

## Homework 5, 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. 3.1.3 (b); 3.1.5 (b); 3.1.13 (c)(d)
2. 3.2.5 (d)(f); 3.2.10 (Hint: no computation needed); 3.2.17 (c)
3. For each of the following statements, determine if it is true. Show your reasonings.
  - (a)  $|\sin z|$  is bounded by 1 on  $\mathbb{C}$ .
  - (b)  $|\sin z| \leq |z|$  on the unit disc  $|z| < 1$ .
  - (c)  $\lim_{z \rightarrow 0} \frac{\sin z}{z} = 1$ .
  - (d)  $\lim_{z \rightarrow \infty} \frac{\sin z}{z} = 0$ .