

April 15, 2003

Show all work for credit.

Leave all answers as exact answers unless otherwise stated.

1. Find the Taylor Series of $f(x) = 5^x$ expanded about the point $x = 1$, that is to say $a = 1$.

2. Find the third degree Taylor polynomial of $f(x) = e^x \sin(x)$

Hint: $e^x = \sum_{n=0}^{\infty} \frac{1}{n!} x^n$, and $\sin(x) = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1}$

3. True or False: Some Taylor Series converge for no values of x .