

## HANDOUT 1

JIASU WANG

### 1. General information:

- Email: jiasu@berkeley.edu.
- Office: 739 Evans hall.
- Office hours: Tuesdays 2:00 pm - 4:00 pm.

### 2. Discussions:

- Tuesdays: I will answer questions from last Thursday's quiz. I will also answer the questions from the homework submitted last Tuesday. Then we will do some exercises. Difficulty depending on audience, ranging from homework level to challenging problems harder than exam problems.
- Thursdays: We will take a quiz at the beginning, about 20 minutes. Then I review material from the previous week.
- You are welcomed to attend either of my discussions, or try out discussions lead by other GSIs. My discussions are TuTh 8:00 am - 9:29 am and TuTh 9:30 am - 10:59 am, both in Evans 87.
- Attendance not mandatory, but you should not skip quizzes.

### 3. Homework:

- Homework must be submitted through gradescope, due time: Tuesday 11:59 pm.
- If you are not added to gradescope for homework submitting, please contact me immediately!
- No late homework, unless approved by Professor Lin.
- Two homework problems will be graded each week. 2 points for each problem: 2 = correct/almost correct; 1 = some progress; 0 = little progress.

### 4. Quizzes:

- Every Thursday, in person! (No quiz on 8/25, 9/22, 10/27).
- Quizzes will be exactly 20 minutes.
- You can take quiz on either of my two discussions. Taking quiz at other GSI will not receive credit!
- No make-up quiz! The lowest two scores for the quizzes will be dropped when counting towards the total score in the end.
- If you meet the requirement from the Disabled Students Program, and require special accommodations of any kind, please contact me as soon as possible.

### 5. Midterms and final:

- There will be 2 midterms, 9/23 and 10/28.
- The discussions before the midterms will be review sessions.
- No last-minute office hours before midterm 1. (I will travel for conference on the afternoon of 9/22, I encourage you go to other GSIs' office hour.)
- Last-minute office hours before midterm 2: 2:00 pm - 4:00 pm 10/27.
- Last-minute office hours before final: TBD.

### Complex number

1. Why we need complex number?

- Solving equations  $x^2 - 2x + 1 = 0$
- Solving equation  $x^2 - 2x + 2 = 0$
- The "unit" imaginary number:  $i = \sqrt{-1}$

2. What is a complex number?

- A Complex Number is a combination of a real Number and an imaginary Number
- $a + bi$ , either part can be zero.
- Examples:  $1 + i$ ,  $39 + 7i$ ,  $\pi + \sqrt{2}i$  ...
- Visual Explanation.

3. How to use complex number?

- Add:  $(a + bi) + (c + di) = (a + c) + (b + d)i$
- Subtract:  $(a + bi) - (c + di) = (a - c) + (b - d)i$
- Multiply:  $(a + bi)(c + di) = ac + adi + bci + bdi^2 = (ac - bd) + (ad + bc)i$
- Conjugate: the conjugate of  $a + bi$  is  $a - bi$ .
- Divide: the trick is to multiply both top and bottom by the conjugate of the bottom.

$$\frac{a + bi}{c + di} = \frac{a + bi}{c + di} \frac{c - di}{c - di} = \frac{(a + bi)(c - di)}{(c + di)(c - di)} = \frac{(ac + bd) + (bc - ad)i}{c^2 + d^2}$$

4. Reference: <https://www.mathsisfun.com/numbers/complex-numbers.html>