(Submitted to Jiacheng Shang in **SERC 332**, between 9 am and noon)

All solutions should be typed, using Latex preferably.

1. Chapter 11, 1
2. Chapter 11, 6
3. Chapter 11, 8
4. Adversary supplement one: 5.19
5. In a round-robin tennis tournament with Federer (F), Nadal (N), Djokovic (D), and Murray (M), suppose Federer beats Murray (denoted as F → M), F → N, M → D, D → F, N → M, and N → D.
   a. Find all the kings in the tournament.
   b. Find all the sorted sequence of kings in the tournament.
   c. Prove that for any tournament, there is at least one king and one sorted sequence of kings.