Name_____ Student ID_____ TA's name_____

Math 231 Homework 7

Due May 6th Submit at the beginning of the class (Put into the box with your TA's name)
Do the calculation and write the numbers during the process

1. Use the definition of Taylor series to find the first four nonzero terms of the series for *f(x)* centered at the given value of *a*, find the Taylor series representation of the function and associated radius of convergence and interval of convergence.

   (a) $f(x) = (1-x)^{-2}$, *a=0*

   (b) $f(x) = e^{2x}$, *a=3*

   (3) $f(x) = \cos(x)$, *a=*π

2. Find the Maclaurin series for f(x) using the definition of Maclaurin series, and the associated radius of convergence and interval of convergence.

   (a) $f(x) = 2^x$

   (b) $f(x) = sinhx$

   (c) $f(x) = sin\pi x$

3. Use the binomial series to expand the function as a power series and state the radius and interval of convergence.

   (a) $f(x) = \sqrt[4]{1-x}$

   (b) $f(x) = \frac{1}{(2+x)^3}$