Math 199 CD3 Merit Worksheet 19: Taylor's Series, Maclaurin Series

April 3, 2022

1. Find the Taylor series for $f(x) = \sin x$ about $\pi/4$

2. Find the Maclaurin series for $f(x) = \ln(1 - x)$

3. Find the first 3 non-zero terms of the Maclaurin series for $e^{\cos x}$

4. Find the Maclaurin series for $\cos(x^2)$

5. Estimate $\int_0^1 \sqrt{x} \sin x dx$ within the 2 decimal accuracy using Maclaurin series.

6. Find the Maclaurin series for 2^x

7. Challenge: show that

$$1 = \sum_1^\infty \frac{n}{(n+1)!}$$