MATH4060 HW2 Due date: Feb 10, 2021, 3:00pm

1. Find the order of growth of the following entire functions

   (a) $f(z) = P(z)e^{Q(z)}$, where P, Q are polynomials of degree p & q respectively.

   (b) $f(z) = e^{e^z}$

   (c) $f(z) = \cos z^{\frac{1}{2}} = \sum_{n=0}^{\infty} (-1)^n \frac{z^n}{(2n)!}$

2. Prove that there exists constant $C > 0$ such that

$$\left| \frac{1}{z} + \sum_{n=1}^{\infty} \frac{2z}{z^2 - n^2} \right| \leq 1 + C \sum_{n=1}^{\infty} \frac{|y|}{y^2 + n^2}$$

for all $z = x + iy$ with $|x| \leq \frac{1}{2}$ and $|y| > 1$.

3. Exercise 3 of Chapter 5 of the Textbook.

4. Exercise 10 of Chapter 5 of the Textbook.

5. Exercise 14 of Chapter 5 of the Textbook.

(End)