

Homework 4

Proofs and explanations should always be written using complete English sentences. You should always explain and justify each of the steps in your solution, unless otherwise noted. Write your name and "Math 114" on the top right of the first page.

1. Sarason, V.6, exercise 1.

2. Sarason, V.6, exercise 2.

Remark: Use the fact that a set S of complex numbers is compact if and only if for all coverings by open sets, i.e. for every family of open sets $\{U_i\}_{i \in I}$ such that $S \subseteq \bigcup_{i \in I} U_i$, there is a finite subcover, i.e. a finite subset $J \subseteq I$ such that $S \subseteq \bigcup_{j \in J} U_j$.

3. Sarason, V.14, exercise 1.

4. Sarason, V.16, exercise 3.