Problem 1:

Find a power series representation of the function:

\[ f(x) = \frac{1}{5 + x} \]

centered at 0 and determine its interval of convergence.

Problem 2:

Use the result of the previous problem to give a power series representation of the function:

\[ f(x) = \frac{1}{(5 + x)^2} \]

Problem 3:

Evaluate the indefinite integral as a power series:

\[ \int \frac{t}{1 - t^5} \, dt \]