MATH 416, Spring 08, Midterm 2

Choose one of the following problems:

1) Develop FFT for sequences of length which is not necssarily a power of 2. Start with the Cooley-Tukey factorization method for $N = pq$. Explore Fourier Transforms for seqences of prime length. As a starting reference you may use "The DFT. An Owner's Manual for teh Discrete Fourier Transform" by Briggs and Henson.

In your paper include theory, codes, documentation, and numerical examples.

2) Develop the software for d-times differentiable splines interpolating given data. Consider cases where the derivatives are and are not defined for the boundary points. This work includes providing a method of solving a system of linear equations. "Numerical Methods for Mathematics, Science, and Engineering" by Mathews may be used as a starting reference.

In your paper include theory, codes, documentation, and numerical examples.