ASSIGNMENT 2

Due February 10, 2005 (before start of class)

Problem 3

Compute the dot product of the following vectors

$$\mathbf{x} = \begin{bmatrix} 2.718281828 & -3.141592654 & 1.414213562 & 0.5772156649 & 0.3010299957 \end{bmatrix};$$

$$\mathbf{y} = \begin{bmatrix} 1486.2497 & 878366.9879 & -22.37492 & 4773714.647 & 0.000185049 \end{bmatrix};$$

in the following four ways:

1. Forward order: $\sum_{i=1}^{n} x_i y_i$

2. Reverse order: $\sum_{i=n}^{1} x_i y_i$

3. Largest-to-smallest order (add positive terms in the sum in order from largest to smallest, then add negative terms in order from smallest to largest, and then add the two partial sums)

4. Smallest-to-largest (reverse the order of adding in the previous method)

Are the results the same? Explain what you find. MATLAB has a build-in function to compute dot products. It is called `dot`. Which method do you think MATLAB uses?

Write a MATLAB script program for this assignment. Name the file using the same convention that we used last time. Submit an electronic copy of the program as an e-mail attachment.

Hint Do not use any loops. The following list of MATLAB functions may be very useful for this assignment: `sum`, `fliplr`, `find`, and `sort`. Use MATLAB's help utility to find out how to use them if you are not familiar with any of these built-in functions.