, 4]),      # c
])
```

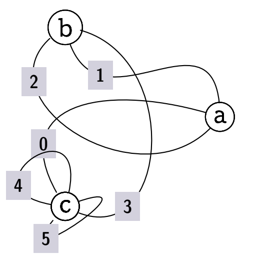
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{2}b^{3} \to {}^{2}c^{0} \to {}^{0}a^{1} \to {}^{3}b^{4})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}c^{1} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{6,163}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,163}$ to $G^{(6)}_{6,163}$ are formed by decorating boundary cycles of $G_{6,163}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,164}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),          # a
  Vertex([2, 1, 3]),          # b
  Vertex([3, 5, 4, 0, 4, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{3}c^{4} \to {}^{0}a^{1} \to {}^{2}c^{3} \to {}^{0}b^{1})$$
$$\beta = ({}^{5}c^{0} \to {}^{2}a^{0} \to {}^{2}b^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{4}c^{5} \to {}^{1}c^{2})$$

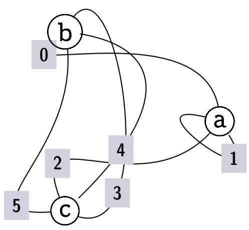
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	b	a	c	3	1	2	0	5	4	β	α	γ

Markings

	$G_{6,164}^{(0)}$	$G_{6,164}^{(1)}$	$G_{6,164}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{6,165}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 5, 4, 3]),# b
  Vertex([3, 4, 2, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{3}b^{0} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{2}c^{3} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1} \to {}^{2}b^{3})$$

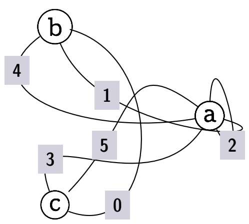
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	4	3	5	β	α	γ

Markings

	$G^{(0)}_{6,165}$	$G^{(1)}_{6,165}$	$G^{(2)}_{6,165}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{6,166}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 5, 4, 3, 2, 1]),# a
  Vertex([4, 1, 0]),         # b
  Vertex([0, 5, 3]),         # c
])
```

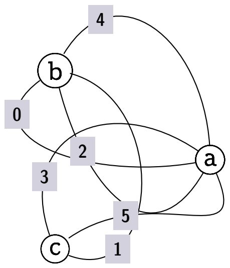
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^1c^2)$$
$$\beta = ({}^4a^5 \to {}^5a^0 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^0b^1)$$
$$\gamma = ({}^2a^3 \to {}^2b^0 \to {}^2c^0)$$

Markings

Fatgraph $G_{6,166}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,166}$ to $G^{(6)}_{6,166}$ are formed by decorating boundary cycles of $G_{6,166}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,167}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 3, 0, 2, 5]),# a
  Vertex([0, 2, 1, 4]),   # b
  Vertex([1, 5, 3]),      # c
])
```

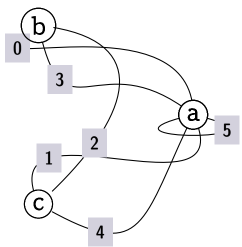
Boundary cycles

$$\alpha = ({}^2b^3 \to {}^0a^1 \to {}^2c^0)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2a^3 \to {}^4a^0 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,167}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,167}$ to $G^{(6)}_{6,167}$ are formed by decorating boundary cycles of $G_{6,167}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,168}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 3, 5, 4, 1, 5]),# a
  Vertex([0, 3, 2]),         # b
  Vertex([4, 2, 1]),         # c
])
```

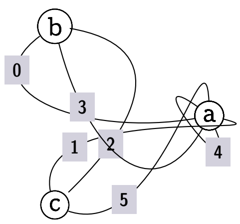
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^5a^0 \to {}^0b^1)$$
$$\gamma = ({}^3a^4 \to {}^2c^0)$$

Markings

Fatgraph $G_{6,168}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,168}$ to $G^{(6)}_{6,168}$ are formed by decorating boundary cycles of $G_{6,168}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,169}$ (3 orientable markings)




```
Fatgraph([
  Vertex([5, 4, 0, 3, 4, 1]),# a
  Vertex([0, 3, 2]),         # b
  Vertex([5, 2, 1]),         # c
])
```

Boundary cycles

$$\alpha = ({}^4a^5 \to {}^0a^1 \to {}^2c^0)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^0b^1)$$
$$\gamma = ({}^1c^2 \to {}^5a^0 \to {}^2a^3 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0)$$

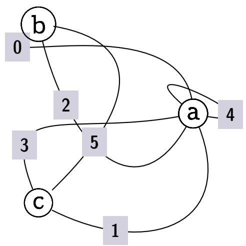
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	1	0	2	5	4	3	β	α	γ

Markings

	$G^{(0)}_{6,169}$	$G^{(1)}_{6,169}$	$G^{(2)}_{6,169}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{6,170}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 3, 2, 1, 4]),# a
  Vertex([0, 2, 5]),         # b
  Vertex([1, 5, 3]),         # c
])
```

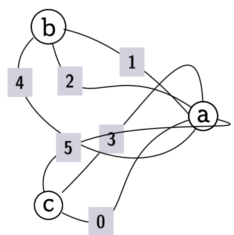
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^5a^0 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^4a^5 \to {}^2c^0)$$
$$\gamma = ({}^2a^3 \to {}^1c^2 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,170}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,170}$ to $G^{(6)}_{6,170}$ are formed by decorating boundary cycles of $G_{6,170}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,171}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 2, 0, 4, 1, 5]),# a
  Vertex([4, 2, 1]),         # b
  Vertex([0, 3, 5]),         # c
])
```

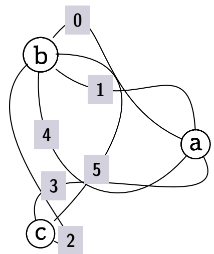
Boundary cycles

$$\alpha = ({}^4a^5 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^1b^2)$$
$$\beta = ({}^2b^0 \to {}^3a^4)$$
$$\gamma = ({}^1c^2 \to {}^5a^0)$$

Markings

Fatgraph $G_{6,171}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,171}$ to $G^{(6)}_{6,171}$ are formed by decorating boundary cycles of $G_{6,171}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,172}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([2, 4, 1, 5, 0]),# b
  Vertex([2, 5, 3]),      # c
])
```

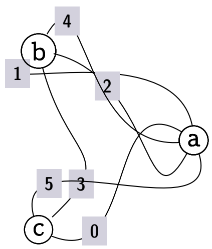
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^3b^4)$$
$$\beta = ({}^2a^3 \to {}^0b^1 \to {}^2c^0)$$
$$\gamma = ({}^3a^0 \to {}^1c^2 \to {}^2b^3)$$

Markings

Fatgraph $G_{6,172}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,172}$ to $G^{(6)}_{6,172}$ are formed by decorating boundary cycles of $G_{6,172}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,173}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2, 5]),# a
  Vertex([1, 3, 2, 4]),   # b
  Vertex([0, 3, 5]),      # c
])
```

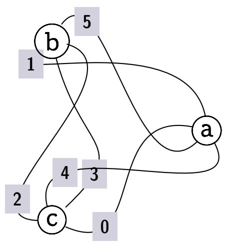
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2)$$
$$\beta = ({}^2a^3 \to {}^2b^3)$$
$$\gamma = ({}^0b^1 \to {}^1c^2 \to {}^4a^0)$$

Markings

Fatgraph $G_{6,173}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,173}$ to $G^{(6)}_{6,173}$ are formed by decorating boundary cycles of $G_{6,173}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,174}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 3, 2, 5]),# b
  Vertex([0, 3, 4, 2]),# c
])
```

Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^3c^0)$$
$$\beta = ({}^2a^3 \to {}^2c^3 \to {}^2b^3)$$
$$\gamma = ({}^3a^0 \to {}^1c^2 \to {}^0b^1)$$

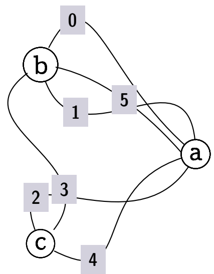
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1‡	c	b	a	0	2	1	5	4	3	α	γ	β

Markings

	$G^{(0)}_{6,174}$	$G^{(1)}_{6,174}$	$G^{(2)}_{6,174}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,175}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2, 5]),# a
  Vertex([3, 1, 5, 0]),   # b
  Vertex([4, 3, 2]),      # c
])
```

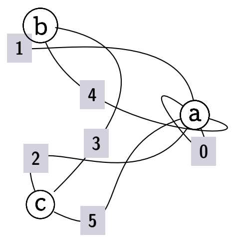
Boundary cycles

$$\alpha = ({}^{3}a^{4} \rightarrow {}^{0}c^{1} \rightarrow {}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{2}b^{3} \rightarrow {}^{3}b^{0} \rightarrow {}^{1}c^{2} \rightarrow {}^{0}b^{1})$$
$$\beta = ({}^{2}a^{3} \rightarrow {}^{2}c^{0})$$
$$\gamma = ({}^{1}b^{2} \rightarrow {}^{4}a^{0})$$

Markings

Fatgraph $G_{6,175}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,175}$ to $G^{(6)}_{6,175}$ are formed by decorating boundary cycles of $G_{6,175}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,176}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2, 0, 4]),# a
  Vertex([1, 4, 3]),         # b
  Vertex([5, 3, 2]),         # c
])
```

Boundary cycles

$$\alpha = ({}^4a^5 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^3a^4 \to {}^2b^0)$$
$$\beta = ({}^2a^3 \to {}^2c^0)$$
$$\gamma = ({}^5a^0 \to {}^0b^1)$$

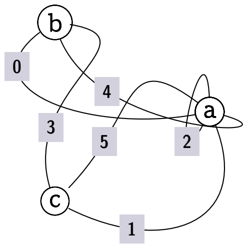
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1‡	a	c	b	0	2	1	3	5	4	α	γ	β

Markings

	$G^{(0)}_{6,176}$	$G^{(1)}_{6,176}$	$G^{(2)}_{6,176}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,177}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 5, 0, 2, 1, 4]),# a
  Vertex([0, 4, 3]),         # b
  Vertex([1, 5, 3]),         # c
])
```

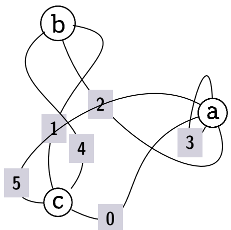
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{1}c^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{4} \to {}^{0}c^{1} \to {}^{5}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{0} \to {}^{4}a^{5} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{6,177}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,177}$ to $G^{(6)}_{6,177}$ are formed by decorating boundary cycles of $G_{6,177}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,178}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 5, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([0, 4, 1, 5]),   # c
])
```

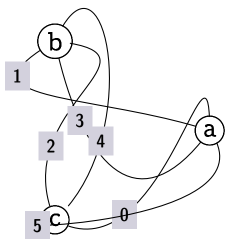
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{3}c^{0})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}b^{0} \to {}^{1}c^{2})$$

Markings

Fatgraph $G_{6,178}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,178}$ to $G^{(6)}_{6,178}$ are formed by decorating boundary cycles of $G_{6,178}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,179}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 5]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([0, 4, 2, 5]),# c
])
```

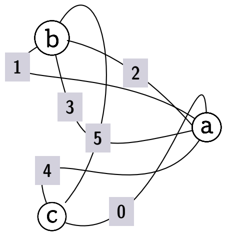
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{2}c^{3})$$
$$\gamma = ({}^{1}c^{2} \to {}^{2}b^{3})$$

Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\dagger}$	a	c	b	3	5	4	0	2	1	α	β	γ

The Fatgraph $G_{6,180}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 4, 2]),# a
  Vertex([1, 3, 2, 5]),   # b
  Vertex([0, 5, 4]),      # c
])
```

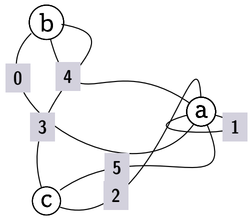
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}a^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{3}a^{4} \to {}^{1}c^{2} \to {}^{2}b^{3})$$

Markings

Fatgraph $G_{6,180}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,180}$ to $G^{(6)}_{6,180}$ are formed by decorating boundary cycles of $G_{6,180}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,181}$ (3 orientable markings)




```
Fatgraph([
  Vertex([2, 4, 1, 0, 5, 1]),# a
  Vertex([0, 4, 3]),         # b
  Vertex([2, 5, 3]),         # c
])
```

Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{4}a^{5} \to {}^{5}a^{0} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}b^{0} \to {}^{3}a^{4} \to {}^{1}c^{2})$$

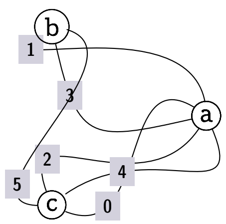
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	3	5	4	γ	β	α

Markings

	$G_{6,181}^{(0)}$	$G_{6,181}^{(1)}$	$G_{6,181}^{(2)}$
α	0	0	1
β	1	2	0
γ	2	1	2

The Fatgraph $G_{6,182}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2, 4]),# a
  Vertex([1, 3, 5]),      # b
  Vertex([0, 4, 2, 5]),   # c
])
```

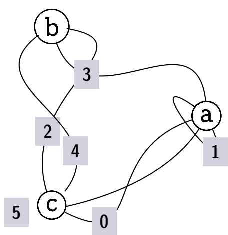
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^2c^3 \to {}^4a^0 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^3c^0 \to {}^1b^2)$$
$$\gamma = ({}^3a^4 \to {}^1c^2)$$

Markings

Fatgraph $G_{6,182}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,182}$ to $G^{(6)}_{6,182}$ are formed by decorating boundary cycles of $G_{6,182}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,183}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 5, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([0, 4, 2, 5]),   # c
])
```

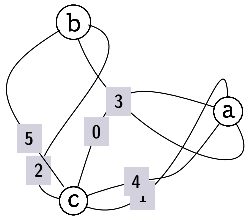
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2c^3 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^3c^0)$$
$$\gamma = ({}^2b^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{6,183}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,183}$ to $G^{(6)}_{6,183}$ are formed by decorating boundary cycles of $G_{6,183}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,184}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),   # a
  Vertex([5, 3, 2]),      # b
  Vertex([1, 4, 0, 5, 2]),# c
])
```

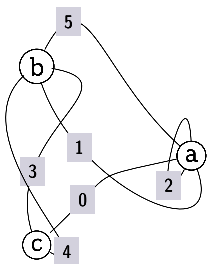
Boundary cycles

$$\alpha = ({}^{4}c^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}b^{0} \to {}^{3}c^{4})$$

Markings

Fatgraph $G_{6,184}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,184}$ to $G^{(6)}_{6,184}$ are formed by decorating boundary cycles of $G_{6,184}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,185}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 5, 0, 2, 1]),# a
  Vertex([4, 1, 3, 5]),   # b
  Vertex([4, 0, 3]),      # c
])
```

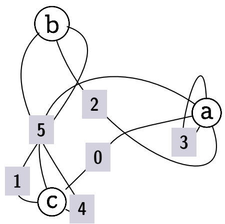
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^3b^0 \to {}^0a^1 \to {}^0c^1)$$
$$\beta = ({}^1a^2 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^0b^1 \to {}^2c^0 \to {}^3a^4 \to {}^4a^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,185}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,185}$ to $G^{(6)}_{6,185}$ are formed by decorating boundary cycles of $G_{6,185}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,186}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 5, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([4, 0, 5, 1]),   # c
])
```

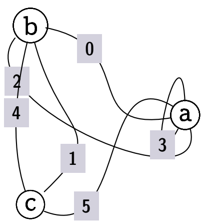
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2c^3 \to {}^0a^1 \to {}^2b^0 \to {}^0c^1)$$
$$\beta = ({}^1a^2 \to {}^1c^2)$$
$$\gamma = ({}^4a^0 \to {}^0b^1 \to {}^3a^4 \to {}^3c^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{6,186}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,186}$ to $G^{(6)}_{6,186}$ are formed by decorating boundary cycles of $G_{6,186}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,187}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 5, 0, 3, 2]),# a
  Vertex([2, 1, 0, 4]),   # b
  Vertex([5, 1, 4]),      # c
])
```

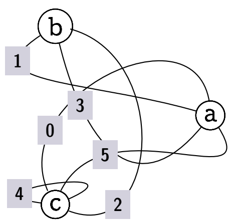
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0c^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^2b^3)$$
$$\gamma = ({}^4a^0 \to {}^3b^0 \to {}^3a^4 \to {}^1c^2 \to {}^0b^1)$$

Markings

Fatgraph $G_{6,187}$ only has the identity automorphism, so the marked fatgraphs $G_{6,187}^{(0)}$ to $G_{6,187}^{(6)}$ are formed by decorating boundary cycles of $G_{6,187}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,188}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 5]),   # a
  Vertex([1, 3, 2]),      # b
  Vertex([2, 4, 5, 0, 4]),# c
])
```

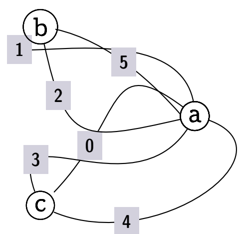
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2c^3 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^4c^0 \to {}^2b^0 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^3a^0 \to {}^3c^4 \to {}^1c^2)$$

Markings

Fatgraph $G_{6,188}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,188}$ to $G^{(6)}_{6,188}$ are formed by decorating boundary cycles of $G_{6,188}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,189}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 5, 4]),# a
  Vertex([1, 2, 5]),         # b
  Vertex([4, 0, 3]),         # c
])
```

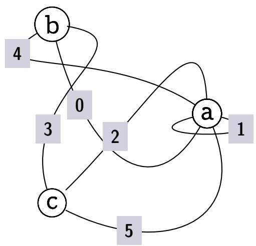
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2b^0 \to {}^0a^1 \to {}^1c^2)$$
$$\beta = ({}^1a^2 \to {}^4a^5 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^2a^3 \to {}^0b^1 \to {}^5a^0 \to {}^2c^0)$$

Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	b	c	3	2	5	4	0	1	γ	α	β
$A_2{}^{\ddagger}$	a	b	c	4	5	1	0	3	2	β	γ	α
$A_3{}^{\dagger\ddagger}$	a	c	b	1	4	0	2	5	3	γ	α	β
$A_4{}^{\dagger\ddagger}$	a	c	b	2	0	3	5	1	4	β	γ	α
$A_5{}^{\dagger}$	a	c	b	5	3	4	1	2	0	α	β	γ

The Fatgraph $G_{6,190}$ (3 orientable markings)




```
Fatgraph([
  Vertex([2, 4, 1, 0, 5, 1]),# a
  Vertex([4, 0, 3]),         # b
  Vertex([5, 2, 3]),         # c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{5}a^{0})$$
$$\gamma = ({}^{2}a^{3} \to {}^{2}c^{0} \to {}^{4}a^{5} \to {}^{1}b^{2})$$

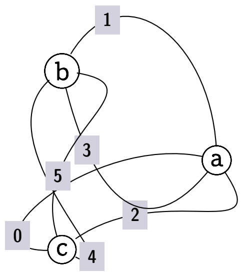
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	1	0	3	5	4	α	γ	β

Markings

	$G^{(0)}_{6,190}$	$G^{(1)}_{6,190}$	$G^{(2)}_{6,190}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,191}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 3, 5, 1]),# b
  Vertex([4, 2, 5, 0]),# c
])
```

Boundary cycles

$$\alpha = ({}^3c^0 \to {}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^2c^3 \to {}^1b^2)$$
$$\gamma = ({}^3a^0 \to {}^3b^0 \to {}^0c^1)$$

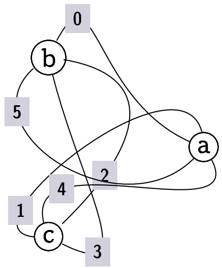
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	b	c	2	3	0	1	5	4	α	γ	β
A_2	b	c	a	3	4	1	5	2	0	α	β	γ
$A_3{}^{\dagger\ddagger}$	b	c	a	1	5	3	4	0	2	α	γ	β
A_4	c	a	b	5	2	4	0	1	3	α	β	γ
$A_5{}^{\dagger\ddagger}$	c	a	b	4	0	5	2	3	1	α	γ	β

Markings

	$G^{(0)}_{6,191}$	$G^{(1)}_{6,191}$	$G^{(2)}_{6,191}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,192}$ (1 orientable marking)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([5, 3, 2, 0]),# b
  Vertex([3, 2, 4, 1]),# c
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}c^{3} \to {}^{3}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}a^{0} \to {}^{1}c^{2} \to {}^{3}c^{0} \to {}^{1}b^{2})$$

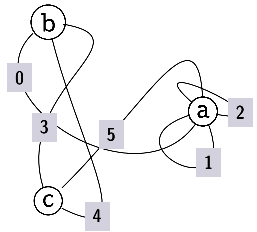
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	4	5	2	3	0	1	α	γ	β
$A_2{}^{\ddagger}$	b	c	a	3	5	1	4	0	2	β	γ	α
$A_3{}^{\ddagger}$	b	a	c	0	2	1	4	3	5	β	α	γ
$A_4{}^{\ddagger}$	c	a	b	4	2	5	0	3	1	γ	α	β
$A_5{}^{\ddagger}$	c	b	a	3	1	5	0	4	2	γ	β	α

Markings

	$G_{6,192}^{(0)}$
α	0
β	1
γ	2

The Fatgraph $G_{6,193}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([5, 2, 1, 0, 1, 2]),# a
  Vertex([0, 4, 3]),         # b
  Vertex([4, 5, 3]),         # c
])
```

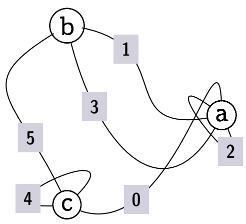
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{5}a^{0} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{5})$$
$$\gamma = ({}^{2}c^{0} \to {}^{1}b^{2})$$

Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\dagger}$	a	c	b	5	2	1	4	3	0	α	β	γ

The Fatgraph $G_{6,194}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 2]),# a
  Vertex([5, 3, 1]),      # b
  Vertex([0, 4, 5, 4]),   # c
])
```

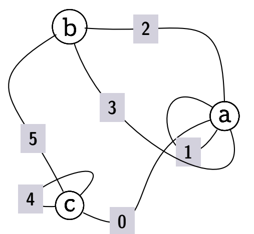
Boundary cycles

$$\alpha = ({}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}c^{1} \to {}^{4}a^{0})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{3})$$
$$\gamma = ({}^{2}a^{3} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{6,194}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,194}$ to $G^{(6)}_{6,194}$ are formed by decorating boundary cycles of $G_{6,194}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,195}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 3]),# a
  Vertex([5, 3, 2]),      # b
  Vertex([0, 4, 5, 4]),   # c
])
```

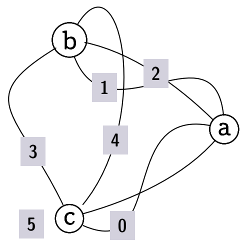
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{3}c^{0} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}b^{0} \to {}^{0}b^{1} \to {}^{2}c^{3} \to {}^{1}c^{2} \to {}^{4}a^{0})$$

Markings

Fatgraph $G_{6,195}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{6,195}$ to $G^{(6)}_{6,195}$ are formed by decorating boundary cycles of $G_{6,195}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{6,196}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2]),# a
  Vertex([3, 1, 2, 4]),# b
  Vertex([0, 4, 3, 5]),# c
])
```

Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{2}c^{3} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}c^{0})$$
$$\gamma = ({}^{3}a^{0} \to {}^{1}b^{2})$$

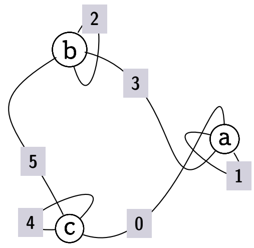
Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
$A_1{}^{\ddagger}$	a	c	b	2	5	0	3	4	1	α	γ	β

Markings

	$G^{(0)}_{6,196}$	$G^{(1)}_{6,196}$	$G^{(2)}_{6,196}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{6,197}$ (1 orientable marking)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([5, 2, 3, 2]),# b
  Vertex([0, 4, 5, 4]),# c
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{2}c^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$

Automorphisms

A_0	a	b	c	0	1	2	3	4	5	α	β	γ
A_1 ‡	a	c	b	3	1	4	0	2	5	β	α	γ
A_2 ‡	b	a	c	5	2	1	3	4	0	γ	β	α
A_3 ‡	b	c	a	3	2	4	5	1	0	β	γ	α
A_4 ‡	c	b	a	0	4	2	5	1	3	α	γ	β
A_5 ‡	c	a	b	5	4	1	0	2	3	γ	α	β

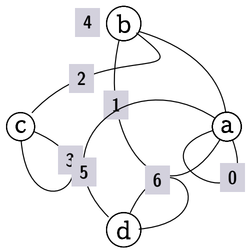
Markings

	$G_{6,197}^{(0)}$
α	0
β	1
γ	2

Fatgraphs with 7 edges / 4 vertices

There are 256 unmarked fatgraphs in this section, originating 2916 marked fatgraphs (1440 orientable, and 1476 nonorientable).

The Fatgraph $G_{7,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 5, 0, 1, 0]),# a
  Vertex([4, 1, 2]),      # b
  Vertex([3, 3, 2]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^1c^2 \to {}^2c^0 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0d^1)$

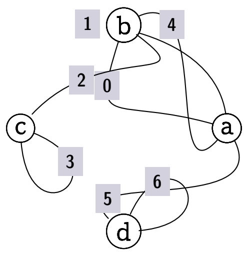
Markings

Fatgraph $G_{7,0}$ only has the identity automorphism, so the marked fatgraphs $G_{7,0}^{(0)}$ to $G_{7,0}^{(6)}$ are formed by decorating boundary cycles of $G_{7,0}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,0}^{(0)}) = -G_{6,0}^{(0)} \qquad D(G_{7,0}^{(3)}) = -G_{6,0}^{(3)}$$
$$D(G_{7,0}^{(1)}) = -G_{6,0}^{(1)} \qquad D(G_{7,0}^{(4)}) = -G_{6,0}^{(4)}$$
$$D(G_{7,0}^{(2)}) = -G_{6,0}^{(2)} \qquad D(G_{7,0}^{(5)}) = -G_{6,0}^{(5)}$$

The Fatgraph $G_{7,1}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 0, 2, 4]),# b
  Vertex([3, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

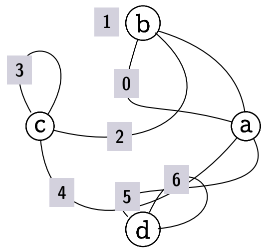
Markings

Fatgraph $G_{7,1}$ only has the identity automorphism, so the marked fatgraphs $G_{7,1}^{(0)}$ to $G_{7,1}^{(6)}$ are formed by decorating boundary cycles of $G_{7,1}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,1}^{(0)}) = -G_{6,0}^{(1)}$
$D(G_{7,1}^{(1)}) = -G_{6,0}^{(0)}$
$D(G_{7,1}^{(2)}) = -G_{6,0}^{(3)}$
$D(G_{7,1}^{(3)}) = -G_{6,0}^{(2)}$
$D(G_{7,1}^{(4)}) = -G_{6,0}^{(5)}$
$D(G_{7,1}^{(5)}) = -G_{6,0}^{(4)}$

The Fatgraph $G_{7,2}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([4, 2, 3, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{3}c^{0} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{3})$
$\gamma = ({}^{0}d^{1})$

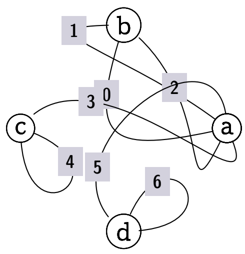
Markings

Fatgraph $G_{7,2}$ only has the identity automorphism, so the marked fatgraphs $G_{7,2}^{(0)}$ to $G_{7,2}^{(6)}$ are formed by decorating boundary cycles of $G_{7,2}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,2}^{(0)}) = -G_{6,0}^{(6)} \qquad D(G_{7,2}^{(3)}) = -G_{6,1}^{(9)}$$
$$D(G_{7,2}^{(1)}) = -G_{6,1}^{(7)} \qquad D(G_{7,2}^{(4)}) = -G_{6,1}^{(10)}$$
$$D(G_{7,2}^{(2)}) = -G_{6,1}^{(8)} \qquad D(G_{7,2}^{(5)}) = -G_{6,1}^{(11)}$$

The Fatgraph $G_{7,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 4, 3]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^4a^0 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2c^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0d^1)$

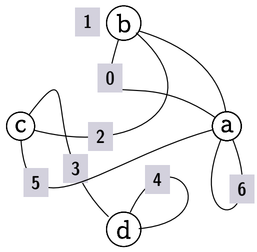
Markings

Fatgraph $G_{7,3}$ only has the identity automorphism, so the marked fatgraphs $G_{7,3}^{(0)}$ to $G_{7,3}^{(6)}$ are formed by decorating boundary cycles of $G_{7,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,3}^{(0)}) = -G_{6,0}^{(1)} - G_{6,1}^{(7)}$
$D(G_{7,3}^{(1)}) = -G_{6,0}^{(0)} - G_{6,0}^{(6)}$
$D(G_{7,3}^{(2)}) = -G_{6,0}^{(3)} - G_{6,1}^{(9)}$
$D(G_{7,3}^{(3)}) = -G_{6,0}^{(2)} - G_{6,1}^{(8)}$
$D(G_{7,3}^{(4)}) = -G_{6,0}^{(5)} - G_{6,1}^{(11)}$
$D(G_{7,3}^{(5)}) = -G_{6,0}^{(4)} - G_{6,1}^{(10)}$

The Fatgraph $G_{7,4}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6, 6]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([5, 2, 3]),      # c
  Vertex([4, 4, 3]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^4a^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^3a^4)$
$\gamma = ({}^0d^1)$

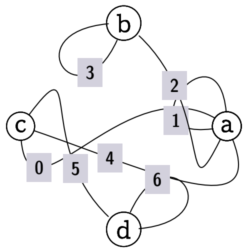
Markings

Fatgraph $G_{7,4}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,4}$ to $G^{(6)}_{7,4}$ are formed by decorating boundary cycles of $G_{7,4}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,4}) = +G^{(7)}_{6,1}$
$D(G^{(1)}_{7,4}) = +G^{(6)}_{6,0}$
$D(G^{(2)}_{7,4}) = +G^{(9)}_{6,1}$
$D(G^{(3)}_{7,4}) = +G^{(8)}_{6,1}$
$D(G^{(4)}_{7,4}) = +G^{(11)}_{6,1}$
$D(G^{(5)}_{7,4}) = +G^{(10)}_{6,1}$

The Fatgraph $G_{7,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 1, 2, 4]),# a
  Vertex([3, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2)$
$\beta = ({}^0b^1)$
$\gamma = ({}^0d^1)$

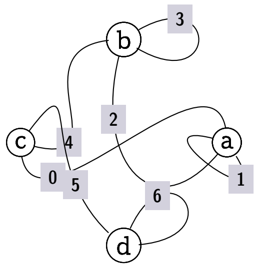
Markings

Fatgraph $G_{7,5}$ only has the identity automorphism, so the marked fatgraphs $G_{7,5}^{(0)}$ to $G_{7,5}^{(6)}$ are formed by decorating boundary cycles of $G_{7,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,5}^{(0)}) = +G_{6,1}^{(7)}$
$D(G_{7,5}^{(1)}) = +G_{6,0}^{(6)}$
$D(G_{7,5}^{(2)}) = +G_{6,1}^{(9)}$
$D(G_{7,5}^{(3)}) = +G_{6,1}^{(8)}$
$D(G_{7,5}^{(4)}) = +G_{6,1}^{(11)}$
$D(G_{7,5}^{(5)}) = +G_{6,1}^{(10)}$

The Fatgraph $G_{7,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([4, 2, 3, 3]),# b
  Vertex([0, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^2c^0 \to {}^1b^2 \to {}^1d^2)$
$\beta = ({}^2b^3)$
$\gamma = ({}^0d^1)$

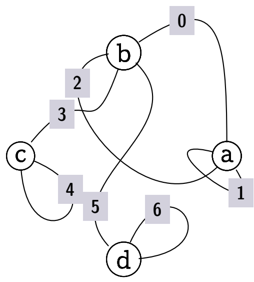
Markings

Fatgraph $G_{7,6}$ only has the identity automorphism, so the marked fatgraphs $G_{7,6}^{(0)}$ to $G_{7,6}^{(6)}$ are formed by decorating boundary cycles of $G_{7,6}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,6}^{(0)}) = -G_{6,0}^{(6)}$
$D(G_{7,6}^{(1)}) = -G_{6,1}^{(7)}$
$D(G_{7,6}^{(2)}) = -G_{6,1}^{(8)}$
$D(G_{7,6}^{(3)}) = -G_{6,1}^{(9)}$
$D(G_{7,6}^{(4)}) = -G_{6,1}^{(10)}$
$D(G_{7,6}^{(5)}) = -G_{6,1}^{(11)}$

The Fatgraph $G_{7,7}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([2, 3, 5, 0]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2b^3 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0d^1)$

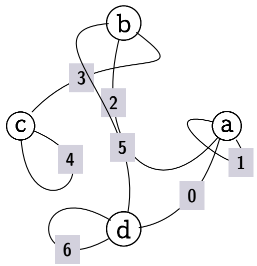
Markings

Fatgraph $G_{7,7}$ only has the identity automorphism, so the marked fatgraphs $G_{7,7}^{(0)}$ to $G_{7,7}^{(6)}$ are formed by decorating boundary cycles of $G_{7,7}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,7}^{(0)}) = +G_{6,0}^{(0)} - G_{6,0}^{(6)}$$
$$D(G_{7,7}^{(1)}) = +G_{6,0}^{(1)} - G_{6,1}^{(7)}$$
$$D(G_{7,7}^{(2)}) = +G_{6,0}^{(2)} - G_{6,1}^{(8)}$$
$$D(G_{7,7}^{(3)}) = +G_{6,0}^{(3)} - G_{6,1}^{(9)}$$
$$D(G_{7,7}^{(4)}) = +G_{6,0}^{(4)} - G_{6,1}^{(10)}$$
$$D(G_{7,7}^{(5)}) = +G_{6,0}^{(5)} - G_{6,1}^{(11)}$$

The Fatgraph $G_{7,8}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([5, 2, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^3d^0 \to {}^2a^3 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^2d^3)$

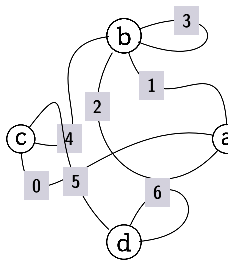
Markings

Fatgraph $G_{7,8}$ only has the identity automorphism, so the marked fatgraphs $G_{7,8}^{(0)}$ to $G_{7,8}^{(6)}$ are formed by decorating boundary cycles of $G_{7,8}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,8}^{(0)}) = +2G_{6,0}^{(6)}$
$D(G_{7,8}^{(1)}) = +2G_{6,1}^{(7)}$
$D(G_{7,8}^{(2)}) = +2G_{6,1}^{(8)}$
$D(G_{7,8}^{(3)}) = +2G_{6,1}^{(9)}$
$D(G_{7,8}^{(4)}) = +2G_{6,1}^{(10)}$
$D(G_{7,8}^{(5)}) = +2G_{6,1}^{(11)}$

The Fatgraph $G_{7,9}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([4, 2, 1, 3, 3]),# b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^4b^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^3b^4)$
$\gamma = ({}^0d^1)$

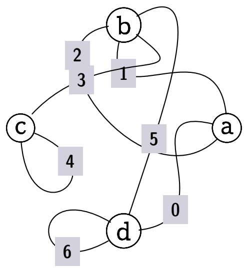
Markings

Fatgraph $G_{7,9}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,9}$ to $G^{(6)}_{7,9}$ are formed by decorating boundary cycles of $G_{7,9}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,9}) = -G^{(12)}_{6,1}$
$D(G^{(1)}_{7,9}) = +G^{(12)}_{6,1}$
$D(G^{(2)}_{7,9}) = -G^{(13)}_{6,2}$
$D(G^{(3)}_{7,9}) = +G^{(13)}_{6,2}$
$D(G^{(4)}_{7,9}) = -G^{(14)}_{6,2}$
$D(G^{(5)}_{7,9}) = +G^{(14)}_{6,2}$

The Fatgraph $G_{7,10}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3, 5]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{2}b^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{2}d^{3})$

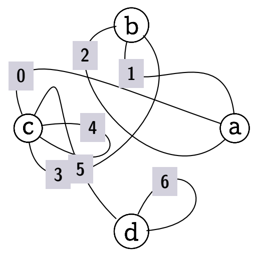
Markings

Fatgraph $G_{7,10}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,10}$ to $G^{(6)}_{7,10}$ are formed by decorating boundary cycles of $G_{7,10}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,10}) = -G^{(1)}_{6,0} + G^{(12)}_{6,1}$
$D(G^{(1)}_{7,10}) = -G^{(0)}_{6,0} - G^{(12)}_{6,1}$
$D(G^{(2)}_{7,10}) = -G^{(3)}_{6,0} + G^{(13)}_{6,2}$
$D(G^{(3)}_{7,10}) = -G^{(2)}_{6,0} - G^{(13)}_{6,2}$
$D(G^{(4)}_{7,10}) = -G^{(5)}_{6,0} + G^{(14)}_{6,2}$
$D(G^{(5)}_{7,10}) = -G^{(4)}_{6,0} - G^{(14)}_{6,2}$

The Fatgraph $G_{7,11}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 3]),      # b
  Vertex([3, 4, 4, 5, 0]),# c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^4c^0 \to {}^3c^4 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1d^2 \to {}^0c^1 \to {}^2b^0 \to {}^0b^1 \to {}^2c^3)$
$\beta = ({}^1c^2)$
$\gamma = ({}^0d^1)$

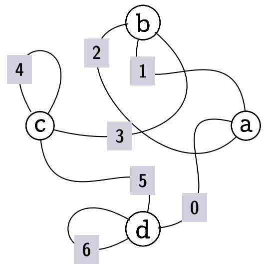
Markings

Fatgraph $G_{7,11}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,11}$ to $G^{(6)}_{7,11}$ are formed by decorating boundary cycles of $G_{7,11}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,11}) = -G^{(12)}_{6,1}$
$D(G^{(1)}_{7,11}) = -G^{(13)}_{6,2}$
$D(G^{(2)}_{7,11}) = -G^{(14)}_{6,2}$
$D(G^{(3)}_{7,11}) = -G^{(12)}_{6,1}$
$D(G^{(4)}_{7,11}) = +G^{(12)}_{6,1}$
$D(G^{(5)}_{7,11}) = -G^{(13)}_{6,2}$

The Fatgraph $G_{7,12}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([5, 3, 4, 4]),# c
  Vertex([0, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^2d^3)$

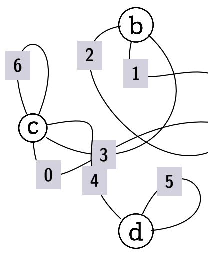
Markings

Fatgraph $G_{7,12}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,12}$ to $G^{(6)}_{7,12}$ are formed by decorating boundary cycles of $G_{7,12}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,12}) = +G^{(13)}_{6,2}$
$D(G^{(1)}_{7,12}) = -G^{(14)}_{6,2}$
$D(G^{(2)}_{7,12}) = +G^{(14)}_{6,2}$
$D(G^{(3)}_{7,12}) = +G^{(0)}_{6,0} + G^{(1)}_{6,0}$
$D(G^{(4)}_{7,12}) = +G^{(2)}_{6,0} + G^{(3)}_{6,0}$
$D(G^{(5)}_{7,12}) = +G^{(4)}_{6,0} + G^{(5)}_{6,0}$

The Fatgraph $G_{7,13}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 3]),      # b
  Vertex([0, 3, 4, 6, 6]),# c
  Vertex([5, 5, 4]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^4c^0 \to {}^2c^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^3c^4)$
$\gamma = ({}^0d^1)$

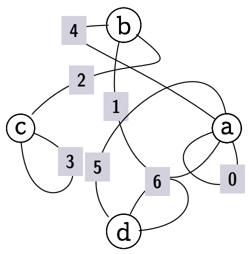
Markings

Fatgraph $G_{7,13}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,13}$ to $G^{(6)}_{7,13}$ are formed by decorating boundary cycles of $G_{7,13}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,13}) = +G^{(0)}_{6,0} - G^{(12)}_{6,1} \qquad D(G^{(3)}_{7,13}) = +G^{(3)}_{6,0} + G^{(13)}_{6,2}$$
$$D(G^{(1)}_{7,13}) = +G^{(1)}_{6,0} + G^{(12)}_{6,1} \qquad D(G^{(4)}_{7,13}) = +G^{(4)}_{6,0} - G^{(14)}_{6,2}$$
$$D(G^{(2)}_{7,13}) = +G^{(2)}_{6,0} - G^{(13)}_{6,2} \qquad D(G^{(5)}_{7,13}) = +G^{(5)}_{6,0} + G^{(14)}_{6,2}$$

The Fatgraph $G_{7,14}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 4, 0, 1, 0]),# a
  Vertex([4, 1, 2]),      # b
  Vertex([3, 3, 2]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

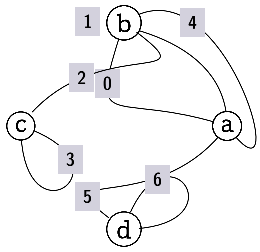
Markings

Fatgraph $G_{7,14}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,14}$ to $G^{(6)}_{7,14}$ are formed by decorating boundary cycles of $G_{7,14}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,14}) = +G^{(6)}_{6,0}$
$D(G^{(1)}_{7,14}) = +G^{(7)}_{6,1}$
$D(G^{(2)}_{7,14}) = +G^{(8)}_{6,1}$
$D(G^{(3)}_{7,14}) = +G^{(9)}_{6,1}$
$D(G^{(4)}_{7,14}) = +G^{(10)}_{6,1}$
$D(G^{(5)}_{7,14}) = +G^{(11)}_{6,1}$

The Fatgraph $G_{7,15}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 0, 2, 4]),# b
  Vertex([3, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1‡	b	a	d	c	0	1	5	6	4	2	3	α	γ	β

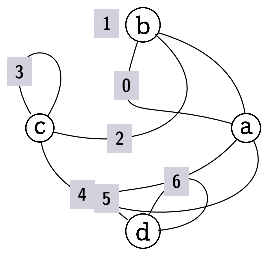
Markings

	$G^{(0)}_{7,15}$	$G^{(1)}_{7,15}$	$G^{(2)}_{7,15}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G^{(0)}_{7,15}) = +G^{(6)}_{6,0} + G^{(7)}_{6,1}$
$D(G^{(1)}_{7,15}) = +G^{(6)}_{6,0} + G^{(7)}_{6,1}$
$D(G^{(2)}_{7,15}) = +G^{(8)}_{6,1} + G^{(9)}_{6,1}$

The Fatgraph $G_{7,16}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([4, 2, 3, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^2a^3 \to {}^3a^0 \to {}^0c^1 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^3c^0 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^0d^1)$

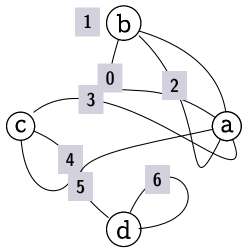
Markings

Fatgraph $G_{7,16}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,16}$ to $G^{(6)}_{7,16}$ are formed by decorating boundary cycles of $G_{7,16}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$D(G^{(0)}_{7,16}) = +G^{(8)}_{6,1} + G^{(9)}_{6,1}$
$D(G^{(1)}_{7,16}) = +G^{(10)}_{6,1} + G^{(11)}_{6,1}$
$D(G^{(2)}_{7,16}) = +G^{(10)}_{6,1} + G^{(11)}_{6,1}$
$D(G^{(3)}_{7,16}) = -G^{(15)}_{6,2}$
$D(G^{(4)}_{7,16}) = -G^{(16)}_{6,2}$
$D(G^{(5)}_{7,16}) = -G^{(17)}_{6,2}$

The Fatgraph $G_{7,17}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 4, 3]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

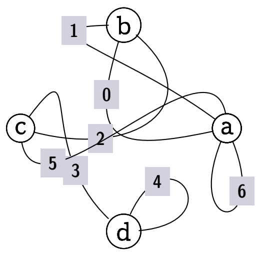
Markings

Fatgraph $G_{7,17}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,17}$ to $G^{(6)}_{7,17}$ are formed by decorating boundary cycles of $G_{7,17}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,17}) = -G^{(18)}_{6,2}$
$D(G^{(1)}_{7,17}) = -G^{(19)}_{6,3}$
$D(G^{(2)}_{7,17}) = -G^{(20)}_{6,3}$

The Fatgraph $G_{7,18}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 1, 0, 6, 6]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([5, 2, 3]),      # c
  Vertex([4, 4, 3]),      # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}a^{4})$
$\gamma = ({}^{0}d^{1})$

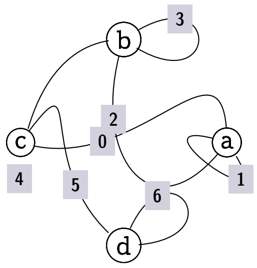
Markings

Fatgraph $G_{7,18}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,18}$ to $G^{(6)}_{7,18}$ are formed by decorating boundary cycles of $G_{7,18}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$D(G^{(3)}_{7,18}) = +G^{(15)}_{6,2}$
$D(G^{(4)}_{7,18}) = +G^{(16)}_{6,2}$
$D(G^{(5)}_{7,18}) = +G^{(17)}_{6,2}$

The Fatgraph $G_{7,19}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([4, 2, 3, 3]),# b
  Vertex([4, 0, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{2}b^{3})$
$\gamma = ({}^{0}d^{1})$

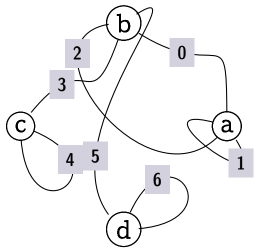
Markings

Fatgraph $G_{7,19}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,19}$ to $G^{(6)}_{7,19}$ are formed by decorating boundary cycles of $G_{7,19}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,19}) = +G^{(18)}_{6,2}$ $\quad$ $D(G^{(3)}_{7,19}) = -G^{(15)}_{6,2}$
$D(G^{(1)}_{7,19}) = +G^{(19)}_{6,3}$ $\quad$ $D(G^{(4)}_{7,19}) = -G^{(16)}_{6,2}$
$D(G^{(2)}_{7,19}) = +G^{(20)}_{6,3}$ $\quad$ $D(G^{(5)}_{7,19}) = -G^{(17)}_{6,2}$

The Fatgraph $G_{7,20}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([2, 3, 0, 5]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0d^1)$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	b	d	c	2	1	0	5	6	3	4	α	γ	β

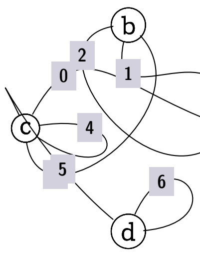
Markings

	$G^{(0)}_{7,20}$	$G^{(1)}_{7,20}$	$G^{(2)}_{7,20}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G^{(0)}_{7,20}) = -G^{(18)}_{6,2}$
$D(G^{(1)}_{7,20}) = -G^{(19)}_{6,3}$
$D(G^{(2)}_{7,20}) = -G^{(20)}_{6,3}$

The Fatgraph $G_{7,21}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 1, 3]),       # b
  Vertex([3, 4, 4, 0, 5]),# c
  Vertex([6, 6, 5]),       # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{4}c^{0} \to {}^{2}a^{0} \to {}^{2}c^{3} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{3}c^{4} \to {}^{1}b^{2} \to {}^{0}b^{1} \to {}^{2}b^{0})$
$\beta = ({}^{1}c^{2})$
$\gamma = ({}^{0}d^{1})$

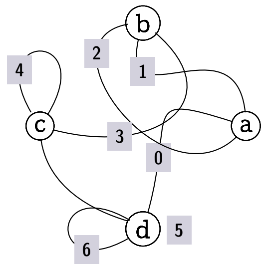
Markings

Fatgraph $G_{7,21}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,21}$ to $G^{(6)}_{7,21}$ are formed by decorating boundary cycles of $G_{7,21}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,21}) = +2G^{(15)}_{6,2}$
$D(G^{(1)}_{7,21}) = +2G^{(16)}_{6,2}$
$D(G^{(2)}_{7,21}) = +2G^{(17)}_{6,2}$
$D(G^{(3)}_{7,21}) = +2G^{(18)}_{6,2}$
$D(G^{(4)}_{7,21}) = +2G^{(19)}_{6,3}$
$D(G^{(5)}_{7,21}) = +2G^{(20)}_{6,3}$

The Fatgraph $G_{7,22}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([5, 3, 4, 4]),# c
  Vertex([5, 0, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^3d^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^2d^3)$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	b	a	d	c	3	1	2	0	6	5	4	α	γ	β

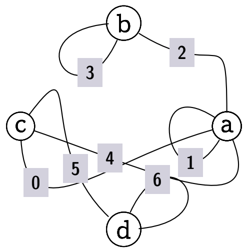
Markings

	$G_{7,22}^{(0)}$	$G_{7,22}^{(1)}$	$G_{7,22}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G_{7,22}^{(0)}) = -G_{6,3}^{(23)}$
$D(G_{7,22}^{(1)}) = -G_{6,4}^{(25)}$
$D(G_{7,22}^{(2)}) = -G_{6,3}^{(21)}$

The Fatgraph $G_{7,23}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 4]),# a
  Vertex([3, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^0b^1)$
$\gamma = ({}^0d^1)$

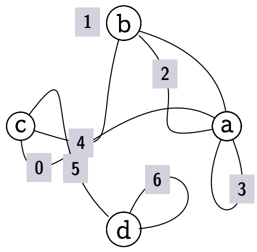
Markings

Fatgraph $G_{7,23}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,23}$ to $G^{(6)}_{7,23}$ are formed by decorating boundary cycles of $G_{7,23}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,23}) = -G^{(26)}_{6,4}$
$D(G^{(1)}_{7,23}) = -G^{(22)}_{6,3}$
$D(G^{(2)}_{7,23}) = -G^{(24)}_{6,3}$
$D(G^{(3)}_{7,23}) = -G^{(29)}_{6,4}$
$D(G^{(4)}_{7,23}) = -G^{(31)}_{6,5}$
$D(G^{(5)}_{7,23}) = -G^{(27)}_{6,4}$

The Fatgraph $G_{7,24}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3, 3]),# a
  Vertex([1, 4, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^3a^4)$
$\gamma = ({}^0d^1)$

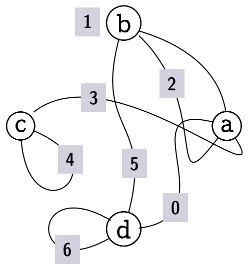
Markings

Fatgraph $G_{7,24}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,24}$ to $G^{(6)}_{7,24}$ are formed by decorating boundary cycles of $G_{7,24}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,24}) = -G^{(32)}_{6,5}$
$D(G^{(1)}_{7,24}) = -G^{(28)}_{6,4}$
$D(G^{(2)}_{7,24}) = -G^{(30)}_{6,4}$
$D(G^{(3)}_{7,24}) = -G^{(27)}_{6,4}$
$D(G^{(4)}_{7,24}) = -G^{(28)}_{6,4}$
$D(G^{(5)}_{7,24}) = -G^{(29)}_{6,4}$

The Fatgraph $G_{7,25}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 5, 2]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^1c^2 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^2d^3)$

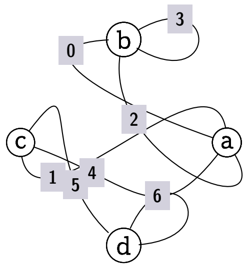
Markings

Fatgraph $G_{7,25}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,25}$ to $G^{(6)}_{7,25}$ are formed by decorating boundary cycles of $G_{7,25}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,25}) = -G^{(30)}_{6,4}$ $\quad$ $D(G^{(3)}_{7,25}) = +G^{(27)}_{6,4}$
$D(G^{(1)}_{7,25}) = -G^{(31)}_{6,5}$ $\quad$ $D(G^{(4)}_{7,25}) = +G^{(28)}_{6,4}$
$D(G^{(2)}_{7,25}) = -G^{(32)}_{6,5}$ $\quad$ $D(G^{(5)}_{7,25}) = +G^{(29)}_{6,4}$

The Fatgraph $G_{7,26}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 2]),# a
  Vertex([0, 2, 3, 3]),# b
  Vertex([1, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2b^3)$
$\gamma = ({}^0d^1)$

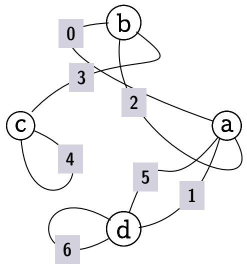
Markings

Fatgraph $G_{7,26}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,26}$ to $G^{(6)}_{7,26}$ are formed by decorating boundary cycles of $G_{7,26}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,26}) = +G^{(30)}_{6,4}$$
$$D(G^{(1)}_{7,26}) = +G^{(31)}_{6,5}$$
$$D(G^{(2)}_{7,26}) = +G^{(32)}_{6,5}$$

The Fatgraph $G_{7,27}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

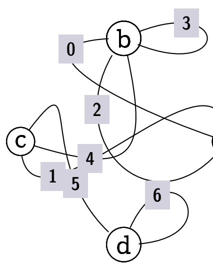
Boundary cycles

$\alpha = ({}^{3}d^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{2}d^{3})$

Markings

Fatgraph $G_{7,27}$ only has the identity automorphism, so the marked fatgraphs $G_{7,27}^{(0)}$ to $G_{7,27}^{(6)}$ are formed by decorating boundary cycles of $G_{7,27}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,28}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([0, 2, 4, 3, 3]),# b
  Vertex([1, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^4b^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^3b^4)$
$\gamma = ({}^0d^1)$

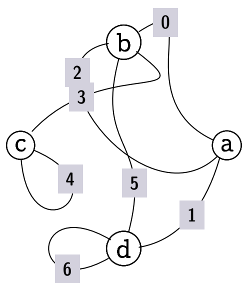
Markings

Fatgraph $G_{7,28}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,28}$ to $G^{(6)}_{7,28}$ are formed by decorating boundary cycles of $G_{7,28}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(3)}_{7,28}) = +2G^{(15)}_{6,2} + G^{(21)}_{6,3}$
$D(G^{(4)}_{7,28}) = +2G^{(16)}_{6,2} + G^{(22)}_{6,3}$
$D(G^{(5)}_{7,28}) = +2G^{(17)}_{6,2} + G^{(23)}_{6,3}$

The Fatgraph $G_{7,29}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3, 0]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^2b^3 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^1c^2 \to {}^3d^0 \to {}^0d^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^2d^3)$

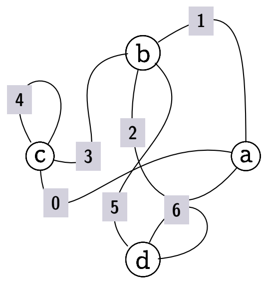
Markings

Fatgraph $G_{7,29}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,29}$ to $G^{(6)}_{7,29}$ are formed by decorating boundary cycles of $G_{7,29}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,29}) = +2G^{(18)}_{6,2} + G^{(24)}_{6,3} \qquad D(G^{(3)}_{7,29}) = -2G^{(21)}_{6,3} - G^{(27)}_{6,4}$$
$$D(G^{(1)}_{7,29}) = +2G^{(19)}_{6,3} + G^{(25)}_{6,4} \qquad D(G^{(4)}_{7,29}) = -2G^{(22)}_{6,3} - G^{(28)}_{6,4}$$
$$D(G^{(2)}_{7,29}) = +2G^{(20)}_{6,3} + G^{(26)}_{6,4} \qquad D(G^{(5)}_{7,29}) = -2G^{(23)}_{6,3} - G^{(29)}_{6,4}$$

The Fatgraph $G_{7,30}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 5, 1]),# b
  Vertex([0, 3, 4, 4]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^2b^3 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1 \to {}^3b^0 \to {}^1c^2 \to {}^1b^2 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^0d^1)$

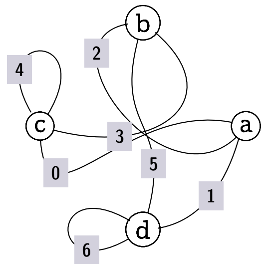
Markings

Fatgraph $G_{7,30}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,30}$ to $G^{(6)}_{7,30}$ are formed by decorating boundary cycles of $G_{7,30}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,30}^{(0)}) = -2G_{6,3}^{(24)} - G_{6,4}^{(30)}$$
$$D(G_{7,30}^{(1)}) = -2G_{6,4}^{(25)} - G_{6,5}^{(31)}$$
$$D(G_{7,30}^{(2)}) = -2G_{6,4}^{(26)} - G_{6,5}^{(32)}$$
$$D(G_{7,30}^{(3)}) = +2G_{6,2}^{(15)} - G_{6,3}^{(21)}$$
$$D(G_{7,30}^{(4)}) = +2G_{6,2}^{(16)} - G_{6,3}^{(22)}$$
$$D(G_{7,30}^{(5)}) = +2G_{6,2}^{(17)} - G_{6,3}^{(23)}$$

The Fatgraph $G_{7,31}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3]),   # b
  Vertex([0, 3, 4, 4]),# c
  Vertex([1, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^2d^3)$

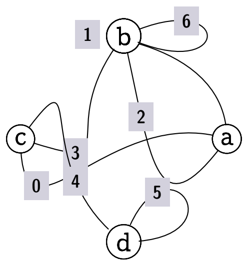
Markings

Fatgraph $G_{7,31}$ only has the identity automorphism, so the marked fatgraphs $G_{7,31}^{(0)}$ to $G_{7,31}^{(6)}$ are formed by decorating boundary cycles of $G_{7,31}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,31}^{(0)}) = +2G_{6,2}^{(18)} - G_{6,3}^{(24)}$$
$$D(G_{7,31}^{(1)}) = +2G_{6,3}^{(19)} - G_{6,4}^{(25)}$$
$$D(G_{7,31}^{(2)}) = +2G_{6,3}^{(20)} - G_{6,4}^{(26)}$$
$$D(G_{7,31}^{(3)}) = +2G_{6,3}^{(23)}$$
$$D(G_{7,31}^{(4)}) = +2G_{6,4}^{(25)}$$
$$D(G_{7,31}^{(5)}) = +2G_{6,3}^{(21)}$$

The Fatgraph $G_{7,32}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([1, 3, 2, 6, 6]),# b
  Vertex([0, 3, 4]),       # c
  Vertex([5, 5, 4]),       # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{2}b^{3} \to {}^{4}b^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$
$\beta = ({}^{3}b^{4})$
$\gamma = ({}^{0}d^{1})$

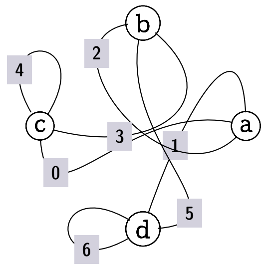
Markings

Fatgraph $G_{7,32}$ only has the identity automorphism, so the marked fatgraphs $G_{7,32}^{(0)}$ to $G_{7,32}^{(6)}$ are formed by decorating boundary cycles of $G_{7,32}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,32}^{(0)}) = +2G_{6,4}^{(26)}$
$D(G_{7,32}^{(1)}) = +2G_{6,3}^{(22)}$
$D(G_{7,32}^{(2)}) = +2G_{6,3}^{(24)}$

The Fatgraph $G_{7,33}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3]),   # b
  Vertex([0, 3, 4, 4]),# c
  Vertex([5, 1, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{3})$
$\gamma = ({}^{2}d^{3})$

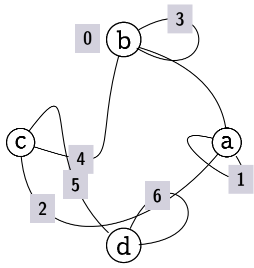
Markings

Fatgraph $G_{7,33}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,33}$ to $G^{(6)}_{7,33}$ are formed by decorating boundary cycles of $G_{7,33}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(3)}_{7,33}) = -G^{(35)}_{6,5}$
$D(G^{(5)}_{7,33}) = -G^{(33)}_{6,5}$
$D(G^{(4)}_{7,33}) = -G^{(37)}_{6,6}$

The Fatgraph $G_{7,34}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 4, 3, 3]),# b
  Vertex([2, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^2b^3)$
$\gamma = ({}^0d^1)$

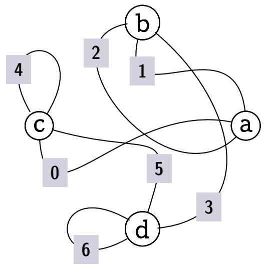
Markings

Fatgraph $G_{7,34}$ only has the identity automorphism, so the marked fatgraphs $G_{7,34}^{(0)}$ to $G_{7,34}^{(6)}$ are formed by decorating boundary cycles of $G_{7,34}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,34}^{(0)}) = -G_{6,6}^{(38)}$
$D(G_{7,34}^{(1)}) = -G_{6,5}^{(34)}$
$D(G_{7,34}^{(2)}) = -G_{6,5}^{(36)}$
$D(G_{7,34}^{(3)}) = -G_{6,6}^{(39)}$
$D(G_{7,34}^{(4)}) = -G_{6,6}^{(40)}$
$D(G_{7,34}^{(5)}) = -G_{6,6}^{(41)}$

The Fatgraph $G_{7,35}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 5, 4, 4]),# c
  Vertex([3, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^3d^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^2d^3)$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	b	a	d	c	3	1	2	0	6	5	4	α	γ	β

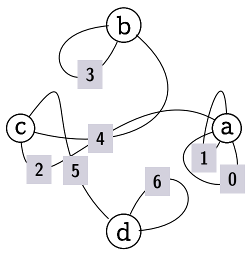
Markings

	$G^{(0)}_{7,35}$	$G^{(1)}_{7,35}$	$G^{(2)}_{7,35}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G^{(0)}_{7,35}) = -G^{(42)}_{6,6}$
$D(G^{(1)}_{7,35}) = -G^{(43)}_{6,7}$
$D(G^{(2)}_{7,35}) = -G^{(44)}_{6,7}$

The Fatgraph $G_{7,36}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([3, 3, 4]),      # b
  Vertex([2, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^0c^1 \to {}^4a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^1d^2)$
$\beta = ({}^0b^1)$
$\gamma = ({}^0d^1)$

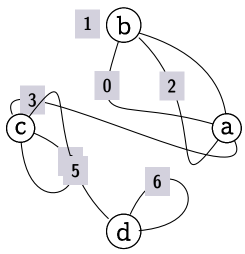
Markings

Fatgraph $G_{7,36}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,36}$ to $G^{(6)}_{7,36}$ are formed by decorating boundary cycles of $G_{7,36}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,36}) = -G^{(27)}_{6,4} + G^{(33)}_{6,5} - G^{(41)}_{6,6} \qquad D(G^{(3)}_{7,36}) = -G^{(30)}_{6,4} + G^{(36)}_{6,5} - G^{(44)}_{6,7}$$
$$D(G^{(1)}_{7,36}) = -G^{(28)}_{6,4} + G^{(34)}_{6,5} - G^{(43)}_{6,7} \qquad D(G^{(4)}_{7,36}) = -G^{(31)}_{6,5} + G^{(37)}_{6,6} - G^{(40)}_{6,6}$$
$$D(G^{(2)}_{7,36}) = -G^{(29)}_{6,4} + G^{(35)}_{6,5} - G^{(39)}_{6,6} \qquad D(G^{(5)}_{7,36}) = -G^{(32)}_{6,5} + G^{(38)}_{6,6} - G^{(42)}_{6,6}$$

The Fatgraph $G_{7,37}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([4, 4, 5, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}c^{0} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

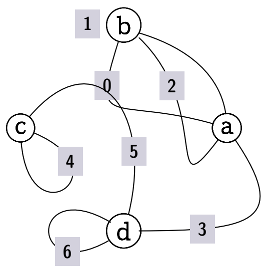
Markings

Fatgraph $G_{7,37}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,37}$ to $G^{(6)}_{7,37}$ are formed by decorating boundary cycles of $G_{7,37}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,37}) = +G^{(27)}_{6,4}$
$D(G^{(1)}_{7,37}) = +G^{(28)}_{6,4}$
$D(G^{(2)}_{7,37}) = +G^{(29)}_{6,4}$
$D(G^{(3)}_{7,37}) = +G^{(30)}_{6,4}$
$D(G^{(4)}_{7,37}) = +G^{(31)}_{6,5}$
$D(G^{(5)}_{7,37}) = +G^{(32)}_{6,5}$

The Fatgraph $G_{7,38}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([4, 4, 5]),   # c
  Vertex([3, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^1c^2 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^2d^3)$

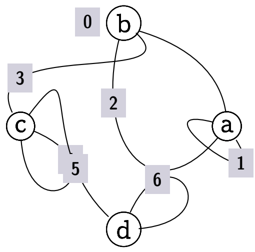
Markings

Fatgraph $G_{7,38}$ only has the identity automorphism, so the marked fatgraphs $G_{7,38}^{(0)}$ to $G_{7,38}^{(6)}$ are formed by decorating boundary cycles of $G_{7,38}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,38}^{(0)}) = +G_{6,4}^{(29)}$
$D(G_{7,38}^{(1)}) = +G_{6,5}^{(31)}$
$D(G_{7,38}^{(2)}) = +G_{6,4}^{(27)}$
$D(G_{7,38}^{(3)}) = +G_{6,5}^{(32)}$
$D(G_{7,38}^{(4)}) = +G_{6,4}^{(28)}$
$D(G_{7,38}^{(5)}) = +G_{6,4}^{(30)}$

The Fatgraph $G_{7,39}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([4, 4, 5, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2b^0 \to {}^3c^0 \to {}^2c^3 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0d^1)$

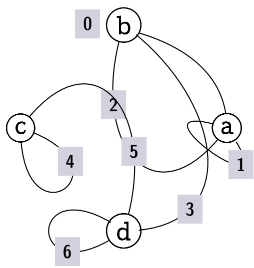
Markings

Fatgraph $G_{7,39}$ only has the identity automorphism, so the marked fatgraphs $G_{7,39}^{(0)}$ to $G_{7,39}^{(6)}$ are formed by decorating boundary cycles of $G_{7,39}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{7,39}^{(0)}) = +G_{6,1}^{(9)} + G_{6,2}^{(13)}$
$D(G_{7,39}^{(1)}) = +G_{6,1}^{(11)} + G_{6,2}^{(14)}$
$D(G_{7,39}^{(2)}) = +G_{6,1}^{(7)} + G_{6,1}^{(12)}$
$D(G_{7,39}^{(3)}) = +G_{6,1}^{(10)} - G_{6,2}^{(14)}$
$D(G_{7,39}^{(4)}) = +G_{6,0}^{(6)} - G_{6,1}^{(12)}$
$D(G_{7,39}^{(5)}) = +G_{6,1}^{(8)} - G_{6,2}^{(13)}$

The Fatgraph $G_{7,40}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([4, 4, 5]),   # c
  Vertex([3, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^{3}d^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{2}d^{3})$

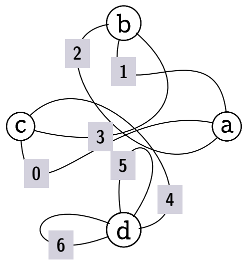
Markings

Fatgraph $G_{7,40}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,40}$ to $G^{(6)}_{7,40}$ are formed by decorating boundary cycles of $G_{7,40}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,40}) = +G^{(2)}_{6,0} - G^{(9)}_{6,1} + G^{(33)}_{6,5} \qquad D(G^{(3)}_{7,40}) = +G^{(5)}_{6,0} - G^{(10)}_{6,1} + G^{(36)}_{6,5}$$
$$D(G^{(1)}_{7,40}) = +G^{(4)}_{6,0} - G^{(11)}_{6,1} + G^{(34)}_{6,5} \qquad D(G^{(4)}_{7,40}) = +G^{(1)}_{6,0} - G^{(6)}_{6,0} + G^{(37)}_{6,6}$$
$$D(G^{(2)}_{7,40}) = +G^{(0)}_{6,0} - G^{(7)}_{6,1} + G^{(35)}_{6,5} \qquad D(G^{(5)}_{7,40}) = +G^{(3)}_{6,0} - G^{(8)}_{6,1} + G^{(38)}_{6,6}$$

The Fatgraph $G_{7,41}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 3]),      # b
  Vertex([0, 3, 4]),      # c
  Vertex([4, 5, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^4d^0 \to {}^1b^2 \to {}^1c^2 \to {}^2d^3 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1)$
$\beta = ({}^1d^2)$
$\gamma = ({}^3d^4)$

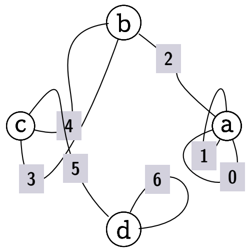
Markings

Fatgraph $G_{7,41}$ only has the identity automorphism, so the marked fatgraphs $G_{7,41}^{(0)}$ to $G_{7,41}^{(6)}$ are formed by decorating boundary cycles of $G_{7,41}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,41}^{(0)}) = +G_{6,0}^{(0)} + G_{6,1}^{(12)} + G_{6,6}^{(39)} \qquad D(G_{7,41}^{(3)}) = +G_{6,0}^{(3)} - G_{6,2}^{(13)} + G_{6,6}^{(42)}$$
$$D(G_{7,41}^{(1)}) = +G_{6,0}^{(1)} - G_{6,1}^{(12)} + G_{6,6}^{(40)} \qquad D(G_{7,41}^{(4)}) = +G_{6,0}^{(4)} + G_{6,2}^{(14)} + G_{6,7}^{(43)}$$
$$D(G_{7,41}^{(2)}) = +G_{6,0}^{(2)} + G_{6,2}^{(13)} + G_{6,6}^{(41)} \qquad D(G_{7,41}^{(5)}) = +G_{6,0}^{(5)} - G_{6,2}^{(14)} + G_{6,7}^{(44)}$$

The Fatgraph $G_{7,42}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([3, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^4a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$
$\beta = ({}^0c^1 \to {}^0b^1)$
$\gamma = ({}^0d^1)$

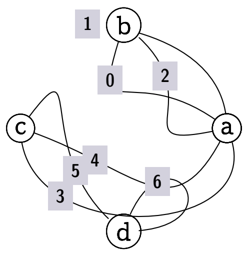
Markings

Fatgraph $G_{7,42}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,42}$ to $G^{(6)}_{7,42}$ are formed by decorating boundary cycles of $G_{7,42}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,42}) = -G^{(27)}_{6,4}$
$D(G^{(1)}_{7,42}) = -G^{(28)}_{6,4}$
$D(G^{(2)}_{7,42}) = -G^{(29)}_{6,4}$
$D(G^{(3)}_{7,42}) = -G^{(30)}_{6,4}$
$D(G^{(4)}_{7,42}) = -G^{(31)}_{6,5}$
$D(G^{(5)}_{7,42}) = -G^{(32)}_{6,5}$

The Fatgraph $G_{7,43}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([3, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^4a^0 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^3a^4 \to {}^0c^1)$$
$$\gamma = ({}^0d^1)$$

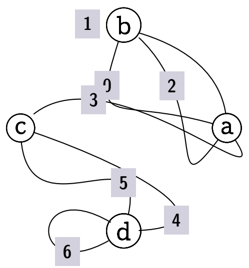
Markings

Fatgraph $G_{7,43}$ only has the identity automorphism, so the marked fatgraphs $G_{7,43}^{(0)}$ to $G_{7,43}^{(6)}$ are formed by decorating boundary cycles of $G_{7,43}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,43}^{(0)}) = +G_{6,0}^{(3)} - G_{6,1}^{(9)} - G_{6,5}^{(33)} \qquad D(G_{7,43}^{(3)}) = +G_{6,0}^{(4)} - G_{6,1}^{(10)} - G_{6,5}^{(36)}$$
$$D(G_{7,43}^{(1)}) = +G_{6,0}^{(5)} - G_{6,1}^{(11)} - G_{6,5}^{(34)} \qquad D(G_{7,43}^{(4)}) = +G_{6,0}^{(0)} - G_{6,0}^{(6)} - G_{6,6}^{(37)}$$
$$D(G_{7,43}^{(2)}) = +G_{6,0}^{(1)} - G_{6,1}^{(7)} - G_{6,5}^{(35)} \qquad D(G_{7,43}^{(5)}) = +G_{6,0}^{(2)} - G_{6,1}^{(8)} - G_{6,6}^{(38)}$$

The Fatgraph $G_{7,44}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{0}d^{1} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}d^{3})$$

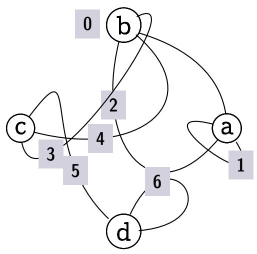
Markings

Fatgraph $G_{7,44}$ only has the identity automorphism, so the marked fatgraphs $G_{7,44}^{(0)}$ to $G_{7,44}^{(6)}$ are formed by decorating boundary cycles of $G_{7,44}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G_{7,44}^{(0)}) = +G_{6,0}^{(1)} + G_{6,1}^{(12)} - G_{6,5}^{(35)} \qquad D(G_{7,44}^{(3)}) = +G_{6,0}^{(2)} - G_{6,2}^{(13)} - G_{6,6}^{(38)}$$
$$D(G_{7,44}^{(1)}) = +G_{6,0}^{(0)} - G_{6,1}^{(12)} - G_{6,6}^{(37)} \qquad D(G_{7,44}^{(4)}) = +G_{6,0}^{(5)} + G_{6,2}^{(14)} - G_{6,5}^{(34)}$$
$$D(G_{7,44}^{(2)}) = +G_{6,0}^{(3)} + G_{6,2}^{(13)} - G_{6,5}^{(33)} \qquad D(G_{7,44}^{(5)}) = +G_{6,0}^{(4)} - G_{6,2}^{(14)} - G_{6,5}^{(36)}$$

The Fatgraph $G_{7,45}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([3, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1} \to {}^{2}b^{3})$
$\gamma = ({}^{0}d^{1})$

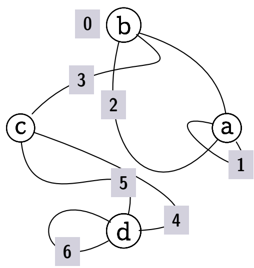
Markings

Fatgraph $G_{7,45}$ only has the identity automorphism, so the marked fatgraphs $G_{7,45}^{(0)}$ to $G_{7,45}^{(6)}$ are formed by decorating boundary cycles of $G_{7,45}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{7,45}^{(0)}) &= +G_{6,0}^{(0)} - G_{6,0}^{(1)} + G_{6,5}^{(35)} + G_{6,6}^{(39)} \\
D(G_{7,45}^{(1)}) &= -G_{6,0}^{(0)} + G_{6,0}^{(1)} + G_{6,6}^{(37)} + G_{6,6}^{(40)} \\
D(G_{7,45}^{(2)}) &= +G_{6,0}^{(2)} - G_{6,0}^{(3)} + G_{6,5}^{(33)} + G_{6,6}^{(41)} \\
D(G_{7,45}^{(3)}) &= -G_{6,0}^{(2)} + G_{6,0}^{(3)} + G_{6,6}^{(38)} + G_{6,6}^{(42)} \\
D(G_{7,45}^{(4)}) &= +G_{6,0}^{(4)} - G_{6,0}^{(5)} + G_{6,5}^{(34)} + G_{6,7}^{(43)} \\
D(G_{7,45}^{(5)}) &= -G_{6,0}^{(4)} + G_{6,0}^{(5)} + G_{6,5}^{(36)} + G_{6,7}^{(44)}
\end{aligned}
$$

The Fatgraph $G_{7,46}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{0}d^{1} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}d^{3})$$

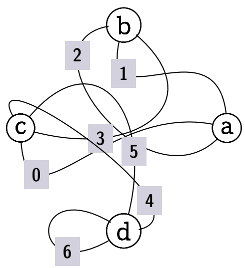
Markings

Fatgraph $G_{7,46}$ only has the identity automorphism, so the marked fatgraphs $G_{7,46}^{(0)}$ to $G_{7,46}^{(6)}$ are formed by decorating boundary cycles of $G_{7,46}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,46}^{(0)}) = +G_{6,5}^{(33)} - G_{6,6}^{(41)}$$
$$D(G_{7,46}^{(1)}) = +G_{6,5}^{(34)} - G_{6,7}^{(43)}$$
$$D(G_{7,46}^{(2)}) = +G_{6,5}^{(35)} - G_{6,6}^{(39)}$$
$$D(G_{7,46}^{(3)}) = +G_{6,5}^{(36)} - G_{6,7}^{(44)}$$
$$D(G_{7,46}^{(4)}) = +G_{6,6}^{(37)} - G_{6,6}^{(40)}$$
$$D(G_{7,46}^{(5)}) = +G_{6,6}^{(38)} - G_{6,6}^{(42)}$$

The Fatgraph $G_{7,47}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([4, 5, 6, 6]),# d
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^1c^2 \to {}^3d^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0d^1 \to {}^2c^3)$
$\gamma = ({}^2d^3)$

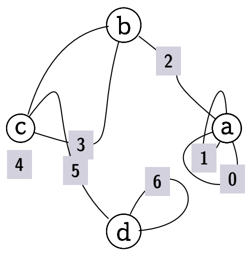
Markings

Fatgraph $G_{7,47}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,47}$ to $G^{(6)}_{7,47}$ are formed by decorating boundary cycles of $G_{7,47}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{7,47}) = +G^{(27)}_{6,4}$
$D(G^{(1)}_{7,47}) = +G^{(28)}_{6,4}$
$D(G^{(2)}_{7,47}) = +G^{(29)}_{6,4}$
$D(G^{(3)}_{7,47}) = +G^{(30)}_{6,4}$
$D(G^{(4)}_{7,47}) = +G^{(31)}_{6,5}$
$D(G^{(5)}_{7,47}) = +G^{(32)}_{6,5}$

The Fatgraph $G_{7,48}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([4, 3, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^2a^3 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^2c^0 \to {}^1d^2 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

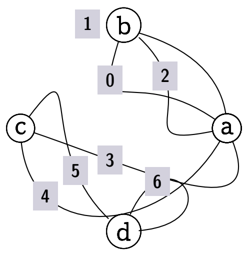
Markings

Fatgraph $G_{7,48}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,48}$ to $G^{(6)}_{7,48}$ are formed by decorating boundary cycles of $G_{7,48}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,48}) = +G^{(6)}_{6,0} - G^{(12)}_{6,1}$$
$$D(G^{(1)}_{7,48}) = +G^{(7)}_{6,1} + G^{(12)}_{6,1}$$
$$D(G^{(2)}_{7,48}) = +G^{(8)}_{6,1} - G^{(13)}_{6,2}$$
$$D(G^{(3)}_{7,48}) = +G^{(9)}_{6,1} + G^{(13)}_{6,2}$$
$$D(G^{(4)}_{7,48}) = +G^{(10)}_{6,1} - G^{(14)}_{6,2}$$
$$D(G^{(5)}_{7,48}) = +G^{(11)}_{6,1} + G^{(14)}_{6,2}$$

The Fatgraph $G_{7,49}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([4, 3, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2b^0 \to {}^4a^0 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^3a^4 \to {}^1d^2 \to {}^1c^2 \to {}^2c^0)$$
$$\gamma = ({}^0d^1)$$

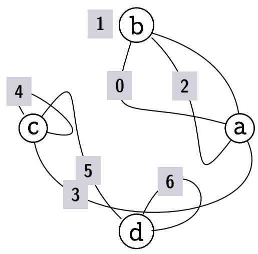
Markings

Fatgraph $G_{7,49}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,49}$ to $G^{(6)}_{7,49}$ are formed by decorating boundary cycles of $G_{7,49}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,49}) = -G^{(0)}_{6,0} - G^{(6)}_{6,0} - G^{(39)}_{6,6} \qquad D(G^{(3)}_{7,49}) = -G^{(3)}_{6,0} - G^{(9)}_{6,1} - G^{(42)}_{6,6}$$
$$D(G^{(1)}_{7,49}) = -G^{(1)}_{6,0} - G^{(7)}_{6,1} - G^{(40)}_{6,6} \qquad D(G^{(4)}_{7,49}) = -G^{(4)}_{6,0} - G^{(10)}_{6,1} - G^{(43)}_{6,7}$$
$$D(G^{(2)}_{7,49}) = -G^{(2)}_{6,0} - G^{(8)}_{6,1} - G^{(41)}_{6,6} \qquad D(G^{(5)}_{7,49}) = -G^{(5)}_{6,0} - G^{(11)}_{6,1} - G^{(44)}_{6,7}$$

The Fatgraph $G_{7,50}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([3, 4, 5, 4]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{0}c^{1} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{3}c^{0} \to {}^{2}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{3} \to {}^{1}d^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}d^{1})$$

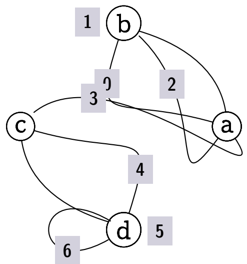
Markings

Fatgraph $G_{7,50}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,50}$ to $G^{(6)}_{7,50}$ are formed by decorating boundary cycles of $G_{7,50}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,50}) = -G^{(1)}_{6,0} - G^{(6)}_{6,0} + G^{(39)}_{6,6} \qquad D(G^{(3)}_{7,50}) = -G^{(2)}_{6,0} - G^{(9)}_{6,1} + G^{(42)}_{6,6}$$
$$D(G^{(1)}_{7,50}) = -G^{(0)}_{6,0} - G^{(7)}_{6,1} + G^{(40)}_{6,6} \qquad D(G^{(4)}_{7,50}) = -G^{(5)}_{6,0} - G^{(10)}_{6,1} + G^{(43)}_{6,7}$$
$$D(G^{(2)}_{7,50}) = -G^{(3)}_{6,0} - G^{(8)}_{6,1} + G^{(41)}_{6,6} \qquad D(G^{(5)}_{7,50}) = -G^{(4)}_{6,0} - G^{(11)}_{6,1} + G^{(44)}_{6,7}$$

The Fatgraph $G_{7,51}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 4, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{3}d^{0} \to {}^{1}d^{2} \to {}^{0}c^{1})$$
$$\gamma = ({}^{2}d^{3})$$

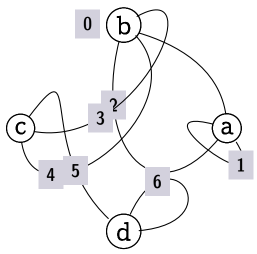
Markings

Fatgraph $G_{7,51}$ only has the identity automorphism, so the marked fatgraphs $G_{7,51}^{(0)}$ to $G_{7,51}^{(6)}$ are formed by decorating boundary cycles of $G_{7,51}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,51}^{(0)}) = -G_{6,5}^{(35)} - G_{6,6}^{(39)}$$
$$D(G_{7,51}^{(1)}) = -G_{6,6}^{(37)} - G_{6,6}^{(40)}$$
$$D(G_{7,51}^{(2)}) = -G_{6,5}^{(33)} - G_{6,6}^{(41)}$$
$$D(G_{7,51}^{(3)}) = -G_{6,6}^{(38)} - G_{6,6}^{(42)}$$
$$D(G_{7,51}^{(4)}) = -G_{6,5}^{(34)} - G_{6,7}^{(43)}$$
$$D(G_{7,51}^{(5)}) = -G_{6,5}^{(36)} - G_{6,7}^{(44)}$$

The Fatgraph $G_{7,52}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([4, 3, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}c^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{0}d^{1})$$

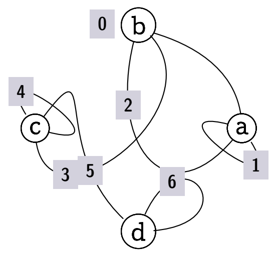
Markings

Fatgraph $G_{7,52}$ only has the identity automorphism, so the marked fatgraphs $G_{7,52}^{(0)}$ to $G_{7,52}^{(6)}$ are formed by decorating boundary cycles of $G_{7,52}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,52}^{(0)}) = -G_{6,3}^{(21)} - G_{6,5}^{(33)}$$
$$D(G_{7,52}^{(1)}) = -G_{6,3}^{(22)} - G_{6,5}^{(34)}$$
$$D(G_{7,52}^{(2)}) = -G_{6,3}^{(23)} - G_{6,5}^{(35)}$$
$$D(G_{7,52}^{(3)}) = -G_{6,3}^{(24)} - G_{6,5}^{(36)}$$
$$D(G_{7,52}^{(4)}) = -G_{6,4}^{(25)} - G_{6,6}^{(37)}$$
$$D(G_{7,52}^{(5)}) = -G_{6,4}^{(26)} - G_{6,6}^{(38)}$$

The Fatgraph $G_{7,53}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([3, 4, 5, 4]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{3}c^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{3} \to {}^{1}d^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}d^{1})$$

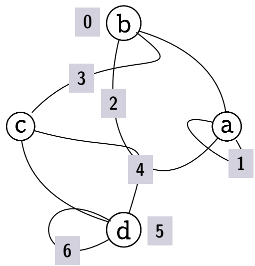
Markings

Fatgraph $G_{7,53}$ only has the identity automorphism, so the marked fatgraphs $G_{7,53}^{(0)}$ to $G_{7,53}^{(6)}$ are formed by decorating boundary cycles of $G_{7,53}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,53}^{(0)}) = +G_{6,3}^{(23)} - G_{6,6}^{(39)}$$
$$D(G_{7,53}^{(1)}) = +G_{6,4}^{(25)} - G_{6,6}^{(40)}$$
$$D(G_{7,53}^{(2)}) = +G_{6,3}^{(21)} - G_{6,6}^{(41)}$$
$$D(G_{7,53}^{(3)}) = +G_{6,4}^{(26)} - G_{6,6}^{(42)}$$
$$D(G_{7,53}^{(4)}) = +G_{6,3}^{(22)} - G_{6,7}^{(43)}$$
$$D(G_{7,53}^{(5)}) = +G_{6,3}^{(24)} - G_{6,7}^{(44)}$$

The Fatgraph $G_{7,54}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 4, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^3d^0 \to {}^1d^2 \to {}^0c^1)$$
$$\gamma = ({}^2d^3)$$

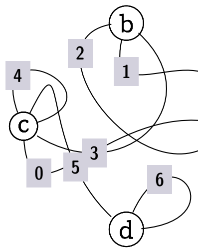
Markings

Fatgraph $G_{7,54}$ only has the identity automorphism, so the marked fatgraphs $G_{7,54}^{(0)}$ to $G_{7,54}^{(6)}$ are formed by decorating boundary cycles of $G_{7,54}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,54}^{(0)}) = -G_{6,0}^{(6)} + G_{6,2}^{(15)} - G_{6,2}^{(16)} \qquad D(G_{7,54}^{(3)}) = -G_{6,1}^{(9)} - G_{6,2}^{(17)} + G_{6,2}^{(18)}$$
$$D(G_{7,54}^{(1)}) = -G_{6,1}^{(7)} - G_{6,2}^{(15)} + G_{6,2}^{(16)} \qquad D(G_{7,54}^{(4)}) = -G_{6,1}^{(10)} + G_{6,3}^{(19)} - G_{6,3}^{(20)}$$
$$D(G_{7,54}^{(2)}) = -G_{6,1}^{(8)} + G_{6,2}^{(17)} - G_{6,2}^{(18)} \qquad D(G_{7,54}^{(5)}) = -G_{6,1}^{(11)} - G_{6,3}^{(19)} + G_{6,3}^{(20)}$$

The Fatgraph $G_{7,55}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 1, 3]),       # b
  Vertex([0, 3, 4, 5, 4]),# c
  Vertex([6, 6, 5]),       # d
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^4c^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^3c^4 \to {}^2c^3 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

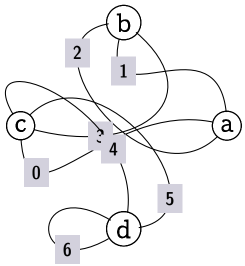
Markings

Fatgraph $G_{7,55}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,55}$ to $G^{(6)}_{7,55}$ are formed by decorating boundary cycles of $G_{7,55}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,55}) = +G^{(21)}_{6,3} - G^{(35)}_{6,5} - G^{(45)}_{6,7} \qquad D(G^{(3)}_{7,55}) = +G^{(24)}_{6,3} - G^{(38)}_{6,6} + G^{(46)}_{6,7}$$
$$D(G^{(1)}_{7,55}) = +G^{(22)}_{6,3} - G^{(37)}_{6,6} + G^{(45)}_{6,7} \qquad D(G^{(4)}_{7,55}) = +G^{(25)}_{6,4} - G^{(34)}_{6,5} - G^{(47)}_{6,7}$$
$$D(G^{(2)}_{7,55}) = +G^{(23)}_{6,3} - G^{(33)}_{6,5} - G^{(46)}_{6,7} \qquad D(G^{(5)}_{7,55}) = +G^{(26)}_{6,4} - G^{(36)}_{6,5} + G^{(47)}_{6,7}$$

The Fatgraph $G_{7,56}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([5, 4, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{3}d^{0} \to {}^{2}c^{3} \to {}^{1}d^{2})$$
$$\gamma = ({}^{2}d^{3})$$

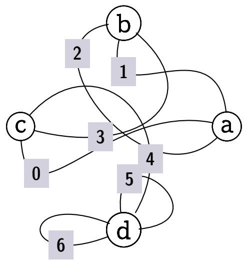
Markings

Fatgraph $G_{7,56}$ only has the identity automorphism, so the marked fatgraphs $G_{7,56}^{(0)}$ to $G_{7,56}^{(6)}$ are formed by decorating boundary cycles of $G_{7,56}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,56}^{(0)}) = +G_{6,3}^{(21)} + G_{6,6}^{(39)} + G_{6,7}^{(45)} \qquad D(G_{7,56}^{(3)}) = +G_{6,3}^{(24)} + G_{6,6}^{(42)} - G_{6,7}^{(46)}$$
$$D(G_{7,56}^{(1)}) = +G_{6,3}^{(22)} + G_{6,6}^{(40)} - G_{6,7}^{(45)} \qquad D(G_{7,56}^{(4)}) = +G_{6,4}^{(25)} + G_{6,7}^{(43)} + G_{6,7}^{(47)}$$
$$D(G_{7,56}^{(2)}) = +G_{6,3}^{(23)} + G_{6,6}^{(41)} + G_{6,7}^{(46)} \qquad D(G_{7,56}^{(5)}) = +G_{6,4}^{(26)} + G_{6,7}^{(44)} - G_{6,7}^{(47)}$$

The Fatgraph $G_{7,57}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 3]),      # b
  Vertex([0, 3, 4]),      # c
  Vertex([5, 4, 5, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{3} \to {}^{4}d^{0})$$
$$\gamma = ({}^{3}d^{4})$$

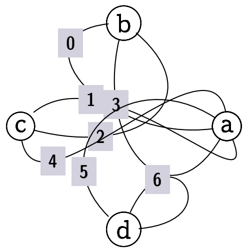
Markings

Fatgraph $G_{7,57}$ only has the identity automorphism, so the marked fatgraphs $G_{7,57}^{(0)}$ to $G_{7,57}^{(6)}$ are formed by decorating boundary cycles of $G_{7,57}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,57}^{(0)}) = -G_{6,4}^{(27)} + G_{6,4}^{(29)} - G_{6,7}^{(48)} \qquad D(G_{7,57}^{(3)}) = -G_{6,4}^{(30)} + G_{6,5}^{(32)} - G_{6,8}^{(50)}$$
$$D(G_{7,57}^{(1)}) = -G_{6,4}^{(28)} + G_{6,5}^{(31)} - G_{6,8}^{(49)} \qquad D(G_{7,57}^{(4)}) = +G_{6,4}^{(28)} - G_{6,5}^{(31)} + G_{6,8}^{(49)}$$
$$D(G_{7,57}^{(2)}) = +G_{6,4}^{(27)} - G_{6,4}^{(29)} + G_{6,7}^{(48)} \qquad D(G_{7,57}^{(5)}) = +G_{6,4}^{(30)} - G_{6,5}^{(32)} + G_{6,8}^{(50)}$$

The Fatgraph $G_{7,58}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 5, 0, 3, 1]),# a
  Vertex([0, 3, 2]),      # b
  Vertex([4, 2, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^2a^3 \to {}^4a^0 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

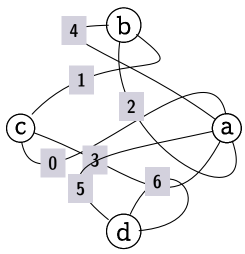
Markings

Fatgraph $G_{7,58}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,58}$ to $G^{(6)}_{7,58}$ are formed by decorating boundary cycles of $G_{7,58}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,58}) = +G^{(49)}_{6,8}$$
$$D(G^{(1)}_{7,58}) = +G^{(48)}_{6,7}$$
$$D(G^{(2)}_{7,58}) = +G^{(50)}_{6,8}$$
$$D(G^{(3)}_{7,58}) = -G^{(48)}_{6,7}$$
$$D(G^{(4)}_{7,58}) = -G^{(50)}_{6,8}$$
$$D(G^{(5)}_{7,58}) = -G^{(49)}_{6,8}$$

The Fatgraph $G_{7,59}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 4, 5, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([0, 3, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1})$$

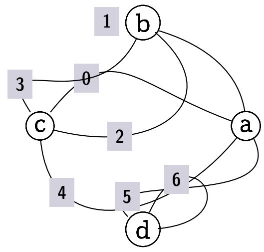
Markings

Fatgraph $G_{7,59}$ only has the identity automorphism, so the marked fatgraphs $G_{7,59}^{(0)}$ to $G_{7,59}^{(6)}$ are formed by decorating boundary cycles of $G_{7,59}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,59}^{(0)}) = +G_{6,0}^{(1)} - G_{6,2}^{(15)} - G_{6,2}^{(16)} + G_{6,7}^{(45)}$$
$$D(G_{7,59}^{(1)}) = +G_{6,0}^{(0)} - G_{6,2}^{(15)} - G_{6,2}^{(16)} - G_{6,7}^{(45)}$$
$$D(G_{7,59}^{(2)}) = +G_{6,0}^{(3)} - G_{6,2}^{(17)} - G_{6,2}^{(18)} + G_{6,7}^{(46)}$$
$$D(G_{7,59}^{(3)}) = +G_{6,0}^{(2)} - G_{6,2}^{(17)} - G_{6,2}^{(18)} - G_{6,7}^{(46)}$$
$$D(G_{7,59}^{(4)}) = +G_{6,0}^{(5)} - G_{6,3}^{(19)} - G_{6,3}^{(20)} + G_{6,7}^{(47)}$$
$$D(G_{7,59}^{(5)}) = +G_{6,0}^{(4)} - G_{6,3}^{(19)} - G_{6,3}^{(20)} - G_{6,7}^{(47)}$$

The Fatgraph $G_{7,60}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 3, 2]),   # b
  Vertex([4, 2, 0, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2c^3 \to {}^2b^0)$$
$$\beta = ({}^2d^0 \to {}^2a^3 \to {}^0b^1 \to {}^3a^0 \to {}^3c^0 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

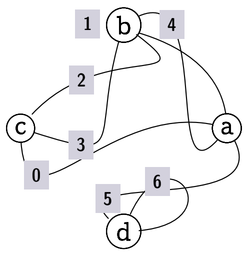
Markings

Fatgraph $G_{7,60}$ only has the identity automorphism, so the marked fatgraphs $G_{7,60}^{(0)}$ to $G_{7,60}^{(6)}$ are formed by decorating boundary cycles of $G_{7,60}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,60}^{(0)}) = +G_{6,3}^{(21)} - G_{6,6}^{(39)} - G_{6,7}^{(45)} - G_{6,7}^{(48)}$$
$$D(G_{7,60}^{(1)}) = +G_{6,3}^{(22)} - G_{6,6}^{(40)} + G_{6,7}^{(45)} - G_{6,8}^{(49)}$$
$$D(G_{7,60}^{(2)}) = +G_{6,3}^{(23)} - G_{6,6}^{(41)} - G_{6,7}^{(46)} + G_{6,7}^{(48)}$$
$$D(G_{7,60}^{(3)}) = +G_{6,3}^{(24)} - G_{6,6}^{(42)} + G_{6,7}^{(46)} - G_{6,8}^{(50)}$$
$$D(G_{7,60}^{(4)}) = +G_{6,4}^{(25)} - G_{6,7}^{(43)} - G_{6,7}^{(47)} + G_{6,8}^{(49)}$$
$$D(G_{7,60}^{(5)}) = +G_{6,4}^{(26)} - G_{6,7}^{(44)} + G_{6,7}^{(47)} + G_{6,8}^{(50)}$$

The Fatgraph $G_{7,61}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([0, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^2a^3 \to {}^0b^1 \to {}^3a^0 \to {}^1c^2 \to {}^2b^3 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

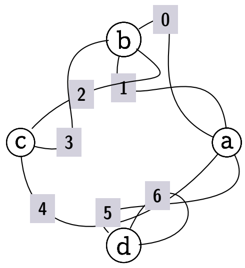
Markings

Fatgraph $G_{7,61}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,61}$ to $G^{(6)}_{7,61}$ are formed by decorating boundary cycles of $G_{7,61}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,61}) = -G^{(12)}_{6,1} + G^{(15)}_{6,2} - G^{(16)}_{6,2}$$
$$D(G^{(1)}_{7,61}) = -G^{(13)}_{6,2} + G^{(17)}_{6,2} - G^{(18)}_{6,2}$$
$$D(G^{(2)}_{7,61}) = -G^{(14)}_{6,2} + G^{(19)}_{6,3} - G^{(20)}_{6,3}$$
$$D(G^{(3)}_{7,61}) = -G^{(23)}_{6,3} - G^{(33)}_{6,5} - G^{(46)}_{6,7} - G^{(48)}_{6,7}$$
$$D(G^{(4)}_{7,61}) = -G^{(25)}_{6,4} - G^{(34)}_{6,5} - G^{(47)}_{6,7} - G^{(49)}_{6,8}$$
$$D(G^{(5)}_{7,61}) = -G^{(21)}_{6,3} - G^{(35)}_{6,5} - G^{(45)}_{6,7} + G^{(48)}_{6,7}$$

The Fatgraph $G_{7,62}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([3, 1, 2, 0]),# b
  Vertex([4, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1})$$

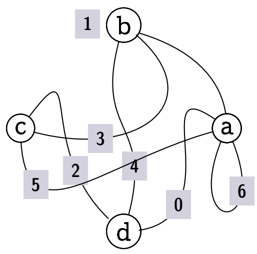
Markings

Fatgraph $G_{7,62}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,62}$ to $G^{(6)}_{7,62}$ are formed by decorating boundary cycles of $G_{7,62}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,62}) = -G^{(26)}_{6,4} - G^{(36)}_{6,5} + G^{(47)}_{6,7} - G^{(50)}_{6,8}$$
$$D(G^{(1)}_{7,62}) = -G^{(22)}_{6,3} - G^{(37)}_{6,6} + G^{(45)}_{6,7} + G^{(49)}_{6,8}$$
$$D(G^{(2)}_{7,62}) = -G^{(24)}_{6,3} - G^{(38)}_{6,6} + G^{(46)}_{6,7} + G^{(50)}_{6,8}$$
$$D(G^{(3)}_{7,62}) = +G^{(27)}_{6,4} - G^{(29)}_{6,4} + G^{(48)}_{6,7}$$
$$D(G^{(4)}_{7,62}) = +G^{(28)}_{6,4} - G^{(31)}_{6,5} + G^{(49)}_{6,8}$$
$$D(G^{(5)}_{7,62}) = +G^{(30)}_{6,4} - G^{(32)}_{6,5} + G^{(50)}_{6,8}$$

The Fatgraph $G_{7,63}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6, 6]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([0, 4, 2]),      # d
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{2}c^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

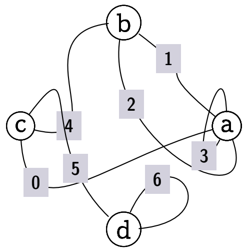
Markings

Fatgraph $G_{7,63}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,63}$ to $G^{(6)}_{7,63}$ are formed by decorating boundary cycles of $G_{7,63}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,63}) = +G^{(45)}_{6,7} + G^{(46)}_{6,7}$$
$$D(G^{(1)}_{7,63}) = -G^{(45)}_{6,7} + G^{(47)}_{6,7}$$
$$D(G^{(2)}_{7,63}) = -G^{(46)}_{6,7} - G^{(47)}_{6,7}$$
$$D(G^{(3)}_{7,63}) = +G^{(48)}_{6,7} + G^{(50)}_{6,8} - G^{(52)}_{6,8}$$
$$D(G^{(4)}_{7,63}) = +G^{(49)}_{6,8} - G^{(50)}_{6,8} - G^{(53)}_{6,8}$$
$$D(G^{(5)}_{7,63}) = -G^{(48)}_{6,7} + G^{(49)}_{6,8} - G^{(51)}_{6,8}$$

The Fatgraph $G_{7,64}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1c^2 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^3a^4 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^4a^0 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

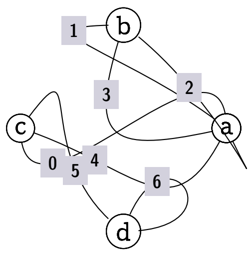
Markings

Fatgraph $G_{7,64}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,64}$ to $G^{(6)}_{7,64}$ are formed by decorating boundary cycles of $G_{7,64}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,64}) = -G^{(49)}_{6,8} + G^{(50)}_{6,8} + G^{(53)}_{6,8} \qquad D(G^{(3)}_{7,64}) = +G^{(35)}_{6,5} - G^{(39)}_{6,6} + G^{(51)}_{6,8}$$
$$D(G^{(1)}_{7,64}) = +G^{(48)}_{6,7} - G^{(49)}_{6,8} + G^{(51)}_{6,8} \qquad D(G^{(4)}_{7,64}) = +G^{(37)}_{6,6} - G^{(40)}_{6,6} - G^{(51)}_{6,8}$$
$$D(G^{(2)}_{7,64}) = -G^{(48)}_{6,7} - G^{(50)}_{6,8} + G^{(52)}_{6,8} \qquad D(G^{(5)}_{7,64}) = +G^{(33)}_{6,5} - G^{(41)}_{6,6} + G^{(52)}_{6,8}$$

The Fatgraph $G_{7,65}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 4, 2]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

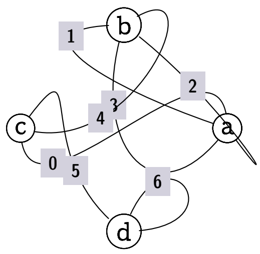
Markings

Fatgraph $G_{7,65}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,65}$ to $G^{(6)}_{7,65}$ are formed by decorating boundary cycles of $G_{7,65}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,65}) = +G^{(38)}_{6,6} - G^{(42)}_{6,6} - G^{(52)}_{6,8}$$
$$D(G^{(1)}_{7,65}) = +G^{(34)}_{6,5} - G^{(43)}_{6,7} + G^{(53)}_{6,8}$$
$$D(G^{(2)}_{7,65}) = +G^{(36)}_{6,5} - G^{(44)}_{6,7} - G^{(53)}_{6,8}$$

The Fatgraph $G_{7,66}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 2]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([0, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

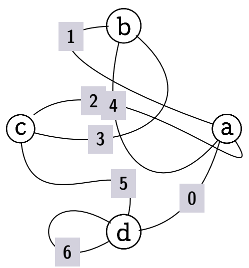
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,66}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,66}$ to $G^{(6)}_{7,66}$ are formed by decorating boundary cycles of $G_{7,66}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,67}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^3d^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^2d^3)$$

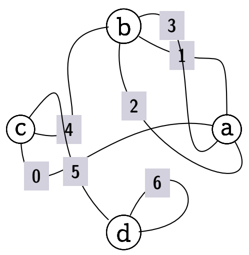
Markings

Fatgraph $G_{7,67}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,67}$ to $G^{(6)}_{7,67}$ are formed by decorating boundary cycles of $G_{7,67}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{7,67}) = +2G^{(37)}_{6,6} + 2G^{(39)}_{6,6} - G^{(51)}_{6,8}$$
$$D(G^{(1)}_{7,67}) = +2G^{(35)}_{6,5} + 2G^{(40)}_{6,6} + G^{(51)}_{6,8}$$
$$D(G^{(2)}_{7,67}) = +2G^{(38)}_{6,6} + 2G^{(41)}_{6,6} - G^{(52)}_{6,8}$$
$$D(G^{(3)}_{7,67}) = +2G^{(33)}_{6,5} + 2G^{(42)}_{6,6} + G^{(52)}_{6,8}$$
$$D(G^{(4)}_{7,67}) = +2G^{(36)}_{6,5} + 2G^{(43)}_{6,7} - G^{(53)}_{6,8}$$
$$D(G^{(5)}_{7,67}) = +2G^{(34)}_{6,5} + 2G^{(44)}_{6,7} + G^{(53)}_{6,8}$$

The Fatgraph $G_{7,68}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 2, 1, 3]),# b
  Vertex([0, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^0c^1 \to {}^0b^1 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^2c^0 \to {}^3b^0 \to {}^1c^2 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

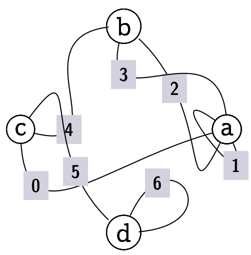
Markings

Fatgraph $G_{7,68}$ only has the identity automorphism, so the marked fatgraphs $G_{7,68}^{(0)}$ to $G_{7,68}^{(6)}$ are formed by decorating boundary cycles of $G_{7,68}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{7,68}^{(0)}) = -G_{6,5}^{(35)} - G_{6,6}^{(37)} - G_{6,6}^{(39)} - G_{6,6}^{(40)}$$
$$D(G_{7,68}^{(1)}) = -G_{6,5}^{(33)} - G_{6,6}^{(38)} - G_{6,6}^{(41)} - G_{6,6}^{(42)}$$
$$D(G_{7,68}^{(2)}) = -G_{6,5}^{(34)} - G_{6,5}^{(36)} - G_{6,7}^{(43)} - G_{6,7}^{(44)}$$
$$D(G_{7,68}^{(3)}) = -2G_{6,4}^{(25)} - G_{6,8}^{(51)}$$
$$D(G_{7,68}^{(4)}) = -2G_{6,3}^{(23)} + G_{6,8}^{(51)}$$
$$D(G_{7,68}^{(5)}) = -2G_{6,4}^{(26)} - G_{6,8}^{(52)}$$

The Fatgraph $G_{7,69}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

Boundary cycles

$$\alpha = ({}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^4a^0 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^2a^3 \to {}^2c^0 \to {}^1c^2 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

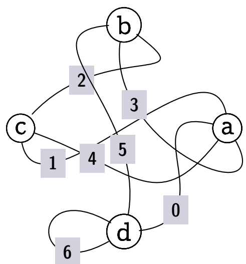
Markings

Fatgraph $G_{7,69}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,69}$ to $G^{(6)}_{7,69}$ are formed by decorating boundary cycles of $G_{7,69}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G^{(0)}_{7,69}) = -2G^{(21)}_{6,3} + G^{(52)}_{6,8}$$
$$D(G^{(1)}_{7,69}) = -2G^{(24)}_{6,3} - G^{(53)}_{6,8}$$
$$D(G^{(2)}_{7,69}) = -2G^{(22)}_{6,3} + G^{(53)}_{6,8}$$
$$D(G^{(3)}_{7,69}) = +G^{(48)}_{6,7}$$
$$D(G^{(4)}_{7,69}) = +G^{(49)}_{6,8}$$
$$D(G^{(5)}_{7,69}) = +G^{(50)}_{6,8}$$

The Fatgraph $G_{7,70}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([1, 4, 2]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

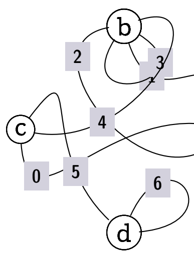
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^2b^0 \to {}^1d^2 \to {}^1c^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,70}$ only has the identity automorphism, so the marked fatgraphs $G_{7,70}^{(0)}$ to $G_{7,70}^{(6)}$ are formed by decorating boundary cycles of $G_{7,70}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,71}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 1, 3, 4]),# b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

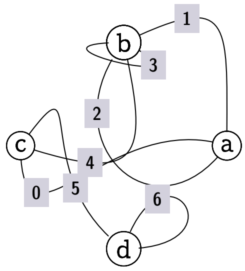
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{3}b^{4} \to {}^{2}c^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,71}$ only has the identity automorphism, so the marked fatgraphs $G_{7,71}^{(0)}$ to $G_{7,71}^{(6)}$ are formed by decorating boundary cycles of $G_{7,71}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,72}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 4, 3, 1]),# b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

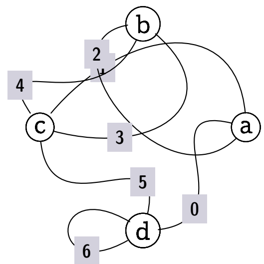
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^3b^4 \to {}^2b^3)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^2c^0 \to {}^1c^2 \to {}^1b^2 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,72}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,72}$ to $G^{(6)}_{7,72}$ are formed by decorating boundary cycles of $G_{7,72}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,73}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 1, 4]),# c
  Vertex([0, 5, 6, 6]),# d
])
```

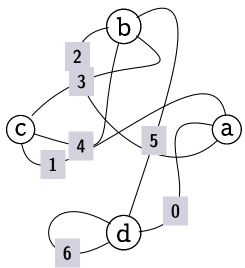
Boundary cycles

$$\alpha = ({}^{2}a^{0} \rightarrow {}^{1}c^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{1}b^{2} \rightarrow {}^{0}c^{1} \rightarrow {}^{0}d^{1} \rightarrow {}^{2}b^{0} \rightarrow {}^{2}c^{3})$$
$$\beta = ({}^{1}a^{2} \rightarrow {}^{3}d^{0} \rightarrow {}^{1}d^{2} \rightarrow {}^{3}c^{0} \rightarrow {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,73}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,73}$ to $G^{(6)}_{7,73}$ are formed by decorating boundary cycles of $G_{7,73}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,74}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([1, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

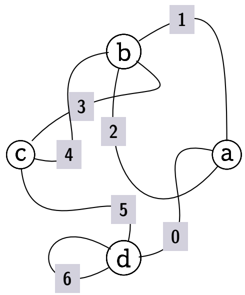
Boundary cycles

$$\alpha = ({}^{2}a^{0} \rightarrow {}^{0}a^{1} \rightarrow {}^{1}b^{2} \rightarrow {}^{3}b^{0} \rightarrow {}^{0}c^{1} \rightarrow {}^{0}d^{1} \rightarrow {}^{2}c^{0})$$
$$\beta = ({}^{1}a^{2} \rightarrow {}^{2}b^{3} \rightarrow {}^{1}c^{2} \rightarrow {}^{3}d^{0} \rightarrow {}^{0}b^{1} \rightarrow {}^{1}d^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,74}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,74}$ to $G^{(6)}_{7,74}$ are formed by decorating boundary cycles of $G_{7,74}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,75}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 1]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

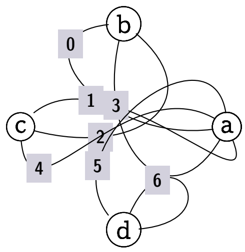
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}d^{0} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,75}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,75}$ to $G^{(6)}_{7,75}$ are formed by decorating boundary cycles of $G_{7,75}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,76}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 4, 0, 3, 1]),# a
  Vertex([0, 3, 2]),      # b
  Vertex([4, 2, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

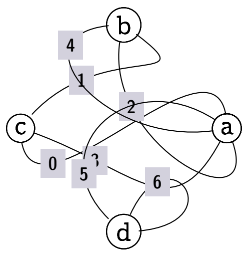
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{4}a^{0} \to {}^{1}d^{2}) \\
\beta &= ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{3}a^{4} \to {}^{0}b^{1}) \\
\gamma &= ({}^{0}d^{1})
\end{aligned}
$$

Markings

Fatgraph $G_{7,76}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,76}$ to $G^{(6)}_{7,76}$ are formed by decorating boundary cycles of $G_{7,76}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,77}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 5, 4, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([0, 3, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

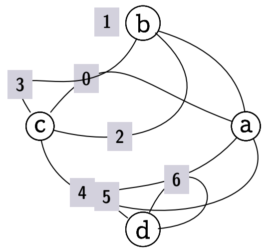
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2}) \\
\beta &= ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{1}c^{2}) \\
\gamma &= ({}^{0}d^{1})
\end{aligned}
$$

Markings

Fatgraph $G_{7,77}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,77}$ to $G^{(6)}_{7,77}$ are formed by decorating boundary cycles of $G_{7,77}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,78}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 3, 2]),   # b
  Vertex([4, 2, 0, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

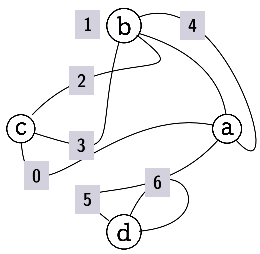
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2b^0 \to {}^1c^2 \to {}^2c^3 \to {}^1d^2)$$
$$\beta = ({}^3a^0 \to {}^3c^0 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,78}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,78}$ to $G^{(6)}_{7,78}$ are formed by decorating boundary cycles of $G_{7,78}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,79}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([0, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

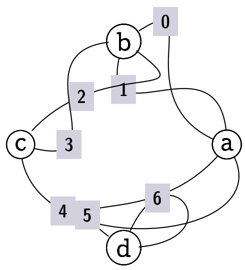
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^3a^0 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,79}$ only has the identity automorphism, so the marked fatgraphs $G_{7,79}^{(0)}$ to $G_{7,79}^{(6)}$ are formed by decorating boundary cycles of $G_{7,79}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,80}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([3, 1, 2, 0]),# b
  Vertex([4, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

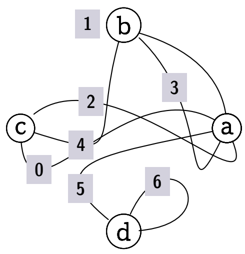
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^3a^0 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,80}$ only has the identity automorphism, so the marked fatgraphs $G_{7,80}^{(0)}$ to $G_{7,80}^{(6)}$ are formed by decorating boundary cycles of $G_{7,80}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,81}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 3, 2]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([0, 4, 2]),      # c
  Vertex([6, 6, 5]),      # d
])
```

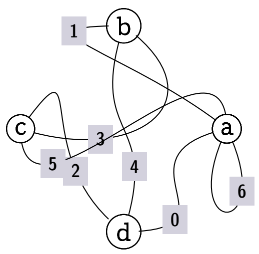
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^2a^3 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^0b^1 \to {}^1c^2 \to {}^4a^0)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,81}$ only has the identity automorphism, so the marked fatgraphs $G_{7,81}^{(0)}$ to $G_{7,81}^{(6)}$ are formed by decorating boundary cycles of $G_{7,81}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,82}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 1, 0, 6, 6]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([0, 4, 2]),      # d
])
```

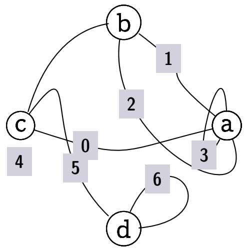
Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{4}a^{0})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{7,82}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,82}$ to $G^{(6)}_{7,82}$ are formed by decorating boundary cycles of $G_{7,82}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,83}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 3, 2]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([4, 0, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

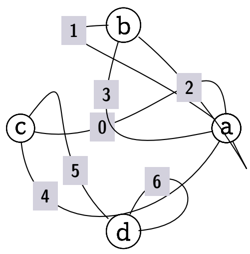
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{0}c^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,83}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,83}$ to $G^{(6)}_{7,83}$ are formed by decorating boundary cycles of $G_{7,83}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,84}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 4, 2]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([4, 0, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

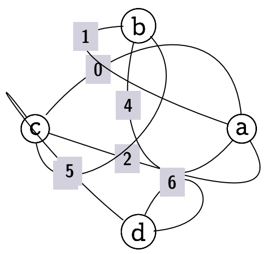
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0c^1 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^4a^0 \to {}^1c^2 \to {}^2c^0 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,84}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,84}$ to $G^{(6)}_{7,84}$ are formed by decorating boundary cycles of $G_{7,84}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,85}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([3, 2, 0, 5]),# c
  Vertex([6, 6, 5]),   # d
])
```

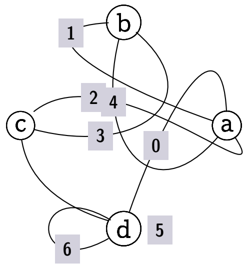
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^1c^2 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^3c^0 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^2b^0 \to {}^0c^1 \to {}^2c^3 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,85}$ only has the identity automorphism, so the marked fatgraphs $G_{7,85}^{(0)}$ to $G_{7,85}^{(6)}$ are formed by decorating boundary cycles of $G_{7,85}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,86}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

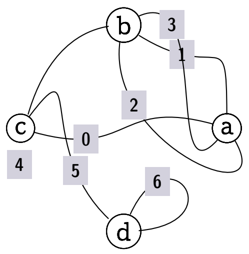
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0d^1 \to {}^2c^0 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^0c^1 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^1c^2 \to {}^3d^0 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,86}$ only has the identity automorphism, so the marked fatgraphs $G_{7,86}^{(0)}$ to $G_{7,86}^{(6)}$ are formed by decorating boundary cycles of $G_{7,86}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,87}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 2, 1, 3]),# b
  Vertex([4, 0, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

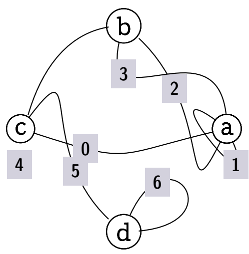
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}b^{3} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{0} \to {}^{0}c^{1})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,87}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,87}$ to $G^{(6)}_{7,87}$ are formed by decorating boundary cycles of $G_{7,87}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,88}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 1]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([4, 0, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

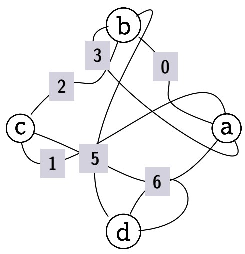
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2c^0 \to {}^4a^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2a^3 \to {}^2b^0 \to {}^0c^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,88}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,88}$ to $G^{(6)}_{7,88}$ are formed by decorating boundary cycles of $G_{7,88}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,89}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([3, 2, 0, 5]),# b
  Vertex([1, 4, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

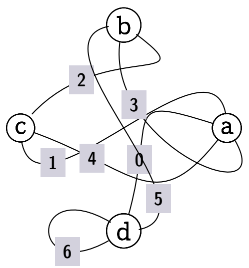
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,89}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,89}$ to $G^{(6)}_{7,89}$ are formed by decorating boundary cycles of $G_{7,89}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,90}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([1, 4, 2]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

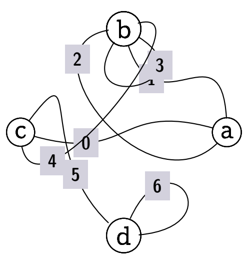
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^3d^0 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0d^1 \to {}^2b^0 \to {}^1c^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,90}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,90}$ to $G^{(6)}_{7,90}$ are formed by decorating boundary cycles of $G_{7,90}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,91}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 1, 3, 4]),# b
  Vertex([4, 0, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

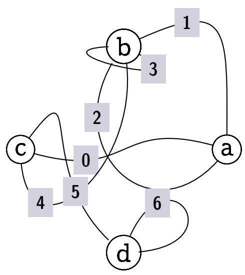
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^4b^0 \to {}^0a^1 \to {}^2c^0 \to {}^1c^2 \to {}^2b^3 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3b^4 \to {}^0c^1 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,91}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,91}$ to $G^{(6)}_{7,91}$ are formed by decorating boundary cycles of $G_{7,91}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,92}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 4, 3, 1]),# b
  Vertex([4, 0, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

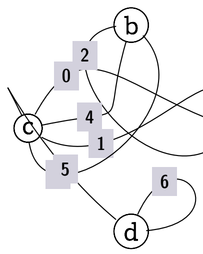
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^4b^0 \to {}^0a^1 \to {}^2b^3 \to {}^1c^2 \to {}^3b^4 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,92}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,92}$ to $G^{(6)}_{7,92}$ are formed by decorating boundary cycles of $G_{7,92}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,93}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 4, 3]),       # b
  Vertex([3, 1, 4, 0, 5]),# c
  Vertex([6, 6, 5]),       # d
])
```

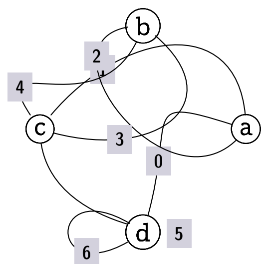
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^4c^0 \to {}^0c^1 \to {}^2a^0 \to {}^0a^1 \to {}^1d^2 \to {}^1c^2 \to {}^3c^4 \to {}^1b^2 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^2c^3 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,93}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,93}$ to $G^{(6)}_{7,93}$ are formed by decorating boundary cycles of $G_{7,93}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,94}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),    # a
  Vertex([2, 4, 3]),    # b
  Vertex([5, 3, 1, 4]),# c
  Vertex([5, 0, 6, 6]),# d
])
```

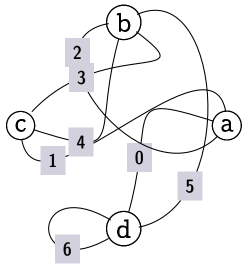
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^2c^3 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^3d^0 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0d^1 \to {}^3c^0 \to {}^0b^1)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,94}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,94}$ to $G^{(6)}_{7,94}$ are formed by decorating boundary cycles of $G_{7,94}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,95}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([1, 4, 3]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

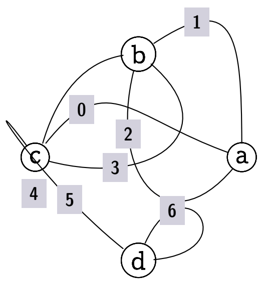
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^0c^1 \to {}^3d^0 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0d^1 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,95}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,95}$ to $G^{(6)}_{7,95}$ are formed by decorating boundary cycles of $G_{7,95}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,96}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 1]),# b
  Vertex([4, 3, 0, 5]),# c
  Vertex([6, 6, 5]),   # d
])
```

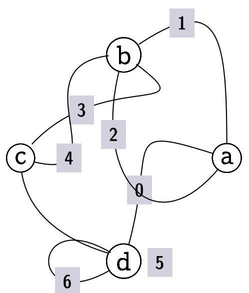
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{3}c^{0} \to {}^{2}c^{3} \to {}^{2}b^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,96}$ only has the identity automorphism, so the marked fatgraphs $G_{7,96}^{(0)}$ to $G_{7,96}^{(6)}$ are formed by decorating boundary cycles of $G_{7,96}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,97}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 1]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

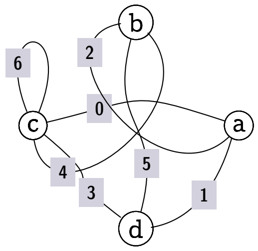
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^0c^1 \to {}^3d^0 \to {}^2b^3 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0d^1 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,97}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,97}$ to $G^{(6)}_{7,97}$ are formed by decorating boundary cycles of $G_{7,97}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,98}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 5, 4]),      # b
  Vertex([4, 3, 0, 6, 6]),# c
  Vertex([1, 5, 3]),      # d
])
```

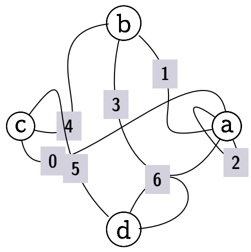
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^4c^0 \to {}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2c^3 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^1d^2 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,98}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,98}$ to $G^{(6)}_{7,98}$ are formed by decorating boundary cycles of $G_{7,98}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,99}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 2]),# a
  Vertex([4, 3, 1]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

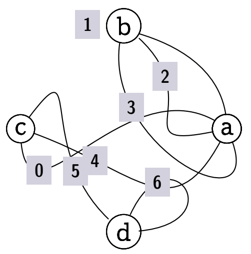
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{2}b^{0} \to {}^{4}a^{0} \to {}^{1}d^{2})$
$\beta = ({}^{2}a^{3} \to {}^{1}b^{2})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,99}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,99}$ to $G^{(6)}_{7,99}$ are formed by decorating boundary cycles of $G_{7,99}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,100}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 4, 3]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

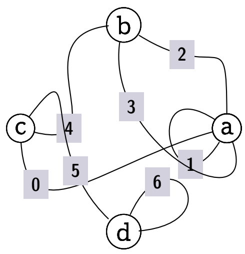
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^0b^1 \to {}^4a^0)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,100}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,100}$ to $G^{(6)}_{7,100}$ are formed by decorating boundary cycles of $G_{7,100}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,101}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 3]),# a
  Vertex([4, 3, 2]),      # b
  Vertex([0, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

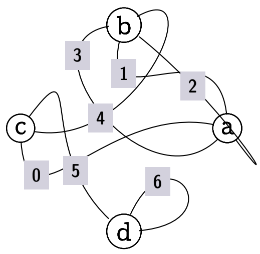
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^4a^0 \to {}^2a^3 \to {}^1c^2 \to {}^2c^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,101}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,101}$ to $G^{(6)}_{7,101}$ are formed by decorating boundary cycles of $G_{7,101}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,102}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([3, 1, 2, 4]),# b
  Vertex([0, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

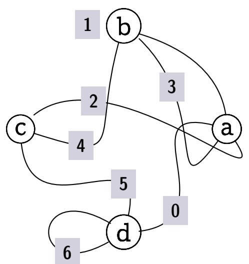
Boundary cycles

$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^3a^0 \to {}^1b^2)$
$\gamma = ({}^0d^1)$

Markings

Fatgraph $G_{7,102}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,102}$ to $G^{(6)}_{7,102}$ are formed by decorating boundary cycles of $G_{7,102}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,103}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 4, 2]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

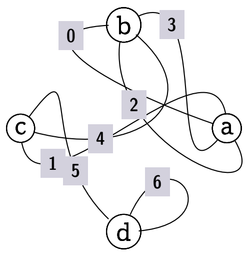
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^3a^0 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,103}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,103}$ to $G^{(6)}_{7,103}$ are formed by decorating boundary cycles of $G_{7,103}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,104}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([0, 2, 4, 3]),# b
  Vertex([1, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

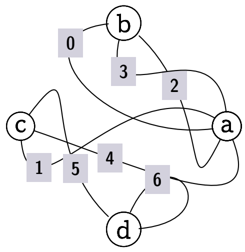
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3b^0)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,104}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,104}$ to $G^{(6)}_{7,104}$ are formed by decorating boundary cycles of $G_{7,104}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,105}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 2, 4]),# a
  Vertex([0, 3, 2]),      # b
  Vertex([1, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

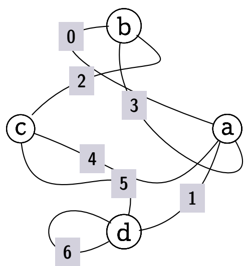
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{4}a^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}a^{3} \to {}^{2}b^{0})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,105}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,105}$ to $G^{(6)}_{7,105}$ are formed by decorating boundary cycles of $G_{7,105}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,106}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([5, 4, 2]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

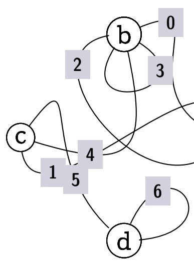
Boundary cycles

$$\alpha = ({}^{3}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,106}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,106}$ to $G^{(6)}_{7,106}$ are formed by decorating boundary cycles of $G_{7,106}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,107}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 3, 4, 3, 0]),# b
  Vertex([1, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

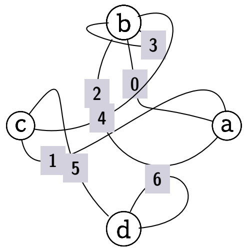
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{2}b^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{4} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,107}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,107}$ to $G^{(6)}_{7,107}$ are formed by decorating boundary cycles of $G_{7,107}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,108}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 0, 3, 4]),# b
  Vertex([1, 4, 5]),      # c
  Vertex([6, 6, 5]),      # d
])
```

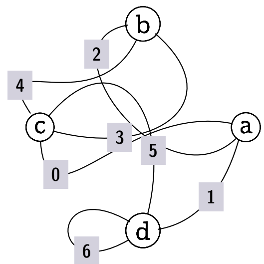
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{4}b^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{3}b^{4} \to {}^{2}b^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,108}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,108}$ to $G^{(6)}_{7,108}$ are formed by decorating boundary cycles of $G_{7,108}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,109}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([1, 5, 6, 6]),# d
])
```

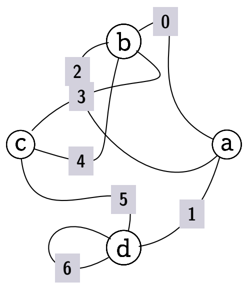
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^1d^2 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^2c^3)$$
$$\beta = ({}^1a^2 \to {}^3c^0 \to {}^0b^1)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,109}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,109}$ to $G^{(6)}_{7,109}$ are formed by decorating boundary cycles of $G_{7,109}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,110}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

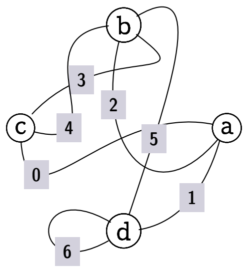
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,110}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,110}$ to $G^{(6)}_{7,110}$ are formed by decorating boundary cycles of $G_{7,110}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,111}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

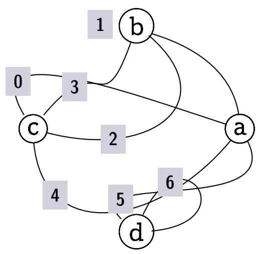
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{3}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,111}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,111}$ to $G^{(6)}_{7,111}$ are formed by decorating boundary cycles of $G_{7,111}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,112}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 3, 2]),   # b
  Vertex([4, 2, 3, 0]),# c
  Vertex([6, 6, 5]),   # d
])
```

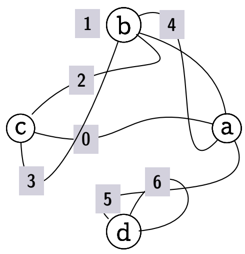
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3a^0 \to {}^2b^0 \to {}^3c^0 \to {}^2c^3 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,112}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,112}$ to $G^{(6)}_{7,112}$ are formed by decorating boundary cycles of $G_{7,112}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,113}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 3, 2, 4]),# b
  Vertex([3, 0, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

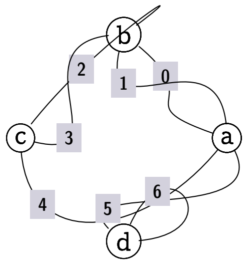
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3a^0 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,113}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,113}$ to $G^{(6)}_{7,113}$ are formed by decorating boundary cycles of $G_{7,113}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,114}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([3, 1, 0, 2]),# b
  Vertex([4, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

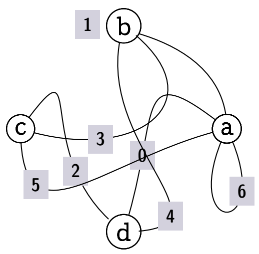
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{2}b^{3} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,114}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,114}$ to $G^{(6)}_{7,114}$ are formed by decorating boundary cycles of $G_{7,114}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,115}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6, 6]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([4, 0, 2]),      # d
])
```

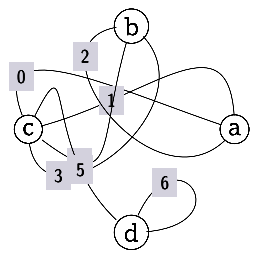
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$$

Markings

Fatgraph $G_{7,115}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,115}$ to $G^{(6)}_{7,115}$ are formed by decorating boundary cycles of $G_{7,115}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,116}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 4, 3]),      # b
  Vertex([3, 4, 1, 5, 0]),# c
  Vertex([6, 6, 5]),      # d
])
```

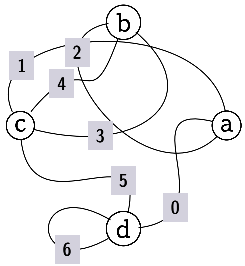
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^4c^0 \to {}^3c^4 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1d^2 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1 \to {}^2c^3)$$
$$\beta = ({}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,116}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,116}$ to $G^{(6)}_{7,116}$ are formed by decorating boundary cycles of $G_{7,116}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,117}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 4, 1]),# c
  Vertex([0, 5, 6, 6]),# d
])
```

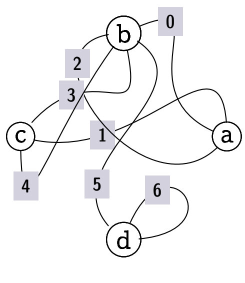
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^0 \to {}^3d^0 \to {}^2c^3 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,117}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,117}$ to $G^{(6)}_{7,117}$ are formed by decorating boundary cycles of $G_{7,117}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,118}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 4, 3, 5, 0]),# b
  Vertex([4, 1, 3]),      # c
  Vertex([6, 6, 5]),      # d
])
```

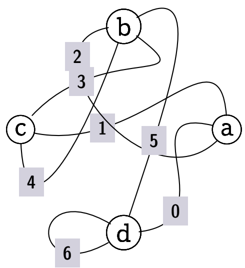
Boundary cycles

$$\alpha = ({}^{2}d^{0} \rightarrow {}^{2}a^{0} \rightarrow {}^{4}b^{0} \rightarrow {}^{0}c^{1} \rightarrow {}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{2}b^{3} \rightarrow {}^{1}c^{2} \rightarrow {}^{3}b^{4} \rightarrow {}^{0}b^{1} \rightarrow {}^{1}d^{2})$$
$$\beta = ({}^{2}c^{0} \rightarrow {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,118}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,118}$ to $G^{(6)}_{7,118}$ are formed by decorating boundary cycles of $G_{7,118}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,119}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([4, 1, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

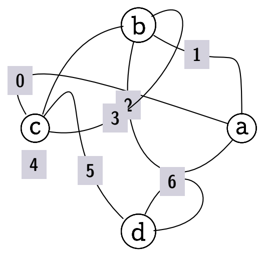
Boundary cycles

$$\alpha = ({}^{2}a^{0} \rightarrow {}^{0}c^{1} \rightarrow {}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{2}b^{3} \rightarrow {}^{3}b^{0} \rightarrow {}^{1}c^{2} \rightarrow {}^{3}d^{0} \rightarrow {}^{0}d^{1} \rightarrow {}^{0}b^{1} \rightarrow {}^{1}d^{2})$$
$$\beta = ({}^{2}c^{0} \rightarrow {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,119}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,119}$ to $G^{(6)}_{7,119}$ are formed by decorating boundary cycles of $G_{7,119}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,120}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([4, 3, 5, 0]),# c
  Vertex([6, 6, 5]),   # d
])
```

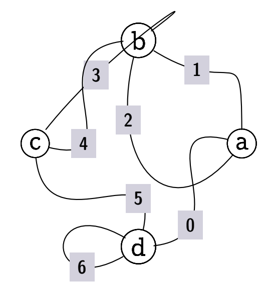
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}b^{0} \to {}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,120}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,120}$ to $G^{(6)}_{7,120}$ are formed by decorating boundary cycles of $G_{7,120}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,121}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

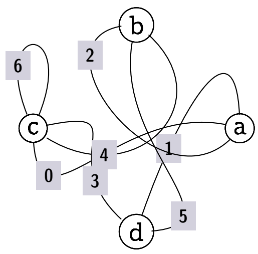
Boundary cycles

$$\alpha = ({}^3d^0 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^3b^0 \to {}^1c^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,121}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,121}$ to $G^{(6)}_{7,121}$ are formed by decorating boundary cycles of $G_{7,121}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,122}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 5, 4]),      # b
  Vertex([0, 4, 3, 6, 6]),# c
  Vertex([5, 1, 3]),      # d
])
```

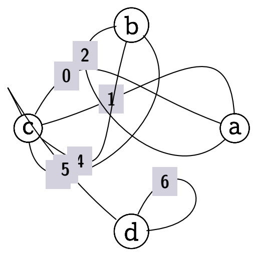
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4c^0 \to {}^1a^2 \to {}^0a^1 \to {}^1d^2 \to {}^0c^1 \to {}^0d^1 \to {}^2c^3 \to {}^0b^1 \to {}^2b^0)$$
$$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,122}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,122}$ to $G^{(6)}_{7,122}$ are formed by decorating boundary cycles of $G_{7,122}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,123}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 4, 3]),      # b
  Vertex([3, 4, 1, 0, 5]),# c
  Vertex([6, 6, 5]),      # d
])
```

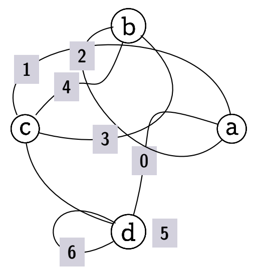
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{4}c^{0} \to {}^{2}a^{0} \to {}^{2}c^{3} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{3}c^{4} \to {}^{0}b^{1} \to {}^{2}b^{0})$
$\beta = ({}^{0}c^{1} \to {}^{1}b^{2})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,123}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,123}$ to $G^{(6)}_{7,123}$ are formed by decorating boundary cycles of $G_{7,123}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,124}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 4, 1]),# c
  Vertex([5, 0, 6, 6]),# d
])
```

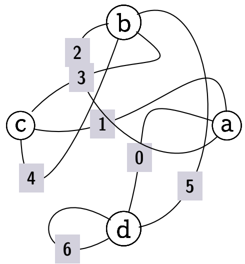
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^3c^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^0d^1 \to {}^2c^3 \to {}^3d^0 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,124}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,124}$ to $G^{(6)}_{7,124}$ are formed by decorating boundary cycles of $G_{7,124}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,125}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([4, 1, 3]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

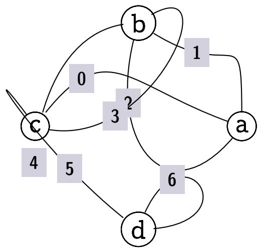
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^0d^1 \to {}^3d^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,125}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,125}$ to $G^{(6)}_{7,125}$ are formed by decorating boundary cycles of $G_{7,125}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,126}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([4, 3, 0, 5]),# c
  Vertex([6, 6, 5]),   # d
])
```

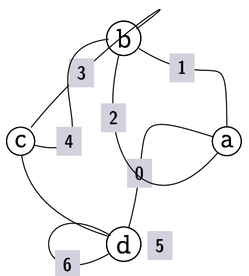
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{2}c^{3} \to {}^{2}b^{3} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}b^{0} \to {}^{0}c^{1})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,126}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,126}$ to $G^{(6)}_{7,126}$ are formed by decorating boundary cycles of $G_{7,126}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,127}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

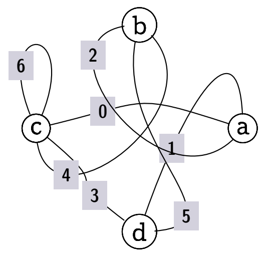
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0d^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^2c^0 \to {}^3d^0 \to {}^2b^3 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^3b^0 \to {}^1c^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,127}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,127}$ to $G^{(6)}_{7,127}$ are formed by decorating boundary cycles of $G_{7,127}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,128}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 5, 4]),      # b
  Vertex([4, 3, 0, 6, 6]),# c
  Vertex([5, 1, 3]),      # d
])
```

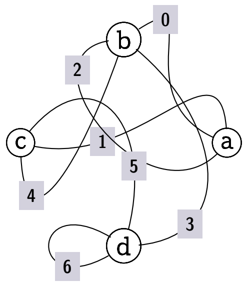
Boundary cycles

$$\alpha = ({}^4c^0 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1d^2 \to {}^1c^2 \to {}^0d^1 \to {}^2c^3 \to {}^0b^1 \to {}^2b^0)$$
$$\beta = ({}^2d^0 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,128}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,128}$ to $G^{(6)}_{7,128}$ are formed by decorating boundary cycles of $G_{7,128}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,129}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([4, 1, 5]),   # c
  Vertex([3, 5, 6, 6]),# d
])
```

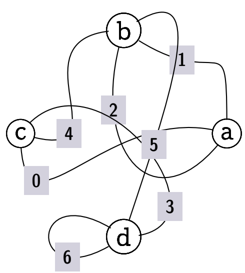
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,129}$ only has the identity automorphism, so the marked fatgraphs $G_{7,129}^{(0)}$ to $G_{7,129}^{(6)}$ are formed by decorating boundary cycles of $G_{7,129}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,130}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([3, 5, 6, 6]),# d
])
```

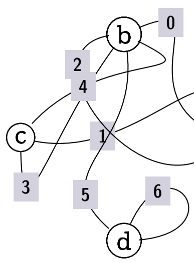
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^0 \to {}^3d^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^0d^1 \to {}^3b^0 \to {}^1c^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,130}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,130}$ to $G^{(6)}_{7,130}$ are formed by decorating boundary cycles of $G_{7,130}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,131}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 3, 5, 4, 0]),# b
  Vertex([3, 1, 4]),       # c
  Vertex([6, 6, 5]),       # d
])
```

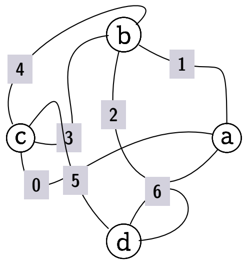
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^3b^4)$$
$$\beta = ({}^2d^0 \to {}^2b^3 \to {}^1d^2 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,131}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,131}$ to $G^{(6)}_{7,131}$ are formed by decorating boundary cycles of $G_{7,131}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,132}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 1, 4]),# b
  Vertex([0, 3, 5, 4]),# c
  Vertex([6, 6, 5]),   # d
])
```

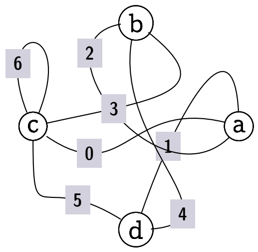
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}c^{0} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{3} \to {}^{3}b^{0} \to {}^{1}d^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,132}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,132}$ to $G^{(6)}_{7,132}$ are formed by decorating boundary cycles of $G_{7,132}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,133}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 4, 3]),      # b
  Vertex([5, 0, 3, 6, 6]),# c
  Vertex([4, 1, 5]),      # d
])
```

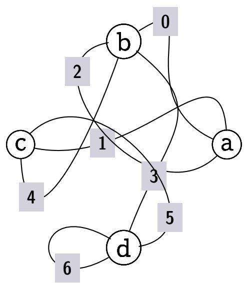
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^4c^0 \to {}^2c^3 \to {}^1b^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,133}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,133}$ to $G^{(6)}_{7,133}$ are formed by decorating boundary cycles of $G_{7,133}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,134}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([4, 1, 5]),   # c
  Vertex([5, 3, 6, 6]),# d
])
```

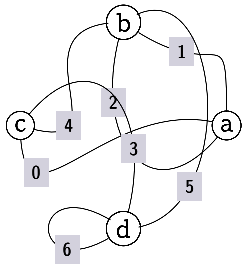
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^0d^1 \to {}^0b^1)$$
$$\beta = ({}^3d^0 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,134}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,134}$ to $G^{(6)}_{7,134}$ are formed by decorating boundary cycles of $G_{7,134}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,135}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 3, 6, 6]),# d
])
```

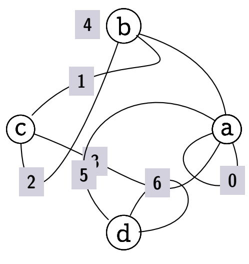
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}d^{0} \to {}^{3}b^{0} \to {}^{1}d^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,135}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,135}$ to $G^{(6)}_{7,135}$ are formed by decorating boundary cycles of $G_{7,135}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,136}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 5, 0, 3, 0]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([2, 3, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

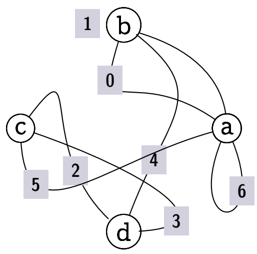
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,136}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,136}$ to $G^{(6)}_{7,136}$ are formed by decorating boundary cycles of $G_{7,136}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,137}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6, 6]),# a
  Vertex([1, 0, 4]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([3, 4, 2]),      # d
])
```

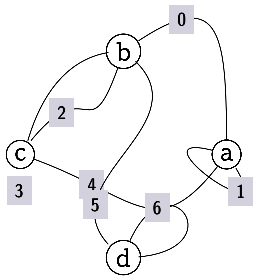
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^4a^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,137}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,137}$ to $G^{(6)}_{7,137}$ are formed by decorating boundary cycles of $G_{7,137}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,138}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([3, 2, 5, 0]),# b
  Vertex([3, 4, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

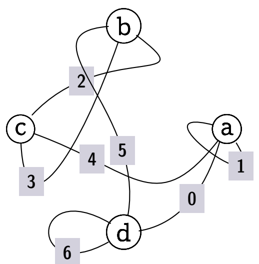
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{2}b^{3} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{0} \to {}^{0}b^{1})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,138}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,138}$ to $G^{(6)}_{7,138}$ are formed by decorating boundary cycles of $G_{7,138}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,139}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

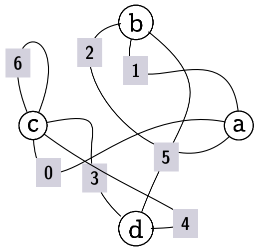
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,139}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,139}$ to $G^{(6)}_{7,139}$ are formed by decorating boundary cycles of $G_{7,139}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,140}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 5]),      # b
  Vertex([0, 4, 3, 6, 6]),# c
  Vertex([4, 5, 3]),      # d
])
```

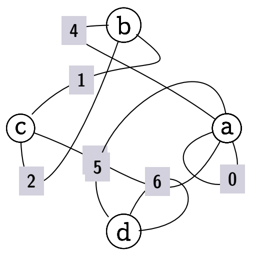
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4c^0 \to {}^2c^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1c^2)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,140}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,140}$ to $G^{(6)}_{7,140}$ are formed by decorating boundary cycles of $G_{7,140}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,141}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 4, 0, 3, 0]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([2, 3, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

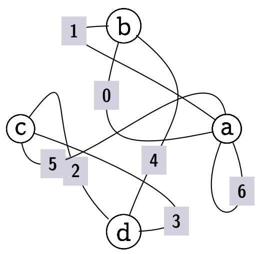
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{0}c^{1} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{4}a^{0} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{0}d^{1})$

Markings

Fatgraph $G_{7,141}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,141}$ to $G^{(6)}_{7,141}$ are formed by decorating boundary cycles of $G_{7,141}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,142}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 1, 0, 6, 6]),# a
  Vertex([1, 0, 4]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([3, 4, 2]),      # d
])
```

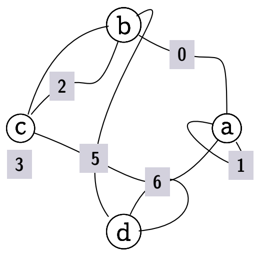
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^4a^0 \to {}^1a^2 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^3a^4)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,142}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,142}$ to $G^{(6)}_{7,142}$ are formed by decorating boundary cycles of $G_{7,142}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,143}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([3, 2, 0, 5]),# b
  Vertex([3, 4, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

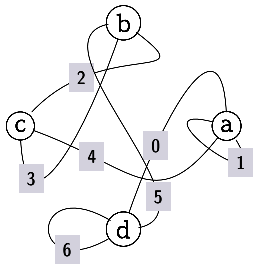
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,143}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,143}$ to $G^{(6)}_{7,143}$ are formed by decorating boundary cycles of $G_{7,143}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,144}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([5, 0, 6, 6]),# d
])
```

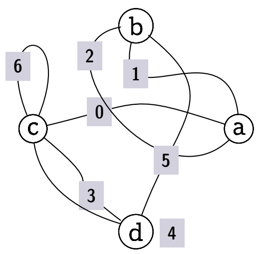
Boundary cycles

$\alpha = ({}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{2}d^{3})$

Markings

Fatgraph $G_{7,144}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,144}$ to $G^{(6)}_{7,144}$ are formed by decorating boundary cycles of $G_{7,144}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,145}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 5]),      # b
  Vertex([4, 3, 0, 6, 6]),# c
  Vertex([4, 5, 3]),      # d
])
```

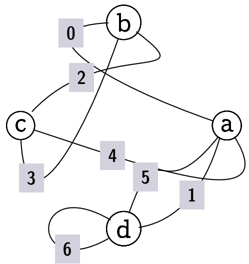
Boundary cycles

$$\alpha = ({}^4c^0 \to {}^1c^2 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1d^2 \to {}^0d^1 \to {}^2c^3 \to {}^0b^1 \to {}^2b^0)$$
$$\beta = ({}^2d^0 \to {}^0c^1)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,145}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,145}$ to $G^{(6)}_{7,145}$ are formed by decorating boundary cycles of $G_{7,145}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,146}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

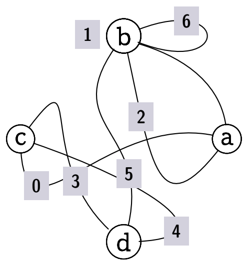
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,146}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,146}$ to $G^{(6)}_{7,146}$ are formed by decorating boundary cycles of $G_{7,146}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,147}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([1, 5, 2, 6, 6]),# b
  Vertex([0, 4, 3]),       # c
  Vertex([4, 5, 3]),       # d
])
```

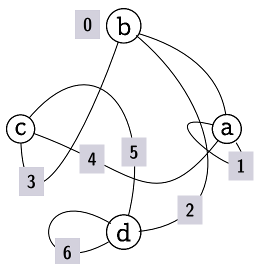
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^2b^3 \to {}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^3b^4)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,147}$ only has the identity automorphism, so the marked fatgraphs $G_{7,147}^{(0)}$ to $G_{7,147}^{(6)}$ are formed by decorating boundary cycles of $G_{7,147}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,148}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 5]),   # c
  Vertex([2, 5, 6, 6]),# d
])
```

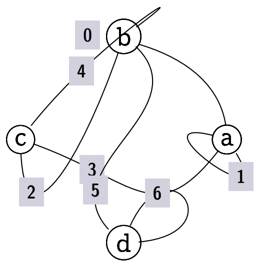
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^3d^0 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,148}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,148}$ to $G^{(6)}_{7,148}$ are formed by decorating boundary cycles of $G_{7,148}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,149}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([0, 2, 5, 4]),# b
  Vertex([2, 3, 4]),   # c
  Vertex([6, 6, 5]),   # d
])
```

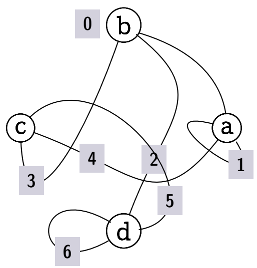
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^3b^0 \to {}^0c^1)$$
$$\beta = ({}^2d^0 \to {}^2b^3 \to {}^1d^2 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,149}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,149}$ to $G^{(6)}_{7,149}$ are formed by decorating boundary cycles of $G_{7,149}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,150}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 5]),   # c
  Vertex([5, 2, 6, 6]),# d
])
```

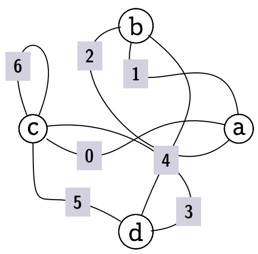
Boundary cycles

$$\alpha = ({}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0)$$
$$\beta = ({}^3d^0 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,150}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,150}$ to $G^{(6)}_{7,150}$ are formed by decorating boundary cycles of $G_{7,150}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,151}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 4]),      # b
  Vertex([5, 0, 3, 6, 6]),# c
  Vertex([3, 4, 5]),      # d
])
```

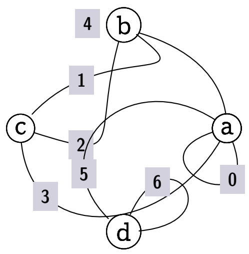
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^4c^0 \to {}^2c^3)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,151}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,151}$ to $G^{(6)}_{7,151}$ are formed by decorating boundary cycles of $G_{7,151}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,152}$ (6 orientable markings)




```
Fatgraph([
  Vertex([4, 5, 0, 3, 0]),# a
  Vertex([4, 2, 1]),      # b
  Vertex([3, 2, 1]),      # c
  Vertex([6, 6, 5]),      # d
])
```

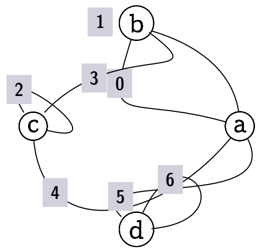
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^2b^0 \to {}^4a^0 \to {}^1d^2)$$
$$\beta = ({}^2a^3 \to {}^2c^0 \to {}^3a^4 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,152}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,152}$ to $G^{(6)}_{7,152}$ are formed by decorating boundary cycles of $G_{7,152}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,153}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 5]),# a
  Vertex([1, 0, 3]),   # b
  Vertex([4, 2, 3, 2]),# c
  Vertex([6, 6, 5]),   # d
])
```

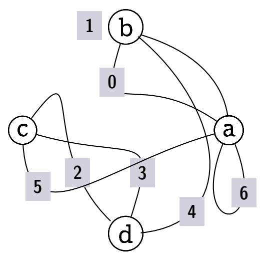
Boundary cycles

$$\alpha = ({}^{2}c^{3} \to {}^{0}a^{1} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{3}c^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,153}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,153}$ to $G^{(6)}_{7,153}$ are formed by decorating boundary cycles of $G_{7,153}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,154}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6, 6]),# a
  Vertex([1, 0, 4]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([4, 3, 2]),      # d
])
```

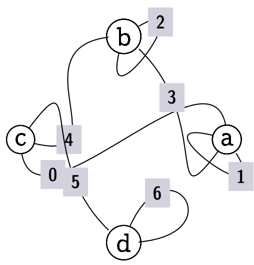
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\gamma = ({}^{3}a^{4})$$

Markings

Fatgraph $G_{7,154}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,154}$ to $G^{(6)}_{7,154}$ are formed by decorating boundary cycles of $G_{7,154}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,155}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([4, 2, 3, 2]),# b
  Vertex([0, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

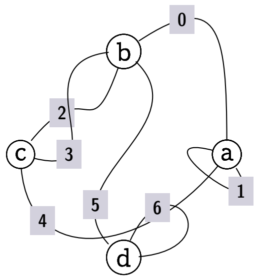
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}b^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,155}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,155}$ to $G^{(6)}_{7,155}$ are formed by decorating boundary cycles of $G_{7,155}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,156}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([3, 2, 5, 0]),# b
  Vertex([4, 3, 2]),   # c
  Vertex([6, 6, 5]),   # d
])
```

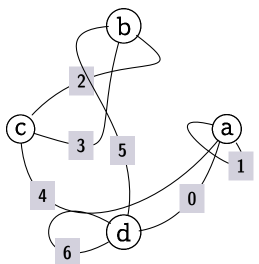
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}b^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,156}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,156}$ to $G^{(6)}_{7,156}$ are formed by decorating boundary cycles of $G_{7,156}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,157}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([4, 3, 2]),   # c
  Vertex([0, 5, 6, 6]),# d
])
```

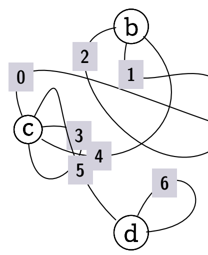
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,157}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,157}$ to $G^{(6)}_{7,157}$ are formed by decorating boundary cycles of $G_{7,157}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,158}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 4]),      # b
  Vertex([3, 4, 3, 5, 0]),# c
  Vertex([6, 6, 5]),      # d
])
```

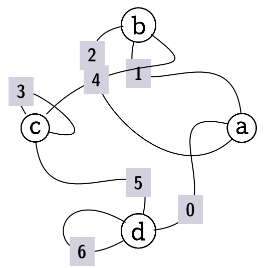
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{4}c^{0} \to {}^{3}c^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}c^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{0} \to {}^{2}b^{0} \to {}^{0}c^{1} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1})$$

Markings

Fatgraph $G_{7,158}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,158}$ to $G^{(6)}_{7,158}$ are formed by decorating boundary cycles of $G_{7,158}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,159}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 4]),   # b
  Vertex([5, 3, 4, 3]),# c
  Vertex([0, 5, 6, 6]),# d
])
```

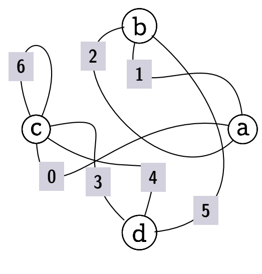
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^0 \to {}^0d^1 \to {}^3d^0 \to {}^1d^2)$$
$$\beta = ({}^2a^0 \to {}^2c^3 \to {}^2b^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,159}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,159}$ to $G^{(6)}_{7,159}$ are formed by decorating boundary cycles of $G_{7,159}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,160}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 5]),      # b
  Vertex([0, 4, 3, 6, 6]),# c
  Vertex([5, 4, 3]),      # d
])
```

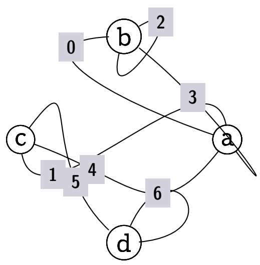
Boundary cycles

$$\alpha = ({}^4c^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^2c^3 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^3c^4)$$

Markings

Fatgraph $G_{7,160}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,160}$ to $G^{(6)}_{7,160}$ are formed by decorating boundary cycles of $G_{7,160}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,161}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 2, 3, 2]),# b
  Vertex([1, 4, 5]),   # c
  Vertex([6, 6, 5]),   # d
])
```

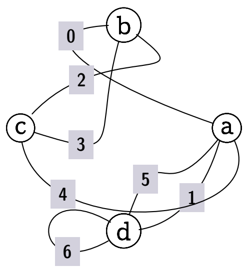
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^1c^2 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^2a^3 \to {}^3a^0 \to {}^1b^2 \to {}^0c^1 \to {}^2b^3)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,161}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,161}$ to $G^{(6)}_{7,161}$ are formed by decorating boundary cycles of $G_{7,161}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,162}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([4, 3, 2]),   # c
  Vertex([1, 5, 6, 6]),# d
])
```

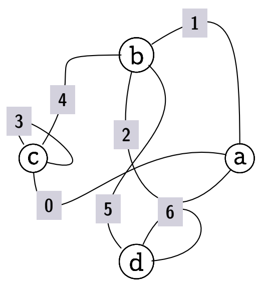
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,162}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,162}$ to $G^{(6)}_{7,162}$ are formed by decorating boundary cycles of $G_{7,162}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,163}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 5, 1]),# b
  Vertex([0, 3, 4, 3]),# c
  Vertex([6, 6, 5]),   # d
])
```

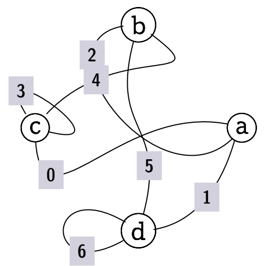
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^3c^0 \to {}^2b^3 \to {}^1d^2)$$
$$\beta = ({}^2a^0 \to {}^2c^3 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0d^1)$$

Markings

Fatgraph $G_{7,163}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,163}$ to $G^{(6)}_{7,163}$ are formed by decorating boundary cycles of $G_{7,163}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,164}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 3, 4, 3]),# c
  Vertex([1, 5, 6, 6]),# d
])
```

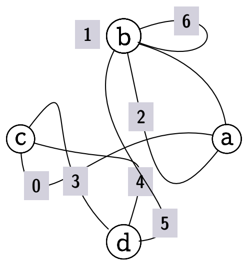
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^0 \to {}^3d^0 \to {}^1d^2)$$
$$\beta = ({}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^2c^3 \to {}^2b^0)$$
$$\gamma = ({}^2d^3)$$

Markings

Fatgraph $G_{7,164}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,164}$ to $G^{(6)}_{7,164}$ are formed by decorating boundary cycles of $G_{7,164}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,165}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([1, 5, 2, 6, 6]),# b
  Vertex([0, 4, 3]),      # c
  Vertex([5, 4, 3]),      # d
])
```

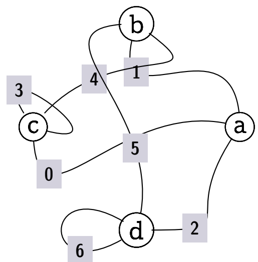
Boundary cycles

$$\alpha = ({}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^0c^1 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^0b^1)$$
$$\gamma = ({}^3b^4)$$

Markings

Fatgraph $G_{7,165}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,165}$ to $G^{(6)}_{7,165}$ are formed by decorating boundary cycles of $G_{7,165}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,166}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([5, 1, 4]),   # b
  Vertex([0, 3, 4, 3]),# c
  Vertex([2, 5, 6, 6]),# d
])
```

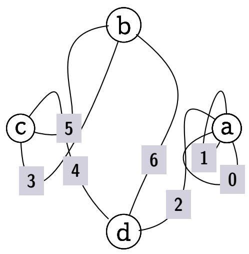
Boundary cycles

$$\alpha = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{0}d^{1})$$
$$\beta = ({}^{2}a^{0} \to {}^{1}b^{2} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{2}c^{3} \to {}^{1}d^{2})$$
$$\gamma = ({}^{2}d^{3})$$

Markings

Fatgraph $G_{7,166}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,166}$ to $G^{(6)}_{7,166}$ are formed by decorating boundary cycles of $G_{7,166}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,167}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 1, 0]),# a
  Vertex([5, 3, 6]),      # b
  Vertex([3, 5, 4]),      # c
  Vertex([2, 6, 4]),      # d
])
```

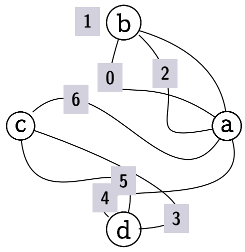
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{0}c^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{7,167}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,167}$ to $G^{(6)}_{7,167}$ are formed by decorating boundary cycles of $G_{7,167}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,168}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 6, 4]),# a
  Vertex([1, 0, 2]),      # b
  Vertex([5, 3, 6]),      # c
  Vertex([3, 5, 4]),      # d
])
```

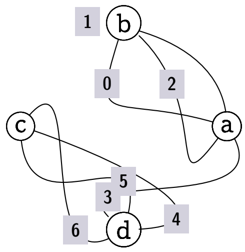
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^2b^0 \to {}^4a^0 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^3a^4 \to {}^1c^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,168}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,168}$ to $G^{(6)}_{7,168}$ are formed by decorating boundary cycles of $G_{7,168}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,169}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 4, 6]),   # c
  Vertex([4, 5, 3, 6]),# d
])
```

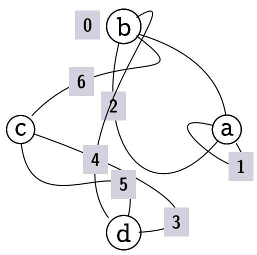
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^2d^3 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^0c^1)$$
$$\gamma = ({}^3d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,169}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,169}$ to $G^{(6)}_{7,169}$ are formed by decorating boundary cycles of $G_{7,169}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,170}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 6, 4]),# b
  Vertex([5, 3, 6]),   # c
  Vertex([3, 5, 4]),   # d
])
```

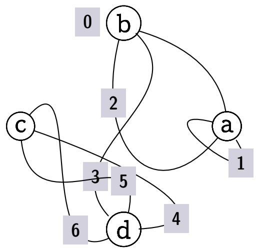
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^3b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,170}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,170}$ to $G^{(6)}_{7,170}$ are formed by decorating boundary cycles of $G_{7,170}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,171}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 6]),   # c
  Vertex([4, 5, 3, 6]),# d
])
```

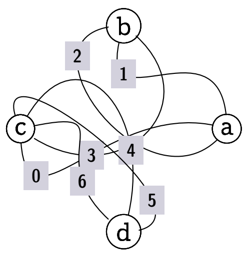
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2c^0 \to {}^2d^3 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^0c^1)$$
$$\gamma = ({}^3d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,171}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,171}$ to $G^{(6)}_{7,171}$ are formed by decorating boundary cycles of $G_{7,171}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,172}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 1, 3]),      # b
  Vertex([0, 3, 6, 4, 5]),# c
  Vertex([5, 4, 6]),      # d
])
```

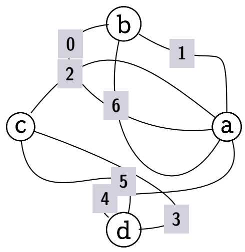
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^4c^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^2c^3 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^3c^4)$$

Markings

Fatgraph $G_{7,172}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,172}$ to $G^{(6)}_{7,172}$ are formed by decorating boundary cycles of $G_{7,172}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,173}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 2, 0, 6, 4]),# a
  Vertex([0, 6, 1]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([3, 5, 4]),      # d
])
```

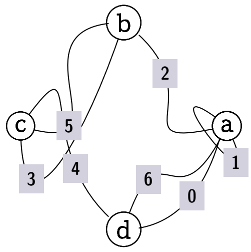
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^4a^0 \to {}^2b^0 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^3a^4 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,173}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,173}$ to $G^{(6)}_{7,173}$ are formed by decorating boundary cycles of $G_{7,173}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,174}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 6, 1]),# a
  Vertex([5, 3, 2]),      # b
  Vertex([3, 5, 4]),      # c
  Vertex([0, 6, 4]),      # d
])
```

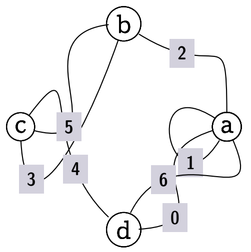
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^4 \to {}^1a^2 \to {}^0a^1 \to {}^4a^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$
$$\beta = ({}^2a^3 \to {}^1b^2 \to {}^1d^2 \to {}^2c^0)$$
$$\gamma = ({}^0c^1 \to {}^0b^1)$$

Markings

Fatgraph $G_{7,174}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,174}$ to $G^{(6)}_{7,174}$ are formed by decorating boundary cycles of $G_{7,174}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,175}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 6]),# a
  Vertex([5, 3, 2]),      # b
  Vertex([3, 5, 4]),      # c
  Vertex([0, 6, 4]),      # d
])
```

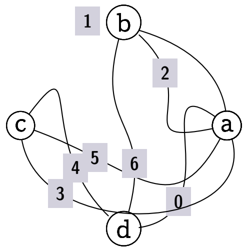
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}b^{2} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}c^{0})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{4}a^{0} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{0}c^{1} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{7,175}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,175}$ to $G^{(6)}_{7,175}$ are formed by decorating boundary cycles of $G_{7,175}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,176}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 5, 3]),# a
  Vertex([1, 6, 2]),      # b
  Vertex([3, 5, 4]),      # c
  Vertex([0, 6, 4]),      # d
])
```

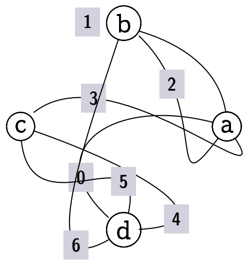
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{3}a^{4} \to {}^{0}c^{1})$$
$$\gamma = ({}^{0}b^{1} \to {}^{1}d^{2} \to {}^{2}c^{0} \to {}^{4}a^{0})$$

Markings

Fatgraph $G_{7,176}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,176}$ to $G^{(6)}_{7,176}$ are formed by decorating boundary cycles of $G_{7,176}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,177}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 6, 2]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 0, 6]),# d
])
```

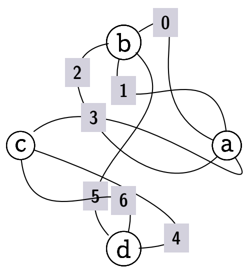
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}a^{2} \to {}^{2}d^{3} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{3}a^{0} \to {}^{3}d^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}d^{1} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{7,177}$ only has the identity automorphism, so the marked fatgraphs $G_{7,177}^{(0)}$ to $G_{7,177}^{(6)}$ are formed by decorating boundary cycles of $G_{7,177}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,178}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([2, 1, 5, 0]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
])
```

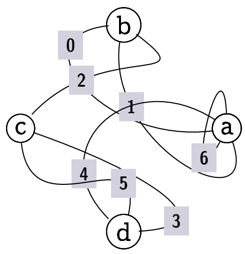
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^1a^2 \to {}^3b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^3a^0 \to {}^2d^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,178}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,178}$ to $G^{(6)}_{7,178}$ are formed by decorating boundary cycles of $G_{7,178}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,179}$ (6 orientable markings)




```
Fatgraph([
  Vertex([6, 4, 0, 6, 1]),# a
  Vertex([0, 1, 2]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([3, 5, 4]),      # d
])
```

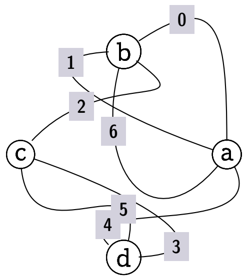
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^2b^0 \to {}^0a^1 \to {}^1c^2)$$
$$\beta = ({}^3a^4 \to {}^1a^2 \to {}^1b^2 \to {}^2c^0 \to {}^4a^0 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,179}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,179}$ to $G^{(6)}_{7,179}$ are formed by decorating boundary cycles of $G_{7,179}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,180}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 6, 4]),# a
  Vertex([1, 6, 2, 0]),# b
  Vertex([5, 3, 2]),   # c
  Vertex([3, 5, 4]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{0}c^{1})$$

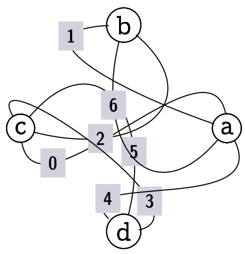
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	b	a	d	c	0	1	4	5	2	3	6	β	α	γ

Markings

	$G^{(0)}_{7,180}$	$G^{(1)}_{7,180}$	$G^{(2)}_{7,180}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,181}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 6, 4]),# a
  Vertex([1, 6, 2]),   # b
  Vertex([0, 2, 5, 3]),# c
  Vertex([3, 5, 4]),   # d
])
```

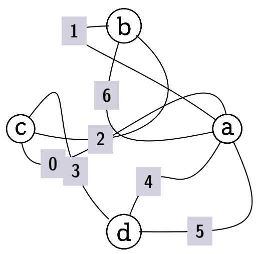
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2d^0 \to {}^0a^1 \to {}^3c^0 \to {}^0b^1)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^0c^1 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^2c^3)$$

Markings

Fatgraph $G_{7,181}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,181}$ to $G^{(6)}_{7,181}$ are formed by decorating boundary cycles of $G_{7,181}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,182}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 6, 4, 5]),# a
  Vertex([1, 6, 2]),      # b
  Vertex([0, 2, 3]),      # c
  Vertex([5, 4, 3]),      # d
])
```

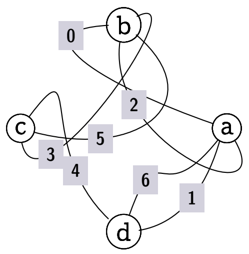
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2c^0 \to {}^0a^1 \to {}^1d^2 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1a^2 \to {}^4a^0 \to {}^0c^1 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^3a^4)$$

Markings

Fatgraph $G_{7,182}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,182}$ to $G^{(6)}_{7,182}$ are formed by decorating boundary cycles of $G_{7,182}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,183}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 2]),# a
  Vertex([0, 2, 5, 3]),# b
  Vertex([3, 5, 4]),   # c
  Vertex([1, 6, 4]),   # d
])
```

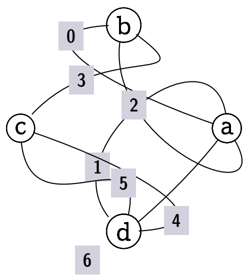
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^0d^1 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^3b^0 \to {}^1d^2 \to {}^2c^0)$$
$$\gamma = ({}^0c^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{7,183}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,183}$ to $G^{(6)}_{7,183}$ are formed by decorating boundary cycles of $G_{7,183}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,184}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 2]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 1, 6]),# d
])
```

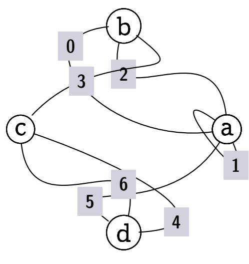
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2c^0 \to {}^2d^3 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^2b^0 \to {}^1c^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,184}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,184}$ to $G^{(6)}_{7,184}$ are formed by decorating boundary cycles of $G_{7,184}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,185}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 5, 1]),# a
  Vertex([0, 2, 3]),      # b
  Vertex([6, 4, 3]),      # c
  Vertex([4, 6, 5]),      # d
])
```

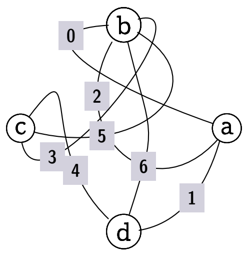
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{4}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}d^{0} \to {}^{2}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{7,185}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,185}$ to $G^{(6)}_{7,185}$ are formed by decorating boundary cycles of $G_{7,185}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,186}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([0, 2, 6, 5, 3]),# b
  Vertex([3, 5, 4]),      # c
  Vertex([1, 6, 4]),      # d
])
```

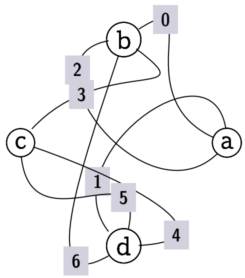
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{4}b^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}c^{1} \to {}^{3}b^{4})$$

Markings

Fatgraph $G_{7,186}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,186}$ to $G^{(6)}_{7,186}$ are formed by decorating boundary cycles of $G_{7,186}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,187}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3, 0]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 1, 6]),# d
])
```

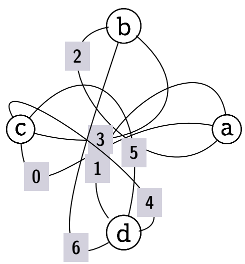
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^2d^3 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,187}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,187}$ to $G^{(6)}_{7,187}$ are formed by decorating boundary cycles of $G_{7,187}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

The Fatgraph $G_{7,188}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([4, 5, 1, 6]),# d
])
```

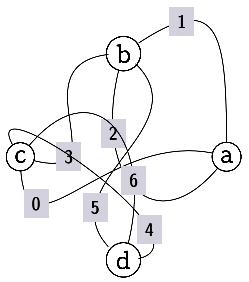
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2d^3 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^3c^0 \to {}^0b^1)$$
$$\gamma = ({}^0d^1 \to {}^2c^3)$$

Markings

Fatgraph $G_{7,188}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,188}$ to $G^{(6)}_{7,188}$ are formed by decorating boundary cycles of $G_{7,188}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,189}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 5, 1]),# b
  Vertex([0, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
])
```

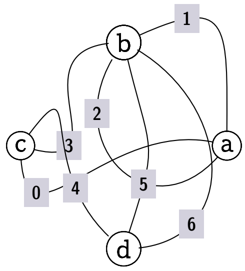
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^1c^2 \to {}^2b^3 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^3c^0 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^2c^3)$$

Markings

Fatgraph $G_{7,189}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,189}$ to $G^{(6)}_{7,189}$ are formed by decorating boundary cycles of $G_{7,189}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,190}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([3, 2, 5, 6, 1]),# b
  Vertex([0, 3, 4]),       # c
  Vertex([6, 5, 4]),       # d
])
```

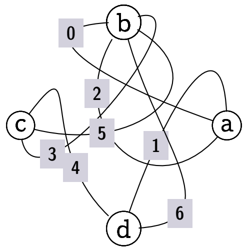
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^4b^0 \to {}^0c^1 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^3b^4)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{7,190}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,190}$ to $G^{(6)}_{7,190}$ are formed by decorating boundary cycles of $G_{7,190}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,191}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([0, 2, 6, 5, 3]),# b
  Vertex([3, 5, 4]),       # c
  Vertex([6, 1, 4]),       # d
])
```

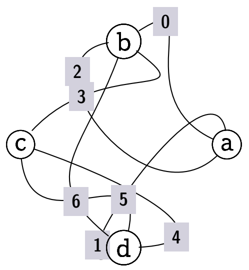
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^4b^0 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^0d^1 \to {}^0b^1 \to {}^1d^2 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^1c^2 \to {}^2b^3)$$
$$\gamma = ({}^0c^1 \to {}^3b^4)$$

Markings

Fatgraph $G_{7,191}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,191}$ to $G^{(6)}_{7,191}$ are formed by decorating boundary cycles of $G_{7,191}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,192}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3, 0]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 6, 1]),# d
])
```

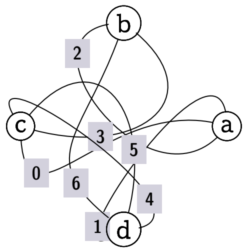
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^2d^3 \to {}^3d^0 \to {}^0b^1)$$
$$\beta = ({}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,192}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,192}$ to $G^{(6)}_{7,192}$ are formed by decorating boundary cycles of $G_{7,192}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,193}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([4, 5, 6, 1]),# d
])
```

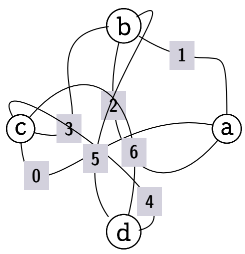
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{2}d^{3} \to {}^{3}d^{0} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}d^{2} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

Markings

Fatgraph $G_{7,193}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,193}$ to $G^{(6)}_{7,193}$ are formed by decorating boundary cycles of $G_{7,193}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,194}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 1, 5]),# b
  Vertex([0, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
])
```

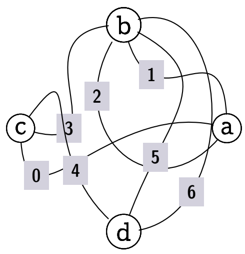
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}b^{0} \to {}^{1}d^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

Markings

Fatgraph $G_{7,194}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,194}$ to $G^{(6)}_{7,194}$ are formed by decorating boundary cycles of $G_{7,194}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,195}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([3, 2, 1, 5, 6]),# b
  Vertex([0, 3, 4]),      # c
  Vertex([6, 5, 4]),      # d
])
```

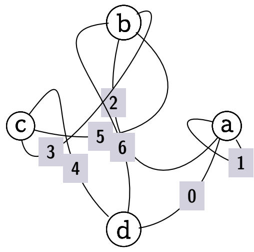
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}d^{1} \to {}^{3}b^{4})$$
$$\gamma = ({}^{2}d^{0} \to {}^{4}b^{0} \to {}^{1}c^{2})$$

Markings

Fatgraph $G_{7,195}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,195}$ to $G^{(6)}_{7,195}$ are formed by decorating boundary cycles of $G_{7,195}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,196}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([6, 2, 5, 3]),# b
  Vertex([3, 5, 4]),   # c
  Vertex([0, 6, 4]),   # d
])
```

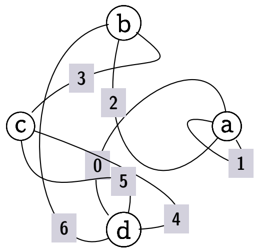
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}c^{1} \to {}^{2}b^{3})$$
$$\gamma = ({}^{3}b^{0} \to {}^{1}d^{2} \to {}^{2}c^{0})$$

Markings

Fatgraph $G_{7,196}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,196}$ to $G^{(6)}_{7,196}$ are formed by decorating boundary cycles of $G_{7,196}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,197}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([6, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 0, 6]),# d
])
```

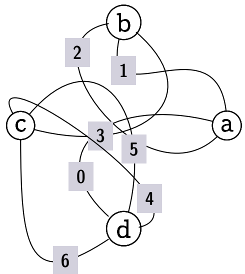
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2c^0 \to {}^2d^3 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^3d^0 \to {}^2b^0 \to {}^1c^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Markings

Fatgraph $G_{7,197}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,197}$ to $G^{(6)}_{7,197}$ are formed by decorating boundary cycles of $G_{7,197}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,198}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([6, 3, 5, 4]),# c
  Vertex([4, 5, 0, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2d^3 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^2c^3)$$
$$\gamma = ({}^3d^0 \to {}^3c^0)$$

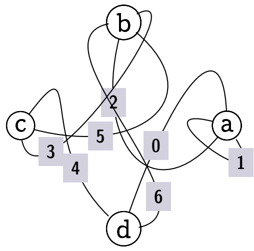
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^\ddagger$	b	a	d	c	3	1	2	0	4	6	5	α	γ	β

Markings

	$G^{(0)}_{7,198}$	$G^{(1)}_{7,198}$	$G^{(2)}_{7,198}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,199}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([6, 2, 5, 3]),# b
  Vertex([3, 5, 4]),   # c
  Vertex([6, 0, 4]),   # d
])
```

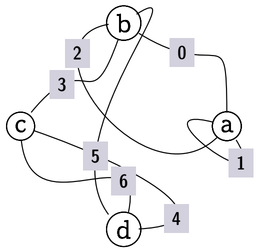
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^0d^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^0b^1 \to {}^2a^3 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0c^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{7,199}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,199}$ to $G^{(6)}_{7,199}$ are formed by decorating boundary cycles of $G_{7,199}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,200}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([2, 3, 0, 5]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{2}a^{3} \to {}^{3}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{0}c^{1})$$

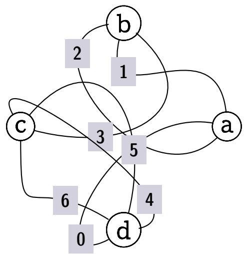
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	b	d	c	2	1	0	5	6	3	4	β	α	γ

Markings

	$G_{7,200}^{(0)}$	$G_{7,200}^{(1)}$	$G_{7,200}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,201}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([6, 3, 5, 4]),# c
  Vertex([4, 5, 6, 0]),# d
])
```

Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{2}d^{3} \to {}^{3}d^{0})$$
$$\beta = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

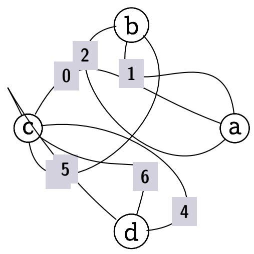
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\ddagger}$	b	a	d	c	3	1	2	0	5	4	6	β	α	γ

Markings

	$G^{(0)}_{7,201}$	$G^{(1)}_{7,201}$	$G^{(2)}_{7,201}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,202}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 1, 3]),       # b
  Vertex([3, 6, 4, 0, 5]),# c
  Vertex([4, 6, 5]),       # d
])
```

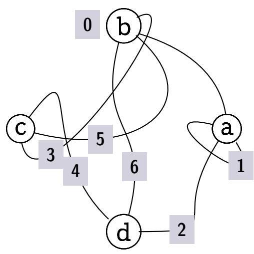
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^4 \to {}^2c^3)$$
$$\beta = ({}^2a^0 \to {}^4c^0 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,202}$ only has the identity automorphism, so the marked fatgraphs $G_{7,202}^{(0)}$ to $G_{7,202}^{(6)}$ are formed by decorating boundary cycles of $G_{7,202}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,203}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 6, 5, 3]),# b
  Vertex([3, 5, 4]),    # c
  Vertex([2, 6, 4]),    # d
])
```

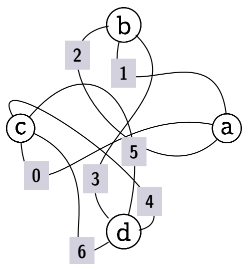
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^0d^1)$$
$$\gamma = ({}^0c^1 \to {}^2b^3)$$

Markings

Fatgraph $G_{7,203}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,203}$ to $G^{(6)}_{7,203}$ are formed by decorating boundary cycles of $G_{7,203}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,204}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 6, 5, 4]),# c
  Vertex([4, 5, 3, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3c^0 \to {}^3d^0)$$
$$\beta = ({}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^2d^3 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^2c^3)$$

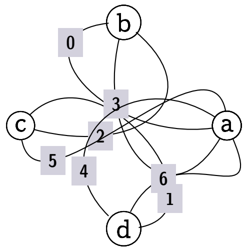
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	b	a	d	c	3	1	2	0	5	4	6	β	α	γ

Markings

	$G^{(0)}_{7,204}$	$G^{(1)}_{7,204}$	$G^{(2)}_{7,204}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,205}$ (6 orientable markings)




```
Fatgraph([
  Vertex([5, 4, 0, 3, 6]),# a
  Vertex([0, 3, 2]),      # b
  Vertex([5, 2, 1]),      # c
  Vertex([1, 6, 4]),      # d
])
```

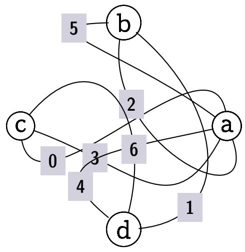
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0a^1 \to {}^2c^0)$$
$$\beta = ({}^1a^2 \to {}^3a^4 \to {}^1d^2 \to {}^0b^1)$$
$$\gamma = ({}^1c^2 \to {}^2a^3 \to {}^4a^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{7,205}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,205}$ to $G^{(6)}_{7,205}$ are formed by decorating boundary cycles of $G_{7,205}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,206}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 5, 4, 3, 2]),# a
  Vertex([5, 2, 1]),      # b
  Vertex([0, 3, 6]),      # c
  Vertex([1, 6, 4]),      # d
])
```

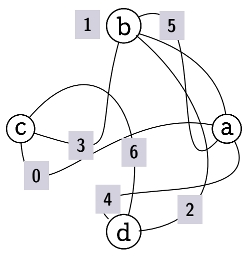
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{2}b^{0})$$
$$\gamma = ({}^{2}a^{3} \to {}^{1}d^{2} \to {}^{1}c^{2})$$

Markings

Fatgraph $G_{7,206}$ only has the identity automorphism, so the marked fatgraphs $G_{7,206}^{(0)}$ to $G_{7,206}^{(6)}$ are formed by decorating boundary cycles of $G_{7,206}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,207}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 3, 2, 5]),# b
  Vertex([0, 3, 6]),   # c
  Vertex([2, 6, 4]),   # d
])
```

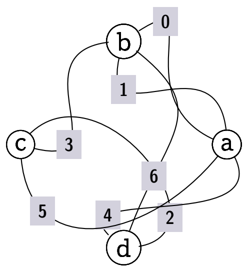
Boundary cycles

$$\alpha = ({}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1 \to {}^1b^2)$$
$$\beta = ({}^2a^3 \to {}^2d^0 \to {}^2b^3)$$
$$\gamma = ({}^3a^0 \to {}^1d^2 \to {}^1c^2 \to {}^0b^1)$$

Markings

Fatgraph $G_{7,207}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,207}$ to $G^{(6)}_{7,207}$ are formed by decorating boundary cycles of $G_{7,207}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,208}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([3, 1, 6, 0]),# b
  Vertex([5, 3, 2]),   # c
  Vertex([2, 6, 4]),   # d
])
```

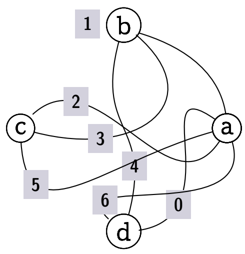
Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^0d^1 \to {}^0b^1)$$
$$\beta = ({}^2a^3 \to {}^2d^0 \to {}^2c^0)$$
$$\gamma = ({}^3a^0 \to {}^1d^2 \to {}^1b^2)$$

Markings

Fatgraph $G_{7,208}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,208}$ to $G^{(6)}_{7,208}$ are formed by decorating boundary cycles of $G_{7,208}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,209}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2, 6]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([5, 3, 2]),      # c
  Vertex([0, 4, 6]),      # d
])
```

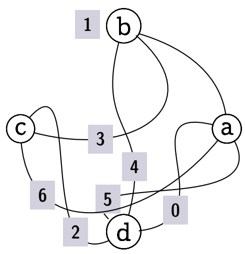
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}b^{1} \to {}^{1}d^{2} \to {}^{4}a^{0})$$

Markings

Fatgraph $G_{7,209}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,209}$ to $G^{(6)}_{7,209}$ are formed by decorating boundary cycles of $G_{7,209}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,210}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 3, 2]),   # c
  Vertex([0, 4, 5, 2]),# d
])
```

Boundary cycles

$$\alpha = ({}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^3d^0 \to {}^2b^0)$$
$$\beta = ({}^2a^3 \to {}^2d^3 \to {}^2c^0)$$
$$\gamma = ({}^3a^0 \to {}^1d^2 \to {}^0b^1)$$

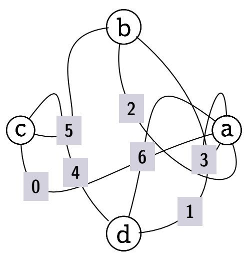
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	d	c	b	a	0	2	1	3	6	5	4	α	γ	β

Markings

	$G^{(0)}_{7,210}$	$G^{(1)}_{7,210}$	$G^{(2)}_{7,210}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,211}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 6, 0, 3, 2]),# a
  Vertex([5, 2, 1]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([1, 6, 4]),      # d
])
```

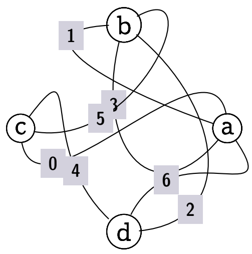
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^1d^2 \to {}^2c^0)$$
$$\beta = ({}^3a^4 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^4a^0 \to {}^0b^1)$$
$$\gamma = ({}^2d^0 \to {}^2b^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,211}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,211}$ to $G^{(6)}_{7,211}$ are formed by decorating boundary cycles of $G_{7,211}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,212}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 6]),# a
  Vertex([1, 3, 2, 5]),# b
  Vertex([0, 5, 4]),   # c
  Vertex([2, 6, 4]),   # d
])
```

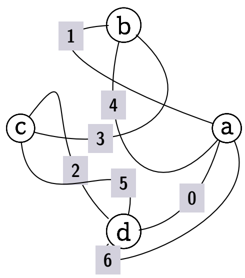
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2c^0 \to {}^0a^1 \to {}^1d^2 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1)$$
$$\gamma = ({}^2d^0 \to {}^1c^2 \to {}^2b^3)$$

Markings

Fatgraph $G_{7,212}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,212}$ to $G^{(6)}_{7,212}$ are formed by decorating boundary cycles of $G_{7,212}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,213}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 6]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([0, 5, 2, 6]),# d
])
```

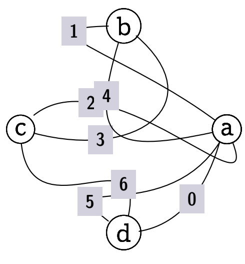
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{3}d^{0} \to {}^{0}a^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}d^{3} \to {}^{2}b^{0})$$
$$\gamma = ({}^{1}d^{2} \to {}^{2}c^{0})$$

Markings

Fatgraph $G_{7,213}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,213}$ to $G^{(6)}_{7,213}$ are formed by decorating boundary cycles of $G_{7,213}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,214}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 5, 2]),# a
  Vertex([1, 4, 3]),      # b
  Vertex([6, 3, 2]),      # c
  Vertex([0, 6, 5]),      # d
])
```

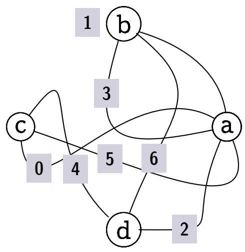
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2d^0 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^4a^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2)$$
$$\gamma = ({}^3a^4 \to {}^1d^2 \to {}^2c^0)$$

Markings

Fatgraph $G_{7,214}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,214}$ to $G^{(6)}_{7,214}$ are formed by decorating boundary cycles of $G_{7,214}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,215}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2, 5]),# a
  Vertex([1, 3, 6]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([2, 6, 4]),      # d
])
```

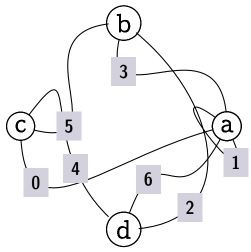
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^4a^0)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^2d^0 \to {}^3a^4 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,215}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,215}$ to $G^{(6)}_{7,215}$ are formed by decorating boundary cycles of $G_{7,215}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,216}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 6, 1]),# a
  Vertex([5, 3, 2]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([2, 6, 4]),      # d
])
```

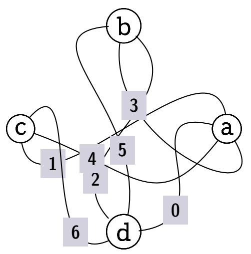
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{4}a^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}a^{3} \to {}^{1}d^{2} \to {}^{2}c^{0})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}b^{0} \to {}^{1}c^{2})$$

Markings

Fatgraph $G_{7,216}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,216}$ to $G^{(6)}_{7,216}$ are formed by decorating boundary cycles of $G_{7,216}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,217}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([1, 4, 6]),   # c
  Vertex([0, 5, 2, 6]),# d
])
```

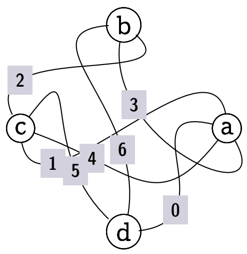
Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^2c^0 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2d^3 \to {}^0d^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^1c^2)$$
$$\gamma = ({}^2b^0 \to {}^1d^2)$$

Markings

Fatgraph $G_{7,217}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,217}$ to $G^{(6)}_{7,217}$ are formed by decorating boundary cycles of $G_{7,217}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,218}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([6, 3, 2]),   # b
  Vertex([1, 4, 5, 2]),# c
  Vertex([0, 6, 5]),   # d
])
```

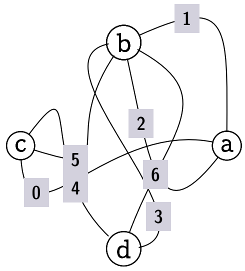
Boundary cycles

$$\alpha = ({}^3c^0 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^0d^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^1c^2)$$
$$\gamma = ({}^2c^3 \to {}^2b^0 \to {}^1d^2)$$

Markings

Fatgraph $G_{7,218}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,218}$ to $G^{(6)}_{7,218}$ are formed by decorating boundary cycles of $G_{7,218}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,219}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([3, 5, 2, 6, 1]),# b
  Vertex([0, 5, 4]),       # c
  Vertex([3, 6, 4]),       # d
])
```

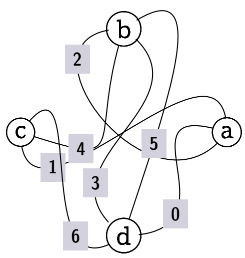
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{4}b^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{3}b^{4} \to {}^{0}d^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{2}b^{3})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{7,219}$ only has the identity automorphism, so the marked fatgraphs $G_{7,219}^{(0)}$ to $G_{7,219}^{(6)}$ are formed by decorating boundary cycles of $G_{7,219}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,220}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),    # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([1, 4, 6]),    # c
  Vertex([0, 5, 3, 6]),# d
])
```

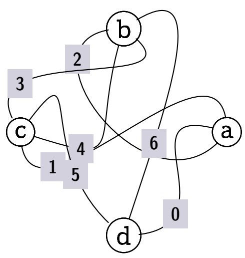
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{2}d^{3} \to {}^{0}d^{1} \to {}^{2}c^{0})\\
\beta &= ({}^{1}a^{2} \to {}^{3}d^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})\\
\gamma &= ({}^{1}d^{2} \to {}^{2}b^{3})
\end{aligned}
$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger}$	c	d	a	b	4	1	6	5	0	3	2	α	β	γ

The Fatgraph $G_{7,221}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 6]),# b
  Vertex([1, 4, 5, 3]),# c
  Vertex([0, 6, 5]),   # d
])
```

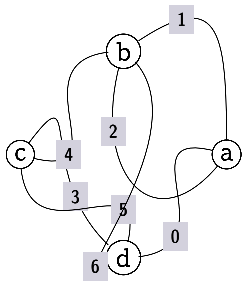
Boundary cycles

$$
\begin{aligned}
\alpha &= ({}^{2}a^{0} \to {}^{3}c^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}d^{1})\\
\beta &= ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})\\
\gamma &= ({}^{2}c^{3} \to {}^{1}d^{2} \to {}^{2}b^{3})
\end{aligned}
$$

Markings

Fatgraph $G_{7,221}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,221}$ to $G^{(6)}_{7,221}$ are formed by decorating boundary cycles of $G_{7,221}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,222}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 6, 1]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([0, 5, 3, 6]),# d
])
```

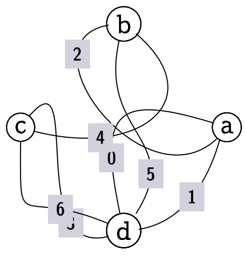
Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^0c^1 \to {}^2d^3 \to {}^0d^1 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^3d^0 \to {}^1b^2)$$
$$\gamma = ({}^1d^2 \to {}^2c^0)$$

Markings

Fatgraph $G_{7,222}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,222}$ to $G^{(6)}_{7,222}$ are formed by decorating boundary cycles of $G_{7,222}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,223}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),      # a
  Vertex([2, 5, 4]),      # b
  Vertex([6, 4, 3]),      # c
  Vertex([1, 5, 0, 6, 3]),# d
])
```

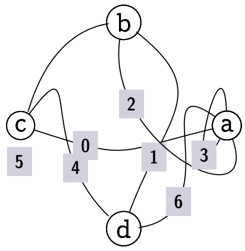
Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{4}d^{0} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}d^{3} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}d^{4} \to {}^{2}c^{0})$$

Markings

Fatgraph $G_{7,223}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,223}$ to $G^{(6)}_{7,223}$ are formed by decorating boundary cycles of $G_{7,223}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,224}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 6, 0, 3, 2]),# a
  Vertex([5, 2, 1]),      # b
  Vertex([5, 0, 4]),      # c
  Vertex([6, 1, 4]),      # d
])
```

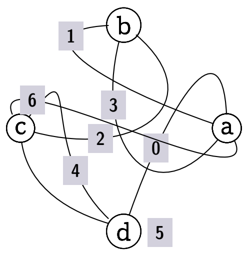
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{3}a^{4} \to {}^{4}a^{0} \to {}^{0}b^{1} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{7,224}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,224}$ to $G^{(6)}_{7,224}$ are formed by decorating boundary cycles of $G_{7,224}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,225}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 6]),# a
  Vertex([1, 3, 2]),   # b
  Vertex([5, 2, 4, 6]),# c
  Vertex([5, 0, 4]),   # d
])
```

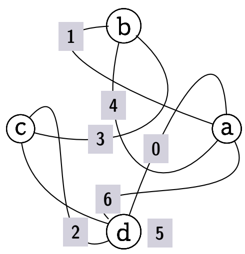
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}d^{1} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{3}a^{0} \to {}^{2}c^{3} \to {}^{1}d^{2})$$

Markings

Fatgraph $G_{7,225}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,225}$ to $G^{(6)}_{7,225}$ are formed by decorating boundary cycles of $G_{7,225}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,226}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 6]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([5, 0, 6, 2]),# d
])
```

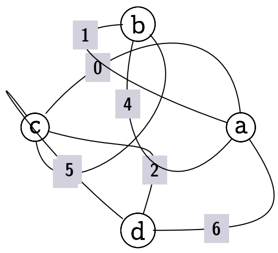
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^0d^1 \to {}^2d^3 \to {}^0b^1)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^3d^0 \to {}^2b^0)$$
$$\gamma = ({}^3a^0 \to {}^1d^2)$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^\dagger$	d	c	b	a	6	2	1	3	5	4	0	α	β	γ

The Fatgraph $G_{7,227}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 6]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([3, 2, 0, 5]),# c
  Vertex([6, 2, 5]),   # d
])
```

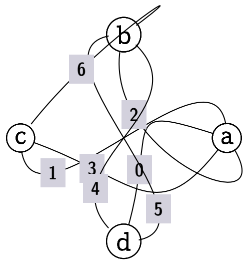
Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0d^1 \to {}^0a^1 \to {}^1c^2 \to {}^0b^1)$$
$$\beta = ({}^0c^1 \to {}^1a^2 \to {}^1b^2 \to {}^3c^0 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^3a^0 \to {}^2d^0 \to {}^2c^3)$$

Markings

Fatgraph $G_{7,227}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,227}$ to $G^{(6)}_{7,227}$ are formed by decorating boundary cycles of $G_{7,227}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,228}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([5, 2, 4, 6]),# b
  Vertex([1, 3, 6]),   # c
  Vertex([5, 0, 4]),   # d
])
```

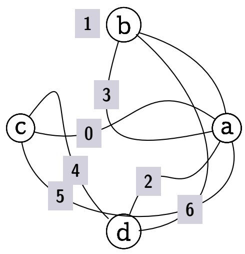
Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{3}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger}$	b	a	d	c	6	4	2	5	1	3	0	α	β	γ

The Fatgraph $G_{7,229}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2, 5]),# a
  Vertex([1, 3, 6]),      # b
  Vertex([5, 0, 4]),      # c
  Vertex([6, 2, 4]),      # d
])
```

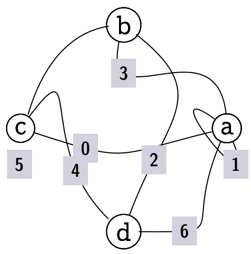
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{1}c^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{3}a^{4} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}a^{3} \to {}^{4}a^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{2}c^{0})$$

Markings

Fatgraph $G_{7,229}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,229}$ to $G^{(6)}_{7,229}$ are formed by decorating boundary cycles of $G_{7,229}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,230}$ (6 orientable markings)




```
Fatgraph([
  Vertex([3, 1, 0, 6, 1]),# a
  Vertex([5, 3, 2]),      # b
  Vertex([5, 0, 4]),      # c
  Vertex([6, 2, 4]),      # d
])
```

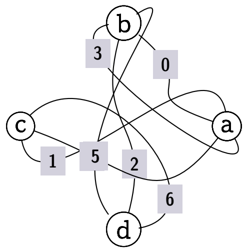
Boundary cycles

$$\alpha = ({}^{4}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}c^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}a^{3} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}c^{1})$$

Markings

Fatgraph $G_{7,230}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,230}$ to $G^{(6)}_{7,230}$ are formed by decorating boundary cycles of $G_{7,230}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,231}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([3, 2, 0, 5]),# b
  Vertex([1, 4, 6]),   # c
  Vertex([6, 2, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}c^{0} \to {}^{0}a^{1} \to {}^{2}b^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}a^{3} \to {}^{0}b^{1} \to {}^{3}a^{0} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}d^{2})$$

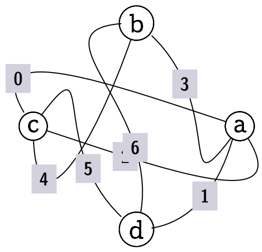
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\ddagger}$	b	a	d	c	0	2	1	3	5	4	6	β	α	γ

Markings

	$G^{(0)}_{7,231}$	$G^{(1)}_{7,231}$	$G^{(2)}_{7,231}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,232}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([6, 4, 3]),   # b
  Vertex([4, 2, 5, 0]),# c
  Vertex([1, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3c^0 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2)$$
$$\beta = ({}^1a^2 \to {}^2b^0 \to {}^2c^3 \to {}^1d^2)$$
$$\gamma = ({}^3a^0 \to {}^0d^1 \to {}^0c^1 \to {}^0b^1)$$

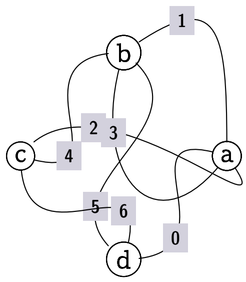
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 †‡	a	d	c	b	2	3	0	1	5	4	6	α	γ	β

Markings

	$G^{(0)}_{7,232}$	$G^{(1)}_{7,232}$	$G^{(2)}_{7,232}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,233}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([4, 3, 5, 1]),# b
  Vertex([6, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}b^{3} \rightarrow {}^{2}a^{3} \rightarrow {}^{0}a^{1} \rightarrow {}^{2}c^{0} \rightarrow {}^{0}c^{1} \rightarrow {}^{0}d^{1} \rightarrow {}^{0}b^{1} \rightarrow {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \rightarrow {}^{2}d^{0} \rightarrow {}^{1}b^{2})$$
$$\gamma = ({}^{3}a^{0} \rightarrow {}^{3}b^{0} \rightarrow {}^{1}c^{2})$$

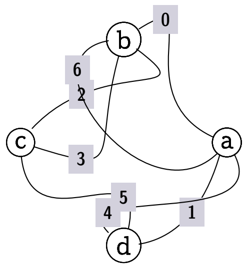
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 †‡	a	b	d	c	2	3	0	1	5	4	6	α	γ	β

Markings

	$G^{(0)}_{7,233}$	$G^{(1)}_{7,233}$	$G^{(2)}_{7,233}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,234}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 4]),# a
  Vertex([6, 3, 2, 0]),# b
  Vertex([5, 3, 2]),   # c
  Vertex([1, 5, 4]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}d^{0} \to {}^{3}b^{0} \to {}^{0}a^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}a^{0} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{1}b^{2} \to {}^{1}d^{2})$$

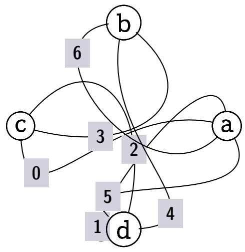
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\ddagger}$	b	a	d	c	0	2	1	4	3	5	6	β	α	γ

Markings

	$G^{(0)}_{7,234}$	$G^{(1)}_{7,234}$	$G^{(2)}_{7,234}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,235}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([6, 4, 3]),   # b
  Vertex([0, 3, 2]),   # c
  Vertex([4, 2, 5, 1]),# d
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{2}d^{3} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{3}a^{0} \to {}^{3}d^{0} \to {}^{1}d^{2} \to {}^{1}c^{2} \to {}^{1}b^{2})$$

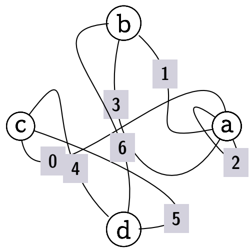
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\ddagger}$	d	c	b	a	4	1	6	3	0	5	2	γ	β	α

Markings

	$G^{(0)}_{7,235}$	$G^{(1)}_{7,235}$	$G^{(2)}_{7,235}$
α	0	0	1
β	1	2	0
γ	2	1	2

The Fatgraph $G_{7,236}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 2]),# a
  Vertex([6, 3, 1]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([5, 6, 4]),      # d
])
```

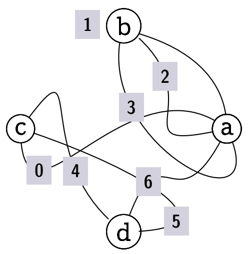
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{4}a^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2})$$

Markings

Fatgraph $G_{7,236}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,236}$ to $G^{(6)}_{7,236}$ are formed by decorating boundary cycles of $G_{7,236}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,237}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 6, 3]),# a
  Vertex([1, 3, 2]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([5, 6, 4]),      # d
])
```

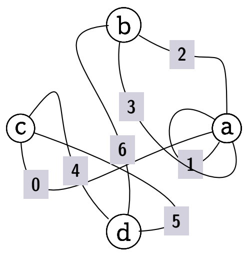
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^0b^1 \to {}^4a^0)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,237}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,237}$ to $G^{(6)}_{7,237}$ are formed by decorating boundary cycles of $G_{7,237}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,238}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 3]),# a
  Vertex([6, 3, 2]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([5, 6, 4]),      # d
])
```

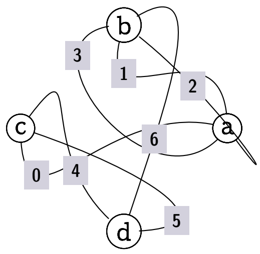
Boundary cycles

$$\alpha = ({}^3a^4 \to {}^0a^1 \to {}^1b^2)$$
$$\beta = ({}^1a^2 \to {}^4a^0 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,238}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,238}$ to $G^{(6)}_{7,238}$ are formed by decorating boundary cycles of $G_{7,238}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,239}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([3, 1, 2, 6]),# b
  Vertex([0, 5, 4]),   # c
  Vertex([5, 6, 4]),   # d
])
```

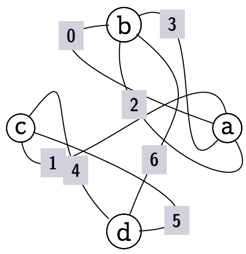
Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}a^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{3}a^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2})$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger}$	b	a	d	c	6	2	1	3	5	4	0	α	β	γ

The Fatgraph $G_{7,240}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([0, 2, 6, 3]),# b
  Vertex([1, 5, 4]),   # c
  Vertex([5, 6, 4]),   # d
])
```

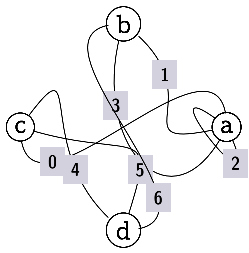
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{0})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2})$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger}$	b	a	d	c	3	6	2	0	5	4	1	α	β	γ

The Fatgraph $G_{7,241}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 2, 1, 3, 2]),# a
  Vertex([6, 3, 1]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([6, 5, 4]),      # d
])
```

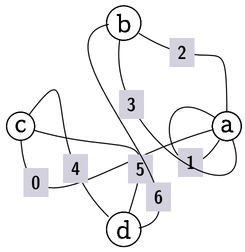
Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{0}c^{1} \to {}^{4}a^{0})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}a^{4} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{2}a^{3} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{7,241}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,241}$ to $G^{(6)}_{7,241}$ are formed by decorating boundary cycles of $G_{7,241}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,242}$ (6 orientable markings)




```
Fatgraph([
  Vertex([2, 1, 0, 1, 3]),# a
  Vertex([6, 3, 2]),      # b
  Vertex([0, 5, 4]),      # c
  Vertex([6, 5, 4]),      # d
])
```

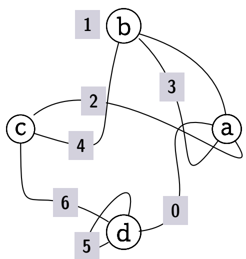
Boundary cycles

$$\alpha = ({}^{3}a^{4} \to {}^{0}a^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{1}d^{2} \to {}^{0}c^{1} \to {}^{2}c^{0})$$
$$\gamma = ({}^{2}d^{0} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{4}a^{0})$$

Markings

Fatgraph $G_{7,242}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,242}$ to $G^{(6)}_{7,242}$ are formed by decorating boundary cycles of $G_{7,242}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,243}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 4, 2]),   # c
  Vertex([0, 5, 6, 5]),# d
])
```

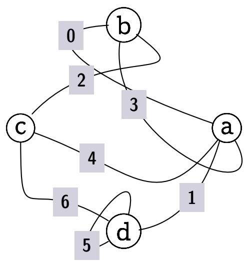
Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{3}d^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}d^{3} \to {}^{2}c^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{7,243}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,243}$ to $G^{(6)}_{7,243}$ are formed by decorating boundary cycles of $G_{7,243}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,244}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([6, 4, 2]),   # c
  Vertex([1, 5, 6, 5]),# d
])
```

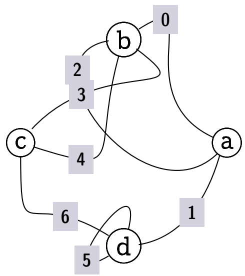
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}d^{1} \to {}^{0}a^{1} \to {}^{3}d^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{2}d^{3} \to {}^{1}b^{2} \to {}^{1}d^{2})$$

Markings

Fatgraph $G_{7,244}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,244}$ to $G^{(6)}_{7,244}$ are formed by decorating boundary cycles of $G_{7,244}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,245}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([1, 5, 6, 5]),# d
])
```

Boundary cycles

$$\alpha = ({}^{3}d^{0} \to {}^{2}a^{0} \to {}^{3}b^{0} \to {}^{0}a^{1} \to {}^{0}d^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{3} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{0}c^{1} \to {}^{1}b^{2})$$

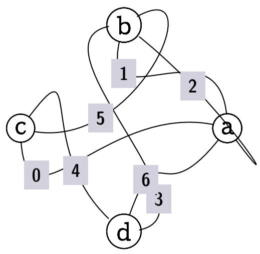
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 †‡	c	b	a	d	4	6	3	2	0	5	1	γ	β	α

Markings

	$G^{(0)}_{7,245}$	$G^{(1)}_{7,245}$	$G^{(2)}_{7,245}$
α	0	0	1
β	1	2	0
γ	2	1	2

The Fatgraph $G_{7,246}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 2]),# a
  Vertex([3, 1, 2, 5]),# b
  Vertex([0, 5, 4]),   # c
  Vertex([3, 6, 4]),   # d
])
```

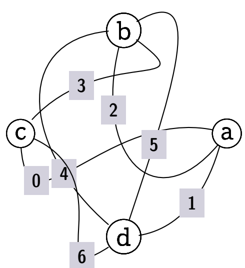
Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^2a^3 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1 \to {}^0b^1)$$
$$\beta = ({}^1a^2 \to {}^1d^2 \to {}^2c^0)$$
$$\gamma = ({}^3a^0 \to {}^1b^2)$$

Markings

Fatgraph $G_{7,246}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,246}$ to $G^{(6)}_{7,246}$ are formed by decorating boundary cycles of $G_{7,246}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,247}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 5]),# b
  Vertex([0, 6, 3]),   # c
  Vertex([1, 5, 4, 6]),# d
])
```

Boundary cycles

$$\alpha = ({}^3d^0 \to {}^0a^1 \to {}^0c^1)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2a^0 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^0d^1 \to {}^2d^3 \to {}^0b^1 \to {}^1d^2)$$

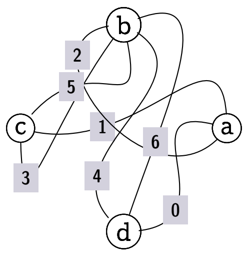
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	c	d	a	b	0	3	6	1	4	5	2	β	α	γ

Markings

	$G^{(0)}_{7,247}$	$G^{(1)}_{7,247}$	$G^{(2)}_{7,247}$
α	0	0	1
β	1	2	2
γ	2	1	0

The Fatgraph $G_{7,248}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),       # a
  Vertex([2, 3, 5, 4, 6]),# b
  Vertex([3, 1, 5]),       # c
  Vertex([0, 6, 4]),       # d
])
```

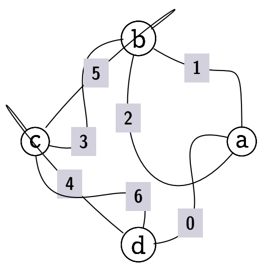
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{4}b^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{1}d^{2} \to {}^{3}b^{4})$$

Markings

Fatgraph $G_{7,248}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,248}$ to $G^{(6)}_{7,248}$ are formed by decorating boundary cycles of $G_{7,248}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,249}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 1, 5]),# b
  Vertex([6, 3, 5, 4]),# c
  Vertex([0, 6, 4]),   # d
])
```

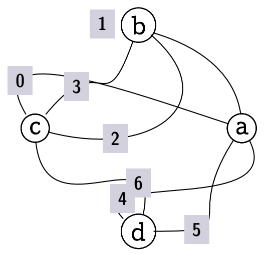
Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{3}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{1}d^{2} \to {}^{3}c^{0})$$

Markings

Fatgraph $G_{7,249}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,249}$ to $G^{(6)}_{7,249}$ are formed by decorating boundary cycles of $G_{7,249}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,250}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([1, 3, 2]),   # b
  Vertex([6, 2, 3, 0]),# c
  Vertex([5, 6, 4]),   # d
])
```

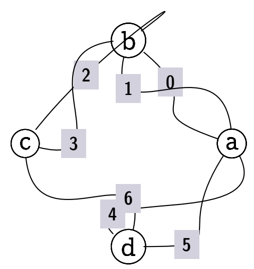
Boundary cycles

$$\alpha = ({}^{0}c^{1} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{2}b^{0} \to {}^{3}c^{0} \to {}^{0}d^{1} \to {}^{2}c^{3} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}d^{0})$$
$$\gamma = ({}^{1}c^{2} \to {}^{1}b^{2})$$

Markings

Fatgraph $G_{7,250}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,250}$ to $G^{(6)}_{7,250}$ are formed by decorating boundary cycles of $G_{7,250}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,251}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([3, 1, 0, 2]),# b
  Vertex([6, 3, 2]),   # c
  Vertex([5, 6, 4]),   # d
])
```

Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}d^{0})$$
$$\gamma = ({}^{3}b^{0} \to {}^{1}c^{2})$$

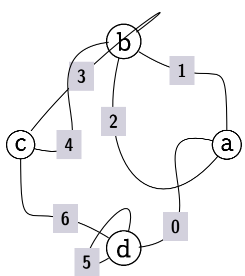
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
A_1 ‡	b	a	d	c	0	1	5	4	3	2	6	α	γ	β

Markings

	$G^{(0)}_{7,251}$	$G^{(1)}_{7,251}$	$G^{(2)}_{7,251}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,252}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([0, 5, 6, 5]),# d
])
```

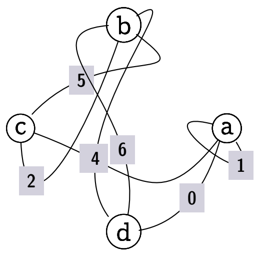
Boundary cycles

$$\alpha = ({}^1a^2 \to {}^0d^1 \to {}^1b^2 \to {}^0a^1 \to {}^3d^0)$$
$$\beta = ({}^2a^0 \to {}^2c^0 \to {}^0c^1 \to {}^2d^3 \to {}^2b^3 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^3b^0 \to {}^1c^2)$$

Markings

Fatgraph $G_{7,252}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{7,252}$ to $G^{(6)}_{7,252}$ are formed by decorating boundary cycles of $G_{7,252}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{7,253}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([6, 2, 5, 4]),# b
  Vertex([2, 3, 5]),   # c
  Vertex([0, 6, 4]),   # d
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^0d^1 \to {}^2b^3)$$
$$\beta = ({}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^3b^0 \to {}^1d^2)$$

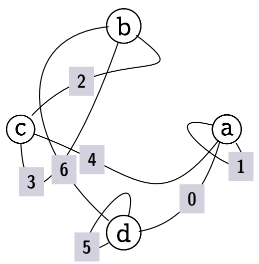
Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	b	d	c	3	1	4	0	2	6	5	α	γ	β

Markings

	$G^{(0)}_{7,253}$	$G^{(1)}_{7,253}$	$G^{(2)}_{7,253}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{7,254}$ (non-orientable, no orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([6, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([0, 5, 6, 5]),# d
])
```

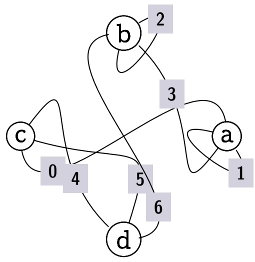
Boundary cycles

$$\alpha = ({}^{3}a^{0} \to {}^{0}d^{1} \to {}^{0}a^{1} \to {}^{3}d^{0})$$
$$\beta = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{1}c^{2} \to {}^{2}d^{3} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{2}c^{0} \to {}^{1}b^{2})$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^{\dagger}$	d	c	b	a	0	5	3	2	6	1	4	α	β	γ

The Fatgraph $G_{7,255}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 3, 1]),# a
  Vertex([6, 2, 3, 2]),# b
  Vertex([0, 5, 4]),   # c
  Vertex([6, 5, 4]),   # d
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^1d^2 \to {}^0c^1 \to {}^2c^0)$$
$$\beta = ({}^1a^2 \to {}^2a^3 \to {}^1b^2 \to {}^2b^3)$$
$$\gamma = ({}^2d^0 \to {}^0d^1 \to {}^3b^0 \to {}^1c^2 \to {}^0b^1)$$

Automorphisms

A_0	a	b	c	d	0	1	2	3	4	5	6	α	β	γ
$A_1{}^\ddagger$	b	a	d	c	6	2	1	3	4	5	0	γ	β	α

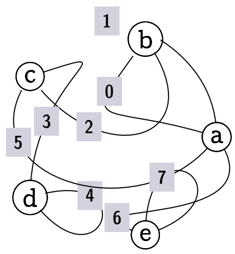
Markings

	$G^{(0)}_{7,255}$	$G^{(1)}_{7,255}$	$G^{(2)}_{7,255}$
α	0	0	1
β	1	2	0
γ	2	1	2

Fatgraphs with 8 edges / 5 vertices

There are 162 unmarked fatgraphs in this section, originating 1836 marked fatgraphs (918 orientable, and 918 nonorientable).

The Fatgraph $G_{8,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 2, 3]),   # c
  Vertex([4, 4, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1})$
$\gamma = ({}^{0}e^{1})$

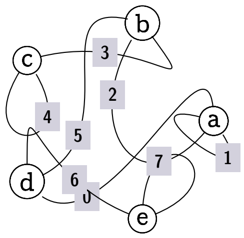
Markings

Fatgraph $G_{8,0}$ only has the identity automorphism, so the marked fatgraphs $G_{8,0}^{(0)}$ to $G_{8,0}^{(6)}$ are formed by decorating boundary cycles of $G_{8,0}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,0}^{(0)}) = -G_{7,0}^{(0)} + G_{7,1}^{(7)}$$
$$D(G_{8,0}^{(1)}) = -G_{7,0}^{(1)} + G_{7,0}^{(6)}$$
$$D(G_{8,0}^{(2)}) = -G_{7,0}^{(2)} + G_{7,1}^{(9)}$$
$$D(G_{8,0}^{(3)}) = -G_{7,0}^{(3)} + G_{7,1}^{(8)}$$
$$D(G_{8,0}^{(4)}) = -G_{7,0}^{(4)} + G_{7,1}^{(11)}$$
$$D(G_{8,0}^{(5)}) = -G_{7,0}^{(5)} + G_{7,1}^{(10)}$$

The Fatgraph $G_{8,1}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([5, 2, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2e^0 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

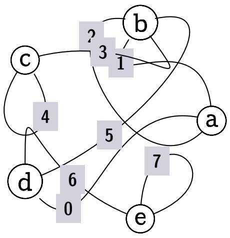
Markings

Fatgraph $G_{8,1}$ only has the identity automorphism, so the marked fatgraphs $G_{8,1}^{(0)}$ to $G_{8,1}^{(6)}$ are formed by decorating boundary cycles of $G_{8,1}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,1}^{(0)}) = -G_{7,0}^{(0)} - G_{7,1}^{(12)} + G_{7,3}^{(19)}$$
$$D(G_{8,1}^{(1)}) = -G_{7,0}^{(1)} - G_{7,2}^{(13)} + G_{7,2}^{(18)}$$
$$D(G_{8,1}^{(2)}) = -G_{7,0}^{(2)} - G_{7,2}^{(14)} + G_{7,3}^{(21)}$$
$$D(G_{8,1}^{(3)}) = -G_{7,0}^{(3)} - G_{7,2}^{(15)} + G_{7,3}^{(20)}$$
$$D(G_{8,1}^{(4)}) = -G_{7,0}^{(4)} - G_{7,2}^{(16)} + G_{7,3}^{(23)}$$
$$D(G_{8,1}^{(5)}) = -G_{7,0}^{(5)} - G_{7,2}^{(17)} + G_{7,3}^{(22)}$$

The Fatgraph $G_{8,2}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3, 5]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{2}b^{3} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

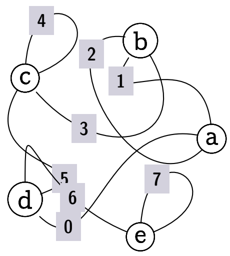
Markings

Fatgraph $G_{8,2}$ only has the identity automorphism, so the marked fatgraphs $G_{8,2}^{(0)}$ to $G_{8,2}^{(6)}$ are formed by decorating boundary cycles of $G_{8,2}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,2}^{(0)}) = +G_{7,1}^{(12)} + G_{7,4}^{(25)} \qquad D(G_{8,2}^{(3)}) = +G_{7,2}^{(15)} + G_{7,4}^{(26)}$$
$$D(G_{8,2}^{(1)}) = +G_{7,2}^{(13)} + G_{7,3}^{(24)} \qquad D(G_{8,2}^{(4)}) = +G_{7,2}^{(16)} + G_{7,4}^{(29)}$$
$$D(G_{8,2}^{(2)}) = +G_{7,2}^{(14)} + G_{7,4}^{(27)} \qquad D(G_{8,2}^{(5)}) = +G_{7,2}^{(17)} + G_{7,4}^{(28)}$$

The Fatgraph $G_{8,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([5, 3, 4, 4]),# c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{3})$
$\gamma = ({}^{0}e^{1})$

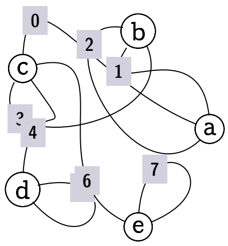
Markings

Fatgraph $G_{8,3}$ only has the identity automorphism, so the marked fatgraphs $G_{8,3}^{(0)}$ to $G_{8,3}^{(6)}$ are formed by decorating boundary cycles of $G_{8,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,3}^{(0)}) = -G_{7,0}^{(6)} + G_{7,2}^{(18)} + G_{7,3}^{(24)} \qquad D(G_{8,3}^{(3)}) = -G_{7,1}^{(9)} + G_{7,3}^{(21)} + G_{7,4}^{(27)}$$
$$D(G_{8,3}^{(1)}) = -G_{7,1}^{(7)} + G_{7,3}^{(19)} + G_{7,4}^{(25)} \qquad D(G_{8,3}^{(4)}) = -G_{7,1}^{(10)} + G_{7,3}^{(22)} + G_{7,4}^{(28)}$$
$$D(G_{8,3}^{(2)}) = -G_{7,1}^{(8)} + G_{7,3}^{(20)} + G_{7,4}^{(26)} \qquad D(G_{8,3}^{(5)}) = -G_{7,1}^{(11)} + G_{7,3}^{(23)} + G_{7,4}^{(29)}$$

The Fatgraph $G_{8,4}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([3, 4, 6, 0]),# c
  Vertex([5, 5, 4]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^3c^0 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^2e^0 \to {}^0c^1 \to {}^2c^3 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^0e^1)$

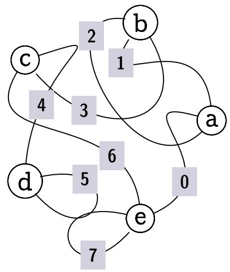
Markings

Fatgraph $G_{8,4}$ only has the identity automorphism, so the marked fatgraphs $G_{8,4}^{(0)}$ to $G_{8,4}^{(6)}$ are formed by decorating boundary cycles of $G_{8,4}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,4}^{(0)}) = +G_{7,1}^{(12)} + G_{7,5}^{(31)}$
$D(G_{8,4}^{(1)}) = +G_{7,2}^{(13)} + G_{7,4}^{(30)}$
$D(G_{8,4}^{(2)}) = +G_{7,2}^{(14)} + G_{7,5}^{(33)}$
$D(G_{8,4}^{(3)}) = +G_{7,2}^{(15)} + G_{7,5}^{(32)}$
$D(G_{8,4}^{(4)}) = +G_{7,2}^{(16)} + G_{7,5}^{(35)}$
$D(G_{8,4}^{(5)}) = +G_{7,2}^{(17)} + G_{7,5}^{(34)}$

The Fatgraph $G_{8,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([6, 3, 4]),   # c
  Vertex([5, 5, 4]),   # d
  Vertex([0, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2d^0 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^2e^3)$

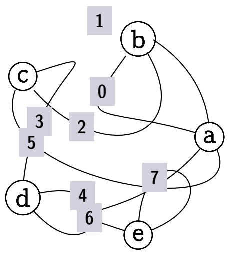
Markings

Fatgraph $G_{8,5}$ only has the identity automorphism, so the marked fatgraphs $G_{8,5}^{(0)}$ to $G_{8,5}^{(6)}$ are formed by decorating boundary cycles of $G_{8,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,5}^{(0)}) = -G_{7,3}^{(24)} + G_{7,4}^{(30)}$$
$$D(G_{8,5}^{(1)}) = -G_{7,4}^{(25)} + G_{7,5}^{(31)}$$
$$D(G_{8,5}^{(2)}) = -G_{7,4}^{(26)} + G_{7,5}^{(32)}$$
$$D(G_{8,5}^{(3)}) = -G_{7,4}^{(27)} + G_{7,5}^{(33)}$$
$$D(G_{8,5}^{(4)}) = -G_{7,4}^{(28)} + G_{7,5}^{(34)}$$
$$D(G_{8,5}^{(5)}) = -G_{7,4}^{(29)} + G_{7,5}^{(35)}$$

The Fatgraph $G_{8,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 2, 3]),   # c
  Vertex([4, 4, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^2a^3 \to {}^3a^0 \to {}^1e^2 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^0e^1)$

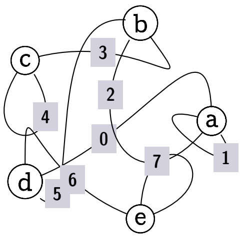
Markings

Fatgraph $G_{8,6}$ only has the identity automorphism, so the marked fatgraphs $G_{8,6}^{(0)}$ to $G_{8,6}^{(6)}$ are formed by decorating boundary cycles of $G_{8,6}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,6}^{(0)}) = -G_{7,1}^{(12)} + G_{7,5}^{(36)} \qquad D(G_{8,6}^{(3)}) = -G_{7,2}^{(15)} + G_{7,6}^{(39)}$$
$$D(G_{8,6}^{(1)}) = -G_{7,2}^{(13)} + G_{7,6}^{(37)} \qquad D(G_{8,6}^{(4)}) = -G_{7,2}^{(16)} + G_{7,6}^{(40)}$$
$$D(G_{8,6}^{(2)}) = -G_{7,2}^{(14)} + G_{7,6}^{(38)} \qquad D(G_{8,6}^{(5)}) = -G_{7,2}^{(17)} + G_{7,6}^{(41)}$$

The Fatgraph $G_{8,7}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([5, 2, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	d	e	b	c	2	1	0	6	7	5	3	4	α	γ	β

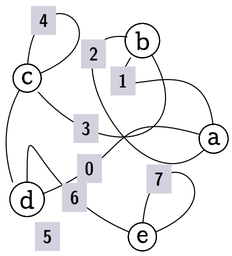
Markings

	$G_{8,7}^{(0)}$	$G_{8,7}^{(1)}$	$G_{8,7}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{8,7}^{(0)}) = +G_{7,4}^{(30)} + G_{7,6}^{(37)}$$
$$D(G_{8,7}^{(1)}) = +G_{7,5}^{(31)} + G_{7,5}^{(36)}$$
$$D(G_{8,7}^{(2)}) = +G_{7,5}^{(32)} + G_{7,6}^{(39)}$$

The Fatgraph $G_{8,8}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([5, 3, 4, 4]),# c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^0e^1)$

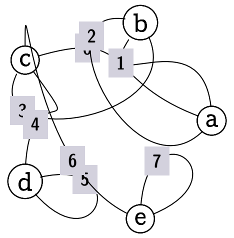
Markings

Fatgraph $G_{8,8}$ only has the identity automorphism, so the marked fatgraphs $G_{8,8}^{(0)}$ to $G_{8,8}^{(6)}$ are formed by decorating boundary cycles of $G_{8,8}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,8}^{(0)}) = +G_{7,5}^{(33)} + G_{7,6}^{(38)} \qquad D(G_{8,8}^{(3)}) = -G_{7,3}^{(24)} - G_{7,6}^{(37)}$$
$$D(G_{8,8}^{(1)}) = +G_{7,5}^{(34)} + G_{7,6}^{(41)} \qquad D(G_{8,8}^{(4)}) = -G_{7,4}^{(25)} - G_{7,5}^{(36)}$$
$$D(G_{8,8}^{(2)}) = +G_{7,5}^{(35)} + G_{7,6}^{(40)} \qquad D(G_{8,8}^{(5)}) = -G_{7,4}^{(26)} - G_{7,6}^{(39)}$$

The Fatgraph $G_{8,9}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([3, 4, 0, 6]),# c
  Vertex([5, 5, 4]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^1d^2 \to {}^2e^0 \to {}^3c^0 \to {}^2c^3 \to {}^0b^1 \to {}^1e^2 \to {}^2b^0)$
$\beta = ({}^0d^1)$
$\gamma = ({}^0e^1)$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	c	e	d	3	1	2	0	6	7	4	5	α	γ	β

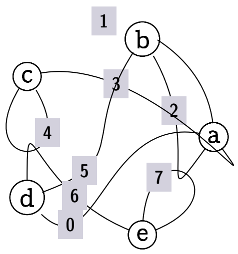
Markings

	$G_{8,9}^{(0)}$	$G_{8,9}^{(1)}$	$G_{8,9}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{8,9}^{(0)}) = -G_{7,4}^{(27)} - G_{7,6}^{(38)}$$
$$D(G_{8,9}^{(1)}) = -G_{7,4}^{(28)} - G_{7,6}^{(41)}$$
$$D(G_{8,9}^{(2)}) = -G_{7,4}^{(29)} - G_{7,6}^{(40)}$$

The Fatgraph $G_{8,10}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 5, 2]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^1e^2 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

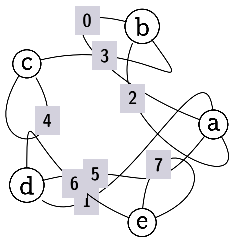
Markings

Fatgraph $G_{8,10}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,10}$ to $G^{(6)}_{8,10}$ are formed by decorating boundary cycles of $G_{8,10}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,10}) = +G^{(0)}_{7,0} - G^{(12)}_{7,1} + G^{(42)}_{7,6} \qquad D(G^{(3)}_{8,10}) = +G^{(3)}_{7,0} - G^{(15)}_{7,2} + G^{(45)}_{7,7}$$
$$D(G^{(1)}_{8,10}) = +G^{(1)}_{7,0} - G^{(13)}_{7,2} + G^{(43)}_{7,7} \qquad D(G^{(4)}_{8,10}) = +G^{(4)}_{7,0} - G^{(16)}_{7,2} + G^{(46)}_{7,7}$$
$$D(G^{(2)}_{8,10}) = +G^{(2)}_{7,0} - G^{(14)}_{7,2} + G^{(44)}_{7,7} \qquad D(G^{(5)}_{8,10}) = +G^{(5)}_{7,0} - G^{(17)}_{7,2} + G^{(47)}_{7,7}$$

The Fatgraph $G_{8,11}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 2]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2e^0 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

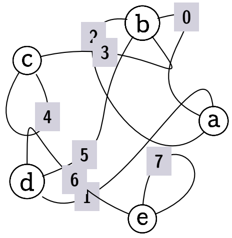
Markings

Fatgraph $G_{8,11}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,11}$ to $G^{(6)}_{8,11}$ are formed by decorating boundary cycles of $G_{8,11}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,11}) = +G^{(7)}_{7,1} + G^{(25)}_{7,4} + G^{(42)}_{7,6} \qquad D(G^{(3)}_{8,11}) = +G^{(8)}_{7,1} + G^{(26)}_{7,4} + G^{(45)}_{7,7}$$
$$D(G^{(1)}_{8,11}) = +G^{(6)}_{7,0} + G^{(24)}_{7,3} + G^{(43)}_{7,7} \qquad D(G^{(4)}_{8,11}) = +G^{(11)}_{7,1} + G^{(29)}_{7,4} + G^{(46)}_{7,7}$$
$$D(G^{(2)}_{8,11}) = +G^{(9)}_{7,1} + G^{(27)}_{7,4} + G^{(44)}_{7,7} \qquad D(G^{(5)}_{8,11}) = +G^{(10)}_{7,1} + G^{(28)}_{7,4} + G^{(47)}_{7,7}$$

The Fatgraph $G_{8,12}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3, 0]),# b
  Vertex([4, 4, 3]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^2b^3 \to {}^1a^2 \to {}^1e^2 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

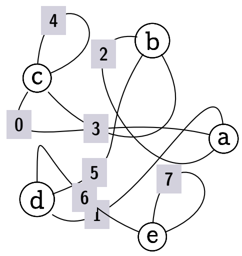
Markings

Fatgraph $G_{8,12}$ only has the identity automorphism, so the marked fatgraphs $G_{8,12}^{(0)}$ to $G_{8,12}^{(6)}$ are formed by decorating boundary cycles of $G_{8,12}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,12}^{(0)}) = +2G_{7,1}^{(12)} + G_{7,7}^{(48)}$
$D(G_{8,12}^{(1)}) = +2G_{7,2}^{(13)} + G_{7,8}^{(49)}$
$D(G_{8,12}^{(2)}) = +2G_{7,2}^{(14)} + G_{7,8}^{(50)}$
$D(G_{8,12}^{(3)}) = +2G_{7,2}^{(15)} + G_{7,8}^{(51)}$
$D(G_{8,12}^{(4)}) = +2G_{7,2}^{(16)} + G_{7,8}^{(52)}$
$D(G_{8,12}^{(5)}) = +2G_{7,2}^{(17)} + G_{7,8}^{(53)}$

The Fatgraph $G_{8,13}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3]),   # b
  Vertex([0, 3, 4, 4]),# c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{3})$
$\gamma = ({}^{0}e^{1})$

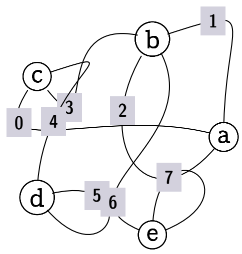
Markings

Fatgraph $G_{8,13}$ only has the identity automorphism, so the marked fatgraphs $G_{8,13}^{(0)}$ to $G_{8,13}^{(6)}$ are formed by decorating boundary cycles of $G_{8,13}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,13}^{(0)}) = +G_{7,3}^{(19)} + G_{7,6}^{(42)} + G_{7,7}^{(48)} \qquad D(G_{8,13}^{(3)}) = +G_{7,3}^{(20)} + G_{7,7}^{(45)} + G_{7,8}^{(51)}$$
$$D(G_{8,13}^{(1)}) = +G_{7,2}^{(18)} + G_{7,7}^{(43)} + G_{7,8}^{(49)} \qquad D(G_{8,13}^{(4)}) = +G_{7,3}^{(23)} + G_{7,7}^{(46)} + G_{7,8}^{(52)}$$
$$D(G_{8,13}^{(2)}) = +G_{7,3}^{(21)} + G_{7,7}^{(44)} + G_{7,8}^{(50)} \qquad D(G_{8,13}^{(5)}) = +G_{7,3}^{(22)} + G_{7,7}^{(47)} + G_{7,8}^{(53)}$$

The Fatgraph $G_{8,14}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 6, 1]),# b
  Vertex([0, 3, 4]),   # c
  Vertex([5, 5, 4]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^2b^3 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^2e^0 \to {}^1c^2 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^0e^1)$

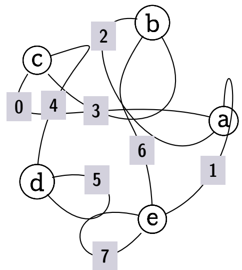
Markings

Fatgraph $G_{8,14}$ only has the identity automorphism, so the marked fatgraphs $G_{8,14}^{(0)}$ to $G_{8,14}^{(6)}$ are formed by decorating boundary cycles of $G_{8,14}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,14}^{(0)}) = +2G_{7,3}^{(24)} - G_{7,8}^{(49)}$$
$$D(G_{8,14}^{(1)}) = +2G_{7,4}^{(25)} - G_{7,7}^{(48)}$$
$$D(G_{8,14}^{(2)}) = +2G_{7,4}^{(26)} - G_{7,8}^{(51)}$$
$$D(G_{8,14}^{(3)}) = +2G_{7,4}^{(27)} - G_{7,8}^{(50)}$$
$$D(G_{8,14}^{(4)}) = +2G_{7,4}^{(28)} - G_{7,8}^{(53)}$$
$$D(G_{8,14}^{(5)}) = +2G_{7,4}^{(29)} - G_{7,8}^{(52)}$$

The Fatgraph $G_{8,15}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([5, 5, 4]),   # d
  Vertex([1, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{1}e^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}e^{0} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1})$
$\gamma = ({}^{2}e^{3})$

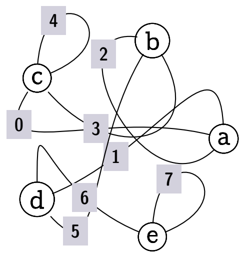
Markings

Fatgraph $G_{8,15}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,15}$ to $G^{(6)}_{8,15}$ are formed by decorating boundary cycles of $G_{8,15}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,15}) = +G^{(31)}_{7,5} + G^{(36)}_{7,5}$
$D(G^{(1)}_{8,15}) = +G^{(30)}_{7,4} + G^{(37)}_{7,6}$
$D(G^{(2)}_{8,15}) = +G^{(33)}_{7,5} + G^{(38)}_{7,6}$
$D(G^{(3)}_{8,15}) = +G^{(32)}_{7,5} + G^{(39)}_{7,6}$
$D(G^{(4)}_{8,15}) = +G^{(35)}_{7,5} + G^{(40)}_{7,6}$
$D(G^{(5)}_{8,15}) = +G^{(34)}_{7,5} + G^{(41)}_{7,6}$

The Fatgraph $G_{8,16}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 3]),   # b
  Vertex([0, 3, 4, 4]),# c
  Vertex([5, 1, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

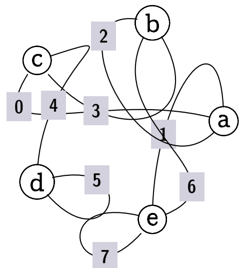
Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{3})$
$\gamma = ({}^{0}e^{1})$

Markings

Fatgraph $G_{8,16}$ only has the identity automorphism, so the marked fatgraphs $G_{8,16}^{(0)}$ to $G_{8,16}^{(6)}$ are formed by decorating boundary cycles of $G_{8,16}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

The Fatgraph $G_{8,17}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([5, 5, 4]),   # d
  Vertex([6, 1, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^0e^1 \to {}^0c^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^2e^3)$

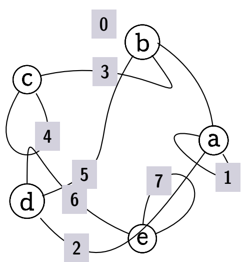
Markings

Fatgraph $G_{8,17}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,17}$ to $G^{(6)}_{8,17}$ are formed by decorating boundary cycles of $G_{8,17}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,17}) = -G^{(54)}_{7,8} - G^{(55)}_{7,9}$$
$$D(G^{(1)}_{8,17}) = -G^{(56)}_{7,9} - G^{(57)}_{7,9}$$
$$D(G^{(2)}_{8,17}) = -G^{(58)}_{7,9} - G^{(59)}_{7,9}$$
$$D(G^{(3)}_{8,17}) = -G^{(0)}_{7,0} - G^{(54)}_{7,8} + G^{(61)}_{7,10}$$
$$D(G^{(4)}_{8,17}) = -G^{(1)}_{7,0} - G^{(55)}_{7,9} + G^{(60)}_{7,9}$$
$$D(G^{(5)}_{8,17}) = -G^{(2)}_{7,0} - G^{(56)}_{7,9} + G^{(63)}_{7,10}$$

The Fatgraph $G_{8,18}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 5, 3]),   # b
  Vertex([4, 4, 3]),   # c
  Vertex([2, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	d	e	b	c	2	1	0	6	7	5	3	4	α	γ	β

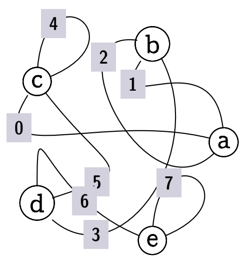
Markings

	$G_{8,18}^{(0)}$	$G_{8,18}^{(1)}$	$G_{8,18}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{8,18}^{(0)}) = -G_{7,0}^{(3)} - G_{7,9}^{(57)} + G_{7,10}^{(62)}$$
$$D(G_{8,18}^{(1)}) = -G_{7,0}^{(4)} - G_{7,9}^{(58)} + G_{7,10}^{(65)}$$
$$D(G_{8,18}^{(2)}) = -G_{7,0}^{(5)} - G_{7,9}^{(59)} + G_{7,10}^{(64)}$$

The Fatgraph $G_{8,19}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 5, 4, 4]),# c
  Vertex([3, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2c^3)$
$\gamma = ({}^0e^1)$

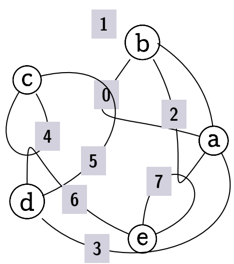
Markings

Fatgraph $G_{8,19}$ only has the identity automorphism, so the marked fatgraphs $G_{8,19}^{(0)}$ to $G_{8,19}^{(6)}$ are formed by decorating boundary cycles of $G_{8,19}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,19}^{(0)}) = -G_{7,0}^{(6)} + G_{7,8}^{(54)} + G_{7,9}^{(60)} \qquad D(G_{8,19}^{(3)}) = -G_{7,1}^{(9)} + G_{7,9}^{(57)} + G_{7,10}^{(63)}$$
$$D(G_{8,19}^{(1)}) = -G_{7,1}^{(7)} + G_{7,9}^{(55)} + G_{7,10}^{(61)} \qquad D(G_{8,19}^{(4)}) = -G_{7,1}^{(10)} + G_{7,9}^{(58)} + G_{7,10}^{(64)}$$
$$D(G_{8,19}^{(2)}) = -G_{7,1}^{(8)} + G_{7,9}^{(56)} + G_{7,10}^{(62)} \qquad D(G_{8,19}^{(5)}) = -G_{7,1}^{(11)} + G_{7,9}^{(59)} + G_{7,10}^{(65)}$$

The Fatgraph $G_{8,20}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([4, 4, 5]),   # c
  Vertex([3, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^0b^1 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

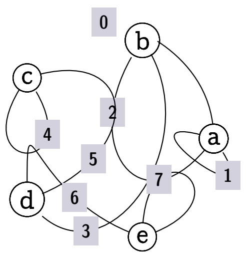
Markings

Fatgraph $G_{8,20}$ only has the identity automorphism, so the marked fatgraphs $G_{8,20}^{(0)}$ to $G_{8,20}^{(6)}$ are formed by decorating boundary cycles of $G_{8,20}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,20}) = +G^{(54)}_{7,8} - G^{(66)}_{7,10} \qquad D(G^{(3)}_{8,20}) = +G^{(57)}_{7,9} + G^{(67)}_{7,11}$$
$$D(G^{(1)}_{8,20}) = +G^{(55)}_{7,9} + G^{(66)}_{7,10} \qquad D(G^{(4)}_{8,20}) = +G^{(58)}_{7,9} - G^{(68)}_{7,11}$$
$$D(G^{(2)}_{8,20}) = +G^{(56)}_{7,9} - G^{(67)}_{7,11} \qquad D(G^{(5)}_{8,20}) = +G^{(59)}_{7,9} + G^{(68)}_{7,11}$$

The Fatgraph $G_{8,21}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([4, 4, 5]),   # c
  Vertex([3, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2e^0 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0c^1)$
$\gamma = ({}^0e^1)$

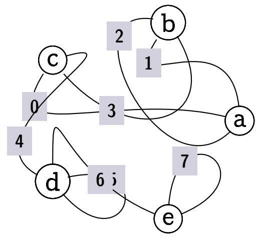
Markings

Fatgraph $G_{8,21}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,21}$ to $G^{(6)}_{8,21}$ are formed by decorating boundary cycles of $G_{8,21}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,21}) = -G^{(54)}_{7,8} + G^{(69)}_{7,11} \qquad D(G^{(3)}_{8,21}) = -G^{(57)}_{7,9} + G^{(72)}_{7,11}$$
$$D(G^{(1)}_{8,21}) = -G^{(55)}_{7,9} + G^{(70)}_{7,11} \qquad D(G^{(4)}_{8,21}) = -G^{(58)}_{7,9} + G^{(73)}_{7,12}$$
$$D(G^{(2)}_{8,21}) = -G^{(56)}_{7,9} + G^{(71)}_{7,11} \qquad D(G^{(5)}_{8,21}) = -G^{(59)}_{7,9} + G^{(74)}_{7,12}$$

The Fatgraph $G_{8,22}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([5, 5, 6, 4]),# d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}d^{3} \to {}^{3}d^{0} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1})$
$\gamma = ({}^{0}e^{1})$

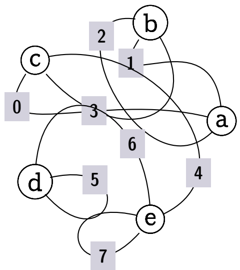
Markings

Fatgraph $G_{8,22}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,22}$ to $G^{(6)}_{8,22}$ are formed by decorating boundary cycles of $G_{8,22}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,22}) = +G^{(66)}_{7,10} + G^{(70)}_{7,11}$$
$$D(G^{(1)}_{8,22}) = -G^{(66)}_{7,10} + G^{(69)}_{7,11}$$
$$D(G^{(2)}_{8,22}) = +G^{(67)}_{7,11} + G^{(72)}_{7,11}$$
$$D(G^{(3)}_{8,22}) = -G^{(67)}_{7,11} + G^{(71)}_{7,11}$$
$$D(G^{(4)}_{8,22}) = +G^{(68)}_{7,11} + G^{(74)}_{7,12}$$
$$D(G^{(5)}_{8,22}) = -G^{(68)}_{7,11} + G^{(73)}_{7,12}$$

The Fatgraph $G_{8,23}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([5, 5, 6]),   # d
  Vertex([4, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2d^0 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0d^1)$
$\gamma = ({}^2e^3)$

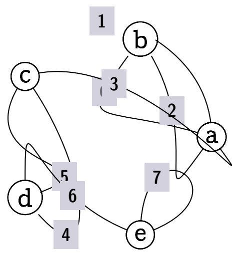
Markings

Fatgraph $G_{8,23}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,23}$ to $G^{(6)}_{8,23}$ are formed by decorating boundary cycles of $G_{8,23}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,23}) = -G^{(54)}_{7,8} - G^{(70)}_{7,11}$$
$$D(G^{(1)}_{8,23}) = -G^{(55)}_{7,9} - G^{(69)}_{7,11}$$
$$D(G^{(2)}_{8,23}) = -G^{(56)}_{7,9} - G^{(72)}_{7,11}$$
$$D(G^{(3)}_{8,23}) = -G^{(57)}_{7,9} - G^{(71)}_{7,11}$$
$$D(G^{(4)}_{8,23}) = -G^{(58)}_{7,9} - G^{(74)}_{7,12}$$
$$D(G^{(5)}_{8,23}) = -G^{(59)}_{7,9} - G^{(73)}_{7,12}$$

The Fatgraph $G_{8,24}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

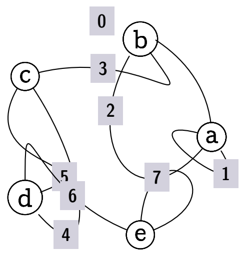
Markings

Fatgraph $G_{8,24}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,24}$ to $G^{(6)}_{8,24}$ are formed by decorating boundary cycles of $G_{8,24}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G^{(0)}_{8,24}) = +G^{(0)}_{7,0} + G^{(6)}_{7,0} + G^{(75)}_{7,12} \qquad D(G^{(3)}_{8,24}) = +G^{(3)}_{7,0} + G^{(9)}_{7,1} + G^{(76)}_{7,12}$$
$$D(G^{(1)}_{8,24}) = +G^{(1)}_{7,0} + G^{(7)}_{7,1} + G^{(75)}_{7,12} \qquad D(G^{(4)}_{8,24}) = +G^{(4)}_{7,0} + G^{(10)}_{7,1} + G^{(77)}_{7,12}$$
$$D(G^{(2)}_{8,24}) = +G^{(2)}_{7,0} + G^{(8)}_{7,1} + G^{(76)}_{7,12} \qquad D(G^{(5)}_{8,24}) = +G^{(5)}_{7,0} + G^{(11)}_{7,1} + G^{(77)}_{7,12}$$

The Fatgraph $G_{8,25}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([4, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}c^{0} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

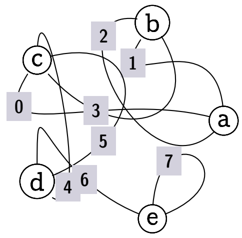
Markings

Fatgraph $G_{8,25}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,25}$ to $G^{(6)}_{8,25}$ are formed by decorating boundary cycles of $G_{8,25}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,25}) = +G^{(60)}_{7,9} + G^{(61)}_{7,10} + G^{(75)}_{7,12} \qquad D(G^{(3)}_{8,25}) = +G^{(69)}_{7,11} + G^{(70)}_{7,11}$$
$$D(G^{(1)}_{8,25}) = +G^{(62)}_{7,10} + G^{(63)}_{7,10} + G^{(76)}_{7,12} \qquad D(G^{(4)}_{8,25}) = +G^{(71)}_{7,11} + G^{(72)}_{7,11}$$
$$D(G^{(2)}_{8,25}) = +G^{(64)}_{7,10} + G^{(65)}_{7,10} + G^{(77)}_{7,12} \qquad D(G^{(5)}_{8,25}) = +G^{(73)}_{7,12} + G^{(74)}_{7,12}$$

The Fatgraph $G_{8,26}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([4, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^3c^0 \to {}^1b^2 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0d^1 \to {}^2c^3)$
$\gamma = ({}^0e^1)$

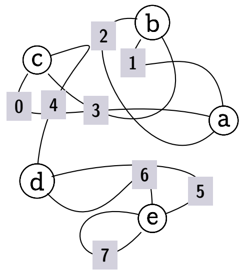
Markings

Fatgraph $G_{8,26}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,26}$ to $G^{(6)}_{8,26}$ are formed by decorating boundary cycles of $G_{8,26}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,26}) = +G^{(0)}_{7,0} - G^{(54)}_{7,8} + G^{(78)}_{7,12} \qquad D(G^{(3)}_{8,26}) = +G^{(3)}_{7,0} - G^{(57)}_{7,9} + G^{(81)}_{7,13}$$
$$D(G^{(1)}_{8,26}) = +G^{(1)}_{7,0} - G^{(55)}_{7,9} + G^{(79)}_{7,13} \qquad D(G^{(4)}_{8,26}) = +G^{(4)}_{7,0} - G^{(58)}_{7,9} + G^{(82)}_{7,13}$$
$$D(G^{(2)}_{8,26}) = +G^{(2)}_{7,0} - G^{(56)}_{7,9} + G^{(80)}_{7,13} \qquad D(G^{(5)}_{8,26}) = +G^{(5)}_{7,0} - G^{(59)}_{7,9} + G^{(83)}_{7,13}$$

The Fatgraph $G_{8,27}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([6, 5, 4]),   # d
  Vertex([5, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0e^1 \to {}^0d^1)$
$\gamma = ({}^2e^3)$

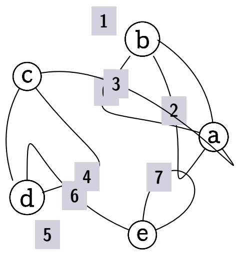
Markings

Fatgraph $G_{8,27}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,27}$ to $G^{(6)}_{8,27}$ are formed by decorating boundary cycles of $G_{8,27}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,27}) = +G^{(7)}_{7,1} + G^{(55)}_{7,9} + G^{(78)}_{7,12}$
$D(G^{(1)}_{8,27}) = +G^{(6)}_{7,0} + G^{(54)}_{7,8} + G^{(79)}_{7,13}$
$D(G^{(2)}_{8,27}) = +G^{(9)}_{7,1} + G^{(57)}_{7,9} + G^{(80)}_{7,13}$
$D(G^{(3)}_{8,27}) = +G^{(8)}_{7,1} + G^{(56)}_{7,9} + G^{(81)}_{7,13}$
$D(G^{(4)}_{8,27}) = +G^{(11)}_{7,1} + G^{(59)}_{7,9} + G^{(82)}_{7,13}$
$D(G^{(5)}_{8,27}) = +G^{(10)}_{7,1} + G^{(58)}_{7,9} + G^{(83)}_{7,13}$

The Fatgraph $G_{8,28}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 4, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{1}d^{2} \to {}^{0}c^{1} \to {}^{2}e^{0})$$
$$\gamma = ({}^{0}e^{1})$$

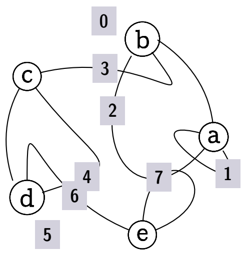
Markings

Fatgraph $G_{8,28}$ only has the identity automorphism, so the marked fatgraphs $G_{8,28}^{(0)}$ to $G_{8,28}^{(6)}$ are formed by decorating boundary cycles of $G_{8,28}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$\begin{aligned}
D(G_{8,28}^{(0)}) &= -G_{7,5}^{(31)} - G_{7,6}^{(42)} - G_{7,11}^{(69)} + G_{7,12}^{(78)}\\
D(G_{8,28}^{(1)}) &= -G_{7,4}^{(30)} - G_{7,7}^{(43)} - G_{7,11}^{(70)} + G_{7,13}^{(79)}\\
D(G_{8,28}^{(2)}) &= -G_{7,5}^{(33)} - G_{7,7}^{(44)} - G_{7,11}^{(71)} + G_{7,13}^{(80)}\\
D(G_{8,28}^{(3)}) &= -G_{7,5}^{(32)} - G_{7,7}^{(45)} - G_{7,11}^{(72)} + G_{7,13}^{(81)}\\
D(G_{8,28}^{(4)}) &= -G_{7,5}^{(35)} - G_{7,7}^{(46)} - G_{7,12}^{(73)} + G_{7,13}^{(82)}\\
D(G_{8,28}^{(5)}) &= -G_{7,5}^{(34)} - G_{7,7}^{(47)} - G_{7,12}^{(74)} + G_{7,13}^{(83)}
\end{aligned}$$

The Fatgraph $G_{8,29}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 4, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^1c^2 \to {}^2c^0 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^1e^2 \to {}^1d^2 \to {}^0c^1 \to {}^2e^0)$$
$$\gamma = ({}^0e^1)$$

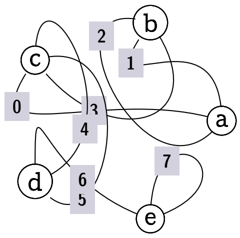
Markings

Fatgraph $G_{8,29}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,29}$ to $G^{(6)}_{8,29}$ are formed by decorating boundary cycles of $G_{8,29}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,29}) = -G^{(19)}_{7,3} + G^{(42)}_{7,6} + G^{(61)}_{7,10} - G^{(78)}_{7,12}$$
$$D(G^{(1)}_{8,29}) = -G^{(18)}_{7,2} + G^{(43)}_{7,7} + G^{(60)}_{7,9} - G^{(79)}_{7,13}$$
$$D(G^{(2)}_{8,29}) = -G^{(21)}_{7,3} + G^{(44)}_{7,7} + G^{(63)}_{7,10} - G^{(80)}_{7,13}$$
$$D(G^{(3)}_{8,29}) = -G^{(20)}_{7,3} + G^{(45)}_{7,7} + G^{(62)}_{7,10} - G^{(81)}_{7,13}$$
$$D(G^{(4)}_{8,29}) = -G^{(23)}_{7,3} + G^{(46)}_{7,7} + G^{(65)}_{7,10} - G^{(82)}_{7,13}$$
$$D(G^{(5)}_{8,29}) = -G^{(22)}_{7,3} + G^{(47)}_{7,7} + G^{(64)}_{7,10} - G^{(83)}_{7,13}$$

The Fatgraph $G_{8,30}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([5, 4, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{3} \to {}^{1}e^{2} \to {}^{1}d^{2} \to {}^{2}e^{0})$$
$$\gamma = ({}^{0}e^{1})$$

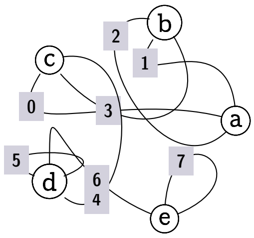
Markings

Fatgraph $G_{8,30}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,30}$ to $G^{(6)}_{8,30}$ are formed by decorating boundary cycles of $G_{8,30}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,30}) = -G^{(66)}_{7,10} + G^{(69)}_{7,11} \qquad D(G^{(3)}_{8,30}) = +G^{(67)}_{7,11} + G^{(72)}_{7,11}$$
$$D(G^{(1)}_{8,30}) = +G^{(66)}_{7,10} + G^{(70)}_{7,11} \qquad D(G^{(4)}_{8,30}) = -G^{(68)}_{7,11} + G^{(73)}_{7,12}$$
$$D(G^{(2)}_{8,30}) = -G^{(67)}_{7,11} + G^{(71)}_{7,11} \qquad D(G^{(5)}_{8,30}) = +G^{(68)}_{7,11} + G^{(74)}_{7,12}$$

The Fatgraph $G_{8,31}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([4, 5, 6, 5]),# d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^3d^0 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1)$
$\beta = ({}^2d^3 \to {}^1e^2 \to {}^1d^2 \to {}^2e^0)$
$\gamma = ({}^0e^1)$

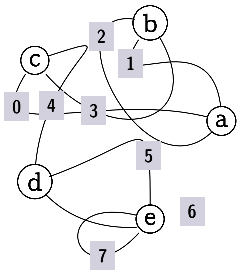
Markings

Fatgraph $G_{8,31}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,31}$ to $G^{(6)}_{8,31}$ are formed by decorating boundary cycles of $G_{8,31}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,31}) &= -G^{(18)}_{7,2} - G^{(30)}_{7,4} + G^{(60)}_{7,9} - G^{(70)}_{7,11}\\
D(G^{(1)}_{8,31}) &= -G^{(19)}_{7,3} - G^{(31)}_{7,5} + G^{(61)}_{7,10} - G^{(69)}_{7,11}\\
D(G^{(2)}_{8,31}) &= -G^{(20)}_{7,3} - G^{(32)}_{7,5} + G^{(62)}_{7,10} - G^{(72)}_{7,11}\\
D(G^{(3)}_{8,31}) &= -G^{(21)}_{7,3} - G^{(33)}_{7,5} + G^{(63)}_{7,10} - G^{(71)}_{7,11}\\
D(G^{(4)}_{8,31}) &= -G^{(22)}_{7,3} - G^{(34)}_{7,5} + G^{(64)}_{7,10} - G^{(74)}_{7,12}\\
D(G^{(5)}_{8,31}) &= -G^{(23)}_{7,3} - G^{(35)}_{7,5} + G^{(65)}_{7,10} - G^{(73)}_{7,12}
\end{aligned}
$$

The Fatgraph $G_{8,32}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([6, 5, 4]),   # d
  Vertex([6, 5, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0e^1 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0d^1 \to {}^3e^0 \to {}^1e^2)$
$\gamma = ({}^2e^3)$

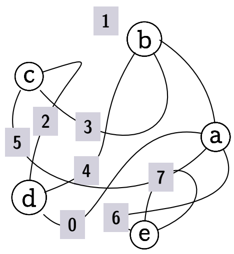
Markings

Fatgraph $G_{8,32}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,32}$ to $G^{(6)}_{8,32}$ are formed by decorating boundary cycles of $G_{8,32}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,32}) = +G^{(75)}_{7,12} - G^{(78)}_{7,12} - G^{(79)}_{7,13} \qquad D(G^{(3)}_{8,32}) = +G^{(12)}_{7,1} + G^{(84)}_{7,13}$$
$$D(G^{(1)}_{8,32}) = +G^{(76)}_{7,12} - G^{(80)}_{7,13} - G^{(81)}_{7,13} \qquad D(G^{(4)}_{8,32}) = +G^{(13)}_{7,2} + G^{(85)}_{7,14}$$
$$D(G^{(2)}_{8,32}) = +G^{(77)}_{7,12} - G^{(82)}_{7,13} - G^{(83)}_{7,13} \qquad D(G^{(5)}_{8,32}) = +G^{(14)}_{7,2} + G^{(86)}_{7,14}$$

The Fatgraph $G_{8,33}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([0, 4, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{0}b^{1} \to {}^{3}a^{0} \to {}^{2}e^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

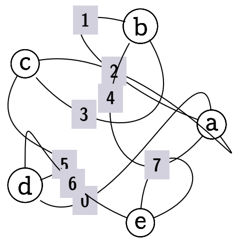
Markings

Fatgraph $G_{8,33}$ only has the identity automorphism, so the marked fatgraphs $G_{8,33}^{(0)}$ to $G_{8,33}^{(6)}$ are formed by decorating boundary cycles of $G_{8,33}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,33}^{(0)}) = +G_{7,2}^{(15)} + G_{7,14}^{(87)}$$
$$D(G_{8,33}^{(1)}) = +G_{7,2}^{(16)} + G_{7,14}^{(88)}$$
$$D(G_{8,33}^{(2)}) = +G_{7,2}^{(17)} + G_{7,14}^{(89)}$$
$$D(G_{8,33}^{(3)}) = -G_{7,4}^{(25)} + G_{7,13}^{(84)}$$
$$D(G_{8,33}^{(4)}) = -G_{7,3}^{(24)} + G_{7,14}^{(85)}$$
$$D(G_{8,33}^{(5)}) = -G_{7,4}^{(27)} + G_{7,14}^{(86)}$$

The Fatgraph $G_{8,34}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^2e^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$$
$$\beta = ({}^1c^2 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^0e^1)$$

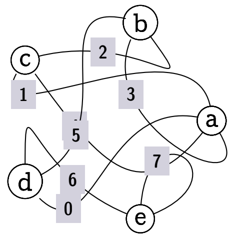
Markings

Fatgraph $G_{8,34}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,34}$ to $G^{(6)}_{8,34}$ are formed by decorating boundary cycles of $G_{8,34}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,34}) = -G^{(26)}_{7,4} + G^{(87)}_{7,14}$$
$$D(G^{(1)}_{8,34}) = -G^{(29)}_{7,4} + G^{(88)}_{7,14}$$
$$D(G^{(2)}_{8,34}) = -G^{(28)}_{7,4} + G^{(89)}_{7,14}$$
$$D(G^{(3)}_{8,34}) = -G^{(36)}_{7,5} - G^{(84)}_{7,13}$$
$$D(G^{(4)}_{8,34}) = -G^{(37)}_{7,6} - G^{(85)}_{7,14}$$
$$D(G^{(5)}_{8,34}) = -G^{(38)}_{7,6} - G^{(86)}_{7,14}$$

The Fatgraph $G_{8,35}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([1, 4, 2]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^1b^2)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^0e^1)$$

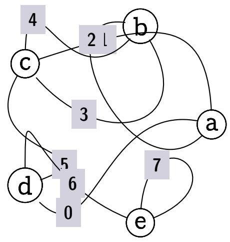
Markings

Fatgraph $G_{8,35}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,35}$ to $G^{(6)}_{8,35}$ are formed by decorating boundary cycles of $G_{8,35}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,35}) = -G^{(39)}_{7,6} - G^{(87)}_{7,14}$$
$$D(G^{(1)}_{8,35}) = -G^{(40)}_{7,6} - G^{(88)}_{7,14}$$
$$D(G^{(2)}_{8,35}) = -G^{(41)}_{7,6} - G^{(89)}_{7,14}$$
$$D(G^{(3)}_{8,35}) = -G^{(48)}_{7,7} + 2G^{(84)}_{7,13}$$
$$D(G^{(4)}_{8,35}) = -G^{(49)}_{7,8} + 2G^{(85)}_{7,14}$$
$$D(G^{(5)}_{8,35}) = -G^{(50)}_{7,8} + 2G^{(86)}_{7,14}$$

The Fatgraph $G_{8,36}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 1, 4]),# c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{3})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

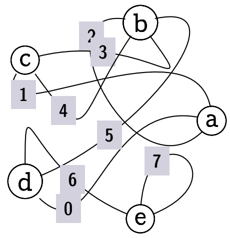
Markings

Fatgraph $G_{8,36}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,36}$ to $G^{(6)}_{8,36}$ are formed by decorating boundary cycles of $G_{8,36}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,36}) = -G^{(51)}_{7,8} + 2G^{(87)}_{7,14}$$
$$D(G^{(1)}_{8,36}) = -G^{(52)}_{7,8} + 2G^{(88)}_{7,14}$$
$$D(G^{(2)}_{8,36}) = -G^{(53)}_{7,8} + 2G^{(89)}_{7,14}$$
$$D(G^{(3)}_{8,36}) = +G^{(12)}_{7,1} - G^{(24)}_{7,3} + G^{(90)}_{7,14}$$
$$D(G^{(4)}_{8,36}) = +G^{(13)}_{7,2} - G^{(25)}_{7,4} + G^{(91)}_{7,15}$$
$$D(G^{(5)}_{8,36}) = +G^{(14)}_{7,2} - G^{(26)}_{7,4} + G^{(92)}_{7,15}$$

The Fatgraph $G_{8,37}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([1, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}c^{0})$$
$$\beta = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{2}b^{3} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

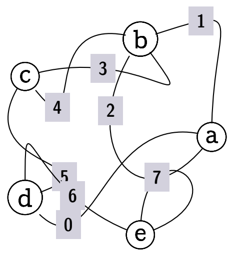
Markings

Fatgraph $G_{8,37}$ only has the identity automorphism, so the marked fatgraphs $G_{8,37}^{(0)}$ to $G_{8,37}^{(6)}$ are formed by decorating boundary cycles of $G_{8,37}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,37}^{(0)}) = +G_{7,2}^{(15)} - G_{7,4}^{(27)} + G_{7,15}^{(93)}$$
$$D(G_{8,37}^{(1)}) = +G_{7,2}^{(16)} - G_{7,4}^{(28)} + G_{7,16}^{(94)}$$
$$D(G_{8,37}^{(2)}) = +G_{7,2}^{(17)} - G_{7,4}^{(29)} + G_{7,16}^{(95)}$$
$$D(G_{8,37}^{(3)}) = -G_{7,13}^{(84)} - G_{7,14}^{(85)} + G_{7,14}^{(90)}$$
$$D(G_{8,37}^{(4)}) = -G_{7,13}^{(84)} - G_{7,14}^{(85)} + G_{7,15}^{(91)}$$
$$D(G_{8,37}^{(5)}) = -G_{7,14}^{(86)} - G_{7,14}^{(87)} + G_{7,15}^{(92)}$$

The Fatgraph $G_{8,38}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 1]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^3)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^2c^0 \to {}^2e^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^0e^1)$$

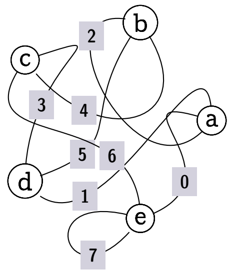
Markings

Fatgraph $G_{8,38}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,38}$ to $G^{(6)}_{8,38}$ are formed by decorating boundary cycles of $G_{8,38}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,38}) = -G^{(86)}_{7,14} - G^{(87)}_{7,14} + G^{(93)}_{7,15} \qquad D(G^{(3)}_{8,38}) = -G^{(36)}_{7,5} - G^{(37)}_{7,6} - G^{(90)}_{7,14}$$
$$D(G^{(1)}_{8,38}) = -G^{(88)}_{7,14} - G^{(89)}_{7,14} + G^{(94)}_{7,16} \qquad D(G^{(4)}_{8,38}) = -G^{(36)}_{7,5} - G^{(37)}_{7,6} - G^{(91)}_{7,15}$$
$$D(G^{(2)}_{8,38}) = -G^{(88)}_{7,14} - G^{(89)}_{7,14} + G^{(95)}_{7,16} \qquad D(G^{(5)}_{8,38}) = -G^{(38)}_{7,6} - G^{(39)}_{7,6} - G^{(92)}_{7,15}$$

The Fatgraph $G_{8,39}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([1, 5, 3]),   # d
  Vertex([0, 6, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2d^0 \to {}^0d^1 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^1e^2 \to {}^2c^0 \to {}^0b^1 \to {}^3e^0 \to {}^1d^2)$$
$$\gamma = ({}^2e^3)$$

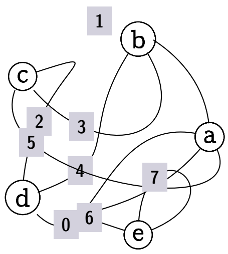
Markings

Fatgraph $G_{8,39}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,39}$ to $G^{(6)}_{8,39}$ are formed by decorating boundary cycles of $G_{8,39}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,39}) = -G^{(38)}_{7,6} - G^{(39)}_{7,6} - G^{(93)}_{7,15} \qquad D(G^{(3)}_{8,39}) = -G^{(48)}_{7,7} - G^{(49)}_{7,8} + 2G^{(90)}_{7,14}$$
$$D(G^{(1)}_{8,39}) = -G^{(40)}_{7,6} - G^{(41)}_{7,6} - G^{(94)}_{7,16} \qquad D(G^{(4)}_{8,39}) = -G^{(48)}_{7,7} - G^{(49)}_{7,8} + 2G^{(91)}_{7,15}$$
$$D(G^{(2)}_{8,39}) = -G^{(40)}_{7,6} - G^{(41)}_{7,6} - G^{(95)}_{7,16} \qquad D(G^{(5)}_{8,39}) = -G^{(50)}_{7,8} - G^{(51)}_{7,8} + 2G^{(92)}_{7,15}$$

The Fatgraph $G_{8,40}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([0, 4, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2)$
$\beta = ({}^3a^0 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$
$\gamma = ({}^0e^1)$

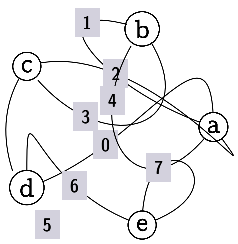
Markings

Fatgraph $G_{8,40}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,40}$ to $G^{(6)}_{8,40}$ are formed by decorating boundary cycles of $G_{8,40}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,40}) = -G^{(50)}_{7,8} - G^{(51)}_{7,8} + 2G^{(93)}_{7,15} \qquad D(G^{(3)}_{8,40}) = +G^{(102)}_{7,17}$$
$$D(G^{(1)}_{8,40}) = -G^{(52)}_{7,8} - G^{(53)}_{7,8} + 2G^{(94)}_{7,16} \qquad D(G^{(4)}_{8,40}) = +G^{(103)}_{7,17}$$
$$D(G^{(2)}_{8,40}) = -G^{(52)}_{7,8} - G^{(53)}_{7,8} + 2G^{(95)}_{7,16} \qquad D(G^{(5)}_{8,40}) = +G^{(104)}_{7,17}$$

The Fatgraph $G_{8,41}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0d^1 \to {}^2c^0 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^0e^1)$$

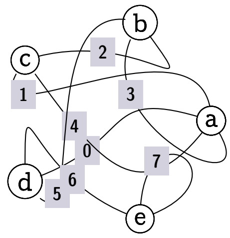
Markings

Fatgraph $G_{8,41}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,41}$ to $G^{(6)}_{8,41}$ are formed by decorating boundary cycles of $G_{8,41}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,41}) = +G^{(105)}_{7,17}$$
$$D(G^{(1)}_{8,41}) = +G^{(106)}_{7,18}$$
$$D(G^{(2)}_{8,41}) = +G^{(107)}_{7,18}$$
$$D(G^{(3)}_{8,41}) = +G^{(96)}_{7,16} + G^{(108)}_{7,18}$$
$$D(G^{(4)}_{8,41}) = +G^{(97)}_{7,16} + G^{(109)}_{7,18}$$
$$D(G^{(5)}_{8,41}) = +G^{(98)}_{7,16} + G^{(110)}_{7,18}$$

The Fatgraph $G_{8,42}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([1, 4, 2]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}e^{1})$

Markings

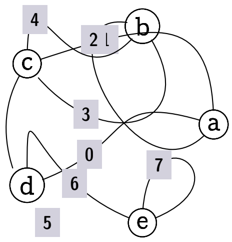
Fatgraph $G_{8,42}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,42}$ to $G^{(6)}_{8,42}$ are formed by decorating boundary cycles of $G_{8,42}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,42}) = +G^{(99)}_{7,16} + G^{(111)}_{7,18}$
$D(G^{(1)}_{8,42}) = +G^{(100)}_{7,17} + G^{(112)}_{7,19}$
$D(G^{(2)}_{8,42}) = +G^{(101)}_{7,17} + G^{(113)}_{7,19}$

$D(G^{(3)}_{8,42}) = +G^{(102)}_{7,17}$
$D(G^{(4)}_{8,42}) = +G^{(103)}_{7,17}$
$D(G^{(5)}_{8,42}) = +G^{(104)}_{7,17}$

The Fatgraph $G_{8,43}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 1, 4]),# c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{1}a^{2} \to {}^{0}d^{1} \to {}^{3}c^{0} \to {}^{0}b^{1})$
$\gamma = ({}^{0}e^{1})$

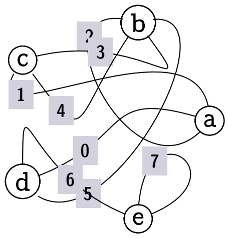
Markings

Fatgraph $G_{8,43}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,43}$ to $G^{(6)}_{8,43}$ are formed by decorating boundary cycles of $G_{8,43}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,43}) = +G^{(105)}_{7,17}$
$D(G^{(1)}_{8,43}) = +G^{(106)}_{7,18}$
$D(G^{(2)}_{8,43}) = +G^{(107)}_{7,18}$
$D(G^{(3)}_{8,43}) = -G^{(96)}_{7,16} + G^{(114)}_{7,19}$
$D(G^{(4)}_{8,43}) = -G^{(97)}_{7,16} + G^{(115)}_{7,19}$
$D(G^{(5)}_{8,43}) = -G^{(98)}_{7,16} + G^{(116)}_{7,19}$

The Fatgraph $G_{8,44}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([1, 4, 3]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^2e^0 \to {}^0c^1 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^0d^1 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0e^1)$$

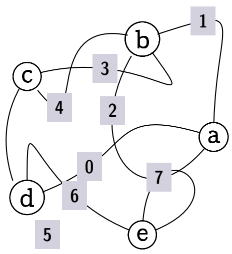
Markings

Fatgraph $G_{8,44}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,44}$ to $G^{(6)}_{8,44}$ are formed by decorating boundary cycles of $G_{8,44}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,44}) = -G^{(99)}_{7,16} + G^{(117)}_{7,19}$$
$$D(G^{(1)}_{8,44}) = -G^{(100)}_{7,17} + G^{(118)}_{7,20}$$
$$D(G^{(2)}_{8,44}) = -G^{(101)}_{7,17} + G^{(119)}_{7,20}$$
$$D(G^{(3)}_{8,44}) = -G^{(102)}_{7,17}$$
$$D(G^{(4)}_{8,44}) = -G^{(103)}_{7,17}$$
$$D(G^{(5)}_{8,44}) = -G^{(104)}_{7,17}$$

The Fatgraph $G_{8,45}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 1]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^2e^0 \to {}^0c^1 \to {}^2b^3 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^1a^2 \to {}^0d^1 \to {}^2c^0 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

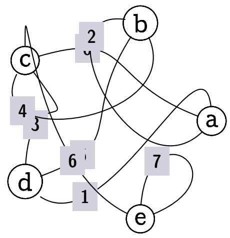
Markings

Fatgraph $G_{8,45}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,45}$ to $G^{(6)}_{8,45}$ are formed by decorating boundary cycles of $G_{8,45}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,45}) = -G^{(105)}_{7,17}$$
$$D(G^{(1)}_{8,45}) = -G^{(106)}_{7,18}$$
$$D(G^{(2)}_{8,45}) = -G^{(107)}_{7,18}$$
$$D(G^{(3)}_{8,45}) = -G^{(108)}_{7,18} - G^{(114)}_{7,19}$$
$$D(G^{(4)}_{8,45}) = -G^{(109)}_{7,18} - G^{(115)}_{7,19}$$
$$D(G^{(5)}_{8,45}) = -G^{(110)}_{7,18} - G^{(116)}_{7,19}$$

The Fatgraph $G_{8,46}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([4, 3, 0, 6]),# c
  Vertex([1, 5, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^0a^1 \to {}^1b^2 \to {}^2e^0 \to {}^3c^0 \to {}^0d^1 \to {}^2c^3 \to {}^1e^2 \to {}^2b^0)$
$\beta = ({}^1a^2 \to {}^1d^2 \to {}^1c^2 \to {}^0b^1)$
$\gamma = ({}^0e^1)$

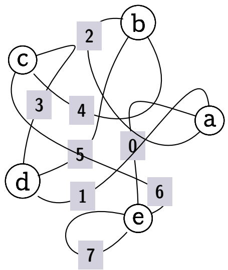
Markings

Fatgraph $G_{8,46}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,46}$ to $G^{(6)}_{8,46}$ are formed by decorating boundary cycles of $G_{8,46}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,46}) = -G^{(111)}_{7,18} - G^{(117)}_{7,19}$
$D(G^{(1)}_{8,46}) = -G^{(112)}_{7,19} - G^{(118)}_{7,20}$
$D(G^{(2)}_{8,46}) = -G^{(113)}_{7,19} - G^{(119)}_{7,20}$
$D(G^{(3)}_{8,46}) = +2G^{(96)}_{7,16} + G^{(120)}_{7,20}$
$D(G^{(4)}_{8,46}) = +2G^{(97)}_{7,16} + G^{(121)}_{7,21}$
$D(G^{(5)}_{8,46}) = +2G^{(98)}_{7,16} + G^{(122)}_{7,21}$

The Fatgraph $G_{8,47}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([1, 5, 3]),   # d
  Vertex([6, 0, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^3e^0 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2)$$
$$\beta = ({}^1a^2 \to {}^0e^1 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$$
$$\gamma = ({}^2e^3)$$

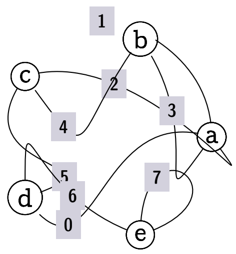
Markings

Fatgraph $G_{8,47}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,47}$ to $G^{(6)}_{8,47}$ are formed by decorating boundary cycles of $G_{8,47}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,47}) = +2G^{(99)}_{7,16} + G^{(123)}_{7,21}$$
$$D(G^{(1)}_{8,47}) = +2G^{(100)}_{7,17} + G^{(124)}_{7,21}$$
$$D(G^{(2)}_{8,47}) = +2G^{(101)}_{7,17} + G^{(125)}_{7,21}$$
$$D(G^{(3)}_{8,47}) = +2G^{(102)}_{7,17}$$
$$D(G^{(4)}_{8,47}) = +2G^{(103)}_{7,17}$$
$$D(G^{(5)}_{8,47}) = +2G^{(104)}_{7,17}$$

The Fatgraph $G_{8,48}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 4, 2]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^1a^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^3a^0 \to {}^1c^2 \to {}^0b^1)$
$\gamma = ({}^0e^1)$

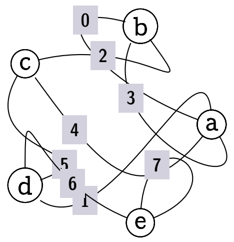
Markings

Fatgraph $G_{8,48}$ only has the identity automorphism, so the marked fatgraphs $G_{8,48}^{(0)}$ to $G_{8,48}^{(6)}$ are formed by decorating boundary cycles of $G_{8,48}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,48}^{(0)}) = +2G_{7,17}^{(105)}$$
$$D(G_{8,48}^{(1)}) = +2G_{7,18}^{(106)}$$
$$D(G_{8,48}^{(2)}) = +2G_{7,18}^{(107)}$$
$$D(G_{8,48}^{(3)}) = +2G_{7,18}^{(108)} - G_{7,20}^{(120)}$$
$$D(G_{8,48}^{(4)}) = +2G_{7,18}^{(109)} - G_{7,21}^{(121)}$$
$$D(G_{8,48}^{(5)}) = +2G_{7,18}^{(110)} - G_{7,21}^{(122)}$$

The Fatgraph $G_{8,49}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([5, 4, 2]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}e^{1})$

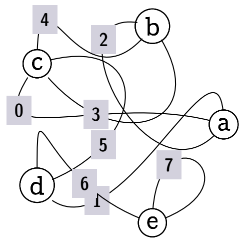
Markings

Fatgraph $G_{8,49}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,49}$ to $G^{(6)}_{8,49}$ are formed by decorating boundary cycles of $G_{8,49}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,49}) = +2G^{(111)}_{7,18} - G^{(123)}_{7,21}$
$D(G^{(1)}_{8,49}) = +2G^{(112)}_{7,19} - G^{(124)}_{7,21}$
$D(G^{(2)}_{8,49}) = +2G^{(113)}_{7,19} - G^{(125)}_{7,21}$

The Fatgraph $G_{8,50}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([0, 3, 5, 4]),# c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}d^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{2}c^{3})$
$\beta = ({}^{1}a^{2} \to {}^{3}c^{0} \to {}^{0}b^{1})$
$\gamma = ({}^{0}e^{1})$

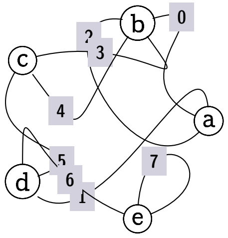
Markings

Fatgraph $G_{8,50}$ only has the identity automorphism, so the marked fatgraphs $G_{8,50}^{(0)}$ to $G_{8,50}^{(6)}$ are formed by decorating boundary cycles of $G_{8,50}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,50}^{(3)}) = -G_{7,23}^{(132)} + G_{7,24}^{(140)}$$
$$D(G_{8,50}^{(4)}) = -G_{7,23}^{(133)} + G_{7,25}^{(142)}$$
$$D(G_{8,50}^{(5)}) = -G_{7,23}^{(134)} + G_{7,24}^{(138)}$$

The Fatgraph $G_{8,51}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{1}a^{2} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1})$
$\gamma = ({}^{0}e^{1})$

Markings

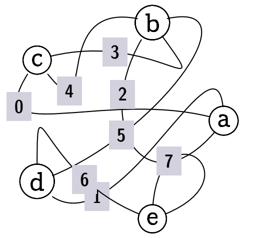
Fatgraph $G_{8,51}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,51}$ to $G^{(6)}_{8,51}$ are formed by decorating boundary cycles of $G_{8,51}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,51}) = -G^{(135)}_{7,23} + G^{(143)}_{7,25}$
$D(G^{(1)}_{8,51}) = -G^{(136)}_{7,24} + G^{(139)}_{7,24}$
$D(G^{(2)}_{8,51}) = -G^{(137)}_{7,24} + G^{(141)}_{7,24}$

$D(G^{(3)}_{8,51}) = +G^{(132)}_{7,23} + G^{(146)}_{7,25}$
$D(G^{(4)}_{8,51}) = +G^{(133)}_{7,23} + G^{(148)}_{7,26}$
$D(G^{(5)}_{8,51}) = +G^{(134)}_{7,23} + G^{(144)}_{7,25}$

The Fatgraph $G_{8,52}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^3 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

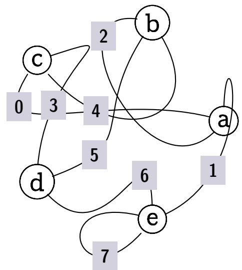
Markings

Fatgraph $G_{8,52}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,52}$ to $G^{(6)}_{8,52}$ are formed by decorating boundary cycles of $G_{8,52}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,52}) = +G^{(135)}_{7,23} + G^{(149)}_{7,26}$
$D(G^{(1)}_{8,52}) = +G^{(136)}_{7,24} + G^{(145)}_{7,25}$
$D(G^{(2)}_{8,52}) = +G^{(137)}_{7,24} + G^{(147)}_{7,25}$
$D(G^{(3)}_{8,52}) = +G^{(152)}_{7,26}$
$D(G^{(4)}_{8,52}) = +G^{(154)}_{7,27}$
$D(G^{(5)}_{8,52}) = +G^{(150)}_{7,26}$

The Fatgraph $G_{8,53}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([6, 5, 3]),   # d
  Vertex([1, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{3}e^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$
$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$
$\gamma = ({}^{2}e^{3})$

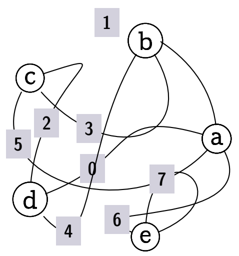
Markings

Fatgraph $G_{8,53}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,53}$ to $G^{(6)}_{8,53}$ are formed by decorating boundary cycles of $G_{8,53}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,53}) = +G^{(155)}_{7,27}$
$D(G^{(1)}_{8,53}) = +G^{(151)}_{7,26}$
$D(G^{(2)}_{8,53}) = +G^{(153)}_{7,26}$
$D(G^{(3)}_{8,53}) = +G^{(150)}_{7,26}$
$D(G^{(4)}_{8,53}) = +G^{(151)}_{7,26}$
$D(G^{(5)}_{8,53}) = +G^{(152)}_{7,26}$

The Fatgraph $G_{8,54}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([4, 0, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2a^3 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^3a^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

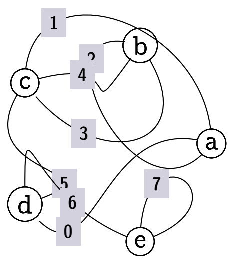
Markings

Fatgraph $G_{8,54}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,54}$ to $G^{(6)}_{8,54}$ are formed by decorating boundary cycles of $G_{8,54}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,54}) = +G^{(153)}_{7,26}$
$D(G^{(1)}_{8,54}) = +G^{(154)}_{7,27}$
$D(G^{(2)}_{8,54}) = +G^{(155)}_{7,27}$
$D(G^{(3)}_{8,54}) = +G^{(156)}_{7,27}$
$D(G^{(4)}_{8,54}) = +G^{(157)}_{7,27}$
$D(G^{(5)}_{8,54}) = +G^{(158)}_{7,27}$

The Fatgraph $G_{8,55}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 4, 1]),# c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{2}c^{3} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{1}c^{2} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

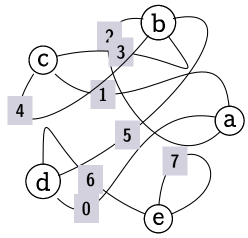
Markings

Fatgraph $G_{8,55}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,55}$ to $G^{(6)}_{8,55}$ are formed by decorating boundary cycles of $G_{8,55}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,55}) = +G^{(159)}_{7,27}$
$D(G^{(1)}_{8,55}) = +G^{(160)}_{7,28}$
$D(G^{(2)}_{8,55}) = +G^{(161)}_{7,28}$
$D(G^{(3)}_{8,55}) = +2G^{(96)}_{7,16} + G^{(128)}_{7,22} + G^{(162)}_{7,28}$
$D(G^{(4)}_{8,55}) = +2G^{(97)}_{7,16} + G^{(130)}_{7,23} + G^{(163)}_{7,28}$
$D(G^{(5)}_{8,55}) = +2G^{(98)}_{7,16} + G^{(126)}_{7,21} + G^{(164)}_{7,28}$

The Fatgraph $G_{8,56}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([4, 1, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

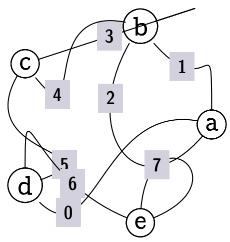
Markings

Fatgraph $G_{8,56}$ only has the identity automorphism, so the marked fatgraphs $G_{8,56}^{(0)}$ to $G_{8,56}^{(6)}$ are formed by decorating boundary cycles of $G_{8,56}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G_{8,56}^{(0)}) = +2G_{7,16}^{(99)} + G_{7,23}^{(131)} + G_{7,28}^{(165)}$$
$$D(G_{8,56}^{(1)}) = +2G_{7,17}^{(100)} + G_{7,22}^{(127)} + G_{7,29}^{(166)}$$
$$D(G_{8,56}^{(2)}) = +2G_{7,17}^{(101)} + G_{7,22}^{(129)} + G_{7,29}^{(167)}$$
$$D(G_{8,56}^{(3)}) = +G_{7,24}^{(138)} + G_{7,25}^{(144)} - G_{7,27}^{(156)}$$
$$D(G_{8,56}^{(4)}) = +G_{7,24}^{(139)} + G_{7,25}^{(145)} - G_{7,27}^{(157)}$$
$$D(G_{8,56}^{(5)}) = +G_{7,24}^{(140)} + G_{7,25}^{(146)} - G_{7,27}^{(158)}$$

The Fatgraph $G_{8,57}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^2e^0 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^3b^0 \to {}^1c^2)$
$\gamma = ({}^0e^1)$

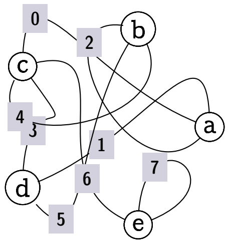
Markings

Fatgraph $G_{8,57}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,57}$ to $G^{(6)}_{8,57}$ are formed by decorating boundary cycles of $G_{8,57}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,57}) = +G^{(141)}_{7,24} + G^{(147)}_{7,25} - G^{(159)}_{7,27}$
$D(G^{(1)}_{8,57}) = +G^{(142)}_{7,25} + G^{(148)}_{7,26} - G^{(160)}_{7,28}$
$D(G^{(2)}_{8,57}) = +G^{(143)}_{7,25} + G^{(149)}_{7,26} - G^{(161)}_{7,28}$
$D(G^{(3)}_{8,57}) = -2G^{(128)}_{7,22} - G^{(134)}_{7,23} + G^{(168)}_{7,29}$
$D(G^{(4)}_{8,57}) = -2G^{(130)}_{7,23} - G^{(136)}_{7,24} + G^{(169)}_{7,29}$
$D(G^{(5)}_{8,57}) = -2G^{(126)}_{7,21} - G^{(132)}_{7,23} + G^{(170)}_{7,29}$

The Fatgraph $G_{8,58}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([4, 3, 6, 0]),# c
  Vertex([5, 1, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^3c^0 \to {}^2c^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^0c^1 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

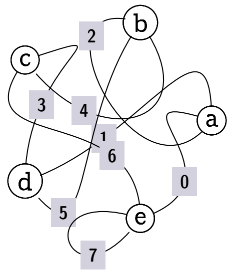
Markings

Fatgraph $G_{8,58}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,58}$ to $G^{(6)}_{8,58}$ are formed by decorating boundary cycles of $G_{8,58}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,58}) = -2G^{(131)}_{7,23} - G^{(137)}_{7,24} + G^{(171)}_{7,29}$
$D(G^{(1)}_{8,58}) = -2G^{(127)}_{7,22} - G^{(133)}_{7,23} + G^{(172)}_{7,30}$
$D(G^{(2)}_{8,58}) = -2G^{(129)}_{7,22} - G^{(135)}_{7,23} + G^{(173)}_{7,30}$
$D(G^{(3)}_{8,58}) = +2G^{(96)}_{7,16} - G^{(128)}_{7,22} + G^{(174)}_{7,30}$
$D(G^{(4)}_{8,58}) = +2G^{(97)}_{7,16} - G^{(130)}_{7,23} + G^{(175)}_{7,30}$
$D(G^{(5)}_{8,58}) = +2G^{(98)}_{7,16} - G^{(126)}_{7,21} + G^{(176)}_{7,30}$

The Fatgraph $G_{8,59}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([5, 1, 3]),   # d
  Vertex([0, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^3e^0 \to {}^0a^1 \to {}^2c^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^2e^3)$

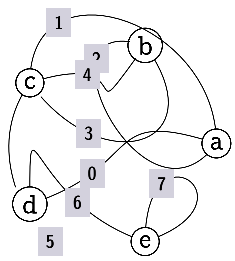
Markings

Fatgraph $G_{8,59}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,59}$ to $G^{(6)}_{8,59}$ are formed by decorating boundary cycles of $G_{8,59}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,59}) &= +2G^{(99)}_{7,16} - G^{(131)}_{7,23} + G^{(177)}_{7,30}\\
D(G^{(1)}_{8,59}) &= +2G^{(100)}_{7,17} - G^{(127)}_{7,22} + G^{(178)}_{7,31}\\
D(G^{(2)}_{8,59}) &= +2G^{(101)}_{7,17} - G^{(129)}_{7,22} + G^{(179)}_{7,31}\\
D(G^{(3)}_{8,59}) &= +G^{(144)}_{7,25} - G^{(156)}_{7,27} + G^{(162)}_{7,28} + G^{(168)}_{7,29} - G^{(174)}_{7,30}\\
D(G^{(4)}_{8,59}) &= +G^{(145)}_{7,25} - G^{(157)}_{7,27} + G^{(163)}_{7,28} + G^{(169)}_{7,29} - G^{(175)}_{7,30}\\
D(G^{(5)}_{8,59}) &= +G^{(146)}_{7,25} - G^{(158)}_{7,27} + G^{(164)}_{7,28} + G^{(170)}_{7,29} - G^{(176)}_{7,30}
\end{aligned}
$$

The Fatgraph $G_{8,60}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([5, 3, 4, 1]),# c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^3c^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2e^0 \to {}^0c^1 \to {}^2c^3 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^1c^2 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

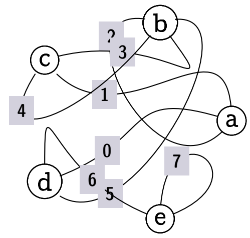
Markings

Fatgraph $G_{8,60}$ only has the identity automorphism, so the marked fatgraphs $G_{8,60}^{(0)}$ to $G_{8,60}^{(6)}$ are formed by decorating boundary cycles of $G_{8,60}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,60}^{(0)}) = +G_{7,25}^{(147)} - G_{7,27}^{(159)} + G_{7,28}^{(165)} + G_{7,29}^{(171)} - G_{7,30}^{(177)}$$
$$D(G_{8,60}^{(1)}) = +G_{7,26}^{(148)} - G_{7,28}^{(160)} + G_{7,29}^{(166)} + G_{7,30}^{(172)} - G_{7,31}^{(178)}$$
$$D(G_{8,60}^{(2)}) = +G_{7,26}^{(149)} - G_{7,28}^{(161)} + G_{7,29}^{(167)} + G_{7,30}^{(173)} - G_{7,31}^{(179)}$$
$$D(G_{8,60}^{(3)}) = -G_{7,24}^{(138)} - G_{7,25}^{(144)} + G_{7,26}^{(150)}$$
$$D(G_{8,60}^{(4)}) = -G_{7,24}^{(139)} - G_{7,25}^{(145)} + G_{7,26}^{(151)}$$
$$D(G_{8,60}^{(5)}) = -G_{7,24}^{(140)} - G_{7,25}^{(146)} + G_{7,26}^{(152)}$$

The Fatgraph $G_{8,61}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 5]),# b
  Vertex([4, 1, 3]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2c^0 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

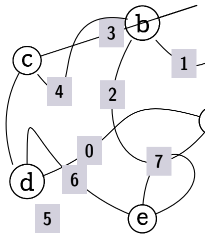
Markings

Fatgraph $G_{8,61}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,61}$ to $G^{(6)}_{8,61}$ are formed by decorating boundary cycles of $G_{8,61}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,61}) &= -G^{(141)}_{7,24} - G^{(147)}_{7,25} + G^{(153)}_{7,26}\\
D(G^{(1)}_{8,61}) &= -G^{(142)}_{7,25} - G^{(148)}_{7,26} + G^{(154)}_{7,27}\\
D(G^{(2)}_{8,61}) &= -G^{(143)}_{7,25} - G^{(149)}_{7,26} + G^{(155)}_{7,27}\\
D(G^{(3)}_{8,61}) &= +G^{(138)}_{7,24} - G^{(156)}_{7,27} - G^{(162)}_{7,28} - G^{(168)}_{7,29} + G^{(174)}_{7,30}\\
D(G^{(4)}_{8,61}) &= +G^{(139)}_{7,24} - G^{(157)}_{7,27} - G^{(163)}_{7,28} - G^{(169)}_{7,29} + G^{(175)}_{7,30}\\
D(G^{(5)}_{8,61}) &= +G^{(140)}_{7,24} - G^{(158)}_{7,27} - G^{(164)}_{7,28} - G^{(170)}_{7,29} + G^{(176)}_{7,30}
\end{aligned}
$$

The Fatgraph $G_{8,62}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([5, 4, 3]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{3} \to {}^{1}e^{2} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}e^{1})$

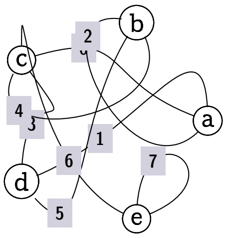
Markings

Fatgraph $G_{8,62}$ only has the identity automorphism, so the marked fatgraphs $G_{8,62}^{(0)}$ to $G_{8,62}^{(6)}$ are formed by decorating boundary cycles of $G_{8,62}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,62}^{(0)}) = +G_{7,24}^{(141)} - G_{7,27}^{(159)} - G_{7,28}^{(165)} - G_{7,29}^{(171)} + G_{7,30}^{(177)}$$
$$D(G_{8,62}^{(1)}) = +G_{7,25}^{(142)} - G_{7,28}^{(160)} - G_{7,29}^{(166)} - G_{7,30}^{(172)} + G_{7,31}^{(178)}$$
$$D(G_{8,62}^{(2)}) = +G_{7,25}^{(143)} - G_{7,28}^{(161)} - G_{7,29}^{(167)} - G_{7,30}^{(173)} + G_{7,31}^{(179)}$$
$$D(G_{8,62}^{(3)}) = +2G_{7,21}^{(126)} + G_{7,31}^{(180)}$$
$$D(G_{8,62}^{(4)}) = +2G_{7,22}^{(127)} + G_{7,31}^{(181)}$$
$$D(G_{8,62}^{(5)}) = +2G_{7,22}^{(128)} + G_{7,31}^{(182)}$$

The Fatgraph $G_{8,63}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([4, 3, 0, 6]),# c
  Vertex([5, 1, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{0}d^{1} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{2}b^{0})$
$\beta = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

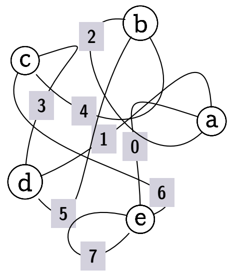
Markings

Fatgraph $G_{8,63}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,63}$ to $G^{(6)}_{8,63}$ are formed by decorating boundary cycles of $G_{8,63}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,63}) = +2G^{(129)}_{7,22} + G^{(183)}_{7,31}$
$D(G^{(1)}_{8,63}) = +2G^{(130)}_{7,23} + G^{(184)}_{7,32}$
$D(G^{(2)}_{8,63}) = +2G^{(131)}_{7,23} + G^{(185)}_{7,32}$
$D(G^{(3)}_{8,63}) = +G^{(186)}_{7,32}$
$D(G^{(4)}_{8,63}) = +G^{(187)}_{7,32}$
$D(G^{(5)}_{8,63}) = +G^{(188)}_{7,32}$

The Fatgraph $G_{8,64}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([5, 1, 3]),   # d
  Vertex([6, 0, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \rightarrow {}^2a^0 \rightarrow {}^1a^2 \rightarrow {}^3e^0 \rightarrow {}^0a^1 \rightarrow {}^2c^0 \rightarrow {}^0c^1 \rightarrow {}^0d^1 \rightarrow {}^2b^0 \rightarrow {}^0b^1 \rightarrow {}^1e^2 \rightarrow {}^1d^2)$
$\beta = ({}^2d^0 \rightarrow {}^1c^2 \rightarrow {}^1b^2)$
$\gamma = ({}^2e^3)$

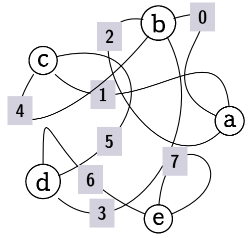
Markings

Fatgraph $G_{8,64}$ only has the identity automorphism, so the marked fatgraphs $G_{8,64}^{(0)}$ to $G_{8,64}^{(6)}$ are formed by decorating boundary cycles of $G_{8,64}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,64}^{(0)}) = +G_{7,32}^{(189)}$$
$$D(G_{8,64}^{(1)}) = +G_{7,33}^{(190)}$$
$$D(G_{8,64}^{(2)}) = +G_{7,33}^{(191)}$$
$$D(G_{8,64}^{(3)}) = +G_{7,24}^{(140)} - G_{7,29}^{(170)} - G_{7,31}^{(180)} + G_{7,32}^{(186)}$$
$$D(G_{8,64}^{(4)}) = +G_{7,25}^{(142)} - G_{7,30}^{(172)} - G_{7,31}^{(181)} + G_{7,32}^{(187)}$$
$$D(G_{8,64}^{(5)}) = +G_{7,24}^{(138)} - G_{7,29}^{(168)} - G_{7,31}^{(182)} + G_{7,32}^{(188)}$$

The Fatgraph $G_{8,65}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([4, 1, 5]),   # c
  Vertex([3, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

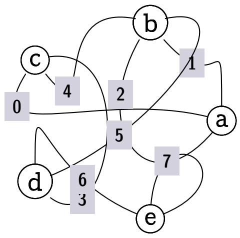
Markings

Fatgraph $G_{8,65}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,65}$ to $G^{(6)}_{8,65}$ are formed by decorating boundary cycles of $G_{8,65}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,65}) &= +G^{(143)}_{7,25} - G^{(173)}_{7,30} - G^{(183)}_{7,31} + G^{(189)}_{7,32}\\
D(G^{(1)}_{8,65}) &= +G^{(139)}_{7,24} - G^{(169)}_{7,29} - G^{(184)}_{7,32} + G^{(190)}_{7,33}\\
D(G^{(2)}_{8,65}) &= +G^{(141)}_{7,24} - G^{(171)}_{7,29} - G^{(185)}_{7,32} + G^{(191)}_{7,33}\\
D(G^{(3)}_{8,65}) &= +G^{(140)}_{7,24} + G^{(146)}_{7,25} - G^{(186)}_{7,32}\\
D(G^{(4)}_{8,65}) &= +G^{(142)}_{7,25} + G^{(148)}_{7,26} - G^{(187)}_{7,32}\\
D(G^{(5)}_{8,65}) &= +G^{(138)}_{7,24} + G^{(144)}_{7,25} - G^{(188)}_{7,32}
\end{aligned}
$$

The Fatgraph $G_{8,66}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([3, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2} \to {}^{1}b^{2})$
$\beta = ({}^{0}d^{1} \to {}^{3}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}e^{1})$

Markings

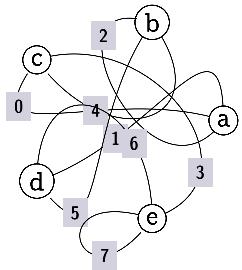
Fatgraph $G_{8,66}$ only has the identity automorphism, so the marked fatgraphs $G_{8,66}^{(0)}$ to $G_{8,66}^{(6)}$ are formed by decorating boundary cycles of $G_{8,66}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,66}^{(0)}) = +G_{7,25}^{(143)} + G_{7,26}^{(149)} - G_{7,33}^{(191)}$$
$G_{7,32}^{(189)}$
$$D(G_{8,66}^{(1)}) = +G_{7,24}^{(139)} + G_{7,25}^{(145)} -$$
$G_{7,33}^{(190)}$
$$D(G_{8,66}^{(2)}) = +G_{7,24}^{(141)} + G_{7,25}^{(147)} -$$

$$D(G_{8,66}^{(3)}) = +2G_{7,26}^{(152)} - G_{7,32}^{(186)}$$
$$D(G_{8,66}^{(4)}) = +2G_{7,27}^{(154)} - G_{7,32}^{(187)}$$
$$D(G_{8,66}^{(5)}) = +2G_{7,26}^{(150)} - G_{7,32}^{(188)}$$

The Fatgraph $G_{8,67}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 1, 6]),   # d
  Vertex([3, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}a^{2} \to {}^{3}e^{0} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$
$\gamma = ({}^{2}e^{3})$

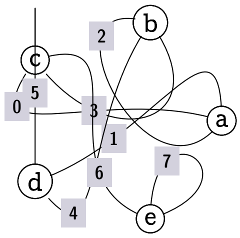
Markings

Fatgraph $G_{8,67}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,67}$ to $G^{(6)}_{8,67}$ are formed by decorating boundary cycles of $G_{8,67}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$D(G^{(0)}_{8,67}) = +2G^{(155)}_{7,27} - G^{(189)}_{7,32}$
$D(G^{(1)}_{8,67}) = +2G^{(151)}_{7,26} - G^{(190)}_{7,33}$
$D(G^{(2)}_{8,67}) = +2G^{(153)}_{7,26} - G^{(191)}_{7,33}$
$D(G^{(3)}_{8,67}) = -G^{(102)}_{7,17} + 2G^{(156)}_{7,27}$
$D(G^{(4)}_{8,67}) = -G^{(103)}_{7,17} + 2G^{(157)}_{7,27}$
$D(G^{(5)}_{8,67}) = -G^{(104)}_{7,17} + 2G^{(158)}_{7,27}$

The Fatgraph $G_{8,68}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([0, 3, 6, 5]),# c
  Vertex([4, 1, 5]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \to {}^3c^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1b^2 \to {}^2e^0 \to {}^1c^2 \to {}^2c^3 \to {}^1e^2)$$
$$\gamma = ({}^0e^1)$$

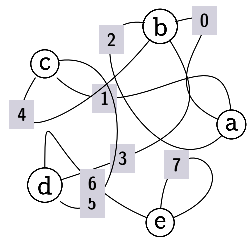
Markings

Fatgraph $G_{8,68}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,68}$ to $G^{(6)}_{8,68}$ are formed by decorating boundary cycles of $G_{8,68}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,68}) = -G^{(105)}_{7,17} + 2G^{(159)}_{7,27}$$
$$D(G^{(1)}_{8,68}) = -G^{(106)}_{7,18} + 2G^{(160)}_{7,28}$$
$$D(G^{(2)}_{8,68}) = -G^{(107)}_{7,18} + 2G^{(161)}_{7,28}$$
$$D(G^{(3)}_{8,68}) = +G^{(102)}_{7,17} + G^{(162)}_{7,28} - G^{(174)}_{7,30} - G^{(182)}_{7,31}$$
$$D(G^{(4)}_{8,68}) = +G^{(103)}_{7,17} + G^{(163)}_{7,28} - G^{(175)}_{7,30} - G^{(184)}_{7,32}$$
$$D(G^{(5)}_{8,68}) = +G^{(104)}_{7,17} + G^{(164)}_{7,28} - G^{(176)}_{7,30} - G^{(180)}_{7,31}$$

The Fatgraph $G_{8,69}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([4, 1, 5]),   # c
  Vertex([5, 3, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

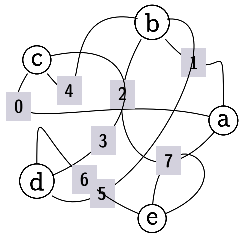
Markings

Fatgraph $G_{8,69}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,69}$ to $G^{(6)}_{8,69}$ are formed by decorating boundary cycles of $G_{8,69}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,69}) = +G^{(105)}_{7,17} + G^{(165)}_{7,28} - G^{(177)}_{7,30} - G^{(185)}_{7,32}$$
$$D(G^{(1)}_{8,69}) = +G^{(106)}_{7,18} + G^{(166)}_{7,29} - G^{(178)}_{7,31} - G^{(181)}_{7,31}$$
$$D(G^{(2)}_{8,69}) = +G^{(107)}_{7,18} + G^{(167)}_{7,29} - G^{(179)}_{7,31} - G^{(183)}_{7,31}$$
$$D(G^{(3)}_{8,69}) = +G^{(144)}_{7,25} + G^{(168)}_{7,29} + G^{(182)}_{7,31} + G^{(188)}_{7,32}$$
$$D(G^{(4)}_{8,69}) = +G^{(145)}_{7,25} + G^{(169)}_{7,29} + G^{(184)}_{7,32} + G^{(190)}_{7,33}$$
$$D(G^{(5)}_{8,69}) = +G^{(146)}_{7,25} + G^{(170)}_{7,29} + G^{(180)}_{7,31} + G^{(186)}_{7,32}$$

The Fatgraph $G_{8,70}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 5]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 3, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

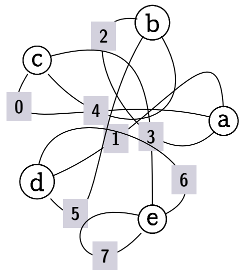
Markings

Fatgraph $G_{8,70}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,70}$ to $G^{(6)}_{8,70}$ are formed by decorating boundary cycles of $G_{8,70}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,70}) = +G^{(147)}_{7,25} + G^{(171)}_{7,29} + G^{(185)}_{7,32} + G^{(191)}_{7,33}$$
$$D(G^{(1)}_{8,70}) = +G^{(148)}_{7,26} + G^{(172)}_{7,30} + G^{(181)}_{7,31} + G^{(187)}_{7,32}$$
$$D(G^{(2)}_{8,70}) = +G^{(149)}_{7,26} + G^{(173)}_{7,30} + G^{(183)}_{7,31} + G^{(189)}_{7,32}$$
$$D(G^{(3)}_{8,70}) = +G^{(102)}_{7,17} - G^{(162)}_{7,28} + G^{(174)}_{7,30} + G^{(182)}_{7,31}$$
$$D(G^{(4)}_{8,70}) = +G^{(103)}_{7,17} - G^{(163)}_{7,28} + G^{(175)}_{7,30} + G^{(184)}_{7,32}$$
$$D(G^{(5)}_{8,70}) = +G^{(104)}_{7,17} - G^{(164)}_{7,28} + G^{(176)}_{7,30} + G^{(180)}_{7,31}$$

The Fatgraph $G_{8,71}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 1, 6]),   # d
  Vertex([6, 3, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}e^{0} \to {}^{1}e^{2} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}e^{3})$$

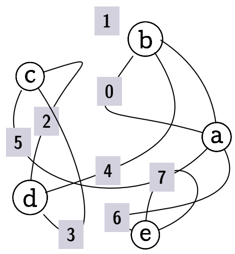
Markings

Fatgraph $G_{8,71}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,71}$ to $G^{(6)}_{8,71}$ are formed by decorating boundary cycles of $G_{8,71}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,71}) = +G^{(105)}_{7,17} - G^{(165)}_{7,28} + G^{(177)}_{7,30} + G^{(185)}_{7,32}$$
$$D(G^{(1)}_{8,71}) = +G^{(106)}_{7,18} - G^{(166)}_{7,29} + G^{(178)}_{7,31} + G^{(181)}_{7,31}$$
$$D(G^{(2)}_{8,71}) = +G^{(107)}_{7,18} - G^{(167)}_{7,29} + G^{(179)}_{7,31} + G^{(183)}_{7,31}$$
$$D(G^{(3)}_{8,71}) = -G^{(134)}_{7,23} + G^{(194)}_{7,33} - G^{(200)}_{7,34} + G^{(204)}_{7,35}$$
$$D(G^{(4)}_{8,71}) = -G^{(136)}_{7,24} + G^{(196)}_{7,34} - G^{(202)}_{7,35} + G^{(205)}_{7,36}$$
$$D(G^{(5)}_{8,71}) = -G^{(132)}_{7,23} + G^{(192)}_{7,33} - G^{(198)}_{7,34} + G^{(206)}_{7,36}$$

The Fatgraph $G_{8,72}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6]),# a
  Vertex([1, 0, 4]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([3, 4, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{3} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}e^{1})$

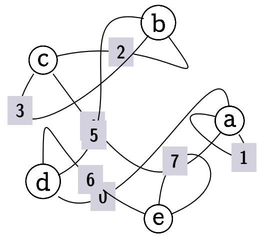
Markings

Fatgraph $G_{8,72}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,72}$ to $G^{(6)}_{8,72}$ are formed by decorating boundary cycles of $G_{8,72}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,72}) &= -G^{(137)}_{7,24} + G^{(197)}_{7,34} - G^{(203)}_{7,35} + G^{(207)}_{7,36} \\
D(G^{(1)}_{8,72}) &= -G^{(133)}_{7,23} + G^{(193)}_{7,33} - G^{(199)}_{7,34} + G^{(208)}_{7,36} \\
D(G^{(2)}_{8,72}) &= -G^{(135)}_{7,23} + G^{(195)}_{7,33} - G^{(201)}_{7,34} + G^{(209)}_{7,36} \\
D(G^{(3)}_{8,72}) &= +G^{(132)}_{7,23} + G^{(212)}_{7,37} \\
D(G^{(4)}_{8,72}) &= +G^{(133)}_{7,23} + G^{(214)}_{7,37} \\
D(G^{(5)}_{8,72}) &= +G^{(134)}_{7,23} + G^{(210)}_{7,36}
\end{aligned}
$$

The Fatgraph $G_{8,73}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2c^0 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

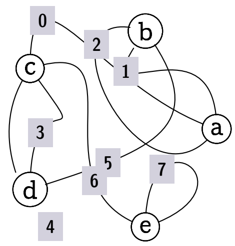
Markings

Fatgraph $G_{8,73}$ only has the identity automorphism, so the marked fatgraphs $G_{8,73}^{(0)}$ to $G_{8,73}^{(6)}$ are formed by decorating boundary cycles of $G_{8,73}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,73}^{(0)}) = +G_{7,23}^{(135)} + G_{7,37}^{(215)}$
$D(G_{8,73}^{(1)}) = +G_{7,24}^{(136)} + G_{7,37}^{(211)}$
$D(G_{8,73}^{(2)}) = +G_{7,24}^{(137)} + G_{7,37}^{(213)}$
$D(G_{8,73}^{(3)}) = +G_{7,23}^{(132)} + G_{7,37}^{(216)}$
$D(G_{8,73}^{(4)}) = +G_{7,23}^{(133)} + G_{7,38}^{(217)}$
$D(G_{8,73}^{(5)}) = +G_{7,23}^{(134)} + G_{7,38}^{(218)}$

The Fatgraph $G_{8,74}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([4, 3, 6, 0]),# c
  Vertex([4, 5, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

Markings

Fatgraph $G_{8,74}$ only has the identity automorphism, so the marked fatgraphs $G_{8,74}^{(0)}$ to $G_{8,74}^{(6)}$ are formed by decorating boundary cycles of $G_{8,74}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,74}^{(0)}) = +G_{7,23}^{(135)} + G_{7,38}^{(219)}$

$D(G_{8,74}^{(1)}) = +G_{7,24}^{(136)} + G_{7,38}^{(220)}$

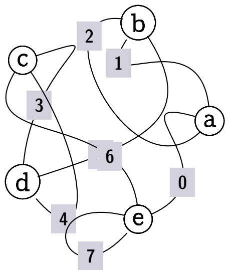
$D(G_{8,74}^{(2)}) = +G_{7,24}^{(137)} + G_{7,38}^{(221)}$

$D(G_{8,74}^{(3)}) = -G_{7,26}^{(150)} - G_{7,36}^{(210)} + G_{7,38}^{(218)}$

$D(G_{8,74}^{(4)}) = -G_{7,26}^{(151)} - G_{7,37}^{(211)} + G_{7,38}^{(220)}$

$D(G_{8,74}^{(5)}) = -G_{7,26}^{(152)} - G_{7,37}^{(212)} + G_{7,37}^{(216)}$

The Fatgraph $G_{8,75}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 5, 3]),   # d
  Vertex([0, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^2e^3)$

Markings

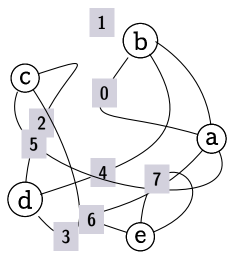
Fatgraph $G_{8,75}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,75}$ to $G^{(6)}_{8,75}$ are formed by decorating boundary cycles of $G_{8,75}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,75}) = -G^{(153)}_{7,26} - G^{(213)}_{7,37} + G^{(219)}_{7,38}$
$G^{(221)}_{7,38}$
$D(G^{(1)}_{8,75}) = -G^{(154)}_{7,27} - G^{(214)}_{7,37} +$
$G^{(217)}_{7,38}$
$D(G^{(2)}_{8,75}) = -G^{(155)}_{7,27} - G^{(215)}_{7,37} +$

$D(G^{(3)}_{8,75}) = -G^{(24)}_{7,3} + G^{(54)}_{7,8} + G^{(224)}_{7,39}$
$D(G^{(4)}_{8,75}) = -G^{(25)}_{7,4} + G^{(55)}_{7,9} + G^{(226)}_{7,39}$
$D(G^{(5)}_{8,75}) = -G^{(26)}_{7,4} + G^{(56)}_{7,9} + G^{(222)}_{7,38}$

The Fatgraph $G_{8,76}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 0, 4]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([3, 4, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2a^3 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^0e^1)$

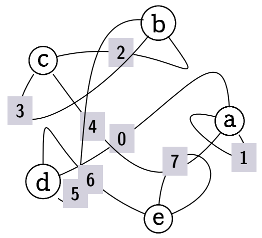
Markings

Fatgraph $G_{8,76}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,76}$ to $G^{(6)}_{8,76}$ are formed by decorating boundary cycles of $G_{8,76}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,76}) = -G^{(27)}_{7,4} + G^{(57)}_{7,9} + G^{(227)}_{7,39}$$
$$D(G^{(1)}_{8,76}) = -G^{(28)}_{7,4} + G^{(58)}_{7,9} + G^{(223)}_{7,39}$$
$$D(G^{(2)}_{8,76}) = -G^{(29)}_{7,4} + G^{(59)}_{7,9} + G^{(225)}_{7,39}$$
$$D(G^{(3)}_{8,76}) = +G^{(0)}_{7,0} + G^{(24)}_{7,3} + G^{(192)}_{7,33} + G^{(230)}_{7,40}$$
$$D(G^{(4)}_{8,76}) = +G^{(1)}_{7,0} + G^{(25)}_{7,4} + G^{(193)}_{7,33} + G^{(232)}_{7,40}$$
$$D(G^{(5)}_{8,76}) = +G^{(2)}_{7,0} + G^{(26)}_{7,4} + G^{(194)}_{7,33} + G^{(228)}_{7,39}$$

The Fatgraph $G_{8,77}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([5, 0, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2c^0 \to {}^1b^2)$
$\gamma = ({}^0e^1)$

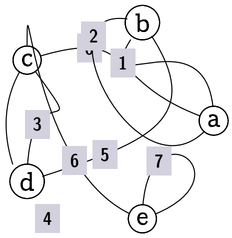
Markings

Fatgraph $G_{8,77}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,77}$ to $G^{(6)}_{8,77}$ are formed by decorating boundary cycles of $G_{8,77}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,77}) &= +G^{(3)}_{7,0} + G^{(27)}_{7,4} + G^{(195)}_{7,33} + G^{(233)}_{7,40} \\
D(G^{(1)}_{8,77}) &= +G^{(4)}_{7,0} + G^{(28)}_{7,4} + G^{(196)}_{7,34} + G^{(229)}_{7,40} \\
D(G^{(2)}_{8,77}) &= +G^{(5)}_{7,0} + G^{(29)}_{7,4} + G^{(197)}_{7,34} + G^{(231)}_{7,40} \\
D(G^{(3)}_{8,77}) &= +G^{(0)}_{7,0} + G^{(54)}_{7,8} + G^{(198)}_{7,34} + G^{(234)}_{7,40} \\
D(G^{(4)}_{8,77}) &= +G^{(1)}_{7,0} + G^{(55)}_{7,9} + G^{(199)}_{7,34} + G^{(235)}_{7,41} \\
D(G^{(5)}_{8,77}) &= +G^{(2)}_{7,0} + G^{(56)}_{7,9} + G^{(200)}_{7,34} + G^{(236)}_{7,41}
\end{aligned}
$$

The Fatgraph $G_{8,78}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([4, 3, 0, 6]),# c
  Vertex([4, 5, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}d^{2} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{0}d^{1} \to {}^{2}c^{3} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{2}b^{0})$
$\beta = ({}^{2}d^{0} \to {}^{0}c^{1})$
$\gamma = ({}^{0}e^{1})$

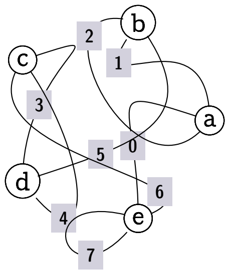
Markings

Fatgraph $G_{8,78}$ only has the identity automorphism, so the marked fatgraphs $G_{8,78}^{(0)}$ to $G_{8,78}^{(6)}$ are formed by decorating boundary cycles of $G_{8,78}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{8,78}^{(0)}) &= +G_{7,0}^{(3)} + G_{7,9}^{(57)} + G_{7,34}^{(201)} + G_{7,41}^{(237)} \\
D(G_{8,78}^{(1)}) &= +G_{7,0}^{(4)} + G_{7,9}^{(58)} + G_{7,35}^{(202)} + G_{7,41}^{(238)} \\
D(G_{8,78}^{(2)}) &= +G_{7,0}^{(5)} + G_{7,9}^{(59)} + G_{7,35}^{(203)} + G_{7,41}^{(239)} \\
D(G_{8,78}^{(3)}) &= +G_{7,35}^{(204)} + G_{7,36}^{(210)} - G_{7,38}^{(222)} - G_{7,39}^{(228)} + G_{7,41}^{(236)} \\
D(G_{8,78}^{(4)}) &= +G_{7,36}^{(205)} + G_{7,37}^{(211)} - G_{7,39}^{(223)} - G_{7,40}^{(229)} + G_{7,41}^{(238)} \\
D(G_{8,78}^{(5)}) &= +G_{7,36}^{(206)} + G_{7,37}^{(212)} - G_{7,39}^{(224)} - G_{7,40}^{(230)} + G_{7,40}^{(234)}
\end{aligned}
$$

The Fatgraph $G_{8,79}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 5, 3]),   # d
  Vertex([6, 0, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{3}e^{0} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{2}e^{3})$

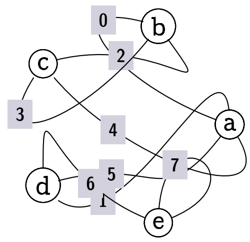
Markings

Fatgraph $G_{8,79}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,79}$ to $G^{(6)}_{8,79}$ are formed by decorating boundary cycles of $G_{8,79}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,79}) &= +G^{(207)}_{7,36} + G^{(213)}_{7,37} - G^{(225)}_{7,39} - G^{(231)}_{7,40} + G^{(239)}_{7,41} \\
D(G^{(1)}_{8,79}) &= +G^{(208)}_{7,36} + G^{(214)}_{7,37} - G^{(226)}_{7,39} - G^{(232)}_{7,40} + G^{(235)}_{7,41} \\
D(G^{(2)}_{8,79}) &= +G^{(209)}_{7,36} + G^{(215)}_{7,37} - G^{(227)}_{7,39} - G^{(233)}_{7,40} + G^{(237)}_{7,41} \\
D(G^{(3)}_{8,79}) &= -G^{(132)}_{7,23} + G^{(242)}_{7,42} \\
D(G^{(4)}_{8,79}) &= -G^{(133)}_{7,23} + G^{(244)}_{7,42} \\
D(G^{(5)}_{8,79}) &= -G^{(134)}_{7,23} + G^{(240)}_{7,41}
\end{aligned}
$$

The Fatgraph $G_{8,80}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

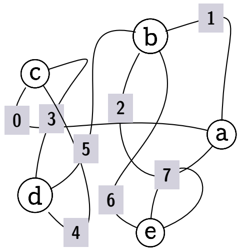
Markings

Fatgraph $G_{8,80}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,80}$ to $G^{(6)}_{8,80}$ are formed by decorating boundary cycles of $G_{8,80}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,80}) &= -G^{(135)}_{7,23} + G^{(245)}_{7,42} \\
D(G^{(1)}_{8,80}) &= -G^{(136)}_{7,24} + G^{(241)}_{7,42} \\
D(G^{(2)}_{8,80}) &= -G^{(137)}_{7,24} + G^{(243)}_{7,42} \\
D(G^{(3)}_{8,80}) &= +G^{(6)}_{7,0} + G^{(24)}_{7,3} - G^{(192)}_{7,33} + G^{(248)}_{7,43} \\
D(G^{(4)}_{8,80}) &= +G^{(7)}_{7,1} + G^{(25)}_{7,4} - G^{(193)}_{7,33} + G^{(250)}_{7,43} \\
D(G^{(5)}_{8,80}) &= +G^{(8)}_{7,1} + G^{(26)}_{7,4} - G^{(194)}_{7,33} + G^{(246)}_{7,42}
\end{aligned}
$$

The Fatgraph $G_{8,81}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([5, 2, 6, 1]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([4, 5, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^2b^3 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2 \to {}^1b^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^0e^1)$

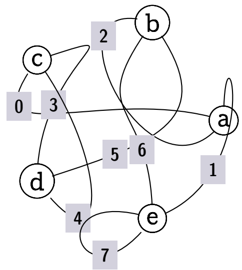
Markings

Fatgraph $G_{8,81}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,81}$ to $G^{(6)}_{8,81}$ are formed by decorating boundary cycles of $G_{8,81}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,81}) &= +G^{(9)}_{7,1} + G^{(27)}_{7,4} - G^{(195)}_{7,33} + G^{(251)}_{7,43}\\
D(G^{(1)}_{8,81}) &= +G^{(10)}_{7,1} + G^{(28)}_{7,4} - G^{(196)}_{7,34} + G^{(247)}_{7,43}\\
D(G^{(2)}_{8,81}) &= +G^{(11)}_{7,1} + G^{(29)}_{7,4} - G^{(197)}_{7,34} + G^{(249)}_{7,43}\\
D(G^{(3)}_{8,81}) &= +G^{(6)}_{7,0} + G^{(54)}_{7,8} - G^{(192)}_{7,33} + G^{(252)}_{7,43}\\
D(G^{(4)}_{8,81}) &= +G^{(7)}_{7,1} + G^{(55)}_{7,9} - G^{(193)}_{7,33} + G^{(253)}_{7,44}\\
D(G^{(5)}_{8,81}) &= +G^{(8)}_{7,1} + G^{(56)}_{7,9} - G^{(194)}_{7,33} + G^{(254)}_{7,44}
\end{aligned}
$$

The Fatgraph $G_{8,82}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([4, 5, 3]),   # d
  Vertex([1, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^1e^2 \to {}^0a^1 \to {}^1b^2 \to {}^3e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^2e^3)$

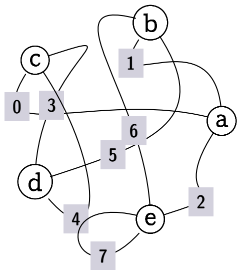
Markings

Fatgraph $G_{8,82}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,82}$ to $G^{(6)}_{8,82}$ are formed by decorating boundary cycles of $G_{8,82}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,82}) &= +G^{(9)}_{7,1} + G^{(57)}_{7,9} - G^{(195)}_{7,33} + G^{(255)}_{7,44}\\
D(G^{(1)}_{8,82}) &= +G^{(10)}_{7,1} + G^{(58)}_{7,9} - G^{(196)}_{7,34}\\
D(G^{(2)}_{8,82}) &= +G^{(11)}_{7,1} + G^{(59)}_{7,9} - G^{(197)}_{7,34}\\
D(G^{(3)}_{8,82}) &= +G^{(210)}_{7,36} - G^{(222)}_{7,38} + G^{(240)}_{7,41} - G^{(246)}_{7,42} + G^{(254)}_{7,44}\\
D(G^{(4)}_{8,82}) &= +G^{(211)}_{7,37} - G^{(223)}_{7,39} + G^{(241)}_{7,42} - G^{(247)}_{7,43}\\
D(G^{(5)}_{8,82}) &= +G^{(212)}_{7,37} - G^{(224)}_{7,39} + G^{(242)}_{7,42} - G^{(248)}_{7,43} + G^{(252)}_{7,43}
\end{aligned}
$$

The Fatgraph $G_{8,83}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([6, 1, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([4, 5, 3]),   # d
  Vertex([2, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^3e^0 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^2e^3)$

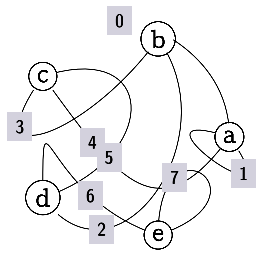
Markings

Fatgraph $G_{8,83}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,83}$ to $G^{(6)}_{8,83}$ are formed by decorating boundary cycles of $G_{8,83}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,83}) &= +G^{(213)}_{7,37} - G^{(225)}_{7,39} + G^{(243)}_{7,42} - G^{(249)}_{7,43}\\
D(G^{(1)}_{8,83}) &= +G^{(214)}_{7,37} - G^{(226)}_{7,39} + G^{(244)}_{7,42} - G^{(250)}_{7,43} + G^{(253)}_{7,44}\\
D(G^{(2)}_{8,83}) &= +G^{(215)}_{7,37} - G^{(227)}_{7,39} + G^{(245)}_{7,42} - G^{(251)}_{7,43} + G^{(255)}_{7,44}\\
D(G^{(3)}_{8,83}) &= -G^{(150)}_{7,26}\\
D(G^{(4)}_{8,83}) &= -G^{(151)}_{7,26}\\
D(G^{(5)}_{8,83}) &= -G^{(152)}_{7,26}
\end{aligned}
$$

The Fatgraph $G_{8,84}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 5]),   # c
  Vertex([2, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1})$

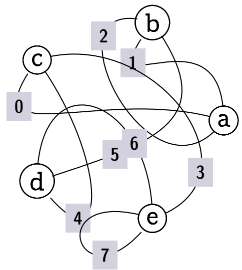
Markings

Fatgraph $G_{8,84}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,84}$ to $G^{(6)}_{8,84}$ are formed by decorating boundary cycles of $G_{8,84}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{8,84}) &= -G^{(153)}_{7,26} \\
D(G^{(1)}_{8,84}) &= -G^{(154)}_{7,27} \\
D(G^{(2)}_{8,84}) &= -G^{(155)}_{7,27} \\
D(G^{(3)}_{8,84}) &= +G^{(0)}_{7,0} - G^{(6)}_{7,0} + G^{(192)}_{7,33} + G^{(198)}_{7,34} \\
D(G^{(4)}_{8,84}) &= +G^{(1)}_{7,0} - G^{(7)}_{7,1} + G^{(193)}_{7,33} + G^{(199)}_{7,34} \\
D(G^{(5)}_{8,84}) &= +G^{(2)}_{7,0} - G^{(8)}_{7,1} + G^{(194)}_{7,33} + G^{(200)}_{7,34}
\end{aligned}
$$

The Fatgraph $G_{8,85}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([4, 5, 6]),   # d
  Vertex([3, 6, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^{0}b^{1} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{3}e^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{2}e^{3})$

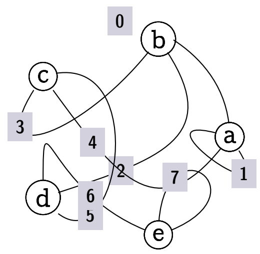
Markings

Fatgraph $G_{8,85}$ only has the identity automorphism, so the marked fatgraphs $G_{8,85}^{(0)}$ to $G_{8,85}^{(6)}$ are formed by decorating boundary cycles of $G_{8,85}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G_{8,85}^{(0)}) = +G_{7,0}^{(3)} - G_{7,1}^{(9)} + G_{7,33}^{(195)} + G_{7,34}^{(201)}$$
$$D(G_{8,85}^{(1)}) = +G_{7,0}^{(4)} - G_{7,1}^{(10)} + G_{7,34}^{(196)} + G_{7,35}^{(202)}$$
$$D(G_{8,85}^{(2)}) = +G_{7,0}^{(5)} - G_{7,1}^{(11)} + G_{7,34}^{(197)} + G_{7,35}^{(203)}$$
$$D(G_{8,85}^{(3)}) = +G_{7,35}^{(204)} - G_{7,39}^{(228)} - G_{7,41}^{(240)} + G_{7,42}^{(246)}$$
$$D(G_{8,85}^{(4)}) = +G_{7,36}^{(205)} - G_{7,40}^{(229)} - G_{7,42}^{(241)} + G_{7,43}^{(247)}$$
$$D(G_{8,85}^{(5)}) = +G_{7,36}^{(206)} - G_{7,40}^{(230)} - G_{7,42}^{(242)} + G_{7,43}^{(248)}$$

The Fatgraph $G_{8,86}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 5]),   # c
  Vertex([5, 2, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{1}b^{2} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

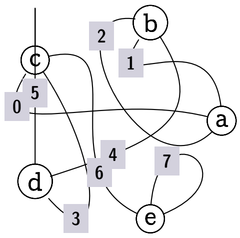
Markings

Fatgraph $G_{8,86}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,86}$ to $G^{(6)}_{8,86}$ are formed by decorating boundary cycles of $G_{8,86}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$\begin{aligned}
D(G^{(0)}_{8,86}) &= +G^{(207)}_{7,36} - G^{(231)}_{7,40} - G^{(243)}_{7,42} + G^{(249)}_{7,43}\\
D(G^{(1)}_{8,86}) &= +G^{(208)}_{7,36} - G^{(232)}_{7,40} - G^{(244)}_{7,42} + G^{(250)}_{7,43}\\
D(G^{(2)}_{8,86}) &= +G^{(209)}_{7,36} - G^{(233)}_{7,40} - G^{(245)}_{7,42} + G^{(251)}_{7,43}\\
D(G^{(3)}_{8,86}) &= -G^{(212)}_{7,37} + G^{(216)}_{7,37} - G^{(234)}_{7,40} + G^{(252)}_{7,43}\\
D(G^{(4)}_{8,86}) &= -G^{(214)}_{7,37} + G^{(217)}_{7,38} - G^{(235)}_{7,41} + G^{(253)}_{7,44}\\
D(G^{(5)}_{8,86}) &= -G^{(210)}_{7,36} + G^{(218)}_{7,38} - G^{(236)}_{7,41} + G^{(254)}_{7,44}
\end{aligned}$$

The Fatgraph $G_{8,87}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 4]),   # b
  Vertex([0, 3, 6, 5]),# c
  Vertex([3, 4, 5]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}c^{3} \to {}^{1}e^{2} \to {}^{2}e^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}e^{1})$$

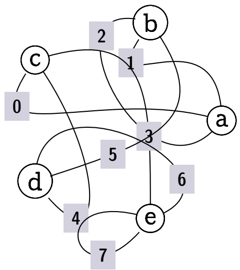
Markings

Fatgraph $G_{8,87}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,87}$ to $G^{(6)}_{8,87}$ are formed by decorating boundary cycles of $G_{8,87}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,87}) = -G^{(215)}_{7,37} + G^{(219)}_{7,38} - G^{(237)}_{7,41} + G^{(255)}_{7,44}$$
$$D(G^{(1)}_{8,87}) = -G^{(211)}_{7,37} + G^{(220)}_{7,38} - G^{(238)}_{7,41}$$
$$D(G^{(2)}_{8,87}) = -G^{(213)}_{7,37} + G^{(221)}_{7,38} - G^{(239)}_{7,41}$$
$$D(G^{(3)}_{8,87}) = +G^{(194)}_{7,33} - G^{(200)}_{7,34}$$
$$D(G^{(4)}_{8,87}) = +G^{(196)}_{7,34} - G^{(202)}_{7,35}$$
$$D(G^{(5)}_{8,87}) = +G^{(192)}_{7,33} - G^{(198)}_{7,34}$$

The Fatgraph $G_{8,88}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([4, 5, 6]),   # d
  Vertex([6, 3, 7, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^3e^0 \to {}^1e^2 \to {}^1c^2)$
$\gamma = ({}^2e^3)$

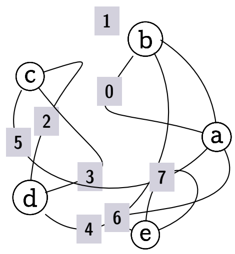
Markings

Fatgraph $G_{8,88}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,88}$ to $G^{(6)}_{8,88}$ are formed by decorating boundary cycles of $G_{8,88}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,88}) = +G^{(197)}_{7,34} - G^{(203)}_{7,35} \qquad D(G^{(3)}_{8,88}) = +G^{(134)}_{7,23}$$
$$D(G^{(1)}_{8,88}) = +G^{(193)}_{7,33} - G^{(199)}_{7,34} \qquad D(G^{(4)}_{8,88}) = +G^{(136)}_{7,24}$$
$$D(G^{(2)}_{8,88}) = +G^{(195)}_{7,33} - G^{(201)}_{7,34} \qquad D(G^{(5)}_{8,88}) = +G^{(132)}_{7,23}$$

The Fatgraph $G_{8,89}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 6]),# a
  Vertex([1, 0, 4]),   # b
  Vertex([5, 3, 2]),   # c
  Vertex([4, 3, 2]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$
$$\beta = ({}^3a^0 \to {}^1a^2 \to {}^2c^0 \to {}^2a^3 \to {}^2e^0 \to {}^0c^1 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^0e^1)$$

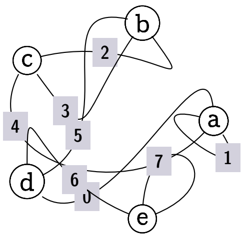
Markings

Fatgraph $G_{8,89}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,89}$ to $G^{(6)}_{8,89}$ are formed by decorating boundary cycles of $G_{8,89}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,89}) = +G^{(137)}_{7,24}$$
$$D(G^{(1)}_{8,89}) = +G^{(133)}_{7,23}$$
$$D(G^{(2)}_{8,89}) = +G^{(135)}_{7,23}$$
$$D(G^{(3)}_{8,89}) = -G^{(188)}_{7,32} + G^{(204)}_{7,35}$$
$$D(G^{(4)}_{8,89}) = -G^{(190)}_{7,33} + G^{(205)}_{7,36}$$
$$D(G^{(5)}_{8,89}) = -G^{(186)}_{7,32} + G^{(206)}_{7,36}$$

The Fatgraph $G_{8,90}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([5, 3, 2]),   # b
  Vertex([4, 3, 2]),   # c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}e^{1})$$

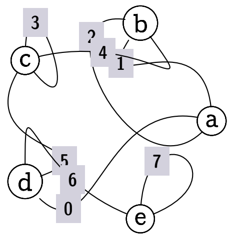
Markings

Fatgraph $G_{8,90}$ only has the identity automorphism, so the marked fatgraphs $G_{8,90}^{(0)}$ to $G_{8,90}^{(6)}$ are formed by decorating boundary cycles of $G_{8,90}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,90}^{(0)}) = -G_{7,33}^{(191)} + G_{7,36}^{(207)}$$
$$D(G_{8,90}^{(1)}) = -G_{7,32}^{(187)} + G_{7,36}^{(208)}$$
$$D(G_{8,90}^{(2)}) = -G_{7,32}^{(189)} + G_{7,36}^{(209)}$$
$$D(G_{8,90}^{(3)}) = +G_{7,32}^{(188)} + G_{7,36}^{(210)} - G_{7,38}^{(218)}$$
$$D(G_{8,90}^{(4)}) = +G_{7,33}^{(190)} + G_{7,37}^{(211)} - G_{7,38}^{(220)}$$
$$D(G_{8,90}^{(5)}) = +G_{7,32}^{(186)} + G_{7,37}^{(212)} - G_{7,37}^{(216)}$$

The Fatgraph $G_{8,91}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 4]),   # b
  Vertex([5, 3, 4, 3]),# c
  Vertex([0, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2e^0 \to {}^3c^0 \to {}^0d^1 \to {}^1e^2 \to {}^1d^2)$$
$$\beta = ({}^2a^0 \to {}^2c^3 \to {}^2b^0 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0e^1)$$

Markings

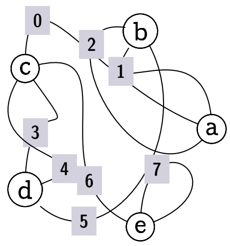
Fatgraph $G_{8,91}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,91}$ to $G^{(6)}_{8,91}$ are formed by decorating boundary cycles of $G_{8,91}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,91}) = +G^{(191)}_{7,33} + G^{(213)}_{7,37} - G^{(219)}_{7,38}$$
$$G^{(221)}_{7,38}$$
$$D(G^{(1)}_{8,91}) = +G^{(187)}_{7,32} + G^{(214)}_{7,37} -$$
$$G^{(217)}_{7,38}$$
$$D(G^{(2)}_{8,91}) = +G^{(189)}_{7,32} + G^{(215)}_{7,37} -$$

$$D(G^{(3)}_{8,91}) = +G^{(150)}_{7,26}$$
$$D(G^{(4)}_{8,91}) = +G^{(151)}_{7,26}$$
$$D(G^{(5)}_{8,91}) = +G^{(152)}_{7,26}$$

The Fatgraph $G_{8,92}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([4, 3, 6, 0]),# c
  Vertex([5, 4, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{0}e^{1})$$

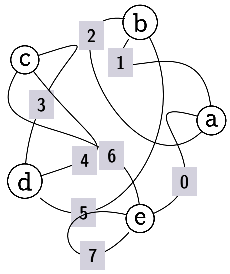
Markings

Fatgraph $G_{8,92}$ only has the identity automorphism, so the marked fatgraphs $G_{8,92}^{(0)}$ to $G_{8,92}^{(6)}$ are formed by decorating boundary cycles of $G_{8,92}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,92}^{(0)}) = +G_{7,26}^{(153)}$$
$$D(G_{8,92}^{(1)}) = +G_{7,27}^{(154)}$$
$$D(G_{8,92}^{(2)}) = +G_{7,27}^{(155)}$$
$$D(G_{8,92}^{(3)}) = +G_{7,1}^{(12)} - G_{7,8}^{(54)}$$
$$D(G_{8,92}^{(4)}) = +G_{7,2}^{(13)} - G_{7,9}^{(55)}$$
$$D(G_{8,92}^{(5)}) = +G_{7,2}^{(14)} - G_{7,9}^{(56)}$$

The Fatgraph $G_{8,93}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 5]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([5, 4, 3]),   # d
  Vertex([0, 6, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^1a^2 \to {}^3e^0 \to {}^0a^1 \to {}^2c^0 \to {}^0c^1 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^2e^3)$$

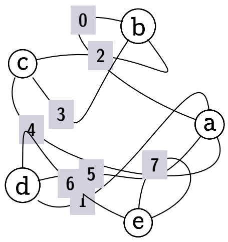
Markings

Fatgraph $G_{8,93}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,93}$ to $G^{(6)}_{8,93}$ are formed by decorating boundary cycles of $G_{8,93}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,93}) = +G^{(15)}_{7,2} - G^{(57)}_{7,9}$$
$$D(G^{(1)}_{8,93}) = +G^{(16)}_{7,2} - G^{(58)}_{7,9}$$
$$D(G^{(2)}_{8,93}) = +G^{(17)}_{7,2} - G^{(59)}_{7,9}$$
$$D(G^{(3)}_{8,93}) = -G^{(90)}_{7,14} + G^{(224)}_{7,39}$$
$$D(G^{(4)}_{8,93}) = -G^{(91)}_{7,15} + G^{(226)}_{7,39}$$
$$D(G^{(5)}_{8,93}) = -G^{(92)}_{7,15} + G^{(222)}_{7,38}$$

The Fatgraph $G_{8,94}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 5, 4]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([4, 3, 2]),   # c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}e^{1})$$

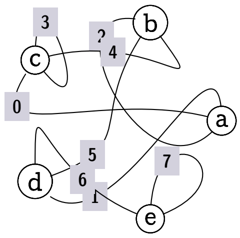
Markings

Fatgraph $G_{8,94}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,94}$ to $G^{(6)}_{8,94}$ are formed by decorating boundary cycles of $G_{8,94}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,94}) = -G^{(93)}_{7,15} + G^{(227)}_{7,39}$$
$$D(G^{(1)}_{8,94}) = -G^{(94)}_{7,16} + G^{(223)}_{7,39}$$
$$D(G^{(2)}_{8,94}) = -G^{(95)}_{7,16} + G^{(225)}_{7,39}$$
$$D(G^{(3)}_{8,94}) = -G^{(0)}_{7,0} - G^{(12)}_{7,1} - G^{(198)}_{7,34}$$
$$D(G^{(4)}_{8,94}) = -G^{(1)}_{7,0} - G^{(13)}_{7,2} - G^{(199)}_{7,34}$$
$$D(G^{(5)}_{8,94}) = -G^{(2)}_{7,0} - G^{(14)}_{7,2} - G^{(200)}_{7,34}$$

The Fatgraph $G_{8,95}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 3, 4, 3]),# c
  Vertex([1, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{3}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}c^{3} \to {}^{2}b^{0})$$
$$\gamma = ({}^{0}e^{1})$$

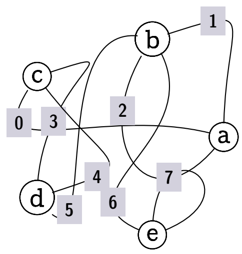
Markings

Fatgraph $G_{8,95}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,95}$ to $G^{(6)}_{8,95}$ are formed by decorating boundary cycles of $G_{8,95}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,95}) = -G^{(3)}_{7,0} - G^{(15)}_{7,2} - G^{(201)}_{7,34} \qquad D(G^{(3)}_{8,95}) = +G^{(90)}_{7,14} + G^{(230)}_{7,40}$$
$$D(G^{(1)}_{8,95}) = -G^{(4)}_{7,0} - G^{(16)}_{7,2} - G^{(202)}_{7,35} \qquad D(G^{(4)}_{8,95}) = +G^{(91)}_{7,15} + G^{(232)}_{7,40}$$
$$D(G^{(2)}_{8,95}) = -G^{(5)}_{7,0} - G^{(17)}_{7,2} - G^{(203)}_{7,35} \qquad D(G^{(5)}_{8,95}) = +G^{(92)}_{7,15} + G^{(228)}_{7,39}$$

The Fatgraph $G_{8,96}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([5, 2, 6, 1]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 4, 3]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{0}d^{1})$$
$$\gamma = ({}^{0}e^{1})$$

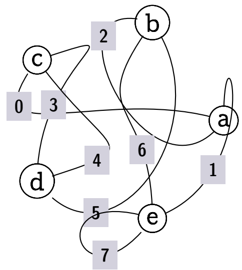
Markings

Fatgraph $G_{8,96}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,96}$ to $G^{(6)}_{8,96}$ are formed by decorating boundary cycles of $G_{8,96}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,96}) = +G^{(93)}_{7,15} + G^{(233)}_{7,40}$$
$$D(G^{(1)}_{8,96}) = +G^{(94)}_{7,16} + G^{(229)}_{7,40}$$
$$D(G^{(2)}_{8,96}) = +G^{(95)}_{7,16} + G^{(231)}_{7,40}$$
$$D(G^{(3)}_{8,96}) = +G^{(216)}_{7,37} + G^{(234)}_{7,40}$$
$$D(G^{(4)}_{8,96}) = +G^{(217)}_{7,38} + G^{(235)}_{7,41}$$
$$D(G^{(5)}_{8,96}) = +G^{(218)}_{7,38} + G^{(236)}_{7,41}$$

The Fatgraph $G_{8,97}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 6, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 4, 3]),   # d
  Vertex([1, 6, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^{1}a^{2} \to {}^{3}e^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{2}e^{3})$$

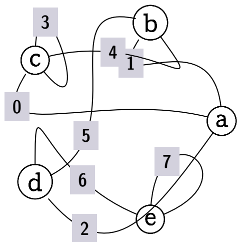
Markings

Fatgraph $G_{8,97}$ only has the identity automorphism, so the marked fatgraphs $G_{8,97}^{(0)}$ to $G_{8,97}^{(6)}$ are formed by decorating boundary cycles of $G_{8,97}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,97}^{(0)}) = +G_{7,38}^{(219)} + G_{7,41}^{(237)}$$
$$D(G_{8,97}^{(1)}) = +G_{7,38}^{(220)} + G_{7,41}^{(238)}$$
$$D(G_{8,97}^{(2)}) = +G_{7,38}^{(221)} + G_{7,41}^{(239)}$$
$$D(G_{8,97}^{(3)}) = -G_{7,32}^{(186)} - G_{7,36}^{(206)} + G_{7,42}^{(242)}$$
$$D(G_{8,97}^{(4)}) = -G_{7,32}^{(187)} - G_{7,36}^{(208)} + G_{7,42}^{(244)}$$
$$D(G_{8,97}^{(5)}) = -G_{7,32}^{(188)} - G_{7,35}^{(204)} + G_{7,41}^{(240)}$$

The Fatgraph $G_{8,98}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([5, 1, 4]),   # b
  Vertex([0, 3, 4, 3]),# c
  Vertex([2, 5, 6]),   # d
  Vertex([7, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{0}d^{1})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{2}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}c^{3} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}e^{1})$$

Markings

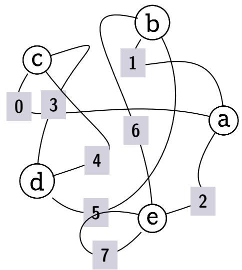
Fatgraph $G_{8,98}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,98}$ to $G^{(6)}_{8,98}$ are formed by decorating boundary cycles of $G_{8,98}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,98}) = -G^{(189)}_{7,32} - G^{(209)}_{7,36} + G^{(243)}_{7,42}$$
$G^{(245)}_{7,42}$
$$D(G^{(1)}_{8,98}) = -G^{(190)}_{7,33} - G^{(205)}_{7,36} +$$
$G^{(241)}_{7,42}$
$$D(G^{(2)}_{8,98}) = -G^{(191)}_{7,33} - G^{(207)}_{7,36} +$$

$$D(G^{(3)}_{8,98}) = -G^{(6)}_{7,0} - G^{(12)}_{7,1} + G^{(198)}_{7,34}$$
$$D(G^{(4)}_{8,98}) = -G^{(7)}_{7,1} - G^{(13)}_{7,2} + G^{(199)}_{7,34}$$
$$D(G^{(5)}_{8,98}) = -G^{(8)}_{7,1} - G^{(14)}_{7,2} + G^{(200)}_{7,34}$$

The Fatgraph $G_{8,99}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([6, 1, 5]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 4, 3]),   # d
  Vertex([2, 6, 7, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{3}e^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$$
$$\gamma = ({}^{2}e^{3})$$

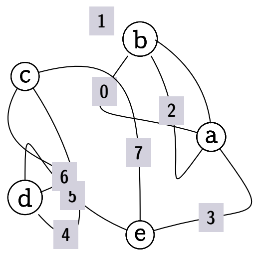
Markings

Fatgraph $G_{8,99}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,99}$ to $G^{(6)}_{8,99}$ are formed by decorating boundary cycles of $G_{8,99}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,99}) = -G^{(9)}_{7,1} - G^{(15)}_{7,2} + G^{(201)}_{7,34} \qquad D(G^{(3)}_{8,99}) = +G^{(90)}_{7,14} + G^{(248)}_{7,43}$$
$$D(G^{(1)}_{8,99}) = -G^{(10)}_{7,1} - G^{(16)}_{7,2} + G^{(202)}_{7,35} \qquad D(G^{(4)}_{8,99}) = +G^{(91)}_{7,15} + G^{(250)}_{7,43}$$
$$D(G^{(2)}_{8,99}) = -G^{(11)}_{7,1} - G^{(17)}_{7,2} + G^{(203)}_{7,35} \qquad D(G^{(5)}_{8,99}) = +G^{(92)}_{7,15} + G^{(246)}_{7,42}$$

The Fatgraph $G_{8,100}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 0, 2]),   # b
  Vertex([6, 4, 7]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{3} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{3}a^{0} \to {}^{2}e^{0} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{0}c^{1})$
$\gamma = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{1}c^{2})$

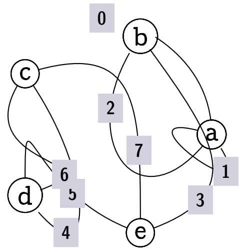
Markings

Fatgraph $G_{8,100}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,100}$ to $G^{(6)}_{8,100}$ are formed by decorating boundary cycles of $G_{8,100}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,100}) = +G^{(93)}_{7,15} + G^{(251)}_{7,43}$
$D(G^{(1)}_{8,100}) = +G^{(94)}_{7,16} + G^{(247)}_{7,43}$
$D(G^{(2)}_{8,100}) = +G^{(95)}_{7,16} + G^{(249)}_{7,43}$
$D(G^{(3)}_{8,100}) = +G^{(206)}_{7,36} + G^{(216)}_{7,37} + G^{(252)}_{7,43}$
$D(G^{(4)}_{8,100}) = +G^{(208)}_{7,36} + G^{(217)}_{7,38} + G^{(253)}_{7,44}$
$D(G^{(5)}_{8,100}) = +G^{(204)}_{7,35} + G^{(218)}_{7,38} + G^{(254)}_{7,44}$

The Fatgraph $G_{8,101}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([6, 4, 7]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2e^0 \to {}^2c^0 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^0d^1 \to {}^0c^1)$
$\gamma = ({}^2d^0 \to {}^1e^2 \to {}^1c^2)$

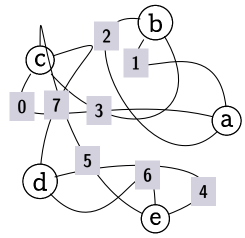
Markings

Fatgraph $G_{8,101}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,101}$ to $G^{(6)}_{8,101}$ are formed by decorating boundary cycles of $G_{8,101}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,101}) = +G^{(209)}_{7,36} + G^{(219)}_{7,38} + G^{(255)}_{7,44}$
$D(G^{(1)}_{8,101}) = +G^{(205)}_{7,36} + G^{(220)}_{7,38}$
$D(G^{(2)}_{8,101}) = +G^{(207)}_{7,36} + G^{(221)}_{7,38}$
$D(G^{(3)}_{8,101}) = -G^{(206)}_{7,36}$
$D(G^{(4)}_{8,101}) = -G^{(208)}_{7,36}$
$D(G^{(5)}_{8,101}) = -G^{(204)}_{7,35}$

The Fatgraph $G_{8,102}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 7, 5]),# c
  Vertex([6, 4, 7]),   # d
  Vertex([4, 6, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{3}c^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2})$
$\beta = ({}^{2}c^{3} \to {}^{2}e^{0} \to {}^{1}d^{2})$
$\gamma = ({}^{0}e^{1} \to {}^{0}d^{1})$

Markings

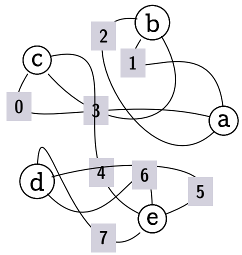
Fatgraph $G_{8,102}$ only has the identity automorphism, so the marked fatgraphs $G_{8,102}^{(0)}$ to $G_{8,102}^{(6)}$ are formed by decorating boundary cycles of $G_{8,102}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,102}^{(0)}) = -G_{7,36}^{(209)}$
$D(G_{8,102}^{(1)}) = -G_{7,36}^{(205)}$
$D(G_{8,102}^{(2)}) = -G_{7,36}^{(207)}$

$D(G_{8,102}^{(3)}) = +G_{7,6}^{(42)} - G_{7,12}^{(78)} - G_{7,40}^{(234)}$
$D(G_{8,102}^{(4)}) = +G_{7,7}^{(43)} - G_{7,13}^{(79)} - G_{7,41}^{(235)}$
$D(G_{8,102}^{(5)}) = +G_{7,7}^{(44)} - G_{7,13}^{(80)} - G_{7,41}^{(236)}$

The Fatgraph $G_{8,103}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([6, 5, 7]),   # d
  Vertex([5, 6, 4, 7]),# e
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^1e^2 \to {}^0b^1 \to {}^0a^1 \to {}^1b^2 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^2e^3)$
$\beta = ({}^0e^1 \to {}^0d^1)$
$\gamma = ({}^3e^0 \to {}^1d^2)$

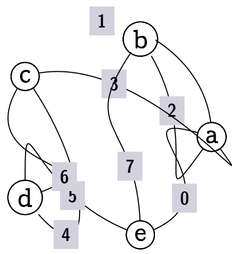
Markings

Fatgraph $G_{8,103}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,103}$ to $G^{(6)}_{8,103}$ are formed by decorating boundary cycles of $G_{8,103}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,103}) = +G^{(45)}_{7,7} - G^{(81)}_{7,13} - G^{(237)}_{7,41}$ $\quad D(G^{(3)}_{8,103}) = -G^{(192)}_{7,33} - G^{(198)}_{7,34}$
$D(G^{(1)}_{8,103}) = +G^{(46)}_{7,7} - G^{(82)}_{7,13} - G^{(238)}_{7,41}$ $\quad D(G^{(4)}_{8,103}) = -G^{(193)}_{7,33} - G^{(199)}_{7,34}$
$D(G^{(2)}_{8,103}) = +G^{(47)}_{7,7} - G^{(83)}_{7,13} - G^{(239)}_{7,41}$ $\quad D(G^{(5)}_{8,103}) = -G^{(194)}_{7,33} - G^{(200)}_{7,34}$

The Fatgraph $G_{8,104}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2, 3]),# a
  Vertex([1, 7, 2]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{1}a^{2} \to {}^{2}e^{0} \to {}^{2}b^{0} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{3}a^{0} \to {}^{2}d^{0} \to {}^{1}e^{2} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}d^{1} \to {}^{0}c^{1})$$

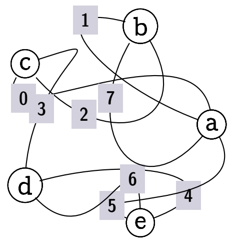
Markings

Fatgraph $G_{8,104}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,104}$ to $G^{(6)}_{8,104}$ are formed by decorating boundary cycles of $G_{8,104}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,104}) = -G^{(195)}_{7,33} - G^{(201)}_{7,34}$$
$$D(G^{(1)}_{8,104}) = -G^{(196)}_{7,34} - G^{(202)}_{7,35}$$
$$D(G^{(2)}_{8,104}) = -G^{(197)}_{7,34} - G^{(203)}_{7,35}$$
$$D(G^{(3)}_{8,104}) = -G^{(60)}_{7,9} - G^{(78)}_{7,12} + G^{(234)}_{7,40} - G^{(252)}_{7,43}$$
$$D(G^{(4)}_{8,104}) = -G^{(61)}_{7,10} - G^{(79)}_{7,13} + G^{(235)}_{7,41} - G^{(253)}_{7,44}$$
$$D(G^{(5)}_{8,104}) = -G^{(62)}_{7,10} - G^{(80)}_{7,13} + G^{(236)}_{7,41} - G^{(254)}_{7,44}$$

The Fatgraph $G_{8,105}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 7, 5]),# a
  Vertex([1, 7, 2]),   # b
  Vertex([0, 2, 3]),   # c
  Vertex([6, 4, 3]),   # d
  Vertex([4, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^2e^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^0c^1 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

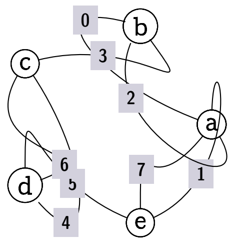
Markings

Fatgraph $G_{8,105}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,105}$ to $G^{(6)}_{8,105}$ are formed by decorating boundary cycles of $G_{8,105}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,105}) = -G^{(63)}_{7,10} - G^{(81)}_{7,13} + G^{(237)}_{7,41} - G^{(255)}_{7,44}$$
$$D(G^{(1)}_{8,105}) = -G^{(64)}_{7,10} - G^{(82)}_{7,13} + G^{(238)}_{7,41}$$
$$D(G^{(2)}_{8,105}) = -G^{(65)}_{7,10} - G^{(83)}_{7,13} + G^{(239)}_{7,41}$$
$$D(G^{(3)}_{8,105}) = -G^{(210)}_{7,36}$$
$$D(G^{(4)}_{8,105}) = -G^{(211)}_{7,37}$$
$$D(G^{(5)}_{8,105}) = -G^{(212)}_{7,37}$$

The Fatgraph $G_{8,106}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 7, 2]),# a
  Vertex([0, 2, 3]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([1, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^3a^0 \to {}^0a^1 \to {}^1b^2 \to {}^2a^3 \to {}^2e^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^2b^0 \to {}^1e^2 \to {}^1c^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

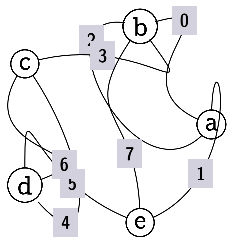
Markings

Fatgraph $G_{8,106}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,106}$ to $G^{(6)}_{8,106}$ are formed by decorating boundary cycles of $G_{8,106}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,106}) = -G^{(213)}_{7,37}$$
$$D(G^{(1)}_{8,106}) = -G^{(214)}_{7,37}$$
$$D(G^{(2)}_{8,106}) = -G^{(215)}_{7,37}$$
$$D(G^{(3)}_{8,106}) = +G^{(42)}_{7,6} + G^{(60)}_{7,9}$$
$$D(G^{(4)}_{8,106}) = +G^{(43)}_{7,7} + G^{(61)}_{7,10}$$
$$D(G^{(5)}_{8,106}) = +G^{(44)}_{7,7} + G^{(62)}_{7,10}$$

The Fatgraph $G_{8,107}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3, 0]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([1, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0a^1 \to {}^2c^0 \to {}^3b^0 \to {}^2e^0 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1a^2 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1 \to {}^1e^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

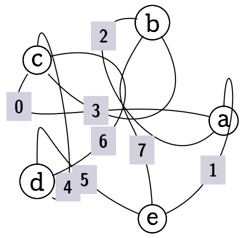
Markings

Fatgraph $G_{8,107}$ only has the identity automorphism, so the marked fatgraphs $G_{8,107}^{(0)}$ to $G_{8,107}^{(6)}$ are formed by decorating boundary cycles of $G_{8,107}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,107}^{(0)}) = +G_{7,7}^{(45)} + G_{7,10}^{(63)}$$
$$D(G_{8,107}^{(1)}) = +G_{7,7}^{(46)} + G_{7,10}^{(64)}$$
$$D(G_{8,107}^{(2)}) = +G_{7,7}^{(47)} + G_{7,10}^{(65)}$$
$$D(G_{8,107}^{(3)}) = +G_{7,2}^{(18)} + G_{7,12}^{(78)} + G_{7,39}^{(224)}$$
$$D(G_{8,107}^{(4)}) = +G_{7,3}^{(19)} + G_{7,13}^{(79)} + G_{7,39}^{(226)}$$
$$D(G_{8,107}^{(5)}) = +G_{7,3}^{(20)} + G_{7,13}^{(80)} + G_{7,38}^{(222)}$$

The Fatgraph $G_{8,108}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3]),   # b
  Vertex([0, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
  Vertex([1, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{1}e^{2} \to {}^{3}c^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

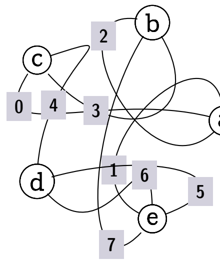
Markings

Fatgraph $G_{8,108}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,108}$ to $G^{(6)}_{8,108}$ are formed by decorating boundary cycles of $G_{8,108}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,108}) = +G^{(21)}_{7,3} + G^{(81)}_{7,13} + G^{(227)}_{7,39} \qquad D(G^{(3)}_{8,108}) = -G^{(18)}_{7,2} - G^{(42)}_{7,6} + G^{(230)}_{7,40}$$
$$D(G^{(1)}_{8,108}) = +G^{(22)}_{7,3} + G^{(82)}_{7,13} + G^{(223)}_{7,39} \qquad D(G^{(4)}_{8,108}) = -G^{(19)}_{7,3} - G^{(43)}_{7,7} + G^{(232)}_{7,40}$$
$$D(G^{(2)}_{8,108}) = +G^{(23)}_{7,3} + G^{(83)}_{7,13} + G^{(225)}_{7,39} \qquad D(G^{(5)}_{8,108}) = -G^{(20)}_{7,3} - G^{(44)}_{7,7} + G^{(228)}_{7,39}$$

The Fatgraph $G_{8,109}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([6, 5, 4]),   # d
  Vertex([5, 6, 1, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^1e^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^2e^3)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^3e^0 \to {}^1d^2 \to {}^0b^1)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

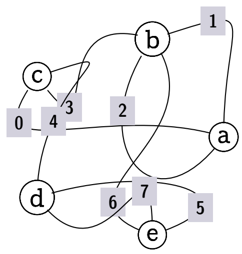
Markings

Fatgraph $G_{8,109}$ only has the identity automorphism, so the marked fatgraphs $G_{8,109}^{(0)}$ to $G_{8,109}^{(6)}$ are formed by decorating boundary cycles of $G_{8,109}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,109}^{(0)}) = -G_{7,3}^{(21)} - G_{7,7}^{(45)} + G_{7,40}^{(233)} \qquad D(G_{8,109}^{(3)}) = +G_{7,37}^{(216)} + G_{7,42}^{(242)}$$
$$D(G_{8,109}^{(1)}) = -G_{7,3}^{(22)} - G_{7,7}^{(46)} + G_{7,40}^{(229)} \qquad D(G_{8,109}^{(4)}) = +G_{7,38}^{(217)} + G_{7,42}^{(244)}$$
$$D(G_{8,109}^{(2)}) = -G_{7,3}^{(23)} - G_{7,7}^{(47)} + G_{7,40}^{(231)} \qquad D(G_{8,109}^{(5)}) = +G_{7,38}^{(218)} + G_{7,41}^{(240)}$$

The Fatgraph $G_{8,110}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 6, 1]),# b
  Vertex([0, 3, 4]),   # c
  Vertex([7, 5, 4]),   # d
  Vertex([5, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}b^{3} \to {}^{1}e^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}e^{1} \to {}^{0}d^{1})$$

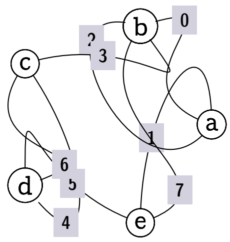
Markings

Fatgraph $G_{8,110}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,110}$ to $G^{(6)}_{8,110}$ are formed by decorating boundary cycles of $G_{8,110}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,110}) = +G^{(219)}_{7,38} + G^{(245)}_{7,42}$$
$$D(G^{(1)}_{8,110}) = +G^{(220)}_{7,38} + G^{(241)}_{7,42}$$
$$D(G^{(2)}_{8,110}) = +G^{(221)}_{7,38} + G^{(243)}_{7,42}$$
$$D(G^{(3)}_{8,110}) = -G^{(18)}_{7,2} + G^{(60)}_{7,9} + G^{(248)}_{7,43} - G^{(252)}_{7,43}$$
$$D(G^{(4)}_{8,110}) = -G^{(19)}_{7,3} + G^{(61)}_{7,10} + G^{(250)}_{7,43} - G^{(253)}_{7,44}$$
$$D(G^{(5)}_{8,110}) = -G^{(20)}_{7,3} + G^{(62)}_{7,10} + G^{(246)}_{7,42} - G^{(254)}_{7,44}$$

The Fatgraph $G_{8,111}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3, 0]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([7, 1, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2b^3 \to {}^3b^0 \to {}^1c^2 \to {}^0e^1 \to {}^0b^1 \to {}^1e^2)$$
$$\beta = ({}^2c^0 \to {}^2e^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

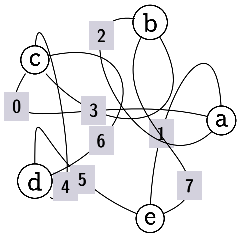
Markings

Fatgraph $G_{8,111}$ only has the identity automorphism, so the marked fatgraphs $G_{8,111}^{(0)}$ to $G_{8,111}^{(6)}$ are formed by decorating boundary cycles of $G_{8,111}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,111}^{(0)}) = -G_{7,3}^{(21)} + G_{7,10}^{(63)} + G_{7,43}^{(251)} - G_{7,44}^{(255)}$$
$$D(G_{8,111}^{(1)}) = -G_{7,3}^{(22)} + G_{7,10}^{(64)} + G_{7,43}^{(247)}$$
$$D(G_{8,111}^{(2)}) = -G_{7,3}^{(23)} + G_{7,10}^{(65)} + G_{7,43}^{(249)}$$
$$D(G_{8,111}^{(3)}) = -G_{7,5}^{(31)} - G_{7,10}^{(66)} + G_{7,39}^{(226)}$$
$$D(G_{8,111}^{(4)}) = -G_{7,4}^{(30)} + G_{7,10}^{(66)} + G_{7,39}^{(224)}$$
$$D(G_{8,111}^{(5)}) = -G_{7,5}^{(33)} - G_{7,11}^{(67)} + G_{7,39}^{(227)}$$

The Fatgraph $G_{8,112}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3]),   # b
  Vertex([0, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
  Vertex([7, 1, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}e^{1} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$$
$$\beta = ({}^{2}e^{0} \to {}^{1}d^{2} \to {}^{1}c^{2} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

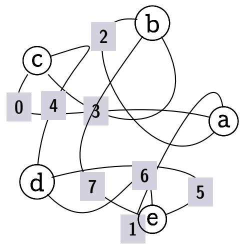
Markings

Fatgraph $G_{8,112}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,112}$ to $G^{(6)}_{8,112}$ are formed by decorating boundary cycles of $G_{8,112}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,112}) = -G^{(32)}_{7,5} + G^{(67)}_{7,11} + G^{(222)}_{7,38} \qquad D(G^{(3)}_{8,112}) = -G^{(30)}_{7,4} - G^{(31)}_{7,5} - G^{(232)}_{7,40}$$
$$D(G^{(1)}_{8,112}) = -G^{(35)}_{7,5} - G^{(68)}_{7,11} + G^{(225)}_{7,39} \qquad D(G^{(4)}_{8,112}) = -G^{(30)}_{7,4} - G^{(31)}_{7,5} - G^{(230)}_{7,40}$$
$$D(G^{(2)}_{8,112}) = -G^{(34)}_{7,5} + G^{(68)}_{7,11} + G^{(223)}_{7,39} \qquad D(G^{(5)}_{8,112}) = -G^{(32)}_{7,5} - G^{(33)}_{7,5} - G^{(233)}_{7,40}$$

The Fatgraph $G_{8,113}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 7, 3]),   # b
  Vertex([0, 3, 4]),   # c
  Vertex([6, 5, 4]),   # d
  Vertex([5, 6, 7, 1]),# e
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \to {}^1a^2 \to {}^2e^3 \to {}^0a^1 \to {}^2c^0 \to {}^0c^1 \to {}^2b^0 \to {}^0b^1 \to {}^3e^0 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1e^2 \to {}^1c^2 \to {}^1b^2)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

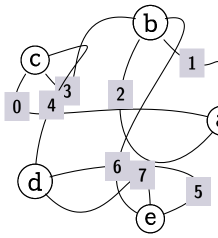
Markings

Fatgraph $G_{8,113}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,113}$ to $G^{(6)}_{8,113}$ are formed by decorating boundary cycles of $G_{8,113}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,113}) = -G^{(32)}_{7,5} - G^{(33)}_{7,5} - G^{(228)}_{7,39} \qquad D(G^{(3)}_{8,113}) = -G^{(30)}_{7,4} + G^{(66)}_{7,10}$$
$$D(G^{(1)}_{8,113}) = -G^{(34)}_{7,5} - G^{(35)}_{7,5} - G^{(231)}_{7,40} \qquad D(G^{(4)}_{8,113}) = -G^{(31)}_{7,5} - G^{(66)}_{7,10}$$
$$D(G^{(2)}_{8,113}) = -G^{(34)}_{7,5} - G^{(35)}_{7,5} - G^{(229)}_{7,40} \qquad D(G^{(5)}_{8,113}) = -G^{(32)}_{7,5} + G^{(67)}_{7,11}$$

The Fatgraph $G_{8,114}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([3, 2, 1, 6]),# b
  Vertex([0, 3, 4]),   # c
  Vertex([7, 5, 4]),   # d
  Vertex([5, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{3}b^{0} \to {}^{1}e^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}e^{1} \to {}^{0}d^{1})$$

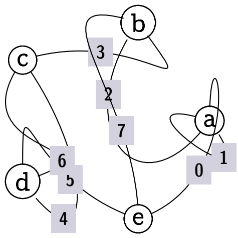
Markings

Fatgraph $G_{8,114}$ only has the identity automorphism, so the marked fatgraphs $G_{8,114}^{(0)}$ to $G_{8,114}^{(6)}$ are formed by decorating boundary cycles of $G_{8,114}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,114}^{(0)}) = -G_{7,5}^{(33)} - G_{7,11}^{(67)}$$
$$D(G_{8,114}^{(1)}) = -G_{7,5}^{(34)} + G_{7,11}^{(68)}$$
$$D(G_{8,114}^{(2)}) = -G_{7,5}^{(35)} - G_{7,11}^{(68)}$$
$$D(G_{8,114}^{(3)}) = +G_{7,11}^{(69)} + G_{7,11}^{(70)} - G_{7,40}^{(234)} + G_{7,43}^{(252)}$$
$$D(G_{8,114}^{(4)}) = +G_{7,11}^{(69)} + G_{7,11}^{(70)} - G_{7,41}^{(235)} + G_{7,44}^{(253)}$$
$$D(G_{8,114}^{(5)}) = +G_{7,11}^{(71)} + G_{7,11}^{(72)} - G_{7,41}^{(236)} + G_{7,44}^{(254)}$$

The Fatgraph $G_{8,115}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([7, 2, 3]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^3 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2e^0 \to {}^2c^0 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^2b^0 \to {}^1e^2 \to {}^1c^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

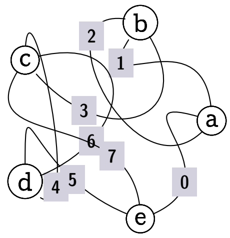
Markings

Fatgraph $G_{8,115}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,115}$ to $G^{(6)}_{8,115}$ are formed by decorating boundary cycles of $G_{8,115}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,115}) = +G^{(71)}_{7,11} + G^{(72)}_{7,11} - G^{(237)}_{7,41} + G^{(255)}_{7,44}$$
$$D(G^{(1)}_{8,115}) = +G^{(73)}_{7,12} + G^{(74)}_{7,12} - G^{(238)}_{7,41}$$
$$D(G^{(2)}_{8,115}) = +G^{(73)}_{7,12} + G^{(74)}_{7,12} - G^{(239)}_{7,41}$$
$$D(G^{(3)}_{8,115}) = +G^{(36)}_{7,5} + G^{(70)}_{7,11}$$
$$D(G^{(4)}_{8,115}) = +G^{(37)}_{7,6} + G^{(69)}_{7,11}$$
$$D(G^{(5)}_{8,115}) = +G^{(38)}_{7,6} + G^{(72)}_{7,11}$$

The Fatgraph $G_{8,116}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([7, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{2}c^{3})$
$\gamma = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{3}c^{0})$

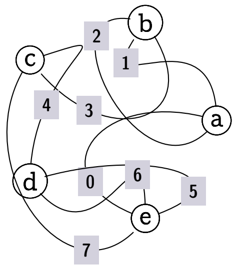
Markings

Fatgraph $G_{8,116}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,116}$ to $G^{(6)}_{8,116}$ are formed by decorating boundary cycles of $G_{8,116}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,116}) = +G^{(39)}_{7,6} + G^{(71)}_{7,11}$
$D(G^{(1)}_{8,116}) = +G^{(40)}_{7,6} + G^{(74)}_{7,12}$
$D(G^{(2)}_{8,116}) = +G^{(41)}_{7,6} + G^{(73)}_{7,12}$
$D(G^{(3)}_{8,116}) = +G^{(36)}_{7,5} - G^{(69)}_{7,11}$
$D(G^{(4)}_{8,116}) = +G^{(37)}_{7,6} - G^{(70)}_{7,11}$
$D(G^{(5)}_{8,116}) = +G^{(38)}_{7,6} - G^{(71)}_{7,11}$

The Fatgraph $G_{8,117}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([7, 3, 4]),   # c
  Vertex([6, 5, 4]),   # d
  Vertex([5, 6, 0, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1c^2 \to {}^1a^2 \to {}^1e^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^0b^1 \to {}^2e^3)$$
$$\beta = ({}^3e^0 \to {}^1d^2 \to {}^2c^0)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

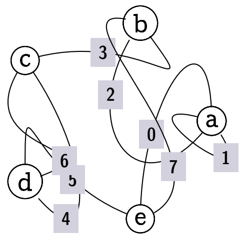
Markings

Fatgraph $G_{8,117}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,117}$ to $G^{(6)}_{8,117}$ are formed by decorating boundary cycles of $G_{8,117}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,117}) = +G^{(39)}_{7,6} - G^{(72)}_{7,11}$$
$$D(G^{(1)}_{8,117}) = +G^{(40)}_{7,6} - G^{(73)}_{7,12}$$
$$D(G^{(2)}_{8,117}) = +G^{(41)}_{7,6} - G^{(74)}_{7,12}$$
$$D(G^{(3)}_{8,117}) = -G^{(37)}_{7,6} - G^{(69)}_{7,11} - G^{(224)}_{7,39}$$
$$D(G^{(4)}_{8,117}) = -G^{(36)}_{7,5} - G^{(70)}_{7,11} - G^{(226)}_{7,39}$$
$$D(G^{(5)}_{8,117}) = -G^{(39)}_{7,6} - G^{(71)}_{7,11} - G^{(222)}_{7,38}$$

The Fatgraph $G_{8,118}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([7, 2, 3]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([7, 0, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^0e^1 \to {}^3a^0 \to {}^0a^1 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2)$$
$$\beta = ({}^1a^2 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^2c^0 \to {}^1d^2 \to {}^1b^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	2	1	0	5	6	3	4	7	β	α	γ

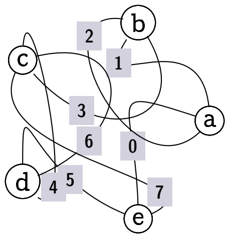
Markings

	$G^{(0)}_{8,118}$	$G^{(1)}_{8,118}$	$G^{(2)}_{8,118}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G^{(0)}_{8,118}) = -G^{(38)}_{7,6} - G^{(72)}_{7,11} - G^{(227)}_{7,39}$$
$$D(G^{(1)}_{8,118}) = -G^{(41)}_{7,6} - G^{(73)}_{7,12} - G^{(223)}_{7,39}$$
$$D(G^{(2)}_{8,118}) = -G^{(40)}_{7,6} - G^{(74)}_{7,12} - G^{(225)}_{7,39}$$

The Fatgraph $G_{8,119}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([7, 3, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
  Vertex([7, 0, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}e^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{1}e^{2})$$
$$\beta = ({}^{2}a^{0} \to {}^{1}c^{2} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

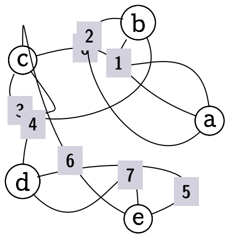
Markings

Fatgraph $G_{8,119}$ only has the identity automorphism, so the marked fatgraphs $G_{8,119}^{(0)}$ to $G_{8,119}^{(6)}$ are formed by decorating boundary cycles of $G_{8,119}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,119}^{(0)}) = +G_{7,6}^{(37)} - G_{7,11}^{(70)} + G_{7,39}^{(224)} \qquad D(G_{8,119}^{(3)}) = +G_{7,6}^{(38)} - G_{7,11}^{(71)} + G_{7,39}^{(227)}$$
$$D(G_{8,119}^{(1)}) = +G_{7,5}^{(36)} - G_{7,11}^{(69)} + G_{7,39}^{(226)} \qquad D(G_{8,119}^{(4)}) = +G_{7,6}^{(41)} - G_{7,12}^{(74)} + G_{7,39}^{(223)}$$
$$D(G_{8,119}^{(2)}) = +G_{7,6}^{(39)} - G_{7,11}^{(72)} + G_{7,38}^{(222)} \qquad D(G_{8,119}^{(5)}) = +G_{7,6}^{(40)} - G_{7,12}^{(73)} + G_{7,39}^{(225)}$$

The Fatgraph $G_{8,120}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([3, 4, 0, 6]),# c
  Vertex([7, 5, 4]),   # d
  Vertex([5, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{1}a^{2} \rightarrow {}^{0}a^{1} \rightarrow {}^{0}b^{1} \rightarrow {}^{2}e^{0} \rightarrow {}^{1}c^{2} \rightarrow {}^{2}c^{3} \rightarrow {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \rightarrow {}^{2}a^{0} \rightarrow {}^{0}c^{1} \rightarrow {}^{1}b^{2} \rightarrow {}^{3}c^{0} \rightarrow {}^{2}b^{0} \rightarrow {}^{1}e^{2})$$
$$\gamma = ({}^{0}e^{1} \rightarrow {}^{0}d^{1})$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	c	e	d	3	1	2	0	6	7	4	5	β	α	γ

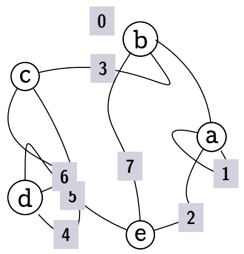
Markings

	$G^{(0)}_{8,120}$	$G^{(1)}_{8,120}$	$G^{(2)}_{8,120}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G^{(0)}_{8,120}) = -G^{(156)}_{7,27}$$
$$D(G^{(1)}_{8,120}) = -G^{(157)}_{7,27}$$
$$D(G^{(2)}_{8,120}) = -G^{(158)}_{7,27}$$

The Fatgraph $G_{8,121}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 2, 1]),# a
  Vertex([0, 7, 3]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([4, 6, 5]),   # d
  Vertex([2, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2)$$
$$\beta = ({}^0e^1 \to {}^1a^2 \to {}^2c^0 \to {}^2a^3 \to {}^2e^0 \to {}^1b^2 \to {}^1d^2)$$
$$\gamma = ({}^0d^1 \to {}^0c^1)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	2	1	0	5	6	3	4	7	β	α	γ

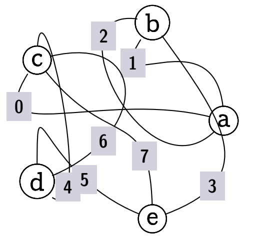
Markings

	$G^{(0)}_{8,121}$	$G^{(1)}_{8,121}$	$G^{(2)}_{8,121}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G^{(0)}_{8,121}) = -G^{(159)}_{7,27}$$
$$D(G^{(1)}_{8,121}) = -G^{(160)}_{7,28}$$
$$D(G^{(2)}_{8,121}) = -G^{(161)}_{7,28}$$

The Fatgraph $G_{8,122}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 3]),   # b
  Vertex([0, 7, 6, 4]),# c
  Vertex([4, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{3}c^{0} \to {}^{1}e^{2})$$
$$\beta = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}d^{1} \to {}^{2}c^{3})$$

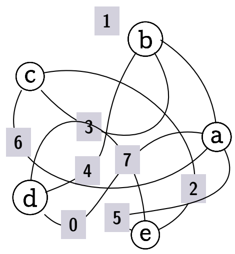
Markings

Fatgraph $G_{8,122}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,122}$ to $G^{(6)}_{8,122}$ are formed by decorating boundary cycles of $G_{8,122}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,122}) = -G^{(156)}_{7,27}$$
$$D(G^{(1)}_{8,122}) = -G^{(157)}_{7,27}$$
$$D(G^{(2)}_{8,122}) = -G^{(158)}_{7,27}$$
$$D(G^{(3)}_{8,122}) = -G^{(159)}_{7,27}$$
$$D(G^{(4)}_{8,122}) = -G^{(160)}_{7,28}$$
$$D(G^{(5)}_{8,122}) = -G^{(161)}_{7,28}$$

The Fatgraph $G_{8,123}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 3, 2]),   # c
  Vertex([0, 4, 7]),   # d
  Vertex([2, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}e^{0} \to {}^{2}c^{0})$$
$$\gamma = ({}^{3}a^{0} \to {}^{1}e^{2} \to {}^{1}d^{2} \to {}^{0}b^{1})$$

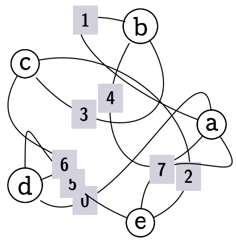
Markings

Fatgraph $G_{8,123}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,123}$ to $G^{(6)}_{8,123}$ are formed by decorating boundary cycles of $G_{8,123}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,123}) = -G^{(18)}_{7,2} + G^{(78)}_{7,12} - G^{(235)}_{7,41} \qquad D(G^{(3)}_{8,123}) = -G^{(21)}_{7,3} + G^{(81)}_{7,13} - G^{(236)}_{7,41}$$
$$D(G^{(1)}_{8,123}) = -G^{(19)}_{7,3} + G^{(79)}_{7,13} - G^{(234)}_{7,40} \qquad D(G^{(4)}_{8,123}) = -G^{(22)}_{7,3} + G^{(82)}_{7,13} - G^{(239)}_{7,41}$$
$$D(G^{(2)}_{8,123}) = -G^{(20)}_{7,3} + G^{(80)}_{7,13} - G^{(237)}_{7,41} \qquad D(G^{(5)}_{8,123}) = -G^{(23)}_{7,3} + G^{(83)}_{7,13} - G^{(238)}_{7,41}$$

The Fatgraph $G_{8,124}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 7]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 3, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([2, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^1e^2 \to {}^2d^0 \to {}^0a^1 \to {}^0b^1)$$
$$\beta = ({}^0e^1 \to {}^0c^1 \to {}^1a^2 \to {}^1b^2 \to {}^3a^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^2e^0 \to {}^1d^2 \to {}^2c^0)$$

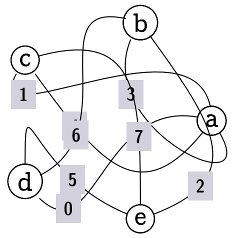
Markings

Fatgraph $G_{8,124}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,124}$ to $G^{(6)}_{8,124}$ are formed by decorating boundary cycles of $G_{8,124}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,124}) = +G^{(48)}_{7,7} + G^{(75)}_{7,12}$$
$$D(G^{(1)}_{8,124}) = +G^{(49)}_{7,8} + G^{(75)}_{7,12}$$
$$D(G^{(2)}_{8,124}) = +G^{(50)}_{7,8} + G^{(76)}_{7,12}$$
$$D(G^{(3)}_{8,124}) = +G^{(51)}_{7,8} + G^{(76)}_{7,12}$$
$$D(G^{(4)}_{8,124}) = +G^{(52)}_{7,8} + G^{(77)}_{7,12}$$
$$D(G^{(5)}_{8,124}) = +G^{(53)}_{7,8} + G^{(77)}_{7,12}$$

The Fatgraph $G_{8,125}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([6, 3, 2]),   # b
  Vertex([1, 4, 7]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([2, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}d^{0} \to {}^{1}e^{2} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}b^{0} \to {}^{1}d^{2} \to {}^{2}e^{0})$$

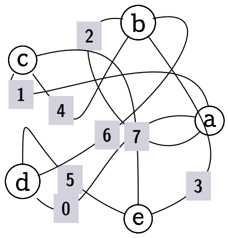
Markings

Fatgraph $G_{8,125}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,125}$ to $G^{(6)}_{8,125}$ are formed by decorating boundary cycles of $G_{8,125}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,125}) = +G^{(42)}_{7,6} - G^{(60)}_{7,9} - G^{(232)}_{7,40} - G^{(253)}_{7,44}$$
$$D(G^{(1)}_{8,125}) = +G^{(43)}_{7,7} - G^{(61)}_{7,10} - G^{(230)}_{7,40} - G^{(252)}_{7,43}$$
$$D(G^{(2)}_{8,125}) = +G^{(44)}_{7,7} - G^{(62)}_{7,10} - G^{(233)}_{7,40} - G^{(255)}_{7,44}$$
$$D(G^{(3)}_{8,125}) = +G^{(45)}_{7,7} - G^{(63)}_{7,10} - G^{(228)}_{7,39} - G^{(254)}_{7,44}$$
$$D(G^{(4)}_{8,125}) = +G^{(46)}_{7,7} - G^{(64)}_{7,10} - G^{(231)}_{7,40}$$
$$D(G^{(5)}_{8,125}) = +G^{(47)}_{7,7} - G^{(65)}_{7,10} - G^{(229)}_{7,40}$$

The Fatgraph $G_{8,126}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 6]),# b
  Vertex([1, 4, 7]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0a^1 \to {}^1b^2 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1 \to {}^2c^0)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^1e^2 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^2e^0 \to {}^1d^2 \to {}^2b^3)$$

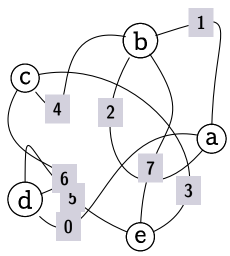
Markings

Fatgraph $G_{8,126}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,126}$ to $G^{(6)}_{8,126}$ are formed by decorating boundary cycles of $G_{8,126}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,126}) = -G^{(49)}_{7,8} + G^{(75)}_{7,12} - G^{(230)}_{7,40} - G^{(248)}_{7,43}$$
$$D(G^{(1)}_{8,126}) = -G^{(48)}_{7,7} + G^{(75)}_{7,12} - G^{(232)}_{7,40} - G^{(250)}_{7,43}$$
$$D(G^{(2)}_{8,126}) = -G^{(51)}_{7,8} + G^{(76)}_{7,12} - G^{(228)}_{7,39} - G^{(246)}_{7,42}$$
$$D(G^{(3)}_{8,126}) = -G^{(50)}_{7,8} + G^{(76)}_{7,12} - G^{(233)}_{7,40} - G^{(251)}_{7,43}$$
$$D(G^{(4)}_{8,126}) = -G^{(53)}_{7,8} + G^{(77)}_{7,12} - G^{(229)}_{7,40} - G^{(247)}_{7,43}$$
$$D(G^{(5)}_{8,126}) = -G^{(52)}_{7,8} + G^{(77)}_{7,12} - G^{(231)}_{7,40} - G^{(249)}_{7,43}$$

The Fatgraph $G_{8,127}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 7, 1]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1c^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^3)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^1e^2 \to {}^1b^2)$$
$$\gamma = ({}^2e^0 \to {}^1d^2 \to {}^2c^0)$$

Markings

Fatgraph $G_{8,127}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,127}$ to $G^{(6)}_{8,127}$ are formed by decorating boundary cycles of $G_{8,127}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,127}) = +2G^{(120)}_{7,20} - G^{(162)}_{7,28} - G^{(174)}_{7,30}$

$D(G^{(1)}_{8,127}) = +2G^{(121)}_{7,21} - G^{(163)}_{7,28} - G^{(175)}_{7,30}$

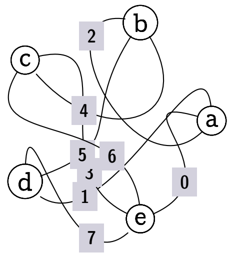
$D(G^{(2)}_{8,127}) = +2G^{(122)}_{7,21} - G^{(164)}_{7,28} - G^{(176)}_{7,30}$

$D(G^{(3)}_{8,127}) = +2G^{(123)}_{7,21} - G^{(165)}_{7,28} - G^{(177)}_{7,30}$

$D(G^{(4)}_{8,127}) = +2G^{(124)}_{7,21} - G^{(166)}_{7,29} - G^{(178)}_{7,31}$

$D(G^{(5)}_{8,127}) = +2G^{(125)}_{7,21} - G^{(167)}_{7,29} - G^{(179)}_{7,31}$

The Fatgraph $G_{8,128}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([6, 4, 3]),   # c
  Vertex([1, 5, 7]),   # d
  Vertex([0, 6, 3, 7]),# e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}e^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}e^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{1}e^{2} \to {}^{2}c^{0})$$

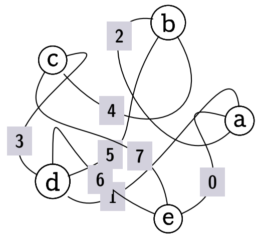
Markings

Fatgraph $G_{8,128}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,128}$ to $G^{(6)}_{8,128}$ are formed by decorating boundary cycles of $G_{8,128}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,128}) = -G^{(126)}_{7,21} - G^{(192)}_{7,33}$$
$$D(G^{(1)}_{8,128}) = -G^{(127)}_{7,22} - G^{(193)}_{7,33}$$
$$D(G^{(2)}_{8,128}) = -G^{(128)}_{7,22} - G^{(194)}_{7,33}$$
$$D(G^{(3)}_{8,128}) = -G^{(129)}_{7,22} - G^{(195)}_{7,33}$$
$$D(G^{(4)}_{8,128}) = -G^{(130)}_{7,23} - G^{(196)}_{7,34}$$
$$D(G^{(5)}_{8,128}) = -G^{(131)}_{7,23} - G^{(197)}_{7,34}$$

The Fatgraph $G_{8,129}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([7, 4, 3]),   # c
  Vertex([1, 5, 6, 3]),# d
  Vertex([0, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{3}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}e^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{3} \to {}^{1}e^{2} \to {}^{2}c^{0})$$

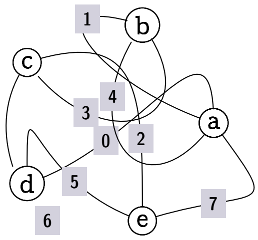
Markings

Fatgraph $G_{8,129}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,129}$ to $G^{(6)}_{8,129}$ are formed by decorating boundary cycles of $G_{8,129}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,129}) = +G^{(138)}_{7,24} + G^{(210)}_{7,36}$$
$$D(G^{(1)}_{8,129}) = +G^{(139)}_{7,24} + G^{(211)}_{7,37}$$
$$D(G^{(2)}_{8,129}) = +G^{(140)}_{7,24} + G^{(212)}_{7,37}$$
$$D(G^{(3)}_{8,129}) = +G^{(141)}_{7,24} + G^{(213)}_{7,37}$$
$$D(G^{(4)}_{8,129}) = +G^{(142)}_{7,25} + G^{(214)}_{7,37}$$
$$D(G^{(5)}_{8,129}) = +G^{(143)}_{7,25} + G^{(215)}_{7,37}$$

The Fatgraph $G_{8,130}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 7]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 3, 2]),   # c
  Vertex([6, 0, 5]),   # d
  Vertex([7, 2, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^0d^1 \to {}^0b^1)$$
$$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1a^2 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^1e^2)$$
$$\gamma = ({}^3a^0 \to {}^1d^2 \to {}^2e^0)$$

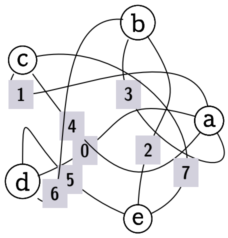
Markings

Fatgraph $G_{8,130}$ only has the identity automorphism, so the marked fatgraphs $G_{8,130}^{(0)}$ to $G_{8,130}^{(6)}$ are formed by decorating boundary cycles of $G_{8,130}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,130}^{(0)}) = -G_{7,25}^{(144)} - G_{7,41}^{(240)}$$
$$D(G_{8,130}^{(1)}) = -G_{7,25}^{(145)} - G_{7,42}^{(241)}$$
$$D(G_{8,130}^{(2)}) = -G_{7,25}^{(146)} - G_{7,42}^{(242)}$$
$$D(G_{8,130}^{(3)}) = -G_{7,25}^{(147)} - G_{7,42}^{(243)}$$
$$D(G_{8,130}^{(4)}) = -G_{7,26}^{(148)} - G_{7,42}^{(244)}$$
$$D(G_{8,130}^{(5)}) = -G_{7,26}^{(149)} - G_{7,42}^{(245)}$$

The Fatgraph $G_{8,131}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([6, 3, 2]),   # b
  Vertex([1, 4, 7]),   # c
  Vertex([6, 0, 5]),   # d
  Vertex([7, 2, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}e^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}e^{1} \to {}^{2}b^{0} \to {}^{1}c^{2} \to {}^{0}d^{1})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}b^{1} \to {}^{3}a^{0} \to {}^{0}c^{1} \to {}^{1}b^{2} \to {}^{1}e^{2})$$

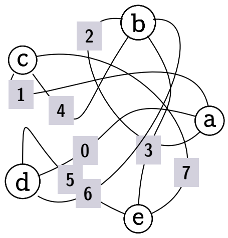
Markings

Fatgraph $G_{8,131}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,131}$ to $G^{(6)}_{8,131}$ are formed by decorating boundary cycles of $G_{8,131}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,131}) = +G^{(126)}_{7,21} - G^{(198)}_{7,34}$$
$$D(G^{(1)}_{8,131}) = +G^{(127)}_{7,22} - G^{(199)}_{7,34}$$
$$D(G^{(2)}_{8,131}) = +G^{(128)}_{7,22} - G^{(200)}_{7,34}$$
$$D(G^{(3)}_{8,131}) = +G^{(129)}_{7,22} - G^{(201)}_{7,34}$$
$$D(G^{(4)}_{8,131}) = +G^{(130)}_{7,23} - G^{(202)}_{7,35}$$
$$D(G^{(5)}_{8,131}) = +G^{(131)}_{7,23} - G^{(203)}_{7,35}$$

The Fatgraph $G_{8,132}$ (3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),    # a
  Vertex([2, 4, 3, 6]),# b
  Vertex([1, 4, 7]),    # c
  Vertex([6, 0, 5]),    # d
  Vertex([7, 3, 5]),    # e
])
```

Boundary cycles

$$\alpha = ({}^{2}c^{0} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}e^{0})$$
$$\beta = ({}^{0}e^{1} \to {}^{1}a^{2} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}e^{2})$$

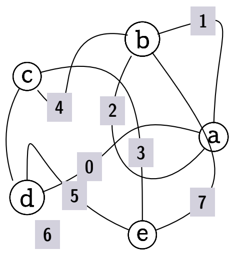
Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
A_1‡	c	b	e	a	d	1	7	4	6	3	0	2	5	α	γ	β
A_2	e	b	d	c	a	7	5	3	2	6	1	4	0	α	β	γ
A_3‡	d	b	a	e	c	5	0	6	4	2	7	3	1	α	γ	β

Markings

	$G_{8,132}^{(0)}$	$G_{8,132}^{(1)}$	$G_{8,132}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

The Fatgraph $G_{8,133}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 7, 1]),# b
  Vertex([6, 4, 3]),   # c
  Vertex([6, 0, 5]),   # d
  Vertex([7, 3, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}b^{3} \to {}^{0}a^{1} \to {}^{1}d^{2} \to {}^{2}e^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}e^{1} \to {}^{2}c^{0} \to {}^{0}d^{1} \to {}^{1}b^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}b^{1} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{1}e^{2})$$

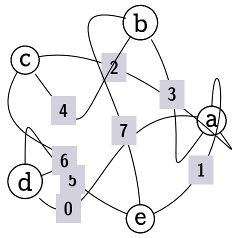
Markings

Fatgraph $G_{8,133}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,133}$ to $G^{(6)}_{8,133}$ are formed by decorating boundary cycles of $G_{8,133}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(3)}_{8,133}) = +G^{(140)}_{7,24}$$
$$D(G^{(4)}_{8,133}) = +G^{(142)}_{7,25}$$
$$D(G^{(5)}_{8,133}) = +G^{(138)}_{7,24}$$

The Fatgraph $G_{8,134}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([7, 4, 3]),   # b
  Vertex([6, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([1, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^0a^1 \to {}^2c^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^1b^2 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^2b^0 \to {}^1e^2)$$
$$\gamma = ({}^3a^0 \to {}^0e^1 \to {}^1c^2 \to {}^0b^1)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	2	3	0	1	5	4	6	7	α	γ	β

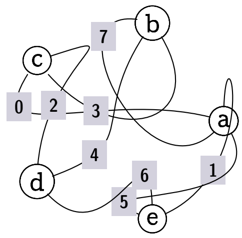
Markings

	$G_{8,134}^{(0)}$	$G_{8,134}^{(1)}$	$G_{8,134}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G_{8,134}^{(0)}) = +G_{7,25}^{(143)}$
$D(G_{8,134}^{(1)}) = +G_{7,24}^{(139)}$
$D(G_{8,134}^{(2)}) = +G_{7,24}^{(141)}$

The Fatgraph $G_{8,135}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 7, 5]),# a
  Vertex([7, 4, 3]),   # b
  Vertex([0, 3, 2]),   # c
  Vertex([6, 4, 2]),   # d
  Vertex([1, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2a^3 \to {}^2b^0 \to {}^0a^1 \to {}^2e^0 \to {}^0c^1)$$
$$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$$
$$\gamma = ({}^0e^1 \to {}^2d^0 \to {}^3a^0 \to {}^1b^2 \to {}^1c^2 \to {}^0d^1 \to {}^1e^2)$$

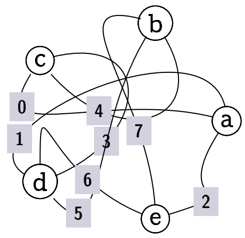
Markings

Fatgraph $G_{8,135}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,135}$ to $G^{(6)}_{8,135}$ are formed by decorating boundary cycles of $G_{8,135}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,135}) = -G^{(146)}_{7,25} + G^{(216)}_{7,37}$$
$$D(G^{(1)}_{8,135}) = -G^{(148)}_{7,26} + G^{(217)}_{7,38}$$
$$D(G^{(2)}_{8,135}) = -G^{(144)}_{7,25} + G^{(218)}_{7,38}$$
$$D(G^{(3)}_{8,135}) = -G^{(149)}_{7,26} + G^{(219)}_{7,38}$$
$$D(G^{(4)}_{8,135}) = -G^{(145)}_{7,25} + G^{(220)}_{7,38}$$
$$D(G^{(5)}_{8,135}) = -G^{(147)}_{7,25} + G^{(221)}_{7,38}$$

The Fatgraph $G_{8,136}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([7, 5, 4]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([5, 3, 6, 1]),# d
  Vertex([2, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{1}e^{2} \to {}^{2}b^{0} \to {}^{0}a^{1} \to {}^{0}c^{1} \to {}^{2}d^{3})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}e^{1} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}a^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{3}d^{0} \to {}^{1}d^{2})$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	c	e	a	d	b	0	3	4	1	2	6	5	7	β	α	γ

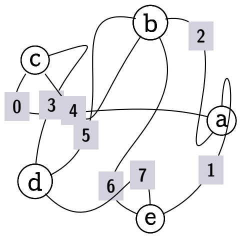
Markings

	$G^{(0)}_{8,136}$	$G^{(1)}_{8,136}$	$G^{(2)}_{8,136}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G^{(0)}_{8,136}) = -G^{(180)}_{7,31}$$
$$D(G^{(1)}_{8,136}) = -G^{(181)}_{7,31}$$
$$D(G^{(2)}_{8,136}) = -G^{(182)}_{7,31}$$

The Fatgraph $G_{8,137}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([5, 4, 6, 2]),# b
  Vertex([0, 4, 3]),   # c
  Vertex([7, 5, 3]),   # d
  Vertex([1, 7, 6]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}a^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{1}b^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{3}b^{0} \to {}^{1}d^{2} \to {}^{2}c^{0})$$
$$\gamma = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}b^{1} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{3} \to {}^{1}e^{2})$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	c	b	a	e	d	0	3	4	1	2	6	5	7	β	α	γ

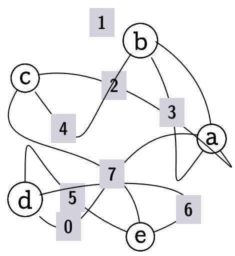
Markings

	$G_{8,137}^{(0)}$	$G_{8,137}^{(1)}$	$G_{8,137}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G_{8,137}^{(0)}) = -G_{7,31}^{(183)}$$
$$D(G_{8,137}^{(1)}) = -G_{7,32}^{(184)}$$
$$D(G_{8,137}^{(2)}) = -G_{7,32}^{(185)}$$

The Fatgraph $G_{8,138}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([7, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{2}a^{3} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2})$
$\beta = ({}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

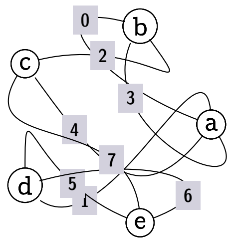
Markings

Fatgraph $G_{8,138}$ only has the identity automorphism, so the marked fatgraphs $G_{8,138}^{(0)}$ to $G_{8,138}^{(6)}$ are formed by decorating boundary cycles of $G_{8,138}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{8,138}^{(0)}) = +G_{7,29}^{(170)} - G_{7,36}^{(206)}$
$D(G_{8,138}^{(1)}) = +G_{7,30}^{(172)} - G_{7,36}^{(208)}$
$D(G_{8,138}^{(2)}) = +G_{7,29}^{(168)} - G_{7,35}^{(204)}$
$D(G_{8,138}^{(3)}) = +G_{7,30}^{(173)} - G_{7,36}^{(209)}$
$D(G_{8,138}^{(4)}) = +G_{7,29}^{(169)} - G_{7,36}^{(205)}$
$D(G_{8,138}^{(5)}) = +G_{7,29}^{(171)} - G_{7,36}^{(207)}$

The Fatgraph $G_{8,139}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([7, 4, 2]),   # c
  Vertex([1, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2d^0 \to {}^3a^0 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^0c^1 \to {}^2c^0 \to {}^0d^1 \to {}^1b^2 \to {}^1e^2)$
$\beta = ({}^1a^2 \to {}^2b^0 \to {}^1c^2)$
$\gamma = ({}^1d^2 \to {}^2e^0)$

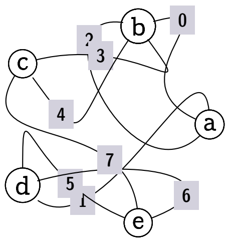
Markings

Fatgraph $G_{8,139}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,139}$ to $G^{(6)}_{8,139}$ are formed by decorating boundary cycles of $G_{8,139}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,139}) = -G^{(90)}_{7,14} + G^{(102)}_{7,17}$
$D(G^{(1)}_{8,139}) = -G^{(91)}_{7,15} + G^{(103)}_{7,17}$
$D(G^{(2)}_{8,139}) = -G^{(92)}_{7,15} + G^{(104)}_{7,17}$
$D(G^{(3)}_{8,139}) = -G^{(93)}_{7,15} + G^{(105)}_{7,17}$
$D(G^{(4)}_{8,139}) = -G^{(94)}_{7,16} + G^{(106)}_{7,18}$
$D(G^{(5)}_{8,139}) = -G^{(95)}_{7,16} + G^{(107)}_{7,18}$

The Fatgraph $G_{8,140}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),    # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([7, 4, 3]),    # c
  Vertex([1, 6, 5]),    # d
  Vertex([6, 7, 5]),    # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{3}b^{0} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}c^{0} \to {}^{1}e^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{3} \to {}^{1}c^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
A_1	c	b	a	e	d	4	7	3	2	0	6	5	1	α	β	γ

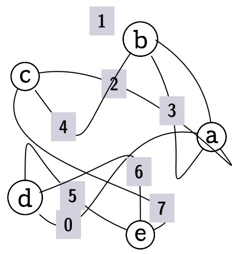
Markings

Fatgraph $G_{8,140}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,140}$ to $G^{(6)}_{8,140}$ are formed by decorating boundary cycles of $G_{8,140}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,140}) = +G^{(85)}_{7,14} + G^{(108)}_{7,18} - G^{(109)}_{7,18}$$
$$D(G^{(1)}_{8,140}) = +G^{(84)}_{7,13} - G^{(108)}_{7,18} + G^{(109)}_{7,18}$$
$$D(G^{(2)}_{8,140}) = +G^{(87)}_{7,14} + G^{(110)}_{7,18} - G^{(111)}_{7,18}$$
$$D(G^{(3)}_{8,140}) = +G^{(86)}_{7,14} - G^{(110)}_{7,18} + G^{(111)}_{7,18}$$
$$D(G^{(4)}_{8,140}) = +G^{(89)}_{7,14} + G^{(112)}_{7,19} - G^{(113)}_{7,19}$$
$$D(G^{(5)}_{8,140}) = +G^{(88)}_{7,14} - G^{(112)}_{7,19} + G^{(113)}_{7,19}$$

The Fatgraph $G_{8,141}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 3, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([7, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$$
$$\beta = ({}^{0}e^{1} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{1}b^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{3}a^{0} \to {}^{1}c^{2} \to {}^{0}b^{1})$$

Markings

Fatgraph $G_{8,141}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,141}$ to $G^{(6)}_{8,141}$ are formed by decorating boundary cycles of $G_{8,141}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,141}) = +G^{(36)}_{7,5} - G^{(114)}_{7,19} + G^{(115)}_{7,19}$

$D(G^{(1)}_{8,141}) = +G^{(37)}_{7,6} + G^{(114)}_{7,19} - G^{(115)}_{7,19}$

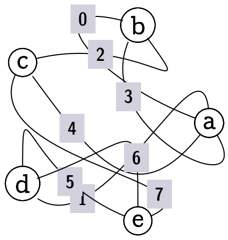
$D(G^{(2)}_{8,141}) = +G^{(38)}_{7,6} - G^{(116)}_{7,19} + G^{(117)}_{7,19}$

$D(G^{(3)}_{8,141}) = +G^{(39)}_{7,6} + G^{(116)}_{7,19} - G^{(117)}_{7,19}$

$D(G^{(4)}_{8,141}) = +G^{(40)}_{7,6} - G^{(118)}_{7,20} + G^{(119)}_{7,20}$

$D(G^{(5)}_{8,141}) = +G^{(41)}_{7,6} + G^{(118)}_{7,20} - G^{(119)}_{7,20}$

The Fatgraph $G_{8,142}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 4, 3]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([7, 4, 2]),   # c
  Vertex([1, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}d^{1} \to {}^{1}e^{2})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{0}e^{1} \to {}^{2}a^{3} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{1}b^{2} \to {}^{1}d^{2})$$

Markings

Fatgraph $G_{8,142}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,142}$ to $G^{(6)}_{8,142}$ are formed by decorating boundary cycles of $G_{8,142}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,142}) = +G^{(48)}_{7,7} - G^{(120)}_{7,20} + G^{(121)}_{7,21}$

$D(G^{(3)}_{8,142}) = +G^{(51)}_{7,8} + G^{(122)}_{7,21} - G^{(123)}_{7,21}$

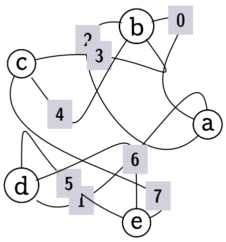
$D(G^{(1)}_{8,142}) = +G^{(49)}_{7,8} + G^{(120)}_{7,20} - G^{(121)}_{7,21}$

$D(G^{(4)}_{8,142}) = +G^{(52)}_{7,8} - G^{(124)}_{7,21} + G^{(125)}_{7,21}$

$D(G^{(2)}_{8,142}) = +G^{(50)}_{7,8} - G^{(122)}_{7,21} + G^{(123)}_{7,21}$

$D(G^{(5)}_{8,142}) = +G^{(53)}_{7,8} + G^{(124)}_{7,21} - G^{(125)}_{7,21}$

The Fatgraph $G_{8,143}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 0]),# b
  Vertex([7, 4, 3]),   # c
  Vertex([1, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0a^1 \to {}^3b^0 \to {}^0d^1 \to {}^1e^2)$$
$$\beta = ({}^1a^2 \to {}^2b^3 \to {}^1c^2 \to {}^0b^1)$$
$$\gamma = ({}^0e^1 \to {}^2c^0 \to {}^2e^0 \to {}^0c^1 \to {}^1b^2 \to {}^1d^2)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	c	b	a	e	d	4	7	3	2	0	5	6	1	γ	β	α

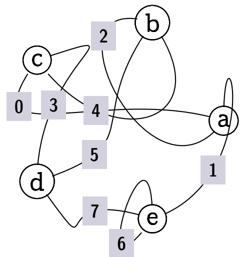
Markings

	$G_{8,143}^{(0)}$	$G_{8,143}^{(1)}$	$G_{8,143}^{(2)}$
α	0	0	1
β	1	2	0
γ	2	1	2

Differentials

$$D(G_{8,143}^{(0)}) = +G_{7,31}^{(180)}$$
$$D(G_{8,143}^{(1)}) = +G_{7,31}^{(181)}$$
$$D(G_{8,143}^{(2)}) = +G_{7,31}^{(182)}$$

The Fatgraph $G_{8,144}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([0, 4, 3]),   # c
  Vertex([7, 5, 3]),   # d
  Vertex([1, 6, 7, 6]),# e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}a^{1} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{3}e^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{0} \to {}^{2}e^{3} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{1}e^{2})$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	d	c	b	a	e	5	7	3	2	4	0	6	1	γ	β	α

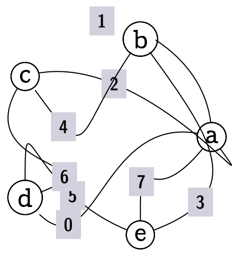
Markings

	$G_{8,144}^{(0)}$	$G_{8,144}^{(1)}$	$G_{8,144}^{(2)}$
α	0	0	1
β	1	2	0
γ	2	1	2

Differentials

$$D(G_{8,144}^{(0)}) = +G_{7,31}^{(183)}$$
$$D(G_{8,144}^{(1)}) = +G_{7,32}^{(184)}$$
$$D(G_{8,144}^{(2)}) = +G_{7,32}^{(185)}$$

The Fatgraph $G_{8,145}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 7, 2]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([6, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([3, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^3 \to {}^0a^1 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1d^2)$$
$$\beta = ({}^1a^2 \to {}^2d^0 \to {}^1e^2)$$
$$\gamma = ({}^3a^0 \to {}^1c^2 \to {}^0b^1)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	2	7	0	3	5	4	6	1	α	γ	β

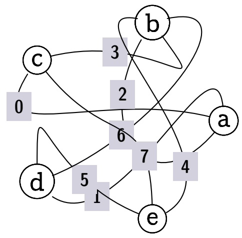
Markings

	$G^{(0)}_{8,145}$	$G^{(1)}_{8,145}$	$G^{(2)}_{8,145}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G^{(0)}_{8,145}) = -G^{(186)}_{7,32} - G^{(188)}_{7,32}$$
$$D(G^{(1)}_{8,145}) = -G^{(187)}_{7,32} - G^{(190)}_{7,33}$$
$$D(G^{(2)}_{8,145}) = -G^{(189)}_{7,32} - G^{(191)}_{7,33}$$

The Fatgraph $G_{8,146}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 3, 6]),# b
  Vertex([0, 7, 3]),   # c
  Vertex([1, 6, 5]),   # d
  Vertex([4, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{0}a^{1} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}b^{2})$$
$$\gamma = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}d^{2})$$

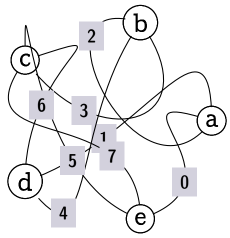
Markings

Fatgraph $G_{8,146}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,146}$ to $G^{(6)}_{8,146}$ are formed by decorating boundary cycles of $G_{8,146}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G^{(0)}_{8,146}) = -G^{(144)}_{7,25} + G^{(212)}_{7,37}$$
$$D(G^{(1)}_{8,146}) = -G^{(145)}_{7,25} + G^{(214)}_{7,37}$$
$$D(G^{(2)}_{8,146}) = -G^{(146)}_{7,25} + G^{(210)}_{7,36}$$
$$D(G^{(3)}_{8,146}) = -G^{(147)}_{7,25} + G^{(215)}_{7,37}$$
$$D(G^{(4)}_{8,146}) = -G^{(148)}_{7,26} + G^{(211)}_{7,37}$$
$$D(G^{(5)}_{8,146}) = -G^{(149)}_{7,26} + G^{(213)}_{7,37}$$

The Fatgraph $G_{8,147}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([7, 3, 6, 5]),# c
  Vertex([4, 1, 6]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^2c^3 \to {}^0a^1 \to {}^0b^1 \to {}^1a^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^1e^2 \to {}^3c^0)$

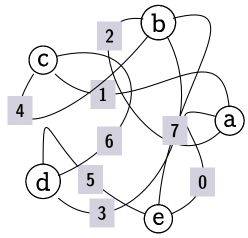
Markings

Fatgraph $G_{8,147}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,147}$ to $G^{(6)}_{8,147}$ are formed by decorating boundary cycles of $G_{8,147}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,147}) = -G^{(138)}_{7,24} - G^{(216)}_{7,37}$
$D(G^{(1)}_{8,147}) = -G^{(139)}_{7,24} - G^{(217)}_{7,38}$
$D(G^{(2)}_{8,147}) = -G^{(140)}_{7,24} - G^{(218)}_{7,38}$
$D(G^{(3)}_{8,147}) = -G^{(141)}_{7,24} - G^{(219)}_{7,38}$
$D(G^{(4)}_{8,147}) = -G^{(142)}_{7,25} - G^{(220)}_{7,38}$
$D(G^{(5)}_{8,147}) = -G^{(143)}_{7,25} - G^{(221)}_{7,38}$

The Fatgraph $G_{8,148}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 7]),# b
  Vertex([4, 1, 6]),   # c
  Vertex([3, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0c^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^3b^0 \to {}^2e^0 \to {}^1c^2 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^0 \to {}^1e^2 \to {}^2b^3)$$

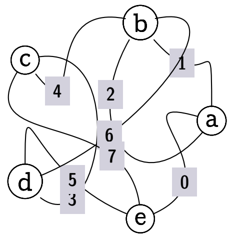
Markings

Fatgraph $G_{8,148}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,148}$ to $G^{(6)}_{8,148}$ are formed by decorating boundary cycles of $G_{8,148}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G^{(0)}_{8,148}) = -G^{(163)}_{7,28} + G^{(232)}_{7,40}$$
$$D(G^{(1)}_{8,148}) = -G^{(162)}_{7,28} + G^{(230)}_{7,40}$$
$$D(G^{(2)}_{8,148}) = -G^{(165)}_{7,28} + G^{(233)}_{7,40}$$
$$D(G^{(3)}_{8,148}) = -G^{(164)}_{7,28} + G^{(228)}_{7,39}$$
$$D(G^{(4)}_{8,148}) = -G^{(167)}_{7,29} + G^{(231)}_{7,40}$$
$$D(G^{(5)}_{8,148}) = -G^{(166)}_{7,29} + G^{(229)}_{7,40}$$

The Fatgraph $G_{8,149}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 6]),# b
  Vertex([7, 4, 3]),   # c
  Vertex([3, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}d^{2} \to {}^{1}b^{2})$$
$$\beta = ({}^{0}d^{1} \to {}^{3}b^{0} \to {}^{1}c^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{2}c^{0})$$

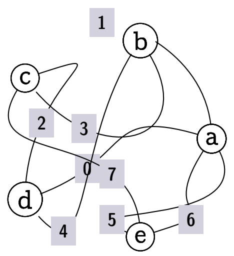
Markings

Fatgraph $G_{8,149}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,149}$ to $G^{(6)}_{8,149}$ are formed by decorating boundary cycles of $G_{8,149}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,149}) = +G^{(174)}_{7,30}$$
$$D(G^{(1)}_{8,149}) = +G^{(175)}_{7,30}$$
$$D(G^{(2)}_{8,149}) = +G^{(176)}_{7,30}$$
$$D(G^{(3)}_{8,149}) = +G^{(177)}_{7,30}$$
$$D(G^{(4)}_{8,149}) = +G^{(178)}_{7,31}$$
$$D(G^{(5)}_{8,149}) = +G^{(179)}_{7,31}$$

The Fatgraph $G_{8,150}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 6, 5]),# a
  Vertex([1, 4, 3]),   # b
  Vertex([7, 3, 2]),   # c
  Vertex([4, 0, 2]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{3}a^{0} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{1}a^{2} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}a^{3} \to {}^{2}e^{0})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$$

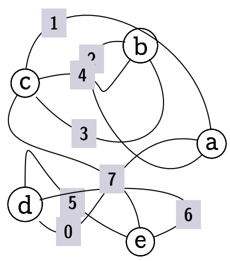
Markings

Fatgraph $G_{8,150}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,150}$ to $G^{(6)}_{8,150}$ are formed by decorating boundary cycles of $G_{8,150}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,150}) = -G^{(138)}_{7,24} + G^{(206)}_{7,36}$$
$$D(G^{(1)}_{8,150}) = -G^{(139)}_{7,24} + G^{(208)}_{7,36}$$
$$D(G^{(2)}_{8,150}) = -G^{(140)}_{7,24} + G^{(204)}_{7,35}$$
$$D(G^{(3)}_{8,150}) = -G^{(141)}_{7,24} + G^{(209)}_{7,36}$$
$$D(G^{(4)}_{8,150}) = -G^{(142)}_{7,25} + G^{(205)}_{7,36}$$
$$D(G^{(5)}_{8,150}) = -G^{(143)}_{7,25} + G^{(207)}_{7,36}$$

The Fatgraph $G_{8,151}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3]),   # b
  Vertex([7, 3, 4, 1]),# c
  Vertex([0, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{3}c^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{2}c^{3})$
$\beta = ({}^{1}c^{2} \to {}^{1}b^{2})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

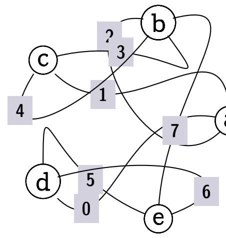
Markings

Fatgraph $G_{8,151}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,151}$ to $G^{(6)}_{8,151}$ are formed by decorating boundary cycles of $G_{8,151}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,151}) = +G^{(170)}_{7,29}$
$D(G^{(1)}_{8,151}) = +G^{(172)}_{7,30}$
$D(G^{(2)}_{8,151}) = +G^{(168)}_{7,29}$
$D(G^{(3)}_{8,151}) = +G^{(173)}_{7,30}$
$D(G^{(4)}_{8,151}) = +G^{(169)}_{7,29}$
$D(G^{(5)}_{8,151}) = +G^{(171)}_{7,29}$

The Fatgraph $G_{8,152}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 4, 3, 7]),# b
  Vertex([4, 1, 3]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}b^{3} \to {}^{3}b^{0} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{0}b^{1} \to {}^{1}e^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

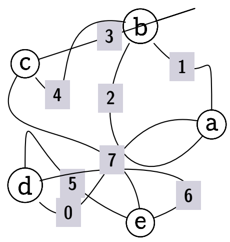
Markings

Fatgraph $G_{8,152}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,152}$ to $G^{(6)}_{8,152}$ are formed by decorating boundary cycles of $G_{8,152}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,152}) = -G^{(163)}_{7,28} + G^{(235)}_{7,41}$$
$$D(G^{(1)}_{8,152}) = -G^{(162)}_{7,28} + G^{(234)}_{7,40}$$
$$D(G^{(2)}_{8,152}) = -G^{(165)}_{7,28} + G^{(237)}_{7,41}$$
$$D(G^{(3)}_{8,152}) = -G^{(164)}_{7,28} + G^{(236)}_{7,41}$$
$$D(G^{(4)}_{8,152}) = -G^{(167)}_{7,29} + G^{(239)}_{7,41}$$
$$D(G^{(5)}_{8,152}) = -G^{(166)}_{7,29} + G^{(238)}_{7,41}$$

The Fatgraph $G_{8,153}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([7, 4, 3]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{0}c^{1} \to {}^{2}c^{0} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{3} \to {}^{1}e^{2} \to {}^{1}b^{2})$
$\beta = ({}^{3}b^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

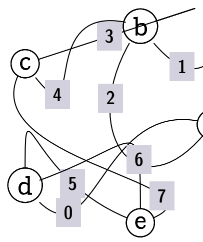
Markings

Fatgraph $G_{8,153}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,153}$ to $G^{(6)}_{8,153}$ are formed by decorating boundary cycles of $G_{8,153}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{8,153}) = +G^{(157)}_{7,27} - G^{(226)}_{7,39}$
$D(G^{(1)}_{8,153}) = +G^{(156)}_{7,27} - G^{(224)}_{7,39}$
$D(G^{(2)}_{8,153}) = +G^{(159)}_{7,27} - G^{(227)}_{7,39}$
$D(G^{(3)}_{8,153}) = +G^{(158)}_{7,27} - G^{(222)}_{7,38}$
$D(G^{(4)}_{8,153}) = +G^{(161)}_{7,28} - G^{(225)}_{7,39}$
$D(G^{(5)}_{8,153}) = +G^{(160)}_{7,28} - G^{(223)}_{7,39}$

The Fatgraph $G_{8,154}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([4, 2, 1, 3]),# b
  Vertex([7, 4, 3]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}d^{1} \to {}^{1}e^{2})$$
$$\beta = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{3} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\gamma = ({}^{3}b^{0} \to {}^{1}c^{2})$$

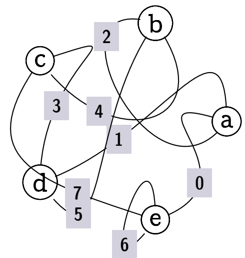
Markings

Fatgraph $G_{8,154}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{8,154}$ to $G^{(6)}_{8,154}$ are formed by decorating boundary cycles of $G_{8,154}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{8,154}) = +G^{(156)}_{7,27}$$
$$D(G^{(1)}_{8,154}) = +G^{(157)}_{7,27}$$
$$D(G^{(2)}_{8,154}) = +G^{(158)}_{7,27}$$
$$D(G^{(3)}_{8,154}) = +G^{(159)}_{7,27}$$
$$D(G^{(4)}_{8,154}) = +G^{(160)}_{7,28}$$
$$D(G^{(5)}_{8,154}) = +G^{(161)}_{7,28}$$

The Fatgraph $G_{8,155}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 5, 4]),   # b
  Vertex([7, 4, 3]),   # c
  Vertex([5, 1, 3]),   # d
  Vertex([0, 6, 7, 6]),# e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^0d^1 \to {}^3e^0)$$
$$\beta = ({}^2a^0 \to {}^2e^3 \to {}^2c^0 \to {}^0c^1 \to {}^2b^0 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$$

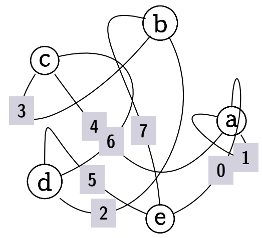
Markings

Fatgraph $G_{8,155}$ only has the identity automorphism, so the marked fatgraphs $G_{8,155}^{(0)}$ to $G_{8,155}^{(6)}$ are formed by decorating boundary cycles of $G_{8,155}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,155}^{(0)}) = +G_{7,29}^{(170)} - G_{7,41}^{(240)}$$
$$D(G_{8,155}^{(1)}) = +G_{7,30}^{(172)} - G_{7,42}^{(241)}$$
$$D(G_{8,155}^{(2)}) = +G_{7,29}^{(168)} - G_{7,42}^{(242)}$$
$$D(G_{8,155}^{(3)}) = +G_{7,30}^{(173)} - G_{7,42}^{(243)}$$
$$D(G_{8,155}^{(4)}) = +G_{7,29}^{(169)} - G_{7,42}^{(244)}$$
$$D(G_{8,155}^{(5)}) = +G_{7,29}^{(171)} - G_{7,42}^{(245)}$$

The Fatgraph $G_{8,156}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([7, 3, 2]),   # b
  Vertex([3, 4, 6]),   # c
  Vertex([2, 6, 5]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^1c^2 \to {}^3a^0 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^0c^1 \to {}^1d^2)$$
$$\beta = ({}^0d^1 \to {}^2c^0 \to {}^1b^2)$$
$$\gamma = ({}^2d^0 \to {}^2b^0 \to {}^1e^2)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	d	e	b	c	4	1	2	5	0	3	7	6	α	γ	β

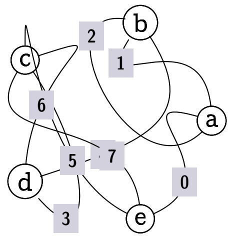
Markings

	$G^{(0)}_{8,156}$	$G^{(1)}_{8,156}$	$G^{(2)}_{8,156}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G^{(0)}_{8,156}) = +G^{(146)}_{7,25} + G^{(204)}_{7,35}$$
$$D(G^{(1)}_{8,156}) = +G^{(148)}_{7,26} + G^{(205)}_{7,36}$$
$$D(G^{(2)}_{8,156}) = +G^{(144)}_{7,25} + G^{(206)}_{7,36}$$

The Fatgraph $G_{8,157}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),   # a
  Vertex([2, 1, 4]),   # b
  Vertex([7, 3, 6, 5]),# c
  Vertex([3, 4, 6]),   # d
  Vertex([0, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^2c^3 \to {}^0a^1 \to {}^1b^2 \to {}^1a^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^1e^2 \to {}^3c^0)$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	c	e	d	4	1	2	5	0	3	7	6	α	γ	β

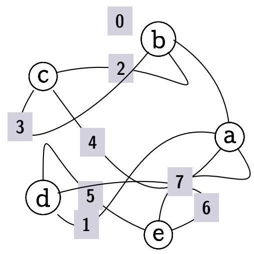
Markings

	$G^{(0)}_{8,157}$	$G^{(1)}_{8,157}$	$G^{(2)}_{8,157}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G^{(0)}_{8,157}) = +G^{(149)}_{7,26} + G^{(207)}_{7,36}$
$D(G^{(1)}_{8,157}) = +G^{(145)}_{7,25} + G^{(208)}_{7,36}$
$D(G^{(2)}_{8,157}) = +G^{(147)}_{7,25} + G^{(209)}_{7,36}$

The Fatgraph $G_{8,158}$ (3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 7]),# a
  Vertex([0, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([1, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
A_1‡	a	d	e	c	b	1	4	5	6	7	3	2	0	α	γ	β
A_2	a	c	b	e	d	4	7	3	2	0	6	5	1	α	β	γ
A_3‡	a	e	d	b	c	7	0	6	5	1	2	3	4	α	γ	β

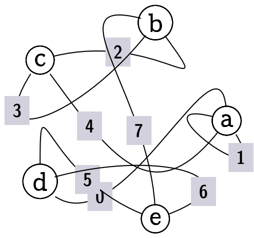
Markings

	$G^{(0)}_{8,158}$	$G^{(1)}_{8,158}$	$G^{(2)}_{8,158}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G^{(0)}_{8,158}) = +G^{(150)}_{7,26} + G^{(152)}_{7,26}$
$D(G^{(1)}_{8,158}) = +G^{(151)}_{7,26} + G^{(154)}_{7,27}$
$D(G^{(2)}_{8,158}) = +G^{(150)}_{7,26} + G^{(152)}_{7,26}$

The Fatgraph $G_{8,159}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([7, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([6, 7, 5]),   # e
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{1}c^{2} \to {}^{3}a^{0} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}a^{3} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$
$\beta = ({}^{2}c^{0} \to {}^{1}b^{2})$
$\gamma = ({}^{1}d^{2} \to {}^{2}e^{0})$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	4	1	6	5	0	3	2	7	α	γ	β

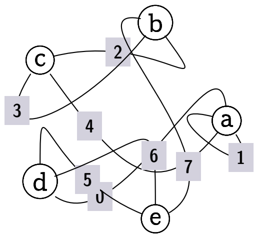
Markings

	$G^{(0)}_{8,159}$	$G^{(1)}_{8,159}$	$G^{(2)}_{8,159}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G^{(0)}_{8,159}) = +G^{(153)}_{7,26} + G^{(155)}_{7,27}$$
$$D(G^{(1)}_{8,159}) = +G^{(151)}_{7,26} + G^{(154)}_{7,27}$$
$$D(G^{(2)}_{8,159}) = +G^{(153)}_{7,26} + G^{(155)}_{7,27}$$

The Fatgraph $G_{8,160}$ (6 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([7, 3, 2]),   # b
  Vertex([3, 4, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0d^1 \to {}^1e^2 \to {}^0a^1 \to {}^2d^0)$$
$$\beta = ({}^0e^1 \to {}^0c^1 \to {}^1a^2 \to {}^0b^1 \to {}^2a^3 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^1d^2)$$
$$\gamma = ({}^2c^0 \to {}^1b^2)$$

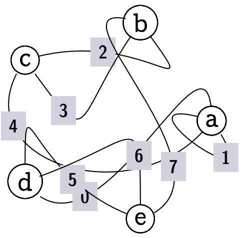
Markings

Fatgraph $G_{8,160}$ only has the identity automorphism, so the marked fatgraphs $G_{8,160}^{(0)}$ to $G_{8,160}^{(6)}$ are formed by decorating boundary cycles of $G_{8,160}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{8,160}^{(0)}) = -G_{7,24}^{(140)} - G_{7,36}^{(210)}$$
$$D(G_{8,160}^{(1)}) = -G_{7,25}^{(142)} - G_{7,37}^{(211)}$$
$$D(G_{8,160}^{(2)}) = -G_{7,24}^{(138)} - G_{7,37}^{(212)}$$
$$D(G_{8,160}^{(3)}) = -G_{7,25}^{(143)} - G_{7,37}^{(213)}$$
$$D(G_{8,160}^{(4)}) = -G_{7,24}^{(139)} - G_{7,37}^{(214)}$$
$$D(G_{8,160}^{(5)}) = -G_{7,24}^{(141)} - G_{7,37}^{(215)}$$

The Fatgraph $G_{8,161}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([0, 1, 4, 1]),# a
  Vertex([7, 3, 2]),   # b
  Vertex([4, 3, 2]),   # c
  Vertex([0, 6, 5]),   # d
  Vertex([7, 6, 5]),   # e
])
```

Boundary cycles

$$\alpha = ({}^3a^0 \to {}^0d^1 \to {}^1e^2 \to {}^0a^1 \to {}^2d^0)$$
$$\beta = ({}^1a^2 \to {}^2a^3 \to {}^2c^0 \to {}^0c^1 \to {}^1b^2)$$
$$\gamma = ({}^0e^1 \to {}^0b^1 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^1d^2)$$

Automorphisms

A_0	a	b	c	d	e	0	1	2	3	4	5	6	7	α	β	γ
$A_1{}^{\dagger\ddagger}$	a	e	d	c	b	4	1	5	6	0	2	3	7	β	α	γ

Markings

	$G_{8,161}^{(0)}$	$G_{8,161}^{(1)}$	$G_{8,161}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

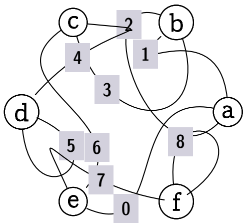
Differentials

$$D(G_{8,161}^{(0)}) = -G_{7,27}^{(156)}$$
$$D(G_{8,161}^{(1)}) = -G_{7,27}^{(157)}$$
$$D(G_{8,161}^{(2)}) = -G_{7,27}^{(158)}$$

Fatgraphs with 9 edges / 6 vertices

There are 46 unmarked fatgraphs in this section, originating 472 marked fatgraphs (236 orientable, and 236 nonorientable).

The Fatgraph $G_{9,0}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([6, 3, 4]),# c
  Vertex([5, 5, 4]),# d
  Vertex([0, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}$
$\beta = ({}^{0}d^{1})$
$\gamma = ({}^{0}f^{1})$

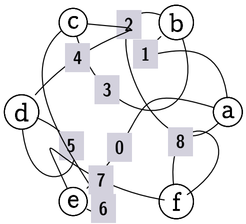
Markings

Fatgraph $G_{9,0}$ only has the identity automorphism, so the marked fatgraphs $G_{9,0}^{(0)}$ to $G_{9,0}^{(6)}$ are formed by decorating boundary cycles of $G_{9,0}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,0}^{(0)}) = -G_{8,0}^{(0)} + G_{8,0}^{(6)} + G_{8,1}^{(12)} - G_{8,3}^{(19)}$$
$$D(G_{9,0}^{(1)}) = -G_{8,0}^{(1)} + G_{8,1}^{(7)} + G_{8,2}^{(13)} - G_{8,2}^{(18)}$$
$$D(G_{9,0}^{(2)}) = -G_{8,0}^{(2)} + G_{8,1}^{(8)} + G_{8,2}^{(14)} - G_{8,3}^{(21)}$$
$$D(G_{9,0}^{(3)}) = -G_{8,0}^{(3)} + G_{8,1}^{(9)} + G_{8,2}^{(15)} - G_{8,3}^{(20)}$$
$$D(G_{9,0}^{(4)}) = -G_{8,0}^{(4)} + G_{8,1}^{(10)} + G_{8,2}^{(16)} - G_{8,3}^{(23)}$$
$$D(G_{9,0}^{(5)}) = -G_{8,0}^{(5)} + G_{8,1}^{(11)} + G_{8,2}^{(17)} - G_{8,3}^{(22)}$$

The Fatgraph $G_{9,1}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([6, 3, 4]),# c
  Vertex([5, 5, 4]),# d
  Vertex([6, 0, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}c^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{0}e^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}$

$\beta = ({}^{0}d^{1})$

$\gamma = ({}^{0}f^{1})$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	e	f	c	d	3	1	2	0	7	8	6	4	5	α	γ	β

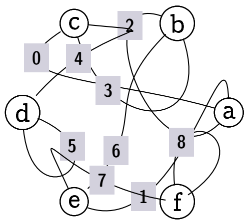
Markings

	$G_{9,1}^{(0)}$	$G_{9,1}^{(1)}$	$G_{9,1}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{9,1}^{(0)}) = -G_{8,1}^{(12)} + G_{8,3}^{(24)} - G_{8,5}^{(31)}$$
$$D(G_{9,1}^{(1)}) = -G_{8,2}^{(13)} + G_{8,4}^{(25)} - G_{8,4}^{(30)}$$
$$D(G_{9,1}^{(2)}) = -G_{8,2}^{(14)} + G_{8,4}^{(26)} - G_{8,5}^{(33)}$$

The Fatgraph $G_{9,2}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 6, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([5, 5, 4]),# d
  Vertex([1, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1f^2 \to {}^1c^2 \to {}^1a^2 \to {}^1e^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^2d^0 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1$
$\beta = ({}^0d^1)$
$\gamma = ({}^0f^1)$

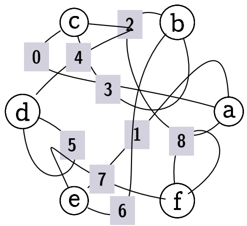
Markings

Fatgraph $G_{9,2}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,2}$ to $G^{(6)}_{9,2}$ are formed by decorating boundary cycles of $G_{9,2}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,2}) = -G^{(15)}_{8,2} + G^{(27)}_{8,4} - G^{(32)}_{8,5}$$
$$D(G^{(1)}_{9,2}) = -G^{(16)}_{8,2} + G^{(28)}_{8,4} - G^{(35)}_{8,5}$$
$$D(G^{(2)}_{9,2}) = -G^{(17)}_{8,2} + G^{(29)}_{8,4} - G^{(34)}_{8,5}$$
$$D(G^{(3)}_{9,2}) = +G^{(24)}_{8,3} + G^{(36)}_{8,5} - G^{(43)}_{8,7}$$
$$D(G^{(4)}_{9,2}) = +G^{(25)}_{8,4} + G^{(37)}_{8,6} - G^{(42)}_{8,6}$$
$$D(G^{(5)}_{9,2}) = +G^{(26)}_{8,4} + G^{(38)}_{8,6} - G^{(45)}_{8,7}$$

The Fatgraph $G_{9,3}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 6, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([5, 5, 4]),# d
  Vertex([6, 1, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1f^2 \to {}^1c^2 \to {}^1a^2 \to {}^0b^1 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^0e^1 \to {}^2e^0 \to {}^0c^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1$

$\beta = ({}^0d^1)$

$\gamma = ({}^0f^1)$

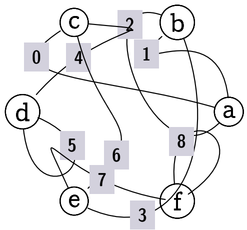
Markings

Fatgraph $G_{9,3}$ only has the identity automorphism, so the marked fatgraphs $G_{9,3}^{(0)}$ to $G_{9,3}^{(6)}$ are formed by decorating boundary cycles of $G_{9,3}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,3}^{(0)}) = +G_{8,4}^{(27)} + G_{8,6}^{(39)} - G_{8,7}^{(44)} \qquad D(G_{9,3}^{(3)}) = -G_{8,1}^{(12)} - G_{8,5}^{(36)} - G_{8,8}^{(49)}$$
$$D(G_{9,3}^{(1)}) = +G_{8,4}^{(28)} + G_{8,6}^{(40)} - G_{8,8}^{(47)} \qquad D(G_{9,3}^{(4)}) = -G_{8,2}^{(13)} - G_{8,6}^{(37)} - G_{8,8}^{(48)}$$
$$D(G_{9,3}^{(2)}) = +G_{8,4}^{(29)} + G_{8,6}^{(41)} - G_{8,8}^{(46)} \qquad D(G_{9,3}^{(5)}) = -G_{8,2}^{(14)} - G_{8,6}^{(38)} - G_{8,8}^{(51)}$$

The Fatgraph $G_{9,4}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 6, 4]),# c
  Vertex([5, 5, 4]),# d
  Vertex([3, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1f^2 \to {}^1c^2 \to {}^1a^2 \to {}^0b^1 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^2d^0 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1$

$\beta = ({}^0d^1)$

$\gamma = ({}^0f^1)$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	e	f	c	d	3	1	2	0	7	8	6	4	5	α	γ	β

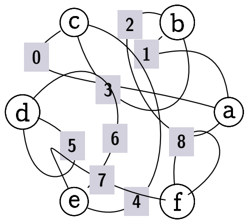
Markings

	$G_{9,4}^{(0)}$	$G_{9,4}^{(1)}$	$G_{9,4}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{9,4}^{(0)}) = -G_{8,2}^{(15)} - G_{8,6}^{(39)} - G_{8,8}^{(50)}$$
$$D(G_{9,4}^{(1)}) = -G_{8,2}^{(16)} - G_{8,6}^{(40)} - G_{8,9}^{(53)}$$
$$D(G_{9,4}^{(2)}) = -G_{8,2}^{(17)} - G_{8,6}^{(41)} - G_{8,9}^{(52)}$$

The Fatgraph $G_{9,5}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([5, 5, 6]),# d
  Vertex([4, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}$

$\beta = ({}^{0}d^{1})$

$\gamma = ({}^{0}f^{1})$

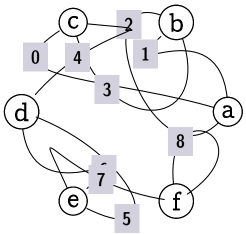
Markings

Fatgraph $G_{9,5}$ only has the identity automorphism, so the marked fatgraphs $G_{9,5}^{(0)}$ to $G_{9,5}^{(6)}$ are formed by decorating boundary cycles of $G_{9,5}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G_{9,5}^{(0)}) = +G_{8,4}^{(30)} - G_{8,6}^{(42)} - G_{8,8}^{(48)} \qquad D(G_{9,5}^{(3)}) = +G_{8,5}^{(33)} - G_{8,7}^{(45)} - G_{8,8}^{(51)}$$
$$D(G_{9,5}^{(1)}) = +G_{8,5}^{(31)} - G_{8,7}^{(43)} - G_{8,8}^{(49)} \qquad D(G_{9,5}^{(4)}) = +G_{8,5}^{(34)} - G_{8,8}^{(46)} - G_{8,9}^{(52)}$$
$$D(G_{9,5}^{(2)}) = +G_{8,5}^{(32)} - G_{8,7}^{(44)} - G_{8,8}^{(50)} \qquad D(G_{9,5}^{(5)}) = +G_{8,5}^{(35)} - G_{8,8}^{(47)} - G_{8,9}^{(53)}$$

The Fatgraph $G_{9,6}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([6, 5, 4]),# d
  Vertex([5, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1f^2 \to {}^0c^1 \to {}^1a^2 \to {}^0b^1 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^1c^2 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0e^1 \to {}^0d^1)$
$\gamma = ({}^0f^1)$

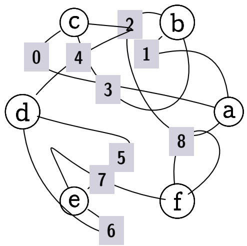
Markings

Fatgraph $G_{9,6}$ only has the identity automorphism, so the marked fatgraphs $G_{9,6}^{(0)}$ to $G_{9,6}^{(6)}$ are formed by decorating boundary cycles of $G_{9,6}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{9,6}^{(0)}) &= +G_{8,0}^{(0)} + G_{8,1}^{(12)} + G_{8,9}^{(54)} - G_{8,10}^{(60)}\\
D(G_{9,6}^{(1)}) &= +G_{8,0}^{(1)} + G_{8,2}^{(13)} + G_{8,10}^{(55)} - G_{8,11}^{(61)}\\
D(G_{9,6}^{(2)}) &= +G_{8,0}^{(2)} + G_{8,2}^{(14)} + G_{8,10}^{(56)} - G_{8,11}^{(62)}\\
D(G_{9,6}^{(3)}) &= +G_{8,0}^{(3)} + G_{8,2}^{(15)} + G_{8,10}^{(57)} - G_{8,11}^{(63)}\\
D(G_{9,6}^{(4)}) &= +G_{8,0}^{(4)} + G_{8,2}^{(16)} + G_{8,10}^{(58)} - G_{8,11}^{(64)}\\
D(G_{9,6}^{(5)}) &= +G_{8,0}^{(5)} + G_{8,2}^{(17)} + G_{8,10}^{(59)} - G_{8,11}^{(65)}
\end{aligned}
$$

The Fatgraph $G_{9,7}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([6, 5, 4]),# d
  Vertex([6, 5, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}e^{1} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{0}d^{1} \to {}^{1}f^{2} \to {}^{1}e^{2} \to {}^{2}e^{0} \to {}^{2}f^{0})$
$\gamma = ({}^{0}f^{1})$

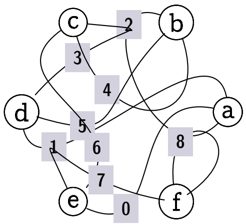
Markings

Fatgraph $G_{9,7}$ only has the identity automorphism, so the marked fatgraphs $G_{9,7}^{(0)}$ to $G_{9,7}^{(6)}$ are formed by decorating boundary cycles of $G_{9,7}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,7}^{(0)}) = +G_{8,0}^{(6)} + G_{8,9}^{(54)} + G_{8,11}^{(66)} - G_{8,12}^{(72)}$$
$$D(G_{9,7}^{(1)}) = +G_{8,1}^{(7)} + G_{8,10}^{(55)} + G_{8,12}^{(67)} - G_{8,13}^{(73)}$$
$$D(G_{9,7}^{(2)}) = +G_{8,1}^{(8)} + G_{8,10}^{(56)} + G_{8,12}^{(68)} - G_{8,13}^{(74)}$$
$$D(G_{9,7}^{(3)}) = +G_{8,1}^{(9)} + G_{8,10}^{(57)} + G_{8,12}^{(69)} - G_{8,13}^{(75)}$$
$$D(G_{9,7}^{(4)}) = +G_{8,1}^{(10)} + G_{8,10}^{(58)} + G_{8,12}^{(70)} - G_{8,13}^{(76)}$$
$$D(G_{9,7}^{(5)}) = +G_{8,1}^{(11)} + G_{8,10}^{(59)} + G_{8,12}^{(71)} - G_{8,13}^{(77)}$$

The Fatgraph $G_{9,8}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([6, 4, 3]),# c
  Vertex([1, 5, 3]),# d
  Vertex([0, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}c^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}c^{1} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}f^{2} \to {}^{1}a^{2} \to {}^{2}f^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{0}f^{1})$$

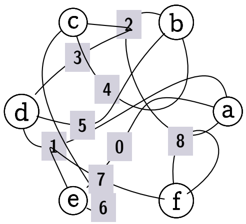
Markings

Fatgraph $G_{9,8}$ only has the identity automorphism, so the marked fatgraphs $G_{9,8}^{(0)}$ to $G_{9,8}^{(6)}$ are formed by decorating boundary cycles of $G_{9,8}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,8}^{(0)}) = +2G_{8,1}^{(12)} - G_{8,11}^{(66)} - G_{8,14}^{(79)} \qquad D(G_{9,8}^{(3)}) = +2G_{8,2}^{(15)} - G_{8,12}^{(69)} - G_{8,14}^{(80)}$$
$$D(G_{9,8}^{(1)}) = +2G_{8,2}^{(13)} - G_{8,12}^{(67)} - G_{8,13}^{(78)} \qquad D(G_{9,8}^{(4)}) = +2G_{8,2}^{(16)} - G_{8,12}^{(70)} - G_{8,14}^{(83)}$$
$$D(G_{9,8}^{(2)}) = +2G_{8,2}^{(14)} - G_{8,12}^{(68)} - G_{8,14}^{(81)} \qquad D(G_{9,8}^{(5)}) = +2G_{8,2}^{(17)} - G_{8,12}^{(71)} - G_{8,14}^{(82)}$$

The Fatgraph $G_{9,9}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([6, 4, 3]),# c
  Vertex([1, 5, 3]),# d
  Vertex([6, 0, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^1f^2 \to {}^1c^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2)$
$\beta = ({}^1a^2 \to {}^0e^1 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$
$\gamma = ({}^0f^1)$

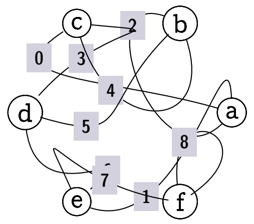
Markings

Fatgraph $G_{9,9}$ only has the identity automorphism, so the marked fatgraphs $G_{9,9}^{(0)}$ to $G_{9,9}^{(6)}$ are formed by decorating boundary cycles of $G_{9,9}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,9}^{(0)}) = +G_{8,3}^{(19)} + G_{8,10}^{(60)} - G_{8,12}^{(72)} - G_{8,14}^{(79)}$$
$$D(G_{9,9}^{(1)}) = +G_{8,2}^{(18)} + G_{8,11}^{(61)} - G_{8,13}^{(73)} - G_{8,13}^{(78)}$$
$$D(G_{9,9}^{(2)}) = +G_{8,3}^{(21)} + G_{8,11}^{(62)} - G_{8,13}^{(74)} - G_{8,14}^{(81)}$$
$$D(G_{9,9}^{(3)}) = +G_{8,3}^{(20)} + G_{8,11}^{(63)} - G_{8,13}^{(75)} - G_{8,14}^{(80)}$$
$$D(G_{9,9}^{(4)}) = +G_{8,3}^{(23)} + G_{8,11}^{(64)} - G_{8,13}^{(76)} - G_{8,14}^{(83)}$$
$$D(G_{9,9}^{(5)}) = +G_{8,3}^{(22)} + G_{8,11}^{(65)} - G_{8,13}^{(77)} - G_{8,14}^{(82)}$$

The Fatgraph $G_{9,10}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([6, 5, 3]),# d
  Vertex([1, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1f^2 \to {}^1c^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^2d^0 \to {}^0d^1 \to {}^2b^0 \to {}^1e^2)$
$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$
$\gamma = ({}^0f^1)$

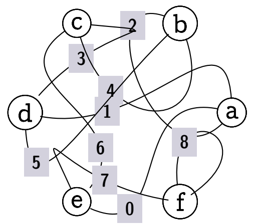
Markings

Fatgraph $G_{9,10}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,10}$ to $G^{(6)}_{9,10}$ are formed by decorating boundary cycles of $G_{9,10}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,10}) = +G^{(24)}_{8,3} + G^{(36)}_{8,5} - G^{(84)}_{8,14} \qquad D(G^{(3)}_{9,10}) = +G^{(27)}_{8,4} + G^{(39)}_{8,6} - G^{(87)}_{8,15}$$
$$D(G^{(1)}_{9,10}) = +G^{(25)}_{8,4} + G^{(37)}_{8,6} - G^{(85)}_{8,15} \qquad D(G^{(4)}_{9,10}) = +G^{(28)}_{8,4} + G^{(40)}_{8,6} - G^{(88)}_{8,15}$$
$$D(G^{(2)}_{9,10}) = +G^{(26)}_{8,4} + G^{(38)}_{8,6} - G^{(86)}_{8,15} \qquad D(G^{(5)}_{9,10}) = +G^{(29)}_{8,4} + G^{(41)}_{8,6} - G^{(89)}_{8,15}$$

The Fatgraph $G_{9,11}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([6, 4, 3]),# c
  Vertex([5, 1, 3]),# d
  Vertex([0, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1f^2 \to {}^1a^2 \to {}^0a^1 \to {}^2f^0 \to {}^2c^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^0f^1)$

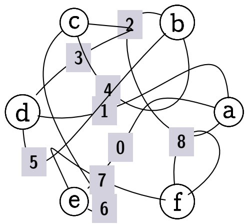
Markings

Fatgraph $G_{9,11}$ only has the identity automorphism, so the marked fatgraphs $G_{9,11}^{(0)}$ to $G_{9,11}^{(6)}$ are formed by decorating boundary cycles of $G_{9,11}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,11}^{(0)}) = +G_{8,5}^{(31)} - G_{8,8}^{(49)} - G_{8,14}^{(84)} \qquad D(G_{9,11}^{(3)}) = +G_{8,5}^{(32)} - G_{8,8}^{(50)} - G_{8,15}^{(87)}$$
$$D(G_{9,11}^{(1)}) = +G_{8,4}^{(30)} - G_{8,8}^{(48)} - G_{8,15}^{(85)} \qquad D(G_{9,11}^{(4)}) = +G_{8,5}^{(35)} - G_{8,9}^{(53)} - G_{8,15}^{(88)}$$
$$D(G_{9,11}^{(2)}) = +G_{8,5}^{(33)} - G_{8,8}^{(51)} - G_{8,15}^{(86)} \qquad D(G_{9,11}^{(5)}) = +G_{8,5}^{(34)} - G_{8,9}^{(52)} - G_{8,15}^{(89)}$$

The Fatgraph $G_{9,12}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([6, 4, 3]),# c
  Vertex([5, 1, 3]),# d
  Vertex([6, 0, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$
$\gamma = ({}^{0}f^{1})$

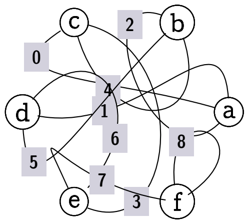
Markings

Fatgraph $G_{9,12}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,12}$ to $G^{(6)}_{9,12}$ are formed by decorating boundary cycles of $G_{9,12}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{9,12}) = -G^{(90)}_{8,15}$
$D(G^{(1)}_{9,12}) = -G^{(91)}_{8,16}$
$D(G^{(2)}_{9,12}) = -G^{(92)}_{8,16}$
$D(G^{(3)}_{9,12}) = -G^{(93)}_{8,16}$
$D(G^{(4)}_{9,12}) = -G^{(94)}_{8,16}$
$D(G^{(5)}_{9,12}) = -G^{(95)}_{8,16}$

The Fatgraph $G_{9,13}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([5, 1, 6]),# d
  Vertex([3, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^1f^2 \to {}^1a^2 \to {}^0a^1 \to {}^2f^0 \to {}^2c^0 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^0e^1 \to {}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^0f^1)$

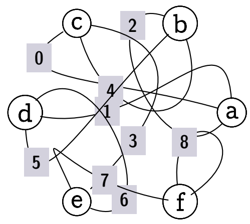
Markings

Fatgraph $G_{9,13}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,13}$ to $G^{(6)}_{9,13}$ are formed by decorating boundary cycles of $G_{9,13}$ with all permutations of $(0,1,2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G^{(0)}_{9,13}) = +G^{(43)}_{8,7} - G^{(84)}_{8,14} - G^{(90)}_{8,15}$
$D(G^{(1)}_{9,13}) = +G^{(42)}_{8,6} - G^{(85)}_{8,15} - G^{(91)}_{8,16}$
$D(G^{(2)}_{9,13}) = +G^{(45)}_{8,7} - G^{(86)}_{8,15} - G^{(92)}_{8,16}$
$D(G^{(3)}_{9,13}) = +G^{(44)}_{8,7} - G^{(87)}_{8,15} - G^{(93)}_{8,16}$
$D(G^{(4)}_{9,13}) = +G^{(47)}_{8,8} - G^{(88)}_{8,15} - G^{(94)}_{8,16}$
$D(G^{(5)}_{9,13}) = +G^{(46)}_{8,8} - G^{(89)}_{8,15} - G^{(95)}_{8,16}$

The Fatgraph $G_{9,14}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([5, 1, 6]),# d
  Vertex([6, 3, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^1f^2 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^1c^2 \to {}^1e^2)$$
$$\gamma = ({}^0f^1)$$

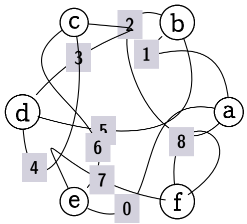
Markings

Fatgraph $G_{9,14}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,14}$ to $G^{(6)}_{9,14}$ are formed by decorating boundary cycles of $G_{9,14}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,14}) = +G^{(91)}_{8,16}$$
$$D(G^{(1)}_{9,14}) = +G^{(90)}_{8,15}$$
$$D(G^{(2)}_{9,14}) = +G^{(93)}_{8,16}$$
$$D(G^{(3)}_{9,14}) = +G^{(92)}_{8,16}$$
$$D(G^{(4)}_{9,14}) = +G^{(95)}_{8,16}$$
$$D(G^{(5)}_{9,14}) = +G^{(94)}_{8,16}$$

The Fatgraph $G_{9,15}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([6, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([0, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1f^2 \to {}^1a^2 \to {}^0b^1 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2)$
$\gamma = ({}^0f^1)$

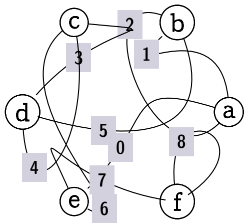
Markings

Fatgraph $G_{9,15}$ only has the identity automorphism, so the marked fatgraphs $G_{9,15}^{(0)}$ to $G_{9,15}^{(6)}$ are formed by decorating boundary cycles of $G_{9,15}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{9,15}^{(0)}) &= -G_{8,0}^{(0)} - G_{8,16}^{(96)} + G_{8,17}^{(99)} - G_{8,19}^{(106)}\\
D(G_{9,15}^{(1)}) &= -G_{8,0}^{(1)} - G_{8,16}^{(96)} + G_{8,17}^{(100)} - G_{8,18}^{(105)}\\
D(G_{9,15}^{(2)}) &= -G_{8,0}^{(2)} - G_{8,17}^{(97)} + G_{8,17}^{(101)} - G_{8,19}^{(108)}\\
D(G_{9,15}^{(3)}) &= -G_{8,0}^{(3)} - G_{8,17}^{(97)} + G_{8,17}^{(102)} - G_{8,19}^{(107)}\\
D(G_{9,15}^{(4)}) &= -G_{8,0}^{(4)} - G_{8,17}^{(98)} + G_{8,18}^{(103)} - G_{8,19}^{(110)}\\
D(G_{9,15}^{(5)}) &= -G_{8,0}^{(5)} - G_{8,17}^{(98)} + G_{8,18}^{(104)} - G_{8,19}^{(109)}
\end{aligned}
$$

The Fatgraph $G_{9,16}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([6, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([6, 0, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}f^{1})$

Markings

Fatgraph $G_{9,16}$ only has the identity automorphism, so the marked fatgraphs $G_{9,16}^{(0)}$ to $G_{9,16}^{(6)}$ are formed by decorating boundary cycles of $G_{9,16}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,16}^{(0)}) = +G_{8,16}^{(96)} + G_{8,19}^{(111)} + G_{8,20}^{(112)}$

$D(G_{9,16}^{(1)}) = +G_{8,17}^{(97)} + G_{8,20}^{(113)} + G_{8,20}^{(114)}$

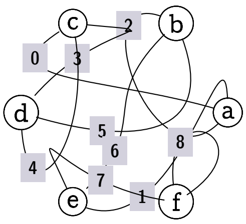
$D(G_{9,16}^{(2)}) = +G_{8,17}^{(98)} + G_{8,20}^{(115)} + G_{8,20}^{(116)}$

$D(G_{9,16}^{(3)}) = +G_{8,19}^{(111)} + G_{8,20}^{(117)} - G_{8,22}^{(124)}$

$D(G_{9,16}^{(4)}) = +G_{8,20}^{(112)} + G_{8,21}^{(118)} - G_{8,21}^{(123)}$

$D(G_{9,16}^{(5)}) = +G_{8,20}^{(113)} + G_{8,21}^{(119)} - G_{8,22}^{(126)}$

The Fatgraph $G_{9,17}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 6, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([1, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{1}e^{2} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}f^{1})$

Markings

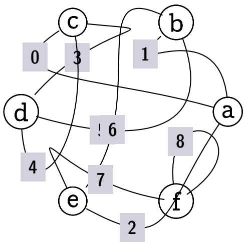
Fatgraph $G_{9,17}$ only has the identity automorphism, so the marked fatgraphs $G_{9,17}^{(0)}$ to $G_{9,17}^{(6)}$ are formed by decorating boundary cycles of $G_{9,17}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,17}^{(0)}) = +G_{8,20}^{(114)} + G_{8,21}^{(120)} - G_{8,22}^{(127)}$
$G_{8,22}^{(125)}$
$D(G_{9,17}^{(1)}) = +G_{8,20}^{(115)} + G_{8,21}^{(121)} -$
$G_{8,22}^{(128)}$
$D(G_{9,17}^{(2)}) = +G_{8,20}^{(116)} + G_{8,21}^{(122)} -$

$D(G_{9,17}^{(3)}) = +G_{8,16}^{(96)} - G_{8,20}^{(117)} - G_{8,23}^{(130)}$
$D(G_{9,17}^{(4)}) = +G_{8,16}^{(96)} - G_{8,21}^{(118)} - G_{8,22}^{(129)}$
$D(G_{9,17}^{(5)}) = +G_{8,17}^{(97)} - G_{8,21}^{(119)} - G_{8,23}^{(132)}$

The Fatgraph $G_{9,18}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([6, 1, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([2, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}f^{1})$

Markings

Fatgraph $G_{9,18}$ only has the identity automorphism, so the marked fatgraphs $G_{9,18}^{(0)}$ to $G_{9,18}^{(6)}$ are formed by decorating boundary cycles of $G_{9,18}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,18}^{(0)}) = +G_{8,17}^{(97)} - G_{8,21}^{(120)} - G_{8,23}^{(131)}$

$D(G_{9,18}^{(1)}) = +G_{8,17}^{(98)} - G_{8,21}^{(121)} - G_{8,23}^{(134)}$

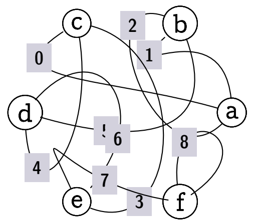
$D(G_{9,18}^{(2)}) = +G_{8,17}^{(98)} - G_{8,21}^{(122)} - G_{8,23}^{(133)}$

$D(G_{9,18}^{(3)}) = -G_{8,19}^{(111)} - G_{8,21}^{(123)} - G_{8,22}^{(129)}$

$D(G_{9,18}^{(4)}) = -G_{8,20}^{(112)} - G_{8,22}^{(124)} - G_{8,23}^{(130)}$

$D(G_{9,18}^{(5)}) = -G_{8,20}^{(113)} - G_{8,22}^{(125)} - G_{8,23}^{(131)}$

The Fatgraph $G_{9,19}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([4, 5, 6]),# d
  Vertex([3, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{0}e^{1} \to {}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{0}f^{1})$

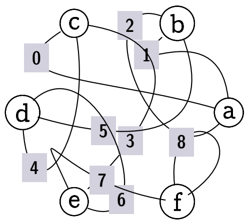
Markings

Fatgraph $G_{9,19}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,19}$ to $G^{(6)}_{9,19}$ are formed by decorating boundary cycles of $G_{9,19}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{9,19}) &= -G^{(114)}_{8,20} - G^{(126)}_{8,22} - G^{(132)}_{8,23} \\
D(G^{(1)}_{9,19}) &= -G^{(115)}_{8,20} - G^{(127)}_{8,22} - G^{(133)}_{8,23} \\
D(G^{(2)}_{9,19}) &= -G^{(116)}_{8,20} - G^{(128)}_{8,22} - G^{(134)}_{8,23} \\
D(G^{(3)}_{9,19}) &= +G^{(99)}_{8,17} + G^{(105)}_{8,18} + G^{(135)}_{8,23} - G^{(141)}_{8,24} \\
D(G^{(4)}_{9,19}) &= +G^{(100)}_{8,17} + G^{(106)}_{8,19} + G^{(136)}_{8,24} - G^{(141)}_{8,24} \\
D(G^{(5)}_{9,19}) &= +G^{(101)}_{8,17} + G^{(107)}_{8,19} + G^{(137)}_{8,24} - G^{(142)}_{8,25}
\end{aligned}
$$

The Fatgraph $G_{9,20}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([4, 5, 6]),# d
  Vertex([6, 3, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^1a^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1f^2 \to {}^2f^0 \to {}^2e^0 \to {}^1c^2 \to {}^1e^2)$
$\gamma = ({}^0f^1)$

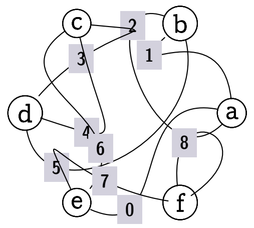
Markings

Fatgraph $G_{9,20}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,20}$ to $G^{(6)}_{9,20}$ are formed by decorating boundary cycles of $G_{9,20}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{9,20}) &= +G^{(102)}_{8,17} + G^{(108)}_{8,19} + G^{(138)}_{8,24} - G^{(142)}_{8,25} \\
D(G^{(1)}_{9,20}) &= +G^{(103)}_{8,18} + G^{(109)}_{8,19} + G^{(139)}_{8,24} - G^{(143)}_{8,25} \\
D(G^{(2)}_{9,20}) &= +G^{(104)}_{8,18} + G^{(110)}_{8,19} + G^{(140)}_{8,24} - G^{(143)}_{8,25} \\
D(G^{(3)}_{9,20}) &= -G^{(0)}_{8,0} + G^{(1)}_{8,0} - G^{(135)}_{8,23} + G^{(136)}_{8,24} \\
D(G^{(4)}_{9,20}) &= -G^{(2)}_{8,0} + G^{(3)}_{8,0} - G^{(137)}_{8,24} + G^{(138)}_{8,24} \\
D(G^{(5)}_{9,20}) &= -G^{(4)}_{8,0} + G^{(5)}_{8,0} - G^{(139)}_{8,24} + G^{(140)}_{8,24}
\end{aligned}
$$

The Fatgraph $G_{9,21}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([6, 4, 3]),# c
  Vertex([5, 4, 3]),# d
  Vertex([0, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$
$\gamma = ({}^{0}f^{1})$

Markings

Fatgraph $G_{9,21}$ only has the identity automorphism, so the marked fatgraphs $G_{9,21}^{(0)}$ to $G_{9,21}^{(6)}$ are formed by decorating boundary cycles of $G_{9,21}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,21}^{(0)}) = +G_{8,20}^{(117)} - G_{8,22}^{(129)} - G_{8,25}^{(144)}$

$D(G_{9,21}^{(1)}) = +G_{8,21}^{(118)} - G_{8,23}^{(130)} - G_{8,25}^{(144)}$

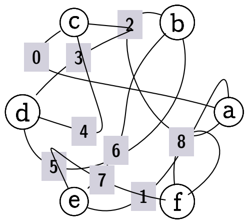
$D(G_{9,21}^{(2)}) = +G_{8,21}^{(119)} - G_{8,23}^{(131)} - G_{8,25}^{(145)}$

$D(G_{9,21}^{(3)}) = +G_{8,21}^{(120)} - G_{8,23}^{(132)} - G_{8,25}^{(145)}$

$D(G_{9,21}^{(4)}) = +G_{8,21}^{(121)} - G_{8,23}^{(133)} - G_{8,25}^{(146)}$

$D(G_{9,21}^{(5)}) = +G_{8,21}^{(122)} - G_{8,23}^{(134)} - G_{8,25}^{(146)}$

The Fatgraph $G_{9,22}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 6, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([5, 4, 3]),# d
  Vertex([1, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$$\alpha = ({}^1f^2 \to {}^1a^2 \to {}^0a^1 \to {}^2f^0 \to {}^0b^1 \to {}^2e^0 \to {}^0c^1 \to {}^2c^0 \to {}^1e^2 \to {}^1d^2)$$
$$\beta = ({}^0e^1 \to {}^2a^0 \to {}^1b^2 \to {}^1c^2 \to {}^2d^0 \to {}^0d^1 \to {}^2b^0)$$
$$\gamma = ({}^0f^1)$$

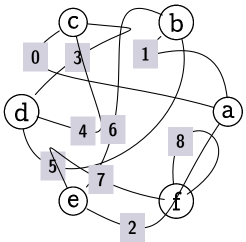
Markings

Fatgraph $G_{9,22}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,22}$ to $G^{(6)}_{9,22}$ are formed by decorating boundary cycles of $G_{9,22}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section “Markings of fatgraphs with trivial automorphisms” for a complete table.

Differentials

$$D(G^{(0)}_{9,22}) = +G^{(123)}_{8,21} + G^{(124)}_{8,22} - G^{(144)}_{8,25}$$
$$D(G^{(1)}_{9,22}) = +G^{(125)}_{8,22} + G^{(126)}_{8,22} - G^{(145)}_{8,25}$$
$$D(G^{(2)}_{9,22}) = +G^{(127)}_{8,22} + G^{(128)}_{8,22} - G^{(146)}_{8,25}$$
$$D(G^{(3)}_{9,22}) = +G^{(0)}_{8,0} - G^{(96)}_{8,16} + G^{(147)}_{8,25} - G^{(153)}_{8,26}$$
$$D(G^{(4)}_{9,22}) = +G^{(1)}_{8,0} - G^{(96)}_{8,16} + G^{(148)}_{8,26} - G^{(154)}_{8,27}$$
$$D(G^{(5)}_{9,22}) = +G^{(2)}_{8,0} - G^{(97)}_{8,17} + G^{(149)}_{8,26} - G^{(155)}_{8,27}$$

The Fatgraph $G_{9,23}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([6, 1, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([5, 4, 3]),# d
  Vertex([2, 6, 7]),# e
  Vertex([8, 8, 7]),# f
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{2}e^{0} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$$
$$\gamma = ({}^{0}f^{1})$$

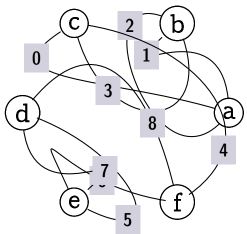
Markings

Fatgraph $G_{9,23}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,23}$ to $G^{(6)}_{9,23}$ are formed by decorating boundary cycles of $G_{9,23}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,23}) = +G^{(3)}_{8,0} - G^{(97)}_{8,17} + G^{(150)}_{8,26} - G^{(156)}_{8,27}$$
$$D(G^{(1)}_{9,23}) = +G^{(4)}_{8,0} - G^{(98)}_{8,17} + G^{(151)}_{8,26} - G^{(157)}_{8,27}$$
$$D(G^{(2)}_{9,23}) = +G^{(5)}_{8,0} - G^{(98)}_{8,17} + G^{(152)}_{8,26} - G^{(158)}_{8,27}$$
$$D(G^{(3)}_{9,23}) = -G^{(24)}_{8,3} - G^{(54)}_{8,9} - G^{(117)}_{8,20} + G^{(147)}_{8,25} - G^{(159)}_{8,27}$$
$$D(G^{(4)}_{9,23}) = -G^{(25)}_{8,4} - G^{(55)}_{8,10} - G^{(118)}_{8,21} + G^{(148)}_{8,26} - G^{(160)}_{8,28}$$
$$D(G^{(5)}_{9,23}) = -G^{(26)}_{8,4} - G^{(56)}_{8,10} - G^{(119)}_{8,21} + G^{(149)}_{8,26} - G^{(161)}_{8,28}$$

The Fatgraph $G_{9,24}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([7, 5, 8]),# d
  Vertex([5, 7, 6]),# e
  Vertex([4, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}f^{1} \to {}^{0}c^{1} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}e^{2})$
$\beta = ({}^{0}e^{1} \to {}^{0}d^{1})$
$\gamma = ({}^{1}f^{2} \to {}^{1}d^{2} \to {}^{2}e^{0})$

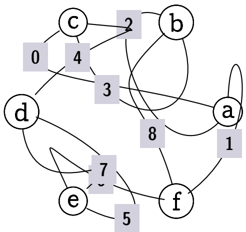
Markings

Fatgraph $G_{9,24}$ only has the identity automorphism, so the marked fatgraphs $G_{9,24}^{(0)}$ to $G_{9,24}^{(6)}$ are formed by decorating boundary cycles of $G_{9,24}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{9,24}^{(0)}) &= -G_{8,4}^{(27)} - G_{8,10}^{(57)} - G_{8,21}^{(120)} + G_{8,26}^{(150)} \\
D(G_{9,24}^{(1)}) &= -G_{8,4}^{(28)} - G_{8,10}^{(58)} - G_{8,21}^{(121)} + G_{8,26}^{(151)} \\
D(G_{9,24}^{(2)}) &= -G_{8,4}^{(29)} - G_{8,10}^{(59)} - G_{8,21}^{(122)} + G_{8,26}^{(152)} \\
D(G_{9,24}^{(3)}) &= -G_{8,5}^{(31)} - G_{8,10}^{(60)} + G_{8,23}^{(130)} + G_{8,26}^{(153)} - G_{8,27}^{(159)} \\
D(G_{9,24}^{(4)}) &= -G_{8,4}^{(30)} - G_{8,11}^{(61)} + G_{8,22}^{(129)} + G_{8,27}^{(154)} - G_{8,28}^{(160)} \\
D(G_{9,24}^{(5)}) &= -G_{8,5}^{(33)} - G_{8,11}^{(62)} + G_{8,23}^{(132)} + G_{8,27}^{(155)} - G_{8,28}^{(161)}
\end{aligned}
$$

The Fatgraph $G_{9,25}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 8, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([7, 5, 4]),# d
  Vertex([5, 7, 6]),# e
  Vertex([1, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0f^1 \to {}^1c^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^1e^2)$$
$$\beta = ({}^1f^2 \to {}^1a^2 \to {}^2c^0 \to {}^2e^0 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

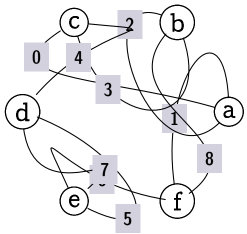
Markings

Fatgraph $G_{9,25}$ only has the identity automorphism, so the marked fatgraphs $G_{9,25}^{(0)}$ to $G_{9,25}^{(6)}$ are formed by decorating boundary cycles of $G_{9,25}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,25}^{(0)}) = -G_{8,5}^{(32)} - G_{8,11}^{(63)} + G_{8,23}^{(131)} + G_{8,27}^{(156)}$$
$$D(G_{9,25}^{(1)}) = -G_{8,5}^{(35)} - G_{8,11}^{(64)} + G_{8,23}^{(134)} + G_{8,27}^{(157)}$$
$$D(G_{9,25}^{(2)}) = -G_{8,5}^{(34)} - G_{8,11}^{(65)} + G_{8,23}^{(133)} + G_{8,27}^{(158)}$$
$$D(G_{9,25}^{(3)}) = -G_{8,0}^{(6)} + G_{8,9}^{(54)} + G_{8,17}^{(99)} - G_{8,25}^{(147)}$$
$$D(G_{9,25}^{(4)}) = -G_{8,1}^{(7)} + G_{8,10}^{(55)} + G_{8,17}^{(100)} - G_{8,26}^{(148)}$$
$$D(G_{9,25}^{(5)}) = -G_{8,1}^{(8)} + G_{8,10}^{(56)} + G_{8,17}^{(101)} - G_{8,26}^{(149)}$$

The Fatgraph $G_{9,26}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 8, 3]),# b
  Vertex([0, 3, 4]),# c
  Vertex([7, 5, 4]),# d
  Vertex([5, 7, 6]),# e
  Vertex([8, 1, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{0}f^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}e^{2} \to {}^{2}f^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$
$\gamma = ({}^{0}e^{1} \to {}^{0}d^{1})$

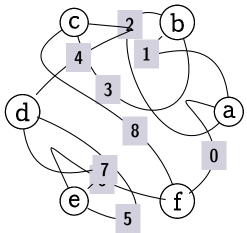
Markings

Fatgraph $G_{9,26}$ only has the identity automorphism, so the marked fatgraphs $G_{9,26}^{(0)}$ to $G_{9,26}^{(6)}$ are formed by decorating boundary cycles of $G_{9,26}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G_{9,26}^{(0)}) &= -G_{8,1}^{(9)} + G_{8,10}^{(57)} + G_{8,17}^{(102)} - G_{8,26}^{(150)}\\
D(G_{9,26}^{(1)}) &= -G_{8,1}^{(10)} + G_{8,10}^{(58)} + G_{8,18}^{(103)} - G_{8,26}^{(151)}\\
D(G_{9,26}^{(2)}) &= -G_{8,1}^{(11)} + G_{8,10}^{(59)} + G_{8,18}^{(104)} - G_{8,26}^{(152)}\\
D(G_{9,26}^{(3)}) &= -G_{8,3}^{(19)} + G_{8,10}^{(60)} + G_{8,19}^{(106)} - G_{8,26}^{(153)}\\
D(G_{9,26}^{(4)}) &= -G_{8,2}^{(18)} + G_{8,11}^{(61)} + G_{8,18}^{(105)} - G_{8,27}^{(154)}\\
D(G_{9,26}^{(5)}) &= -G_{8,3}^{(21)} + G_{8,11}^{(62)} + G_{8,19}^{(108)} - G_{8,27}^{(155)}
\end{aligned}
$$

The Fatgraph $G_{9,27}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([8, 3, 4]),# c
  Vertex([7, 5, 4]),# d
  Vertex([5, 7, 6]),# e
  Vertex([0, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^2d^0 \to {}^2a^0 \to {}^0f^1 \to {}^1c^2 \to {}^1a^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^0c^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2)$
$\beta = ({}^1f^2 \to {}^2e^0 \to {}^1d^2 \to {}^2c^0)$
$\gamma = ({}^0e^1 \to {}^0d^1)$

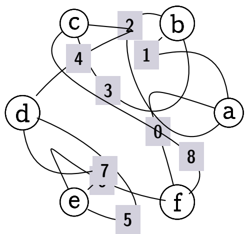
Markings

Fatgraph $G_{9,27}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,27}$ to $G^{(6)}_{9,27}$ are formed by decorating boundary cycles of $G_{9,27}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$
\begin{aligned}
D(G^{(0)}_{9,27}) &= -G^{(20)}_{8,3} + G^{(63)}_{8,11} + G^{(107)}_{8,19} - G^{(156)}_{8,27}\\
D(G^{(1)}_{9,27}) &= -G^{(23)}_{8,3} + G^{(64)}_{8,11} + G^{(110)}_{8,19} - G^{(157)}_{8,27}\\
D(G^{(2)}_{9,27}) &= -G^{(22)}_{8,3} + G^{(65)}_{8,11} + G^{(109)}_{8,19} - G^{(158)}_{8,27}\\
D(G^{(3)}_{9,27}) &= +G^{(111)}_{8,19} + G^{(117)}_{8,20}\\
D(G^{(4)}_{9,27}) &= +G^{(112)}_{8,20} + G^{(118)}_{8,21}\\
D(G^{(5)}_{9,27}) &= +G^{(113)}_{8,20} + G^{(119)}_{8,21}
\end{aligned}
$$

The Fatgraph $G_{9,28}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([8, 3, 4]),# c
  Vertex([7, 5, 4]),# d
  Vertex([5, 7, 6]),# e
  Vertex([8, 0, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^0f^1 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^1f^2 \to {}^2e^0 \to {}^0b^1 \to {}^1d^2)$$
$$\beta = ({}^2d^0 \to {}^2a^0 \to {}^0c^1 \to {}^2f^0 \to {}^1b^2 \to {}^1c^2 \to {}^2b^0 \to {}^1e^2)$$
$$\gamma = ({}^0e^1 \to {}^0d^1)$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	f	e	d	c	3	1	2	0	6	7	4	5	8	β	α	γ

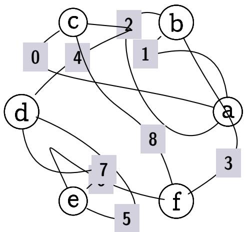
Markings

	$G_{9,28}^{(0)}$	$G_{9,28}^{(1)}$	$G_{9,28}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G_{9,28}^{(0)}) = +G_{8,20}^{(114)} + G_{8,21}^{(120)}$$
$$D(G_{9,28}^{(1)}) = +G_{8,20}^{(115)} + G_{8,21}^{(121)}$$
$$D(G_{9,28}^{(2)}) = +G_{8,20}^{(116)} + G_{8,21}^{(122)}$$

The Fatgraph $G_{9,29}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 3]),# b
  Vertex([0, 8, 4]),# c
  Vertex([7, 5, 4]),# d
  Vertex([5, 7, 6]),# e
  Vertex([3, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{2}c^{0} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{0}f^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}b^{0} \to {}^{1}e^{2})$$
$$\gamma = ({}^{0}e^{1} \to {}^{0}d^{1})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	f	e	d	c	3	1	2	0	6	7	4	5	8	β	α	γ

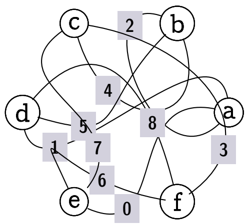
Markings

	$G_{9,29}^{(0)}$	$G_{9,29}^{(1)}$	$G_{9,29}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G_{9,29}^{(0)}) = -G_{8,20}^{(112)} - G_{8,23}^{(130)}$$
$$D(G_{9,29}^{(1)}) = -G_{8,19}^{(111)} - G_{8,22}^{(129)}$$
$$D(G_{9,29}^{(2)}) = -G_{8,20}^{(114)} - G_{8,23}^{(132)}$$

The Fatgraph $G_{9,30}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([7, 4, 3]),# c
  Vertex([1, 5, 8]),# d
  Vertex([0, 7, 6]),# e
  Vertex([3, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0f^1 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^0c^1 \to {}^2d^0 \to {}^0d^1 \to {}^2b^0)$$
$$\beta = ({}^1a^2 \to {}^1f^2 \to {}^2e^0 \to {}^1d^2 \to {}^0b^1)$$
$$\gamma = ({}^1e^2 \to {}^2f^0 \to {}^2c^0)$$

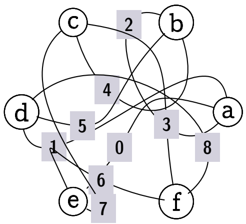
Markings

Fatgraph $G_{9,30}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,30}$ to $G^{(6)}_{9,30}$ are formed by decorating boundary cycles of $G_{9,30}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,30}) = -G^{(113)}_{8,20} - G^{(131)}_{8,23}$$
$$D(G^{(1)}_{9,30}) = -G^{(116)}_{8,20} - G^{(134)}_{8,23}$$
$$D(G^{(2)}_{9,30}) = -G^{(115)}_{8,20} - G^{(133)}_{8,23}$$
$$D(G^{(3)}_{9,30}) = -G^{(6)}_{8,0} - G^{(24)}_{8,3} + G^{(99)}_{8,17} - G^{(117)}_{8,20}$$
$$D(G^{(4)}_{9,30}) = -G^{(7)}_{8,1} - G^{(25)}_{8,4} + G^{(100)}_{8,17} - G^{(118)}_{8,21}$$
$$D(G^{(5)}_{9,30}) = -G^{(8)}_{8,1} - G^{(26)}_{8,4} + G^{(101)}_{8,17} - G^{(119)}_{8,21}$$

The Fatgraph $G_{9,31}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([7, 4, 3]),# c
  Vertex([1, 5, 8]),# d
  Vertex([7, 0, 6]),# e
  Vertex([8, 3, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^2d^0 \to {}^1e^2 \to {}^0a^1 \to {}^2f^0)$$
$$\beta = ({}^0e^1 \to {}^0f^1 \to {}^1a^2 \to {}^2c^0 \to {}^0b^1 \to {}^1d^2)$$
$$\gamma = ({}^2a^0 \to {}^1f^2 \to {}^0c^1 \to {}^1b^2 \to {}^2e^0 \to {}^1c^2 \to {}^0d^1 \to {}^2b^0)$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
A_1	f	c	b	e	d	a	8	6	3	2	4	7	1	5	0	α	β	γ

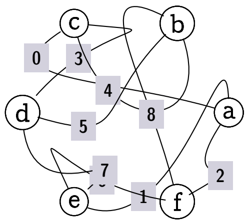
Markings

Fatgraph $G_{9,31}$ only has the identity automorphism, so the marked fatgraphs $G_{9,31}^{(0)}$ to $G_{9,31}^{(6)}$ are formed by decorating boundary cycles of $G_{9,31}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,31}^{(0)}) = -G_{8,1}^{(9)} - G_{8,4}^{(27)} + G_{8,17}^{(102)} - G_{8,21}^{(120)}$$
$$D(G_{9,31}^{(1)}) = -G_{8,1}^{(10)} - G_{8,4}^{(28)} + G_{8,18}^{(103)} - G_{8,21}^{(121)}$$
$$D(G_{9,31}^{(2)}) = -G_{8,1}^{(11)} - G_{8,4}^{(29)} + G_{8,18}^{(104)} - G_{8,21}^{(122)}$$
$$D(G_{9,31}^{(3)}) = +G_{8,22}^{(124)} + G_{8,27}^{(159)}$$
$$D(G_{9,31}^{(4)}) = +G_{8,21}^{(123)} + G_{8,28}^{(160)}$$
$$D(G_{9,31}^{(5)}) = +G_{8,22}^{(126)} + G_{8,28}^{(161)}$$

The Fatgraph $G_{9,32}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([8, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([7, 5, 3]),# d
  Vertex([1, 7, 6]),# e
  Vertex([2, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{2}b^{0} \to {}^{1}f^{2} \to {}^{0}a^{1} \to {}^{2}e^{0} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{0}f^{1} \to {}^{1}d^{2} \to {}^{2}c^{0} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{1}e^{2})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	c	f	a	e	d	b	0	3	4	1	2	6	5	7	8	β	α	γ

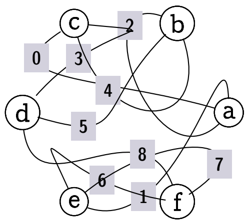
Markings

	$G_{9,32}^{(0)}$	$G_{9,32}^{(1)}$	$G_{9,32}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G_{9,32}^{(0)}) = +G_{8,22}^{(125)}$$
$$D(G_{9,32}^{(1)}) = +G_{8,22}^{(128)}$$
$$D(G_{9,32}^{(2)}) = +G_{8,22}^{(127)}$$

The Fatgraph $G_{9,33}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([8, 5, 3]),# d
  Vertex([1, 7, 6]),# e
  Vertex([7, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0f^1 \to {}^1c^2 \to {}^0a^1 \to {}^1b^2 \to {}^1f^2 \to {}^2e^0 \to {}^0c^1 \to {}^2d^0 \to {}^0d^1 \to {}^2b^0)$
$\beta = ({}^1a^2 \to {}^2c^0 \to {}^1d^2 \to {}^0b^1)$
$\gamma = ({}^1e^2 \to {}^2f^0)$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
A_1	d	c	b	a	f	e	5	8	3	2	4	0	7	6	1	α	β	γ

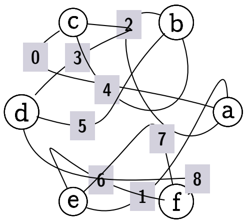
Markings

Fatgraph $G_{9,33}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,33}$ to $G^{(6)}_{9,33}$ are formed by decorating boundary cycles of $G_{9,33}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,33}) = +G^{(18)}_{8,2} + G^{(30)}_{8,4} - G^{(105)}_{8,18} - G^{(129)}_{8,22}$$
$$D(G^{(1)}_{9,33}) = +G^{(19)}_{8,3} + G^{(31)}_{8,5} - G^{(106)}_{8,19} - G^{(130)}_{8,23}$$
$$D(G^{(2)}_{9,33}) = +G^{(20)}_{8,3} + G^{(32)}_{8,5} - G^{(107)}_{8,19} - G^{(131)}_{8,23}$$
$$D(G^{(3)}_{9,33}) = +G^{(21)}_{8,3} + G^{(33)}_{8,5} - G^{(108)}_{8,19} - G^{(132)}_{8,23}$$
$$D(G^{(4)}_{9,33}) = +G^{(22)}_{8,3} + G^{(34)}_{8,5} - G^{(109)}_{8,19} - G^{(133)}_{8,23}$$
$$D(G^{(5)}_{9,33}) = +G^{(23)}_{8,3} + G^{(35)}_{8,5} - G^{(110)}_{8,19} - G^{(134)}_{8,23}$$

The Fatgraph $G_{9,34}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 4, 3]),# c
  Vertex([8, 5, 3]),# d
  Vertex([1, 7, 6]),# e
  Vertex([8, 7, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{0}a^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{2}b^{0})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{2}d^{0} \to {}^{0}f^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{1}e^{2})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	d	c	b	a	f	e	5	8	3	2	4	0	6	7	1	γ	β	α

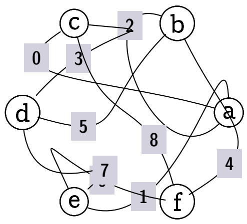
Markings

	$G_{9,34}^{(0)}$	$G_{9,34}^{(1)}$	$G_{9,34}^{(2)}$
α	0	0	1
β	1	2	0
γ	2	1	2

Differentials

$$D(G_{9,34}^{(0)}) = +G_{8,6}^{(42)} - G_{8,15}^{(85)} + G_{8,28}^{(160)}$$
$$D(G_{9,34}^{(1)}) = +G_{8,7}^{(43)} - G_{8,14}^{(84)} + G_{8,27}^{(159)}$$
$$D(G_{9,34}^{(2)}) = +G_{8,7}^{(44)} - G_{8,15}^{(87)}$$

The Fatgraph $G_{9,35}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([0, 8, 3]),# c
  Vertex([7, 5, 3]),# d
  Vertex([1, 7, 6]),# e
  Vertex([4, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{1}f^{2} \to {}^{0}a^{1} \to {}^{2}e^{0} \to {}^{0}c^{1})$$
$$\beta = ({}^{1}a^{2} \to {}^{2}c^{0} \to {}^{1}d^{2} \to {}^{0}b^{1})$$
$$\gamma = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}f^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{2}d^{0} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{1}e^{2})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	c	f	a	e	d	b	0	3	8	1	4	6	5	7	2	β	α	γ

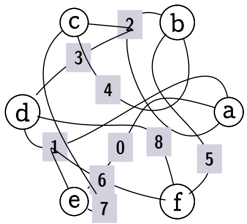
Markings

	$G_{9,35}^{(0)}$	$G_{9,35}^{(1)}$	$G_{9,35}^{(2)}$
α	0	0	1
β	1	2	2
γ	2	1	0

Differentials

$$D(G_{9,35}^{(0)}) = +G_{8,7}^{(45)} - G_{8,15}^{(86)} + G_{8,28}^{(161)}$$
$$D(G_{9,35}^{(1)}) = +G_{8,8}^{(46)} - G_{8,15}^{(89)}$$
$$D(G_{9,35}^{(2)}) = +G_{8,8}^{(47)} - G_{8,15}^{(88)}$$

The Fatgraph $G_{9,36}$ (non-orientable, 1 orientable marking)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([7, 4, 3]),# c
  Vertex([1, 8, 3]),# d
  Vertex([7, 0, 6]),# e
  Vertex([5, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{2}d^{0} \to {}^{0}a^{1} \to {}^{2}f^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{1}e^{2})$$
$$\beta = ({}^{0}e^{1} \to {}^{0}f^{1} \to {}^{1}a^{2} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$$
$$\gamma = ({}^{2}a^{0} \to {}^{1}f^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\ddagger}$	a	d	c	e	b	f	2	0	1	7	3	8	5	4	6	β	γ	α
$A_2{}^{\ddagger}$	a	e	c	b	d	f	1	2	0	4	7	6	8	3	5	γ	α	β
$A_3{}^{\dagger\ddagger}$	b	c	e	a	f	d	5	2	4	0	7	3	8	6	1	β	α	γ
$A_4{}^{\dagger\ddagger}$	b	a	e	f	c	d	4	5	2	6	0	1	3	7	8	α	γ	β
$A_5{}^{\dagger\ddagger}$	b	f	e	c	a	d	2	4	5	7	6	8	1	0	3	γ	β	α
$A_6{}^{\ddagger}$	c	d	f	e	b	a	4	7	3	6	8	1	2	5	0	γ	α	β
A_7	c	e	f	b	d	a	3	4	7	5	6	0	1	8	2	α	β	γ
$A_8{}^{\ddagger}$	c	b	f	d	e	a	7	3	4	8	5	2	0	6	1	β	γ	α
$A_9{}^{\dagger\ddagger}$	d	c	b	a	f	e	8	1	3	2	4	7	6	5	0	γ	β	α
$A_{10}{}^{\dagger\ddagger}$	d	a	b	f	c	e	3	8	1	5	2	0	7	4	6	β	α	γ
$A_{11}{}^{\dagger\ddagger}$	d	f	b	c	a	e	1	3	8	4	5	6	0	2	7	α	γ	β
$A_{12}{}^{\dagger\ddagger}$	e	f	d	c	a	b	0	7	6	3	8	5	2	1	4	β	α	γ
$A_{13}{}^{\dagger\ddagger}$	e	c	d	a	f	b	6	0	7	1	3	4	5	8	2	α	γ	β
$A_{14}{}^{\dagger\ddagger}$	e	a	d	f	c	b	7	6	0	8	1	2	4	3	5	γ	β	α
$A_{15}{}^{\ddagger}$	f	e	a	b	d	c	8	5	6	2	0	7	3	1	4	β	γ	α
$A_{16}{}^{\ddagger}$	f	b	a	d	e	c	6	8	5	1	2	4	7	0	3	γ	α	β
A_{17}	f	d	a	e	b	c	5	6	8	0	1	3	4	2	7	α	β	γ

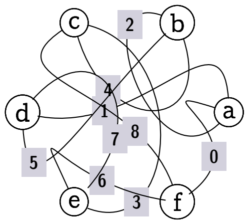
Markings

	$G_{9,36}^{(0)}$
α	0
β	1
γ	2

Differentials

$$D(G_{9,36}^{(0)}) = +G_{8,23}^{(135)} - G_{8,25}^{(147)} - G_{8,27}^{(154)}$$

The Fatgraph $G_{9,37}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([8, 4, 3]),# c
  Vertex([5, 1, 7]),# d
  Vertex([3, 7, 6]),# e
  Vertex([0, 8, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^2a^0 \rightarrow {}^0f^1 \rightarrow {}^1a^2 \rightarrow {}^0a^1 \rightarrow {}^2f^0 \rightarrow {}^0b^1 \rightarrow {}^0c^1 \rightarrow {}^0d^1 \rightarrow {}^2b^0 \rightarrow {}^1e^2 \rightarrow {}^1d^2)$$
$$\beta = ({}^0e^1 \rightarrow {}^2d^0 \rightarrow {}^1c^2 \rightarrow {}^1b^2)$$
$$\gamma = ({}^1f^2 \rightarrow {}^2e^0 \rightarrow {}^2c^0)$$

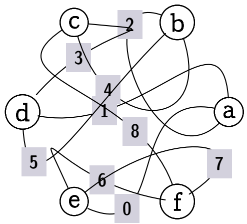
Markings

Fatgraph $G_{9,37}$ only has the identity automorphism, so the marked fatgraphs $G_{9,37}^{(0)}$ to $G_{9,37}^{(6)}$ are formed by decorating boundary cycles of $G_{9,37}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,37}^{(0)}) = +G_{8,24}^{(136)} - G_{8,26}^{(148)} - G_{8,26}^{(153)}$
$D(G_{9,37}^{(1)}) = +G_{8,24}^{(137)} - G_{8,26}^{(149)} - G_{8,27}^{(156)}$
$D(G_{9,37}^{(2)}) = +G_{8,24}^{(138)} - G_{8,26}^{(150)} - G_{8,27}^{(155)}$
$D(G_{9,37}^{(3)}) = +G_{8,24}^{(139)} - G_{8,26}^{(151)} - G_{8,27}^{(158)}$
$D(G_{9,37}^{(4)}) = +G_{8,24}^{(140)} - G_{8,26}^{(152)} - G_{8,27}^{(157)}$
$D(G_{9,37}^{(5)}) = -G_{8,25}^{(144)}$

The Fatgraph $G_{9,38}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([8, 4, 3]),# c
  Vertex([5, 1, 3]),# d
  Vertex([0, 7, 6]),# e
  Vertex([7, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^0e^1 \to {}^2a^0 \to {}^0f^1 \to {}^1a^2 \to {}^0a^1 \to {}^2c^0 \to {}^1f^2 \to {}^2e^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1d^2)$
$\beta = ({}^2d^0 \to {}^1c^2 \to {}^1b^2)$
$\gamma = ({}^1e^2 \to {}^2f^0)$

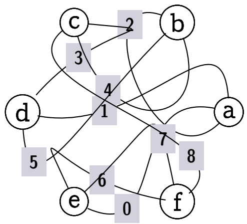
Markings

Fatgraph $G_{9,38}$ only has the identity automorphism, so the marked fatgraphs $G_{9,38}^{(0)}$ to $G_{9,38}^{(6)}$ are formed by decorating boundary cycles of $G_{9,38}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$D(G_{9,38}^{(0)}) = -G_{8,25}^{(145)}$
$D(G_{9,38}^{(1)}) = -G_{8,25}^{(146)}$
$D(G_{9,38}^{(2)}) = -G_{8,1}^{(12)}$
$D(G_{9,38}^{(3)}) = -G_{8,2}^{(13)}$
$D(G_{9,38}^{(4)}) = -G_{8,2}^{(14)}$
$D(G_{9,38}^{(5)}) = -G_{8,2}^{(15)}$

The Fatgraph $G_{9,39}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([8, 4, 3]),# c
  Vertex([5, 1, 3]),# d
  Vertex([0, 7, 6]),# e
  Vertex([8, 7, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0} \to {}^{0}d^{1})$$
$$\beta = ({}^{2}a^{0} \to {}^{0}f^{1} \to {}^{2}f^{0} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{2}b^{0} \to {}^{1}e^{2} \to {}^{1}d^{2})$$
$$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$$

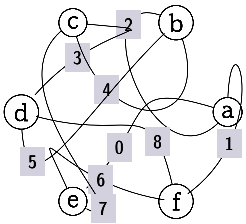
Markings

Fatgraph $G_{9,39}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,39}$ to $G^{(6)}_{9,39}$ are formed by decorating boundary cycles of $G_{9,39}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,39}) = -G^{(16)}_{8,2}$$
$$D(G^{(1)}_{9,39}) = -G^{(17)}_{8,2}$$
$$D(G^{(2)}_{9,39}) = -G^{(36)}_{8,5}$$
$$D(G^{(3)}_{9,39}) = -G^{(37)}_{8,6}$$
$$D(G^{(4)}_{9,39}) = -G^{(38)}_{8,6}$$
$$D(G^{(5)}_{9,39}) = -G^{(39)}_{8,6}$$

The Fatgraph $G_{9,40}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 5, 4]),# b
  Vertex([7, 4, 3]),# c
  Vertex([5, 8, 3]),# d
  Vertex([7, 0, 6]),# e
  Vertex([1, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^{1}e^{2} \to {}^{0}a^{1} \to {}^{2}f^{0})$
$\beta = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}b^{1} \to {}^{0}f^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{1}d^{2})$
$\gamma = ({}^{2}d^{0} \to {}^{1}c^{2} \to {}^{1}b^{2})$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	e	f	c	d	4	5	2	6	0	1	3	7	8	γ	β	α
$A_2{}^{\dagger\ddagger}$	c	e	f	a	d	b	3	4	7	1	6	0	5	8	2	γ	β	α
$A_3{}^{\dagger\ddagger}$	d	f	a	e	b	c	5	3	8	0	1	6	4	2	7	γ	β	α
A_4	e	c	d	b	f	a	6	0	7	5	3	4	1	8	2	α	β	γ
A_5	f	d	b	c	a	e	1	6	8	4	5	3	0	2	7	α	β	γ

Markings

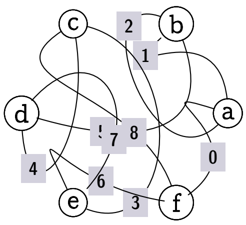
	$G_{9,40}^{(0)}$	$G_{9,40}^{(1)}$	$G_{9,40}^{(2)}$
α	0	0	1
β	1	2	0
γ	2	1	2

Differentials

$D(G^{(0)}_{9,40}) = -G^{(40)}_{8,6}$ $\qquad$ $D(G^{(2)}_{9,40}) = +G^{(49)}_{8,8}$

$D(G^{(1)}_{9,40}) = -G^{(41)}_{8,6}$

The Fatgraph $G_{9,41}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([8, 4, 3]),# c
  Vertex([4, 5, 7]),# d
  Vertex([3, 7, 6]),# e
  Vertex([0, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^2a^0 \to {}^0f^1 \to {}^1a^2 \to {}^0a^1 \to {}^2f^0 \to {}^1b^2 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^0b^1 \to {}^1e^2 \to {}^1d^2)$

$\beta = ({}^0e^1 \to {}^2d^0 \to {}^1c^2)$

$\gamma = ({}^1f^2 \to {}^2e^0 \to {}^2c^0)$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
A_1 †‡	b	a	e	f	c	d	5	1	2	3	6	0	4	8	7	α	γ	β

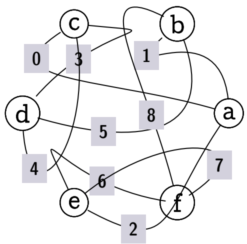
Markings

	$G^{(0)}_{9,41}$	$G^{(1)}_{9,41}$	$G^{(2)}_{9,41}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$$D(G_{9,41}^{(0)}) = +G_{8,8}^{(48)} \qquad D(G_{9,41}^{(2)}) = +G_{8,8}^{(50)}$$
$$D(G_{9,41}^{(1)}) = +G_{8,8}^{(51)}$$

The Fatgraph $G_{9,42}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([8, 1, 5]),# b
  Vertex([0, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([2, 7, 6]),# e
  Vertex([7, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{0}f^{1} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{1}e^{2} \to {}^{2}f^{0})$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
A_1	b	a	d	c	f	e	5	1	8	4	3	0	7	6	2	α	β	γ

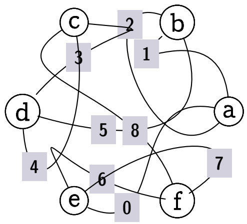
Markings

Fatgraph $G_{9,42}$ only has the identity automorphism, so the marked fatgraphs $G_{9,42}^{(0)}$ to $G_{9,42}^{(6)}$ are formed by decorating boundary cycles of $G_{9,42}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G_{9,42}^{(0)}) = +G_{8,9}^{(53)} \qquad D(G_{9,42}^{(3)}) = -G_{8,12}^{(67)}$$
$$D(G_{9,42}^{(1)}) = +G_{8,9}^{(52)} \qquad D(G_{9,42}^{(4)}) = -G_{8,12}^{(68)}$$
$$D(G_{9,42}^{(2)}) = -G_{8,11}^{(66)} \qquad D(G_{9,42}^{(5)}) = -G_{8,12}^{(69)}$$

The Fatgraph $G_{9,43}$ (non-orientable, 3 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([8, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([0, 7, 6]),# e
  Vertex([7, 8, 6]),# f
])
```

Boundary cycles

$\alpha = ({}^{0}e^{1} \to {}^{2}a^{0} \to {}^{0}f^{1} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{1}b^{2} \to {}^{1}f^{2} \to {}^{2}e^{0} \to {}^{0}c^{1} \to {}^{0}d^{1} \to {}^{2}b^{0} \to {}^{2}c^{0} \to {}^{0}b^{1} \to {}^{1}d^{2})$
$\beta = ({}^{2}d^{0} \to {}^{1}c^{2})$
$\gamma = ({}^{1}e^{2} \to {}^{2}f^{0})$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	f	e	d	c	5	1	2	7	6	0	4	3	8	α	γ	β

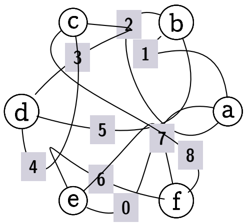
Markings

	$G_{9,43}^{(0)}$	$G_{9,43}^{(1)}$	$G_{9,43}^{(2)}$
α	0	1	2
β	1	0	0
γ	2	2	1

Differentials

$D(G_{9,43}^{(0)}) = -G_{8,12}^{(70)}$
$D(G_{9,43}^{(1)}) = -G_{8,12}^{(71)}$
$D(G_{9,43}^{(2)}) = +G_{8,14}^{(79)}$

The Fatgraph $G_{9,44}$ (6 orientable markings)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([8, 4, 3]),# c
  Vertex([4, 5, 3]),# d
  Vertex([0, 7, 6]),# e
  Vertex([8, 7, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^0e^1 \to {}^1f^2 \to {}^1a^2 \to {}^0a^1 \to {}^0b^1 \to {}^2e^0)$$
$$\beta = ({}^2a^0 \to {}^0f^1 \to {}^2f^0 \to {}^2c^0 \to {}^0c^1 \to {}^0d^1 \to {}^2b^0 \to {}^1b^2 \to {}^1e^2 \to {}^1d^2)$$
$$\gamma = ({}^2d^0 \to {}^1c^2)$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
A_1	e	f	d	c	a	b	0	6	7	4	3	8	1	2	5	α	β	γ

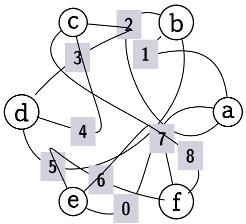
Markings

Fatgraph $G_{9,44}$ only has the identity automorphism, so the marked fatgraphs $G^{(0)}_{9,44}$ to $G^{(6)}_{9,44}$ are formed by decorating boundary cycles of $G_{9,44}$ with all permutations of $(0, 1, 2)$ in lexicographic order. See Section "Markings of fatgraphs with trivial automorphisms" for a complete table.

Differentials

$$D(G^{(0)}_{9,44}) = +G^{(78)}_{8,13}$$
$$D(G^{(1)}_{9,44}) = +G^{(81)}_{8,14}$$
$$D(G^{(2)}_{9,44}) = +G^{(80)}_{8,14}$$
$$D(G^{(3)}_{9,44}) = +G^{(83)}_{8,14}$$
$$D(G^{(4)}_{9,44}) = +G^{(82)}_{8,14}$$
$$D(G^{(5)}_{9,44}) = +G^{(90)}_{8,15}$$

The Fatgraph $G_{9,45}$ (non-orientable, 1 orientable marking)




```
Fatgraph([
  Vertex([1, 0, 2]),# a
  Vertex([2, 1, 5]),# b
  Vertex([8, 4, 3]),# c
  Vertex([5, 4, 3]),# d
  Vertex([0, 7, 6]),# e
  Vertex([8, 7, 6]),# f
])
```

Boundary cycles

$$\alpha = ({}^{0}e^{1} \to {}^{1}f^{2} \to {}^{1}a^{2} \to {}^{0}a^{1} \to {}^{0}b^{1} \to {}^{2}e^{0})$$
$$\beta = ({}^{2}d^{0} \to {}^{2}a^{0} \to {}^{1}b^{2} \to {}^{1}c^{2} \to {}^{0}d^{1} \to {}^{2}b^{0})$$
$$\gamma = ({}^{0}f^{1} \to {}^{2}f^{0} \to {}^{2}c^{0} \to {}^{0}c^{1} \to {}^{1}e^{2} \to {}^{1}d^{2})$$

Automorphisms

A_0	a	b	c	d	e	f	0	1	2	3	4	5	6	7	8	α	β	γ
$A_1{}^{\dagger\ddagger}$	b	a	f	e	d	c	5	1	2	6	7	0	3	4	8	β	α	γ
$A_2{}^{\dagger\ddagger}$	c	d	a	b	f	e	8	3	4	1	2	5	6	7	0	γ	β	α
$A_3{}^{\ddagger}$	d	c	e	f	b	a	5	3	4	6	7	8	1	2	0	β	γ	α
$A_4{}^{\dagger\ddagger}$	e	f	d	c	a	b	0	6	7	3	4	8	1	2	5	α	γ	β
$A_5{}^{\ddagger}$	f	e	b	a	c	d	8	6	7	1	2	0	3	4	5	γ	α	β

Markings

	$G_{9,45}^{(0)}$
α	0
β	1
γ	2

Differentials

$$D(G_{9,45}^{(0)}) = +G_{8,16}^{(91)}$$

Markings of fatgraphs with trivial automorphisms

This appendix shows the numbering of marked fatgraphs when the base unmarked fatgraph G has only the trivial automorphism.

	$G^{(0)}$	$G^{(1)}$	$G^{(2)}$	$G^{(3)}$	$G^{(4)}$	$G^{(5)}$
α	0	0	1	1	2	2
β	1	2	0	2	0	1
γ	2	1	2	0	1	0