MATH 251 Calculus I Fall 2003
Practice problems for Final **Name:** _____

1. Evaluate the following limits.
   (a) $\lim_{x\to\infty} \frac{x^2-4}{3x^2-2x-8}$
   (b) $\lim_{x\to\infty} x^{\frac{1}{x}}$
   (c) $\lim_{x\to\infty} \sqrt{x^2+1}-1$
2. Sketch
   (a) $f(x) = x^{8/3} - 2x^{5/3} - 6x^{2/3}$
   (b) $f(x) = x + \frac{4}{x}$
   (c) $f(x) = x \ln x$
3. A rectangular box has a square base with edges at least 1cm long. Its total surface area is 600cm^2. What is the largest possible volume that such a box can have?
4. Show that of all rectangles of a given area the one with smallest perimeter is a square.