

Final Examination – Take-Home Part

Carefully verify that the Klein disk model satisfies all the Hilbert *incidence* and *betweenness* axioms and *Hilbert's hyperbolic axiom of parallels*.

You may assume that the underlying Euclidean plane is the standard (“real”) Euclidean plane, which satisfies Dedekind’s axiom. However, whenever a continuity axiom is necessary in your argument, you should take note of that fact.

“Carefully” means that you can’t just say “This is obvious.” Typically, you will need to cite a Euclidean fact (which you don’t need to reprove) and then explain why it is still applicable. (For example, you might need to check that a point whose existence is guaranteed by a Euclidean axiom does not fall outside the disk.)

This is an open-book examination, but while you are working on it, you should not discuss it with other human beings (with or without intervening electronic media) nor use Web search engines. Even after finishing, you must not mention it among students who may not have done so.