Problem 1.
Suppose functions $f_1, \ldots, f_n$ are linearly independent and let $g$ be another function.

a) Is it true that functions $f_1, \ldots, f_n, g$ are linearly independent?

b) Is it true that functions $f_1, \ldots, f_{n-1}$ are linearly independent?

Suppose functions $f_1, \ldots, f_n$ are linearly dependent and let $g$ be another function.

(c) Is it true that functions $f_1, \ldots, f_n, g$ are linearly dependent?

(d) Is it true that functions $f_1, \ldots, f_{n-1}$ are linearly dependent?

In each case give a counterexample if the statement is not true and give an argument if it is true. (Answers with no support will get no credit.)

Due: Tuesday, February 22.