Problem Set 3        Real Analysis 1        Due 9/30/2002

For each proposition, either prove or give a counterexample. Each problem is worth 3 points. Adequate demonstration is required for full credit.

1. Proposition: If the sequence \{a_n\} converges to 0, then the sequence \{|a_n|\} converges to 0.

2. Proposition: If the sequence \{|a_n|\} converges to 0, then the sequence \{a_n\} converges to 0.

3. Proposition: If the sequence \{a_n\} converges to A, then the sequence \{|a_n|\} converges to |A|.

4. Proposition: If the sequence \{|a_n|\} converges to |A|, then the sequence \{a_n\} converges to A.

5. Proposition: If the sequence \{a_n\} converges to 0, and the sequence \{b_n\} is bounded, then the sequence \{a_n b_n\} converges to 0.

6. Proposition: If the sequence \{a_n\} converges to 0, and \{b_n\} is another sequence, then the sequence \{a_n b_n\} converges to 0.