

Homework 4

March 21, 2025

1. Consider the function given by :

$$f(x) = \frac{1}{1-x}$$

Find the interval of convergence for each of the following.

- a.** $f'(x)$ **b.** $f''(x)$
2. Find a power series for $f(x) = \frac{1}{6-x}$, centered at $x = 1$.
3. Find a power series for $f(x) = e^x \sin x$ centered at $x = 0$.