Math 4329: Worksheet 01
Dr. Natasha Sharma

Name: _____

1. This question is on the Taylor polynomial.

(a) Find the Taylor Polynomial $p_3(x)$ for $f(x) = e^x \sin(x)$ about the point $a = 0$.

(b) Bound the error $|f(x) - p_3(x)|$ using the Taylor Remainder $R_3(x)$ on $[-\pi/4, \pi/4]$.

(c) Let $p_n(x)$ be the Taylor Polynomial of degree n of $f(x) = \cos(x)$ about $a = 0$. How large should n be so that $|f(x) - p_n(x)| < 10^{-5}$ for $-\pi/4 \leq x \leq \pi/4$?