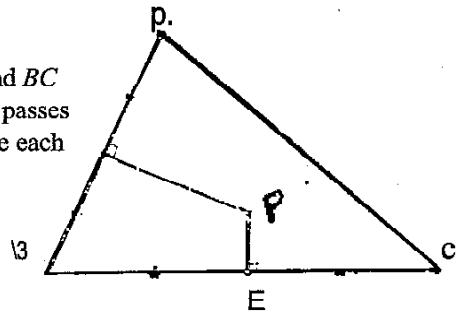
Math 130 Midterm

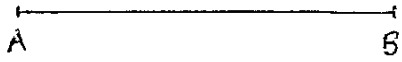
R.Hartshorne

10/4/1996

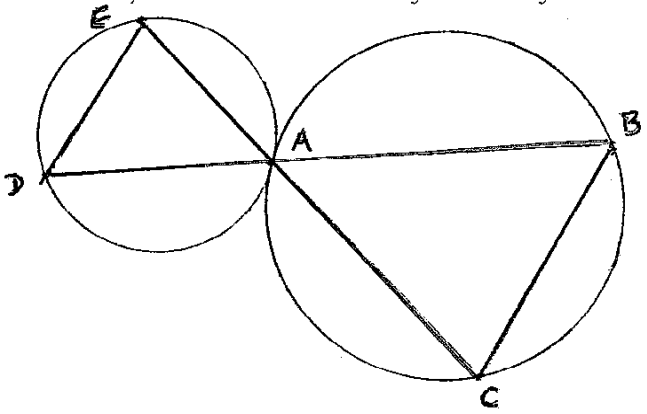
1 If ABC is any triangle, and if the perpendicular bisectors of AB and BC meet in a point P, sho\v that the perpendicular bisector of AC also passes through P. Write a proof 3) based on Euclid's Book I only, and cite each proposition
you use by number .



2. On the given segment AB, construct a regular pentagon having AB as one side. Label and number your steps. For full credit, use 25 steps or less.



3. Let two circles touch each other at a point A. Let two lines pass through A, meeting the circles at further points B, C, D, E, as shown. Prove that BC is parallel to DE. Give a proof based on Euclid's *Elements*, and cite the results you use by book and number.



4. Make a ruler and compass construction of three circles of different radii, each one touching the other two. Label and number steps as usual, and say a few words why your construction works. Try to use as few steps as possible.