

\mathbb{R} -hyperbolic space $\mathbb{R}H^n$

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The *unique* simply connected Riemannian manifold of dimension n with constant sectional curvature -1

$$\mathbb{R}H^n$$

- isometries
- connection
- geodesics
- exponential map

low dimensions

dim	upper half	Poincare ball	Hyperboloid model	Isom.
2	$\mathbb{R}H^2$			$PSL(2, \mathbb{R})$ $\cong PSU(1, 1, \mathbb{C})$
3				$PSL(2, \mathbb{C})$
4				
5				