

Math 431 Homework 9

Due 12/1

- 1.** Consider the following statement: If we replaced axiom B4 by Pasch's theorem, the geometry with that set of axioms is the same as neutral geometry (all other betweenness axioms, as well as incidence, congruence and continuity remain unchanged). What do you think 'geometries are the same' means (you may consult with me if you are unsure)? Whether you think they are the same or not, explain how you reached your conclusion (proofs are required to support your claims).
- 2.** Proposition 3.16 states that for every line l and every point P not on l , there exists a line through P perpendicular to l . Show that such line is in fact unique (remember that we do NOT have Euclidean parallel property).
- 3.** Prove that the sum of the degree measures of any two angles of a triangle is less than 180° .