MATH 2060B - HW 8
Due Date: 28 April 2021, 23:59

Problems: Ex9.4 P.286: 1f, 17, 19 (3 Questions in total)

Textbook: Bartle RG, Sherbert DR(2011). Introduction to Real Analysis, fourth edition, John Wiley Sons,Inc.

Instruction:

1. Please submit your solution in one pdf file to Blackboard.
2. Rename your file in the form "HW1_ChanTaiMan_1155151031".
3. You are reminded that your HW is graded based on **both** your idea and your presentation

Questions:

1 (P.286 Q1f)**.** Discuss the convergence and the uniform convergence of the series of functions $\sum f_n$ where $f_n : [0, \infty) \to \mathbb{R}$ are defined by

$$f_n(x) := \frac{(-1)^n}{n + x}$$

for all $x \in [0, \infty)$ and $n \in \mathbb{N}$

2 (P.286 Q17)**.** Let $x \in \mathbb{R}$. Suppose $|x| < 1$. Show that

$$\arctan(x) = \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1} x^{2n+1}$$

3 (P.286 Q19)**.** Find a series expansion for $f(x) := \int_0^x e^{-t^2} dt$ for all $x \in \mathbb{R}$.