

Written HW24 – MATH 2502 Fall 2021

Due by 23 April for timely completion credit

We found a number of power series in class that you will find listed below. For each of them, find the interval of convergence of the series in your favorite way (e.g. ratio test). Don't forget to check endpoints when relevant!!

1. If $f(x) = \int_0^x \frac{1}{1+t^4} dt$, then

$$f(x) = \sum_{k=0}^{\infty} \frac{(-1)^k x^{4k+1}}{4k+1}.$$

2. If $h(x) = \int_0^x t e^{-t^4} dt$, then

$$h(x) = \sum_{k=0}^{\infty} \frac{(-1)^k x^{4k+2}}{k!(4k+2)}.$$

3. If $g(x) = \int_0^x \cos(t^2) dt$, then

$$g(x) = \sum_{k=0}^{\infty} \frac{(-1)^k x^{4k+1}}{(2k)!(4k+1)}$$