Math 172 Group Project

- Choose one topic from the attached list.

- You are going to CREATE a teaching resource related to the **REAL WORLD PROBLEM.** This resource should be something that can be used to review the topic once it have been learned. You must cover the topic Numerically, Graphically, Algebraically and Verbally. You may integrate MatLab/Maple into your group project presentation. This project should be final draft quality and fully electronic. In addition, it should include a 10-minute video containing the project presentation. Be creative!

- The written version of the project must contain Title, Short Description of methods used (key points), Examples, and References on your project.

- Your teaching resource can be represented as a powerpoint show with pictures of relevant items, or as a paper.

- **Problem Creation:** The problems you create should be entirely your own. Simply changing the numbers in a problem you find elsewhere is unacceptable as well. You may consult multiple sources, but don't steal. To do so would be considered plagiarism.

- **Presenting the problem solution** keep in mind that one of your goals is to create a product (teaching resource) that will be of use to future calculus students. So don't skip steps or omit explanation. On the other hand, don't go overboard showing steps that it is reasonable to expect a calculus student to understand. Your solutions may also include comments on common mistakes made with these types of problems, other methods that would work besides the method you are presenting. You should demonstrate using of integration techniques from sections 6.5, 8.1-8.4. Number of problems should be equal the number of students in the group.

- **Graphs/Diagrams:** If a problem/solution requires diagrams or graphs, be sure to include these where appropriate.

- It is recommended to inform me about the progress. The project draft must be completed before April 4 and printed version of the presentation have to be submitted before 04/04. Final version of the project should be submitted electronically to Turnitin (via e-campus) together with a file containing a video presentation of the project by April 22 (you will be informed by e-mail about the details).

- Your project grade will be based on the following criteria:

  - Draft (submitted at time, draft content) 15%

  - Professional looking document adhering to all requirements . . . 5%

  - Organization (information is presented in logical, interesting sequence which audience can follow.) 10%

  - Quality of problems (clarity, variety of problems, ability to assist students, creativity) . . . 20%

- Quality of solutions (correctness, clarity, depth of understanding, ability to assist students) . . . 40%

- Video Presentation . . . 20%

• All additional information will be send by e-mail and/or announced in class.

Here is a list of ideas for projects:

1. Area (Sections 7.1 and 8.3 (this means that you should create problems where area is calculated using trigonometric substitutions (feel free to combine different integration techniques)))

2. Area (Sections 7.1 and 8.4 (this means that you should create problems where area is calculated using partial fractions decomposition (feel free to combine different integration techniques)))

3. Volume of solids of revolution using washer method (Section 7.2)

4. Volume of solids that are not solids of revolution (Section 7.2)

5. Volume of solids of revolution using cylindrical shells (Section 7.3)

6. Work (Section 7.4)

7. Average Value of Function (Section 7.5)

8. Arc Length (Section 9.3)