Math 266A **Fall 2005** **Guide for the Final Exam**

The final exam is in our classroom on Saturday 19 November from 2:30-4:30pm. (Note that the time has changed from that printed in the schedule of courses.)

The exam is cumulative, so anything that we have learned could appear.

There will be proportionally more questions from the material that we covered after the fourth test. Here are some sample questions from those sections, so that you have an idea of what to expect.

1. If you use the sandwich theorem, the intermediate value theorem, or L'Hôpital's rule, then say so.

   (a) $\displaystyle\lim_{x\to 0} \frac{e^x - 1}{3x} =$

2. Analyze and graph the function $f(x) = x^4 - 2x^2$.

3. The city park department is planning an enclosed play area in a new park. One side of the area will be against an existing building, with no fence needed there. Find the dimensions of the maximum rectangular area that can be made with 900 m of fence.

4. (a) Use the stability criterion to characterize the stability of the equilibria of

$$x_{t+1} = \frac{10x_t^2}{9 + x_t^2}.$$

   (b) Use cobwebbing to decide to which value x_t converges as $t \to \infty$ if $x_0 = 0.5$.