Math 133
Fall 2007
R. Schultz

UPDATED GENERAL INFORMATION — DECEMBER 7, 2007

Here is some additional information regarding the final examination for the course. About half will cover the material in Sections III.5 – III.6 and V.2 – V.4, and about half will cover material through Section III.4 (one problem can be viewed as fitting into either category). There will be eight problems, with a total of 200 possible points; the examination is designed to be a two hour examination, but there will be three hours to complete it. There will not be any true-false or multiple choice questions. Slightly less than 1/4 of the exam will involve non – Euclidean geometry.

There will also be an extra credit problem worth 20 points; it will either involve material from Section III.4 or Section V.1.

As in previous exams, all questions should be worked, and unless indicated otherwise the supporting reasons for answers must be given. If a problem is not about the coordinate plane $\mathbf{R}^2$ and does not explicitly state that the underlying geometry is neutral, Euclidean or hyperbolic, then you may choose any one of these possibilities. As usual, the point values for individual problems will be indicated in brackets.

The same rules (no electronic devices, etc.) that applied to the second midterm exam will also apply to the final examination. If a problem does not explicitly state that the underlying plane or 3-dimensional space is neutral, Euclidean or hyperbolic, you will be free to choose one of these alternatives; in particular, if you wish to assume that the plane is Euclidean for such problems, it will be perfectly all right to do so.

Here are some suggestions for preparation. It is essential to know all the basic definitions and theorems, and also the names attached to various theorems in the notes. The ideas behind problems which were troublesome on the second exam are likely to reappear in some form. Assigned homework exercises, or variations on them, will probably appear on the exam, and the same applies for exercises worked out in class. Simple proofs from the notes may also appear on the exam (the proofs of the Vertical Angle and Isosceles Triangle Theorems are simple and maybe even too simple, while the proofs of the Saccheri – Legendre and Two – Circle Theorems are not simple enough to qualify, and in borderline cases there would probably be some hints for organizing the arguments). In hyperbolic geometry at the level of this course, one of the most useful and powerful concepts is the angle defect of a triangle, so careful study of the definitions, elementary derivations, properties and uses of the angle defect is strongly recommended.