Key notions introduced this long week:

1. Rouche’s Theorem—undergraduate version and graduate version, algebraic number of zeros and poles;
2. Maximum Principle—boundary version;
3. Schwarz’s Lemma;
4. Schwarz-Pick Theorem;
5. Hadamard Three Circles Theorem.

Homework problems:

**Problem 1.** A function $f$ from the complex sphere $\hat{C}$ to itself is meromorphic if both $f(z)$ and $f(\frac{1}{z})$ are meromorphic functions on $\mathbb{C}$. Prove that $f$ has zero as the algebraic number of zeros and poles on $\hat{C}$.

§6.1. 1, 2.
§6.2. 1, 2.
§6.3. 1, 4.