

Math 8051 Homework 1

Due Wednesday, 9/6/17

1. For $a \in \mathbb{C}$, let r_1, \dots, r_n be all the n -th roots of a . Show that $\sum r_i = 0$.
2. Exercise 7 on page 6.
3. Exercise 1 on pages 7–8.
4. Prove that every closed ball in a metric space (X, d) is a closed set.
5. On $X = \mathbb{R}^2$, let d be the standard metric, and let t be the taxicab metric. Prove that (X, d) and (X, t) have the same open sets.