Math 126 Calculus I Mathematica Computing Lab 3 Block 3 Tinsley

Instructions: Work in the same groups as you have been. The lab is due on Friday of Week 3 by 5:00 PM.

Notes:

- **The real number e is obtained with the capital E.**

- When copying expressions into word, you can avoid the ^ symbol for exponentiation and other input symbols by converting the expression to Traditional Form. For example, the expression (1-Tan[x^2])/(2x^3) in Traditional Form appears as $\frac{1-\tan(x^2)}{2x^3}$. First, highlight the expression, then right click, select Convert to, and then choose Traditional Form. Now, execute the Copy As sequence as described in the second lab.

- The Classroom Assistant palette has many special symbols as well as derivatives and integrals in nicer non-input forms. Experiment with it.

***Integral Calculus*:** Mathematica is happy to calculate both indefinite and definite integrals for you. The basic form is for the indefinite integral is:
Integrate$[1/(x\text{^}3+1), x]$. The answer (in Traditional Form) is

$$-\frac{1}{6}\log(x^2-x+1)+\frac{1}{3}\log(x+1)+\frac{\tan^{-1}(\frac{2x-1}{\sqrt{3}})}{\sqrt{3}}$$

Mathematica does not supply the constant of integration. The form for the definite integral should not surprise you. The limits of integration are given within { }. It is Integrate[1/(x^3+1, {x, 0,1}]. The answer in Traditional Form is $\frac{1}{18}(2\sqrt{3}\pi+\log(64))$.

The symbols ∞ and -∞ are allowed here though you probably will not need these until calculus 2. You can type Infinity or select it from the Classroom Assistant palette.

Feel free to use Mathematica to check your homework answers. You will be allowed to use it or your calculator on the second half of the final exam.

Exercise 1: Please work in the same groups as assigned the first week.

Use Mathematica to do exercises 32, 52, 62, 74 from the CHAPTER REVIEW EXERCISES at the end of chapter 5 (p. 369-73). Show your work by embedding **nicely** expressions, integrals, graphs, etc in a word document. Be sure all names are on your document. We have the lab reserved from 2:00 – 3:00 PM on Thursday of Week 4.

New Instructions for turning in your labs: Please email me your labs. However, please include ALL members of your group as addressees along with me so that I can do a Reply All to return your corrected labs.