
Worksheet 13

Taylor Series Manipulations

TAYLOR SERIES MANIPULATIONS

We will use substitution and other Taylor series manipulations to calculate Taylor series.

Problem 1. Find the Taylor series for the following functions $f(x)$.

(a) $f(x) = \frac{1}{1 + 3x}$.

(b) $f(x) = \frac{\cos x - 1}{x^2}$

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

Problem 2. Compute the Taylor polynomial $T_4 \{ e^{-t} \sin 2t \}$.

Problem 3. Compute the Taylor polynomial $T_4 f(x)$ where $f(x) = x^2 e^{-x^2}$. Estimate the error $R_4 f(x)$ for any x on the interval $0 \leq x \leq 1$.