

408L CLASS PROBLEMS

APRIL 27TH, 2020

Problem 1. Find the Taylor series of $x^3 + x + 1$ about 2.

Problem 2. Find the Taylor series of $\frac{1}{x}$ about 1.

Problem 3. Find the Taylor series of $\cos(x)$ about $\frac{\pi}{3}$.

Problem 4. Find $\frac{1}{0!} + \frac{2}{1!} + \frac{4}{2!} + \frac{8}{3!} + \dots + \frac{2^n}{n!} + \dots$

Problem 5. Show that $\int_0^1 e^{x^2} dx = \sum_{n=0}^{\infty} \frac{1}{(2n+1) \cdot n!}$. Numerically estimate the value of this integral by computing the sum of the first four terms of this sum.