Math 135, HW 6

Due Wednesday, February 25th

1. Find the first three terms of the generalized Fourier series for $\cos x$ with respect to $1, x, x^2, \cdots$ on the interval $[-1, 1]$

2. Find the generalized Fourier series for x with respect to $1, x, x^2, \cdots$ on the interval $[-2, 2]$

3. Show that a null function is zero at each point of continuity. (That is, if f is a null function, x is a point, and there is an interval $(x - \epsilon, x + \epsilon)$ such that f is continuous on this interval then $f(x) = 0$.)

4. Section 38, Problems 1 and 2 (Note: do not simply copy down what was said in class. Give careful, step by step arguments.)

5. Find $\sum_{n=1}^{\infty} \frac{1}{(2n-1)^2}$. (Look at Example 2 in Section 33.)