

Homework

due on Wednesday, November 19

Read carefully Chapter 7, sections 33-36 of Hartshorne's book. Solve the following problems:

33.5 a) (Hint: Start with a line l and a point P not on it. Drop perpendicular p from P to l and let q be a line through P perpendicular to p . You need to show that no line $m \neq q$ through P is parallel to l . Suppose contrary, that m is such a line and play with right triangles with one angle congruent to the acute angle between m and p . We did similar argument in class, when we proved that a semi-euclidean plane which satisfies the Archimedes axiom (A) also satisfies (P).

34.1

34.3 (Hint: Find Saccheri quadrilateral with angle C; use the perpendicular bisector of BC).

34.5 (Hint. Consider Saccheri quadrilaterals with base on l and one vertex at the given point).

Important: Read the first sentence in Exercises to section 35 (the sentence before problem 35.1)..

35.3(Hint: Use the fact that Legendre's Axiom is false for the given angle)

35.4

36.2 a,b (Hint: Use the method of proof of prop. 34.6.)

36.4 Hint: Assume that $\beta' \geq \beta$ and consider triangle DXA congruent to triangle ABD , where X and B are on opposite sides of the line AD .