Problem Set 25
11.9: Represenation of functions as Power Series

Please indicate the members who are present. Also indicate the group coordinator.

Group Number:	
Members:	

$$\frac{1}{1-x} = 1 + x + x^2 + x^4 + \cdots = \sum_{n=0}^{\infty} x^n, \qquad |x| < 1$$

Problem 1

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

Problem 2

Find a power series representation for the function and determine the interval of convergence $f(x) = \dfrac{5}{1-4x^2}$.

Problem 3

Find a power series representation for the function and determine the interval of convergence $f(x) = \dfrac{5}{1-4x^2}$.

Problem 4

Find a power series representation for the function and determine the interval of convergence $f(x) = \dfrac{x}{(1+4x)^2}$.

Problem 5

Find a power series representation for the function and determine the interval of convergence $f(x) = \ln(5 - x)$.

Problem 6

Find a power series representation for the function and determine the interval of convergence $f(x) = x^2 \tan^{-1}(x^3)$.

Problem 7

Evaluate the indefinite integral as a power series. What is the radius of convergence?

$$\int \frac{\tan^{-1} x}{x} dx$$