Math 366: Honors Analysis II Name:________________________
Quiz 2 *February 16, 2001*

1. Define:
a) $\mathcal{F}$ is uniformly equicontinuous.

b) $f * g$

2. State:
a) The Weierstrass Approximation Theorem

b) The Arzela-Ascoli Theorem.

3. Calculate the radius of convergence of the series $\sum_{n=0}^{\infty}(1+(-1)^n+1/n)^n x^n$.

Prove two of the following:

4. Suppose f is integrable and has compact support. If g is a polynomial of degree n then $f * g$ is a polynomial of degree $\leq n$.

5. Suppose $f \in C[0,1]$ and $\displaystyle\int_0^1 f(x)x^n dx = 0$ for all $n \in \mathbb{N}$. Then $f(x) = 0$ for all $x \in [0,1]$. (Hint: Use the Weierstrass Approximation Theorem.)

6. If $f_n \in C^1[a,b]$ and $|f_n'(x)| \leq M$ for all $n \in \mathbb{N}$, then $\{f_n\}$ is equicontinuous.