Due at the start of class Wednesday, September 14, 2011.

**Problem 1.** Consider the problem of not only finding the value of the maximum contiguous sum in an array, but also determining the two endpoints. Give a linear time algorithm for solving this problem. [What happens if all entries are negative?]

**Problem 2.** We can generalize the “maximum contiguous sum problem” to two dimensions: Given an $m \times n$ array of (positive and negative) numbers, find the largest sum of values in a (contiguous) rectangle.

(a) Write down an English description of the “brute force” algorithm for the “maximum contiguous rectangle problem”. One or two sentences should suffice.

(b) Write down the “brute force” algorithm in pseudocode.

(c) How many times is the inner loop executed? Write it using summations.

(d) Simplify your answer. Justify your work. [If you do this right, the solution involves very little calculation. We will discuss summations in class Monday in case you are struggling with this part.]

(e) **Challenge Problem.** Find a better algorithm for the “maximum contiguous rectangle problem”. How well can you do?