

Homework 1, MATH 300 2021-22 Term 2

The numbered questions are from the textbook:

E.B. Saff, A.D. Snider, *Fundamentals of Complex Analysis with Applications to Engineering, Science and Mathematics*, third edition.

We will randomly choose 3-4 questions to mark each time.

1. 1.1.4; 1.1.8; 1.1.20;
2. 1.2.8; 1.2.17;
3. 1.3.12;
4. 1.4.22;
5. Let $z, z_1, z_2 \in \mathbb{C} \setminus \{0\}$ be arbitrary. For each of the following statements, prove it if you think it is correct, or give counterexamples showing it is incorrect.
 - (a) $\text{Arg}(z_1 z_2) = \text{Arg}(z_1) + \text{Arg}(z_2)$.
 - (b) $\text{Arg}(rz) = \text{Arg}(z)$ where $r > 0$.
 - (c) $\text{Arg}(1/z) = -\text{Arg}(z)$.
 - (d) $\text{Arg}(\bar{z}) = -\text{Arg}(z)$.