Math 2B Worksheet: 11.8/10 Power Series and Taylor Series

Write your names and Student ID numbers at the top of the page

1. Find the radius and interval of convergence.

$$\sum_{n=1}^{\infty} n!(2x-1)^n$$

2. Find a power series representation for the function and determine its interval of convergence.

$$f(x) = \frac{x}{2x^2+1}$$

3. Evaluate $\int \frac{t}{1-t^8} dt$ as a power series then find the radius of convergence.

4. Use the definition of Taylor series to find the first 4 terms of the Taylor series for $f(x) = \ln x$ centered at $a = 1$. Do the same for the Maclaurin series of $g(x) = xe^x$ (the first 4 nonzero terms).