

Rectangles

RG §3.6

① $\exists 1 \Rightarrow \exists$ arbitrarily large



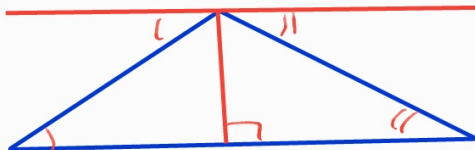
② \exists arbitrarily large $\Rightarrow \exists$ any size



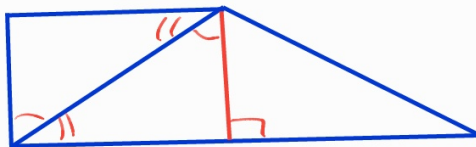
③ \exists rectangles \Rightarrow right triangles have angle sum 180°



④ \Rightarrow all triangles have angle sum 180°



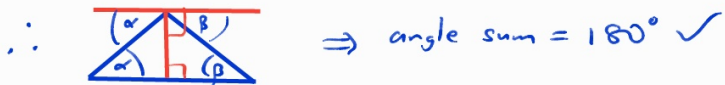
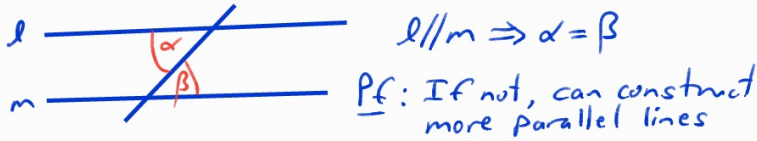
⑤ \exists triangle with angle sum $180^\circ \Rightarrow \exists$ rectangle



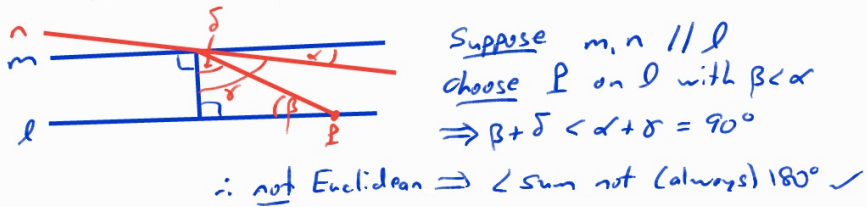
$\therefore \exists$ rectangle $\Leftrightarrow \exists$ triangle with angle sum 180°

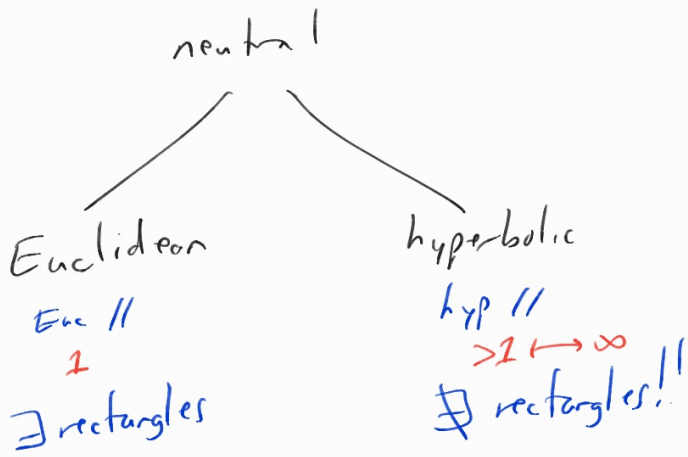
$\therefore \exists \text{ rectangle} \Leftrightarrow \exists \text{ triangle with angle sum } 180^\circ$
 $\Leftrightarrow \text{Euclidean}$

• Euclidean \Rightarrow $\angle \text{ sum} = 180^\circ$



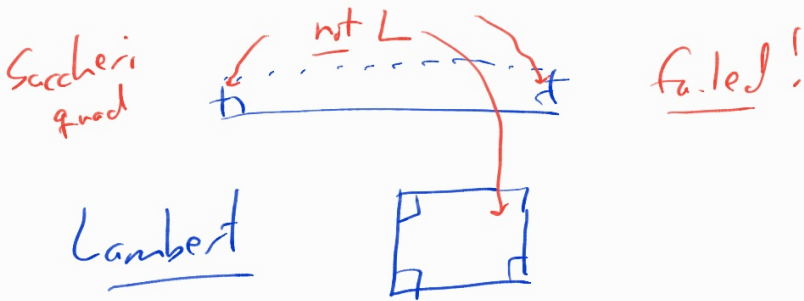
• $\angle \text{ sum} = 180^\circ \Rightarrow \text{Euclidean}$





Saccheri

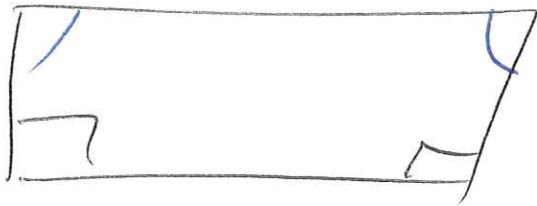
- tried to show; neutral \Rightarrow Euc
- neutral \Rightarrow \exists rect



Facts

- ① Δ 's have angle sum ≤ 180
- ② $\exists \Delta$ with $180 \Rightarrow$ all Δ 's have 180
 \Rightarrow Euclidean
- ③ $\exists \square \Rightarrow$ Euclidean

Saccheri



Lambert

