

Math CS-120: Homework 2

Read Chapters 2 and 3 in Stewart and Tall.

I. Write $z = x + iy$. Discuss the difference between the $\text{Arg } z$ and $\tan^{-1} \frac{y}{x}$. If we consider the principle value of $\text{Arg } z$, is it true that $\text{Arg } z = \tan^{-1} \frac{y}{x}$ for all $z = x + iy \in \mathbb{C}$?

II. Exercises 2: #3, #5, #6, #8, #9

III. Prove that $\sum \frac{z^n}{n}$ converges at every point on the closed disc $\{z \in \mathbb{C} : |z| \leq 1\}$ *except* for $z = 1$.

IV. Exercises 3: #4, #5, #9, #10