Quiz 9

DUE: MON. APR. 14

Name: ______________________________ **Prof. Ron Buckmire**

Date: _______________ **Friday April 11**

Time Begun: ____________________

Time Ended: ____________________

Topic covered: Taylor Series and Taylor Polynomials

The **student learning outcome** of this quiz is to provide you with an opprtunity to display your understanding of Taylor (and MacLaurin) series.

Reality Check:

EXPECTED SCORE : __________**/10** ACTUAL SCORE : __________**/10**

Instructions:

1. Once you open the quiz, you have 30 minutes to complete it.
2. You **may not** use the book or any of your class notes, but you may use a calculator. You must work alone.
3. If you use extra paper, please staple it to the quiz before coming to class. UNSTAPLED SHEETS WILL NOT BE GRADED.
4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules. Complete the reality check to give yourself a sense of how well you think you did on the quiz.
5. Relax and enjoy....
6. **This quiz is due on Monday, April 14**, at the **beginning** of class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, ____________________, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

SHOW YOUR WORK

Adapted from Stewart, page 487, #4.. Suppose the Taylor series $\sum_{k=0}^{\infty} \frac{f^{(k)}(4)}{k!}(x-4)^k$ for a mystery function $f(x)$ centered at $a = 4$ has the following expression for its k^{th} derivative:

$$f^{(k)}(4) = \frac{(-1)^k k!}{3^k(k+1)}$$

(a) (*3 points*) Write down the 2nd-degree Taylor Polynomial approximation to $f(x)$ at $a = 4$.

(b) (*3 points*) Find the radius of convergence of the Taylor series for $f(x)$ about $a = 4$.

(c) (*4 points*) What is the set of x values for which the Taylor series will converge to the mystery function $f(x)$?