Name ________________________________

1. (3 points) Write down the Maclaurin series for each of the following functions and specify the values of $x$ for which the series converge. Show at least the terms up to $x^5$.
   
   (a) $\frac{1}{1-x}$
   
   (b) $\ln(1 + x)$
   
   (c) $\sin x$

2. (3 points) Write down the Maclaurin series for each of the following functions and specify the values of $x$ for which the series converge. Show at least the terms up to $x^7$.
   
   (a) $x \cos 2x$
   
   (b) $\frac{10x}{1 - 8x^3}$

3. (4 points) Use a 5th order Maclaurin polynomial for $e^x$ to show how one could obtain an estimate for $e$ with an error of less than 0.005.