Math 319 Midterm 1: extra credit

Due Tuesday, October 12, 2004

Extra credit for students in MAT 319

Rewrite solutions to all the questions in Midterm 1, handing your solutions to Professor McDuff by 5 pm on Tuesday, October 12 (either in lecture or under her office door Math 3-111.) If there are any of these questions that you do not want to rework, please hand in your original exam script and you will be credited with your original grade for the problem. The final grade for Midterm I will be made up of your original grade out of 50 added to the new grade out of 25.

Hints In general, in each question you must look to see where a detailed proof is needed. Many of you wrote down various somewhat relevant thoughts without making a coherent argument.

1. Make sure your algebra is correct. Explain clearly where you use the inductive hypothesis.

2. It is obvious that 2 is included in this infinite intersection. You must find an argument to show that nothing else is in the intersection.

3. Give the precise definition and then use it in (ii).

4. Many of you were very confused here. The set $S$ is the set of solutions to the equation $\sin x = 1$. The fact that the function $\sin x$ is bounded is irrelevant because you are asked about points in the domain of $\sin$ not points in its range (ie values of the function.)

5. Many of you wrote things like “$S$ is bijective”. But this is nonsense: $S$ is a set and only functions can be bijective. In the second part, divide the argument into two: first consider the case when $S$ and $T$ are disjoint, and then look at the general case.