

MthU242  
Northeastern University  
Quiz #10  
20 Minutes

Calculus II  
Professor Gilmore  
Mar. 29, 2007

Name: \_\_\_\_\_.

### Show All Your Work

1. Consider the function  $f(x) = x^2 + e^x$ . Work out the MacLauren series for this function, that is the Taylor's series centered at 0. Show all of your work in some tabular form. Work out the first five terms of the series, then give the nth term.

2. Develop the Taylor's series for the function  $f(x) = \cos(x)$  centered at  $a = \frac{\pi}{4}$ . Work out the first five terms of the series and then write down the first nine terms.

3. The Taylor's series at  $a = 0$  for the function  $\sin(x)$  is  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}$ .

Use the error term for Taylor's series to decide how many terms you need in order to calculate  $\cos(.2)$  to 5 decimal place accuracy.

Name: \_\_\_\_\_.