

Problem Set 33

1) What are some frequently used Taylor series? How can you use these series?

2) Determine the power series for $Si(x) = \int_0^x \frac{\sin t}{t} dt$

3) Compute $\lim_{x \rightarrow 1} \frac{\ln x}{x-1}$.

4) Find the first four terms of the binomial series for the functions:

a)

$$\left(1 - \frac{x}{3}\right)^4$$

b)

$$(1 + x^2)^3$$

5) Use series to evaluate the following limits:

a)

$$\lim_{x \rightarrow 0} \frac{e^x - e^{-x}}{x}$$

b)

$$\lim_{x \rightarrow 0} \frac{\ln(1 + x^3)}{x \sin(x^2)}$$