Honors 213 　　　　　 Spring 2005 　　　　　 Homework 10

Due April 26

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Name

For this homework set you are allowed to work with other members of either of the geometry classes. However, must cite everyone with whom you have discussed your problem.

In addition, you may **NOT** consult with anyone (except me) when you write your paper explaining your problem(s).

"Suppose we loosely define a religion as any discipline whose foundations rest on an element of faith, irrespective of any element of reason which may be present. Quantum mechanics for example would be a religion under this definition. But mathematics would hold the unique position of being the only branch of theology possessing a rigorous demonstration of the fact that it should be so classified." – De Sua, F. (In H. Eves' *In Mathematical Circles*)

Problems

Remember that you may use any previous problem as part of the justification for your problem(s).

1. **(Alec)**

    (a) Do the Incidence Axioms 1 and 2 parts of exercise K-1 of Chapter 7.

    (b) Do part a of exercise K-3 of Chapter 7. It is not necessary to prove the hyperbolic theorem you state.

    (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

2. **(Chelsea)**

    (a) Do the Incidence Axiom 3 part of exercise K-1 of Chapter 7.

    (b) Prove part b of exercise K-3 of Chapter 7.

    (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

3. **(Emily)**

    (a) Do the Betweenness Axiom 1 part of exercise K-1 of Chapter 7.

    (b) Do part c of exercise K-3 of Chapter 7. It is not necessary to prove the hyperbolic theorem you state.

    (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

4. **(Eric)**

    (a) Do the Betweenness Axiom 2 part of exercise K-1 of Chapter 7.

    (b) Do part a of exercise K-3 of Chapter 7. It is not necessary to prove the hyperbolic theorem you state.

    (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

5. **(Jana)**

   (a) Do the Incidence Axiom 3 part of exercise K-1 of Chapter 7.

   (b) Prove part b of exercise K-3 of Chapter 7.

   (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

6. **(Jane)**

   (a) Do the Betweenness Axiom 3 part of exercise K-1 of Chapter 7.

   (b) Do part c of exercise K-3 of Chapter 7. It is not necessary to prove the hyperbolic theorem you state.

   (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

7. **(Kristen)**

   (a) Do the Betweenness Axiom 4 part of exercise K-1 of Chapter 7.

   (b) Do part a of exercise K-3 of Chapter 7. It is not necessary to prove the hyperbolic theorem you state.

   (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.

8. **(Sarah)**

   (a) Do the Continuity Axiom part of exercise K-1 of Chapter 7.

   (b) Prove part b of exercise K-3 of Chapter 7.

   (c) Use a compass and straightedge to draw the diagrams for all three parts of exercise K-2 of Chapter 7.