Math 300   Spring 2005   Homework 02

Due January 31

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                                                                    Name

Remember, you are not to discuss these problems with anyone with three exceptions: (1) discussions with me are allowed, (2) you may use any information that comes to light during a Wednesday Brainstorming session and (3) if the directions to the problem specifies you may work with others.

"No, no, you're not thinking, you're just being logical." -Niels Bohr, physicist (1885-1962)

Problems

1. Give a careful definition of one of the geometric terms or phrases from each of exercises 1, 2, and 3.

2. Do the construction problems from major exercises $1\,(a)$-$1\,(g)$, and 2 (pages 31-32) that were assigned to you in class. You will need to provide justifications for each of your constructive steps. For this assignment you may use any results from Euclidean geometry to justify the steps of your constructions. (In future assignments you will not be able to assume you are in Euclidean geometry.)

3. Develop a truth table for the logical statements (below) that were assigned to you in class. Give a brief verbal explanation of what the logical statement means.

   (a) $(p \vee q) \Longleftrightarrow (\sim p) \wedge (\sim q)$

   (b) $(p \Longrightarrow q) \Longleftrightarrow (\sim q) \Longrightarrow (\sim p)$ contrapositive

   (c) $(p \Longrightarrow q) \Longleftrightarrow (\sim p) \vee q$

   (d) $\tilde{\ }\,[H \Rightarrow C] \Longleftrightarrow H \wedge \tilde{\ }C$

   (e) $(P \wedge (P \Rightarrow Q)) \Rightarrow Q$

   (f) $((P \wedge \tilde{\ }Q) \Rightarrow (R \wedge \tilde{\ }R)) \Rightarrow (P \Rightarrow Q)$