

YOUR NAME: _____

George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the radius and interval of convergence of the series $\sum_{n=1}^{\infty} \frac{x^n}{5^n n^5}$

2. Find the radius and interval of convergence of the series $\sum_{n=1}^{\infty} n!(2x - 1)^n$

3. Find a power series representation for the function $f(x) = \frac{x}{4x+1}$ and determine the interval of convergence.

4. Use partial fractions to express $f(x) = \frac{7x-1}{3x^2+2x-1}$ as the sum of a power series. (You do not need to find the interval of convergence.)