

## Poincaré disk and the upper half plane

### 1. POINCARÉ DISK

- 1.1. **Points and lines.**
- 1.2. **Incidence axioms.**
- 1.3. **Betweenness axioms.**
- 1.4. **Congruence Axioms.**
- 1.5. **Limiting parallel axiom.**

### 2. UPPER HALF PLANE

- 2.1. **Points and lines.**
- 2.2. **Möbius transformation sending Poincaré disk to the Upper Half plane.** Cayley transform :  $z \mapsto i\frac{z-1}{z+1}$  takes Poincaré disk to the upper half plane.