Structure of a Mathematica Lab Report

Your lab reports should contain each of the following four sections:

1. Title Page
   See sample below

2. Objectives
   This section should consist of a few sentences written in your own words. You should comment on what you had hoped to learn by performing these lab exercises. You may discuss the types of problems that occurred in this report and the mathematical and Mathematica procedures that you used to solve them. See sample below

3. Problems and Solutions
   This is the largest section of your report. It should include the statement of each worksheet problem followed by the sequence of Mathematica instructions which you executed to solve that problem. Occasionally, a worksheet problem will ask for a solution to be determined analytically, using just pencil and paper. In such a case, you may either neatly write-in your solution in a blank space under the statement of the problem or you may type-in your solution using Mathematica's typesetting capabilities.

4. Analysis and Conclusions
   This section should consist of an analysis of your results. You should comment on any problems or difficulties you had experienced in solving the exercises. Indicate any discrepancies between the output that you logically expected and that which you actually arrived at using Mathematica. You may also discuss what exactly you liked or disliked about the problem set. In any case, be constructive with your criticism. See sample below
THE NUMBER $e$ AS A LIMIT, LOGARITHMIC AND EXPONENTIAL FUNCTIONS
Lab #1

Richard Ford
Due Date: June 8, 2010
Instructor: D. Maslanka
PART II. SAMPLE: OBJECTIVES

Objectives
This was the first time that I had encountered the program ‘Mathematica’. Therefore, by completing the lab 1 problem set, I had hoped to become familiar with this program and to begin to learn something about its uses. The first lab assignment covered a variety of different mathematical problems, ranging from solving elementary equations to performing complex integrations. The procedures used to solve these problems were consistent with those used in the lectures. Moreover, Mathematica programming reminded me of other more familiar programming tools such as MATLAB and C++.

PART IV. SAMPLE: ANALYSIS & CONCLUSIONS

Analysis and Conclusions
The first problem in this report was a relatively simple one for me to solve. So it was a good one to get me into the swing of Mathematica programming. In contrast, problems 3 and 4 were much more challenging. Their solutions required a lot more trial and error on my part. Although the fundamental ideas behind them were not too complicated, it was still difficult for me to translate these two problems in terms of the Mathematica program. Of course, it often is the case that initial difficulties will arise whenever you first experiment with a brand new programming tool. However, after getting some help from the TA and a little advice from the instructor, I was able to figure out most of the Mathematica formulas that I needed to solve all of the problems. The numerical results were mostly what I had expected. Overall, I thought that these four exercises formed a very good initial problem set. The questions posed were neither too simple nor overly complicated to serve as an introduction to Mathematica programming.