MA 2325
Assignment 1
Due 7 October 2009

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1. Defining the complex conjugate in the usual way, $\overline{x+iy} = x - iy$, prove that
$$\lim_{n\to\infty} a_n = L$$
if and only if
$$\lim_{n\to\infty} \overline{a_n} = \overline{L}.$$

2. Recall that an open set in the complex plane is, by definition, one which contains a disc of positive radius about each of its points. Prove that
   (a) the intersection of two open sets is an open set.
   (b) the union of arbitrarily many open sets is an open set.

3. Find the radius of convergence of the series
$$\sum_{n=1}^{\infty} n^{-1} z^n.$$