

Math 121A: Homework 3 (due February 13)

Office hours: Monday Feb 11, 4PM–6PM.

1. Find all solutions of $\sqrt[3]{i}$ and $\sqrt[3]{-i}$ and plot their positions in the complex plane.

2. Find the locus of points that satisfy

(a) $|z + 1| = |z + i|$,

(b) $\operatorname{Re} z = |z - 1|$

and sketch them in the complex plane.

3. Boas exercise 3.2.8

4. Boas exercise 3.2.17

5. Boas exercise 3.3.2

6. Boas exercise 3.3.13

7. Alice, Bob, and Charlie are three siblings with ages a , b , and c respectively. Their combined age is 18 years. Charlie is older than Bob. Alice's age is equal to twice the difference between Bob's and Charlie's ages. Bob's age is equal the average of Alice's and Charlie's ages.

(a) Use the information provided to formulate a system of three equations for a , b , and c .

(b) Solve the system using row reduction techniques, or otherwise.

8. Boas exercise 3.4.9

9. Boas exercise 3.4.21