Math 114: Calculus I. **PRACTICE Quiz on Spreadsheets** Name: _____

Nov 2004

Closed book. Closed notes. NO CALCULATORS. You may only use Excel. Please write very legibly. You may use the back of the sheet for extra space. Mark your scratch work by circling it and writing "Do not grade" on it.

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1. Open a blank Excel file and immediately save it on Desktop under *your FULL name*. (Ask for help if you can't do this.)

2. In the first row (not column), create the integers from 1 to 200. Do this by typing in formulas in such a way that if you change Cell A1 to any integer n, then Row 1 will automatically show the integers from n to $n + 199$.

3. Save your file before reading on! In each of the first **forty** columns, use the number in the first row as the initial point x_0 for Newton's Method to find a root of $f(x) = e^{x-1} - 3(x-1) = 0$, accurate to at least eight decimal places. Recall the recursion formula for Newton's method: $x_{n+1} = x_n - f(x_n)/f'(x_n)$.

   You should get $1.619\cdots$ and $2.151\cdots$ as roots. In the space below write each of these roots to eight decimal places.

   Which columns give which roots?

4. Save your file. Then open a new Worksheet in the *same* file (click on the "Sheet2" tab at the bottom).

   In Cell A1 type the number 0.01. Then in Column B create the numbers from 2 to 3 in increments of 0.01, but do this in such a way that if the 0.01 in A1 is changed, the numbers in Column B change accordingly.

5. Save your file. In Column C create the values of $f(x) = e^{x-1} - 3(x-1)$ that correspond to Column B.

   Which x value in Column B gives a value for $f(x)$ that's closest to 0? Answer here: _____

6. Save your file. Use Columns B and C to create a graph of $f(x)$ on the interval $[2, 3]$.

7. Make sure all rows below Row 150 are blank in both worksheets. Then save your file and email it to your lab (not lecture) instructor (rnaimi@oxy.edu or tollisen@oxy.edu). (Ask for help with emailing, if you don't know how.)