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The All – or – Nothing Theorem for angle sums

Lecture 16 begins here.

The preceding result on rectangles has an immediate consequence for angle sums of triangles.

Theorem 9. *If a rectangle exists in a neutral plane* $\mathbb{P}$*, then every right triangle in* $\mathbb{P}$ *has an angle sum equal to* $180°$**.**

Proof. Suppose we are given right triangle $\triangle ABC$ with a right angle at **B.** By the preceding result there is a rectangle $\square WXYZ$ such that $|AB| = |WX|$ and $|BC| = |XY|$**.** By **S.A.S.** we have $\triangle ABC \cong \triangle WXY$**;** in particular**,** the angle sums of these triangles are equal**.** On the other hand**,** the proof of Theorem **7** implies

Go to lecture16a.pdf for the rest of the material!