Math 266A A02 **Winter 2009** **Guide for the Final Exam**

The final exam is on Thursday 19 March from 2:30-4:30pm in our regular classroom. This is also the deadline for turning in any late good problems.

The exam is cumulative, so anything that we have learned could appear. There will not be any questions specifically from Chapter 1, but you will need those skills for other questions.

There will be proportionally more questions from the material that we covered after the fourth test. Here are some sample questions from sections 5.3–5.5, so that you have an idea of what to expect. The homework problems are also a good source of practice material.

1. Compute the following limits. If you use the sandwich theorem or L'Hôpital's rule, then say so.

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

   (b) $\lim_{x\to 0^+} \dfrac{e^x}{3x} =$

   (c) $\lim_{x\to \infty} \dfrac{(\ln(x))^2}{x^2} =$

   (d) $\lim_{x\to \infty} x^{1/x} =$

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.