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Fall 2010

Project: Application of Algebra or Analysis

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Project - Preliminary Version
Due Date: Nov. 23rd

In this assignment, you must find an application of Algebra or Analysis to a real world or applied problem and write a 1-2 page paper describing the problem, providing references, and explaining how the references you found are important to the topic.

You are free to choose any topic you would like and you are encouraged to discuss possible topics with your instructor. Some sample topics are as follows:

- Coding theory, an application of Algebra to signal processing.

- Cryptography, an application of Number theory and modular arithmetic.

- Solution of rubik's cube, an application of Group theory to puzzles.

- Theory of rankings, an application of Linear Algebra.

- Steepest descent methods, an application of Analysis to finding global minima.

- Global invertibility problems, an application of Analysis to large scale supply demand problems in Economics

- Free boundary problems, an application of Analysis to physics.

After choosing a topic, you should use the internet, textbooks, and articles to find further information about the topic. You will be required to find at least two referred research articles that describe the application of Algebra or Analysis to your topic. In order to help you find papers and learn about the peer-review process in mathematics, there will be an information session in the library where you will learn how to search mathematical articles on databases such as MathSciNet and JSTOR. You will also learn how to find mathematical reviews and read abstracts that may help you to understand better each article.

In your paper, you must provide references to the research articles in the proper format as below:

Balreira, E. C. Foliations and Global Inversion, *Commentarii Mathematici Helvetici*, 85 (1) p73–93, 2010.