

Math 261 Fall 2011  
Assignment #3

This assignment is due at the beginning of class on Monday, October 3, 2011.

**1.**

- (a) Page 15 Problem #9 (b), (c), and (d) only.
- (b) Page 15 Problem #10 (b), (c), and (d) only.

Note that you will use value of

$$\max_{0 < x < 1} |f^{(3)}(x)|$$

in order to solve both Problems #9 and #10 (i.e., this number is the same for both problems). Also note that the answer given in the text might differ slightly from the answer that we obtain by the methods from class owing to how we approximate the error. In determining the *actual error* you will need to compute

$$\int_0^1 e^x \cos x \, dx.$$

This can be done using integration by parts. When evaluating the *actual value* of this expression (which is not really the actual value but rather a decimal approximation based on what your calculator tells you when you plug  $\exp(1)$ ,  $\cos(1)$ , and  $\sin(1)$  in) round off to 8 decimal places.

**2.** Page 16 Problem #18.

**3.** Page 16 Problem #20. Note that the Maclaurin polynomial is simply the Taylor polynomial about the point  $a = 0$ . In other words, an equivalent version of the problem is the following. Find the  $n$ th Taylor polynomial  $P_n(x)$  about the point  $a = 0$  for  $f(x) = \arctan x$ .

**4.** Page 39 Problem #3.

**5.** Page 39 Problem #4.