

Math 172 – Homework 11

Due at the beginning of the final exam.

PART A

Problems from the textbook:

- Section 10.7 #10, 21, 28, 32

PART B

1. Find the fourth-degree Taylor polynomial of $f(x) = \frac{1}{2+6x}$ centered at $a = 0$.
2. Find the third-degree Taylor polynomial of $f(x) = \sqrt[3]{x}$ centered at $a = 1$.
3. Given $f(x) = \sinh(x) = \frac{e^x - e^{-x}}{2}$.
 - (a) Find the 5-th degree Taylor polynomial of $f(x)$ centered at $a = 0$.
 - (b) Estimate the accuracy of the approximation $f(x) \approx T_5(x)$ when $0 \leq x \leq 1/2$.
4. Given $f(x) = \ln x$.
 - (a) Find the second degree Taylor Polynomial for $f(x)$ at $a = 3$.
 - (b) Determine an upper bound on the remainder in using $T_2(x)$ to approximate $f(x)$ for $2 \leq x \leq 4.5$.