

# Lecture on Jul. 27th, 2017: Taylor Series II

## 1 Warm-up Practice

- Find the interval of convergence for  $\sum_{n=0}^{\infty} x^n$ ,  $\sum_{n=0}^{\infty} \frac{1}{n} x^n$  and  $\sum_{n=0}^{\infty} \frac{1}{n!} x^n$ .

## 2 Operations on Taylor Series

- Properties on addition, multiplication, differentiation and integration of Taylor series.
- Substitution technique of Taylor series.
- Examples to make use of the techniques above.

## 3 Approximations Using Taylor Series

- Definition of remainder of a Taylor series.
- Taylor's formula for the remainder.
- Error estimation for alternating series.
- Procedures to approximate definite integrals using Taylor series.