Problem Set 7   Calc 2   Due 11/30/2004

Congratulations on your appointment as a temporary intern at Coe's new Wildlife Outreach Program. This position is a tremendous honor, and I'm sure your family is very proud.

Your first Wildlife Outreach Program assignment is as follows:

Suppose that a few years ago a fertilizer spill contaminated a small lake used for sport fishing and killed the entire fish population of the lake. The lake has now been decontaminated and a year ago was restocked with 200 new fish, which have reproduced so that currently the population of the lake is around 500 fish. It is estimated that, based on the size and conditions, the eventual population of the lake could reach 5000 fish. You are part of a team charged with analyzing the future management of the lake's use. In particular, you have been asked to address the following questions:

> 1. Can we predict how many fish should be present in the lake after several years go by, provided that no fishing is allowed during that period?
>
> 2. How many fish can safely be taken from the lake (per year) once fishing is again allowed?
>
> 3. How many years should be allowed to pass before fishing is allowed to resume?

Your responses to these questions should take the form of a memo or formal written report intended for a primarily non-technical audience. You are welcome to include whatever tables or illustrations you deem appropriate, but be sure to explain their meaning to an audience that might not have any particularly strong mathematics background.

Since this is a graded internship, you will be evaluated on a 25-point scale, with 5 points apiece for the quality of your answers to each of the questions above, and another 10 points for the overall quality of your report.