

Info

This note, that [was found here](#), as a part of [a collection](#) is written (completely with human hands) by [Rupadarshi Ray](#), was created on January 10, 2026 2:44:37 PM, was last modified on February 27, 2026 1:17:28 AM, and was exported on September 7, 2026 2:50:36 PM.

Hexagons in hyperbolic plane

✓ <https://www.desmos.com/calculator/v2yscfzqdg>

regular hexagons

```
g = hyperbolic_regular_polygon(6, pi/1.55, center=3+15*I, fill=True, color='red')
g.plot()
```

right angled convex hexagons with one marked vertex

Proposition: Consider the set of all *convex* hexagons in $\mathbb{R}H^2$ with one marked vertex upto orientation and marking preserving isometries

$$\text{right angled } cPoly^+_{\mathbb{R}H^2}(6,1)$$

and the lengths of every other side of a hexagon going counterclockwise starting at the marked point

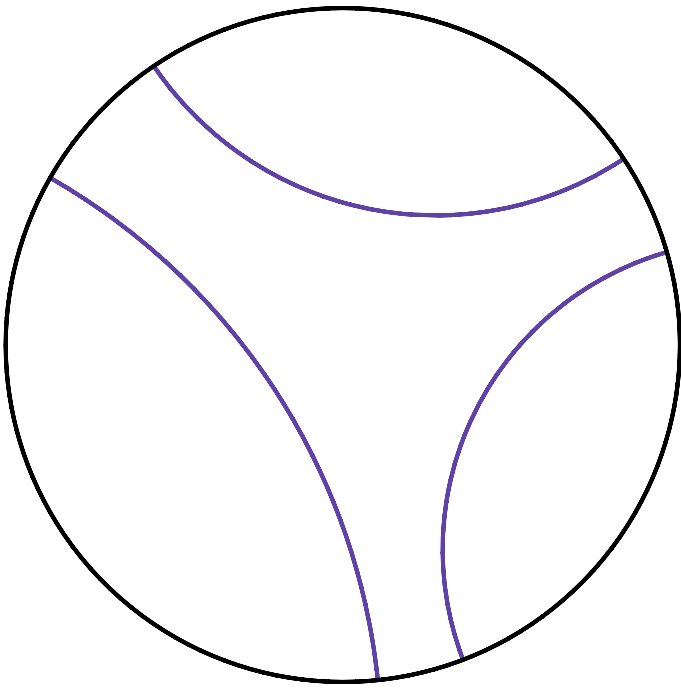
$$(l_1,l_2,l_3): \text{right angled } cPoly^+_{\mathbb{R}H^2}(6,1) \rightarrow \mathbb{R}^3_{>0}$$

is a bijection.

[1]

ideal hexagons

extended hexagons



Current note has 0 direct children and 0 total descendants.

- [squishy](#)
 - $\mathbb{R}H^2, \mathbb{R}H^2_0, D^2$
 - [Polygons in hyperbolic plane](#)
 - [Hexagons in hyperbolic plane](#)

And it has 2 siblings.

- [squishy](#)
 - $\mathbb{R}H^2, \mathbb{R}H^2_0, D^2$
 - [Polygons in hyperbolic plane](#)
 - [Triangles in hyperbolic plane](#)
 - [Hexagons in hyperbolic plane](#)

1. [Benson Farb, Dan Margalit - A Primer on Mapping Class Groups, p.276](#) ↩