

DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems in the space provided. No Attached papers. Transfer all your answers to the space provided.

1. Find a power series representation for the function then determine the radius and interval of convergence

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

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

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

3. Find a power series representation for the function then determine the radius and interval of convergence.

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

4. Find a power series representation for the function then determine the radius and interval of convergence.

$$f(x) = \ln(2-x)$$

5. Evaluate the indefinite integral as a power series, then find the radius convergence.

$$f(x) = \int \frac{x - \tan^{-1} x}{x^2} dx$$