

**Homework 9**  
**Due 7/26/05**

**Problem 1:** Let  $a_1, \dots, a_n$  be points on the unit circle. Show that there is some other point  $p$  on the unit circle such that the product of the distances from  $p$  to  $a_i$ ,  $1 \leq i \leq n$ , is at least 1. (Hint: Maximum Modulus Principle!)

**Problems 2-7:** VIII.4.1, VIII.7.2, VIII.7.5, VIII.12.1, VIII.12.2, VIII.12.3.

**Problem 8:** (Prelim exam, spring 1981) Suppose that  $f$  and  $g$  are entire functions such that  $|f(z)| \leq |g(z)|$  for all  $z \in \mathbb{C}$ . Show that  $f(z) = cg(z)$  for some constant  $c$ . (Hint: Think about the singularities of  $f/g$ .)