# MATH 466, Spring 2004

## Assignment 1

**Due Date: Feb 9**

**IMPORTANT NOTE: A penalty of 30% of total points will be applied to late homework. Write your answers clearly.**

1. **Do the following problems:**
   **Sec 6.1 : 3(a), 5**
   **Sec 6.2 : 1-4 with 1(a) matrix.**
   **Sec 6.3 : 1(a), 4.**
   **Sec 6.4 : 6, 10.**
   **Sec 6.5 : 3(a), 4(a).**
   **Sec 6.6 : 1, 3 and 5 with 2(a) matrix, 6(c),11.**

2. **Show that the Gaussian Elimination with Backward Substitution requires** $\frac{n^3}{3} + n^2 - \frac{n}{3}$ **multiplications/divisions, and** $\frac{n^3}{3} + \frac{n^2}{2} - \frac{5n}{6}$ **additions/subtractions.**

3. **Show that** $det(AB) = det(A)det(B)$ **for** $n \times n$ **matrices** $A$ **and** $B$**.**

4. **(Programming) GEpartialpivot.m is MATLAB code for Gaussian Elimination with partial pivoting. Fill out the backward substitution in GEpartialpivot.m and test it with the following matrix:**

$$\begin{bmatrix} 6.0 \times 10^{-7} & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

   **Compare this solution with Gaussian Elimination without pivoting, which can be obtained by modifying the same MATLAB code. Which one is correct? Explain why these two solutions are different.**