Exercises for Week 1

The work handed in should be entirely your own. You can consult Gamelin and/or the class notes but nothing else. To receive full credit, justify your answer in a clear and logical way. Due Jan 30.

Reading. Read Sections 1.1-1.3 of the textbook carefully.

1. Show that there is an isomorphism from $\mathbb{C}$ to the collection of matrices

$$\left\{ \begin{pmatrix} x & -y \\ y & x \end{pmatrix} \middle| x, y \in \mathbb{R} \right\}.$$

   Hint: Identify what multiplication by a complex number does to the plane $\mathbb{R}^2 \cong \mathbb{C}$ in terms of matrices.

2. Section I.1. Exercises 1 (a), (b), (f), (g), 2, 6.

3. Section I.2 Exercises 4, 5.

4. Section I.3 Exercise 7.