18.099 - 18.06CI.

HW-2

Due on Monday, Feb 23 in class. First draft due on Thursday, Feb 19.

(1) Find the dimension of the space of all homogeneous polynomials of degree p in n variables. Prove your answer. Make sure that it works in both cases $p \leq n$ and $p > n$, as well as for the limit values $p = 0$ and $n = 1$.
(2) Two linear spaces L and M over a field F are isomorphic if there exists a linear map $f : L \to M$ which is a set-theoretical bijection (one-one and onto). Prove that two finite dimensional linear spaces are isomorphic if and only if their dimensions coincide.