MA575 Fall 2008 Problem Set 10 DUE: 12 December 2008

- 1. Beals, page 66, #2,5.
- 2. Show that every uniformly convergent sequence of bounded functions on a metric space is uniformly bounded.
- 3. Let $f_n(x) = x(1 + nx^2)^{-1}$ on R. Show that f_n converges uniformly to a function f and consider the convergence of $f'_n(x)$ to f'(x): Is there convergence and what type?
- 4. Suppose that f_n and g_n converge uniformly on a metric space X and that both are bounded. Then show that f_ng_n converges uniformly on X.