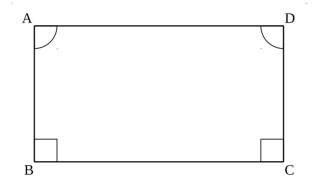# Mathematics 3260H – Geometry II: Projective and non-Euclidean geometry

### Assignment #5
### Triangles and Saccheri Quadrilaterals
*Due on Wednesday, 18 October.*

Recall that a *Saccheri quadrilateral* is a quadrilateral $ABCD$ in which sides $AB$ and $CD$ are perpendicular to the base $BC$, with $A$ and $D$ on the same side of $BC$, and with $AB = CD$ (*i.e.* $AB$ and $CD$ have the same length).



One can use Postulates I–IV to show that $\angle BAD = \angle CDA$, but they don't quite suffice to show that these angles are right angles.

**1.** Suppose that every Saccheri quadrilateral $ABCD$ as above has $\angle BAD = \angle CDA$ be right angles. Show that it follows that the sum of the interior angles of any triangle is two right angles. *[10]*