

# Project Report Guidelines

Douglas B. Meade

Department of Mathematics, University of South Carolina

The purpose of a project report is to present your answer to the project problem(s) and to communicate the mathematical ideas and methods used to obtain your answer. This information should be a concisely worded and well-organized paper that is understandable to any other student in this course.

The format of a typical project report is described below. This format is quite general, but is not always applicable. If you do not follow this outline, be sure that your report does provide all of the relevant information. Regardless of the organization you use, your report must

- clearly state the problem
- explain the methods used, including significant intermediate results
- answer all questions posed in the problem

The typical report will be at least one (1) page but not more than three (3) pages of a Word document in 12-point font, including figures. The report should contain each of the following elements: Title, Introduction, Analysis and Discussion, and Conclusion. Brief descriptions of what should be included in each of these sections as well as some guidelines for presenting mathematical equations and figures are given below.

## *Title*

The title should summarize, as specifically as possible, the subject of the project. Your name should be included here as well. (It is not necessary to put the title on a separate page.)

## *Introduction*

This brief section should include a clear statement of the major objectives of the project. In particular, clearly identify questions you are going to answer. The problem statement should also include any background information that may be needed to understand the major objectives. Lastly, this section should conclude with a brief overview of the mathematics that will be used to complete the project.

## *Analysis and Discussion*

Provide clear answers to all questions in the project. Explain the methods and intermediate steps used to obtain the information needed to obtain these answers. Did you encounter any surprises? Did you try a method that did not work as you expected? This part of the report should contain enough details for a reader to repeat your analysis for this, or a related, problem. Include appropriate figures and equations as needed.

Address any interesting observations you may have had as you were working through the project. Can you make any generalizations? Why or why not? These comments should be fairly detailed, but brief.

## *Equations and Figures*

Mathematical expressions should be included in your report when appropriate. Short expressions should flow with the text. Longer expressions should be presented on a separate line. For example:

The solutions to the quadratic equation  $ax^2 + bx + c = 0$  are

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}. \quad (1)$$

The roots in (1) are real-valued only when the quantity  $b^2 - 4ac \geq 0$ .

Note that an equation number is included whenever a displayed equation will be referenced elsewhere in the report.

Figures should be included when explicitly requested or when they provide meaningful information for the report. It is not enough to simply include a figure. Be sure you explain, in words, the information obtained from each figure. As demonstrated in Figure 1, a caption can be a good way to provide the written description of a figure.

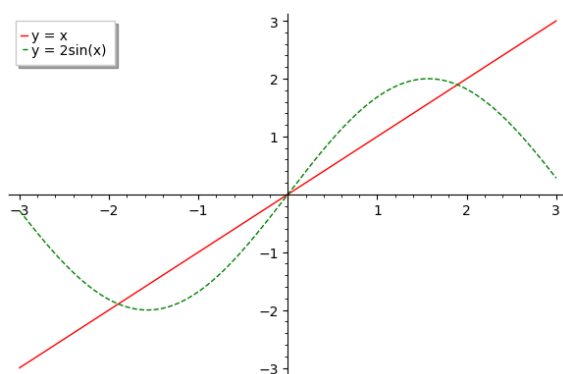


Figure 1: The equation  $x = 2\sin(x)$  has exactly three solutions. This SageMath-generated plot shows that these solutions are  $x = 0$  (exactly) and  $x \approx \pm 1.89$ .

Figures and equations do not have to be computer generated. Hand drawn equations and figures are acceptable provided they are neat. In many cases it will be easiest to copy an equation or graph from SageMath directly into a Word document. In general, you should use the method that is most effective for you.

### *Conclusion*

Summarize your results, the methods used to obtain them, and how they relate to your stated purpose of the project. To demonstrate the overall significance of your findings and the concepts you learned, clearly identify connections between the main points of your discussion.

### *Final Check*

After writing — and before turning in — your report, do each of the following:

- Make sure your writing is clear. If you read the report aloud to yourself or a friend, does it make sense?
- Run the report through a spellchecker. Look for incorrectly spelled words that the spellcheck misses!
- Check to be sure all of the questions have been answered and all pertinent equations and figures are included.
- Staple together all pages of the project report.

## Grading Outline for Project and Report

Department of Mathematics, University of South Carolina

Your Name \_\_\_\_\_

Category	Explanation	Score	Comments
Analysis & Discussion	mathematically correct answers to questions; supporting mathematical analysis;	/ 30	
Creativeness & Styling	interesting design; good visual appearance;	/ 30	
Organization & Structure	appropriate layout of report; overall appearance	/ 10	
Introduction	clear statement of problem; summary of methods to be used	/ 10	
Figures & Equations	clear presentation of mathematical expressions; inclusion of appropriate figures, with clear explanations	/ 10	
Conclusion	summary of results, including overall significance	/ 10	
Writing	correct grammar; appropriate vocabulary; clear and concise	/ 5	
Length	at least one page and not more than three pages (including graphs and figures)	/ 5	
<b>Total</b>		<b>/ 110</b>	