## Homework
### due on Wedesday, November 23

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 $p$ frpm $P$ to $l$ and let $q$ be a line through $P$ perpendicular to $p$. You need to show that no line $m \neq q$ throught $P$ is parallel to $l$. Suppose contrary, that $m$ is such a line and play with right traingles with one angle congruent to the acute angle between $m$ and $p$. We did similar argument in class, when we proved that a semi-euclideal plane wich 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 thet 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 $AD$.